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Business Analytics (23CAH-701)

Project Title:

"HR Analytics Dashboard Using Tableau: Analyzing Employee Attrition and Satisfaction Metrics"

Submitted By:

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Submitted To:

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Class & Sec.: _____

Teacher's Code:_____

UID:_____

Teacher's Sign:_____

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"Project Title: HR Analytics Dashboard Using Tableau: Analyzing Employee Attrition and Satisfaction Metrics"

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Project Title: " HR Analytics Dashboard Using Tableau: Analyzing Employee Attrition and Satisfaction Metrics "

Introduction:

This project focuses on analyzing HR data, particularly examining employee attrition and job satisfaction across various attributes such as department, age group, gender, education field, and job role. By utilizing a Tableau dashboard, we aim to gain insights into factors influencing attrition and satisfaction, helping organizations make data-driven decisions to improve employee retention and overall job satisfaction.

Project Description:

The dataset contains comprehensive records related to employee demographics and job satisfaction within an organization, covering details such as department, job role, age group, gender, and educational background. This data allows for an in-depth exploration of HR metrics with specific goals to:

- Analyze attrition rates across different departments and understand potential contributing factors.
- Investigate employee satisfaction rates segmented by job role, age group, and gender.
- Assess the distribution of employees by age and gender across departments.
- Identify the relationship between educational background and attrition, helping to determine areas where specific interventions may be needed.

Data Source:

The data for this project comes from the HR department's official records, containing key details about employee demographics, job satisfaction, and attrition rates within the organization. Each entry represents an individual employee, capturing essential details like department, job role, age group, education level, and attrition status.

Dataset Attributes:

1. **Employee Identification:** A unique identifier for each employee, ensuring privacy.
2. **Demographic Information:**
    - **Department:** The department to which the employee belongs (e.g., HR, Sales, R&D).
    - **Age Group:** The age bracket of the employee (e.g., 25-34, 35-44).
    - **Gender:** The gender of the employee (Male/Female).

3. **Job Information:**

   - **Job Role:** The specific job position held by the employee (e.g., Manager, Sales Executive).
   - **Job Satisfaction:** Satisfaction score based on internal surveys.

4. **Educational Background:**

   - **Field of Education:** The educational field or degree held by the employee (e.g., Life Sciences, Marketing, Engineering).

5. **Attrition Information:**

   - **Attrition Status:** Indicates whether an employee has left the organization.

Research Questions:

Department-Wise Attrition: Which departments have the highest attrition rates? Are there patterns or trends indicating factors that might influence employees to leave?

Job Satisfaction Analysis: What are the satisfaction rates across different job roles, and how do these affect attrition?

Education and Attrition Correlation: Is there a relationship between the employee's field of education and their likelihood of leaving the organization?

Age and Gender Distribution: How does employee distribution vary by age group and gender across different departments?

Methodology:

This project will involve data cleaning, exploratory data analysis (EDA), and visualization using Tableau. Descriptive statistics will summarize employee attributes, while visual analysis will help identify trends in attrition, job satisfaction, and department demographics. More advanced analysis could include predictive modeling to determine factors influencing attrition rates.

Significance:

Understanding patterns in attrition and job satisfaction is critical for improving employee retention and fostering a positive work environment. Insights from this analysis can help HR departments implement targeted interventions, improve job satisfaction, and reduce attrition, ultimately enhancing organizational stability and growth.

Add Excel data to Tableau:

Step 1: Open Tableau

1. Launch Tableau on your computer.

Step 2: Connect to Data

1. On the start page, you'll see several options for connecting to data.
2. Under the **"Connect"** section, click on **"Microsoft Excel."**

Step 3: Select the Excel File

1. A file dialog will appear. Navigate to the location where your Excel file is saved.
2. Select the Excel file containing your HR data and click **"Open."**

Step 4: Choose the Worksheet

1. After opening the file, Tableau will display the sheets available in the Excel file on the left side.
2. Drag the desired worksheet(s) from the left pane to the **"Drag sheets here"** area in the middle.

Step 5: Review Data

1. Tableau will automatically load a preview of your data. You can review it to ensure the data is correct.
2. Make sure the data types (e.g., string, number, date) are recognized correctly. If not, you can adjust them by clicking on the data type icon in the column header.

Step 6: Go to Sheet

1. Once you've confirmed your data, click on the **"Sheet 1"** tab at the bottom to start creating your visualizations.
2. Tableau will take you to the worksheet view, where you can begin dragging fields to
3. Create your visualizations.

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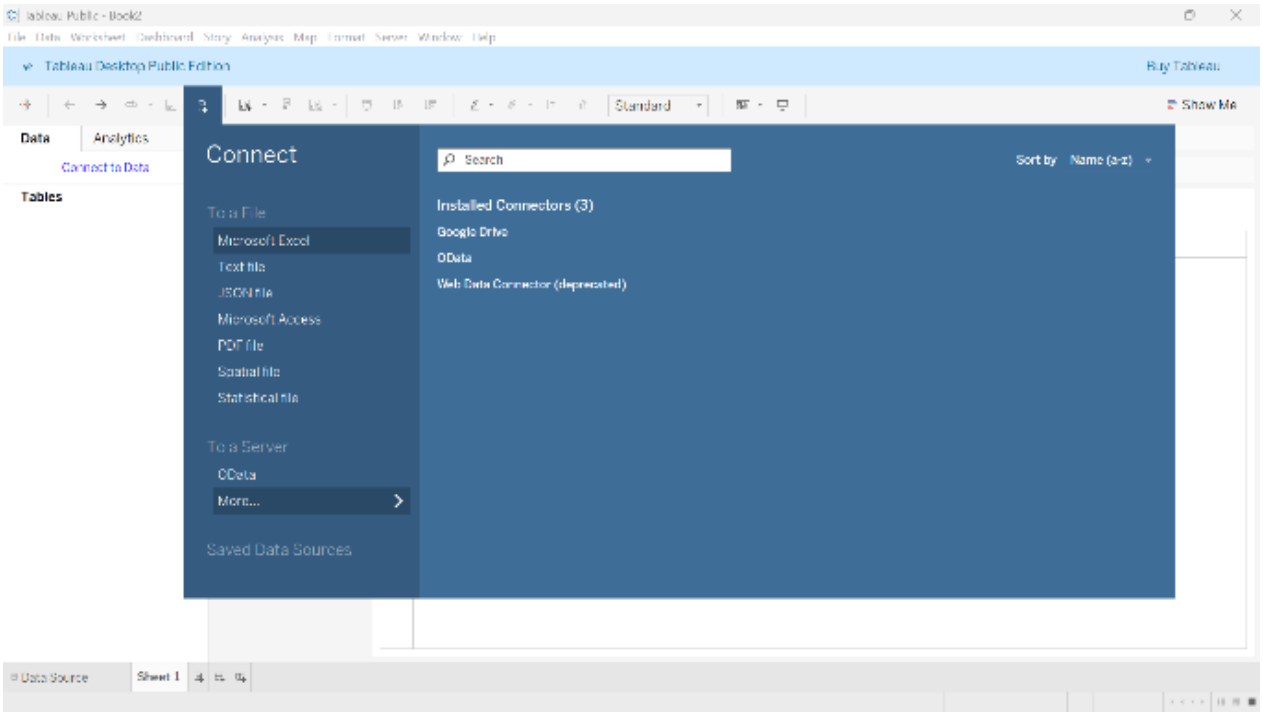
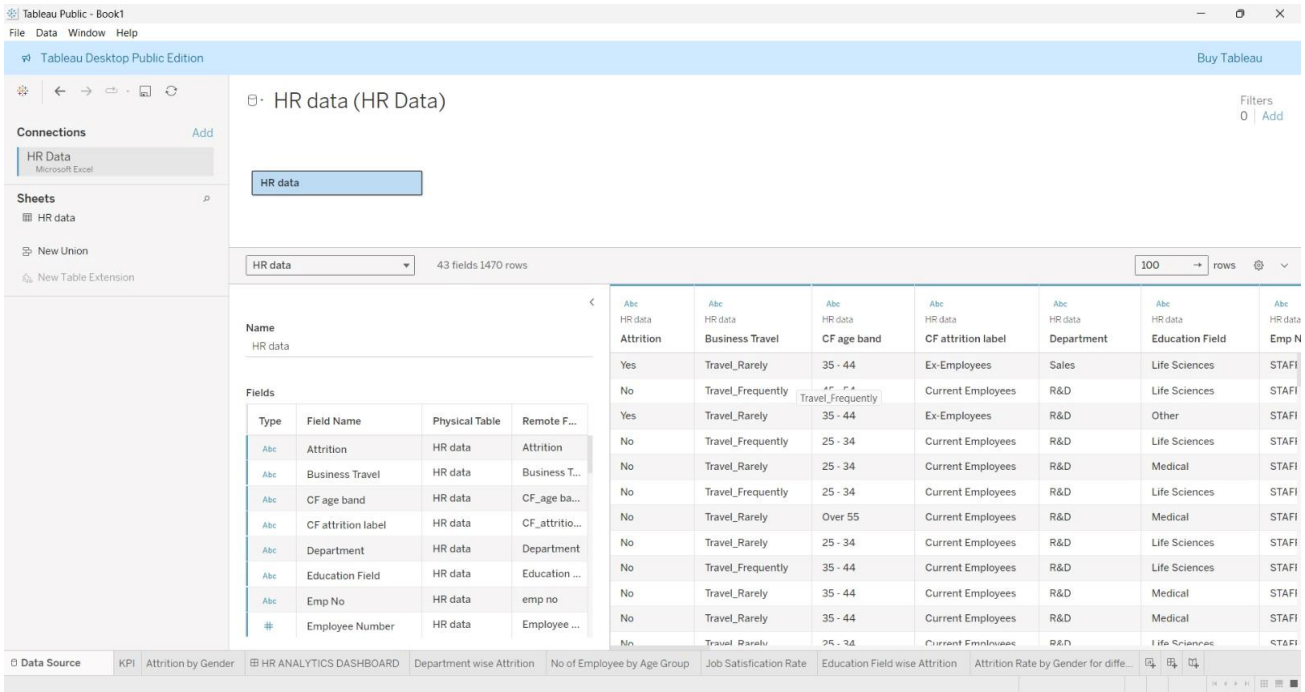




Sheet 1: KPI (Key Performance Indicator) –

Steps:

KPI Sheet Setup

1. Rename Sheet:

- Change the name of Sheet 1 to **KPI.**

Attrition Calculation

1. Calculate Attrition:

- Create a calculated field:
  - Right-click on the data pane and select Create Calculated Field.
  - Name it to Attrition Count.
  - Enter the formula: **`IF [ATTRITION] = 'Yes' THEN 1 ELSE 0 END`.**

Attrition Rate Calculation

1. Calculate Attrition Rate:

- Create another calculated field:
  - Right-click on the data pane and select Create Calculated Field.
  - Name it to Attrition Rate.
  - Enter the formula: **`SUM([Attrition Count]) / SUM([Employee Count]).**

Remaining Employee Count Calculation

1. Calculate Remaining Employees:

- Create a calculated field for remaining employees:
  - Right-click on the data pane and select Create Calculated Field.
  - Name it to Remaining Employees.
  - Enter the formula: **`SUM([Employee Count]) - SUM([Attrition Count])`.**

Education Field as a Filter

1. Add Education Field:

- Drag the Education field to the filter shelf in the analysis.

Filter Panel Setup

1. Configure Filter Panel:

- Click on the Education field in the filter shelf.

- Choose All to include all options in the filter.

Filter Application

1. Apply Filter:

- Right-click on the Education filter in the filter shelf.

- Select Apply to Worksheet.

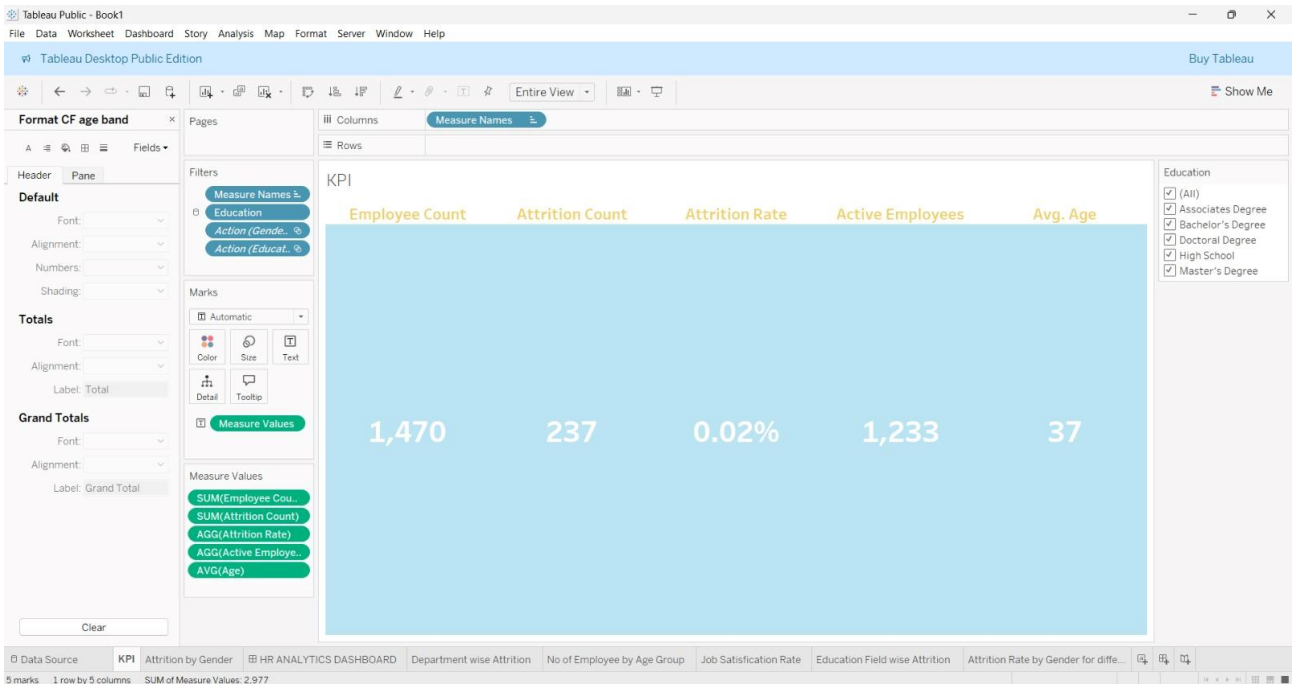
- Choose All Using This Data Source.

Text Formatting for Better Visibility

Headings: Use **Bold** and **Larger Font Sizes** (e.g., 16-20pt) for main section titles like "KPI Sheet Setup" and "Employee Count."

Subheadings: Format subheadings in **bold** or ***italic*** to distinguish them from regular text.

Text Color: Apply colors selectively (e.g., dark blue for headings, gray for details).



Sheet 2: Attrition by Gender –

Steps:

1. Create a New Sheet:

- Rename the new sheet as **Attrition by Gender**.

2. Set Up the Basic Chart:

- Drag **Gender** to **Rows** and **Attrition Count** (calculated field) to **Columns**.

- This will create a default **Bar Chart**.

3. Add Color by Gender:

- Drag **Gender** to the **Color** shelf for both instances (bar and circle).

- **Set Custom Colors:**

  - Click on the color options for each gender and apply your preferred custom colors.

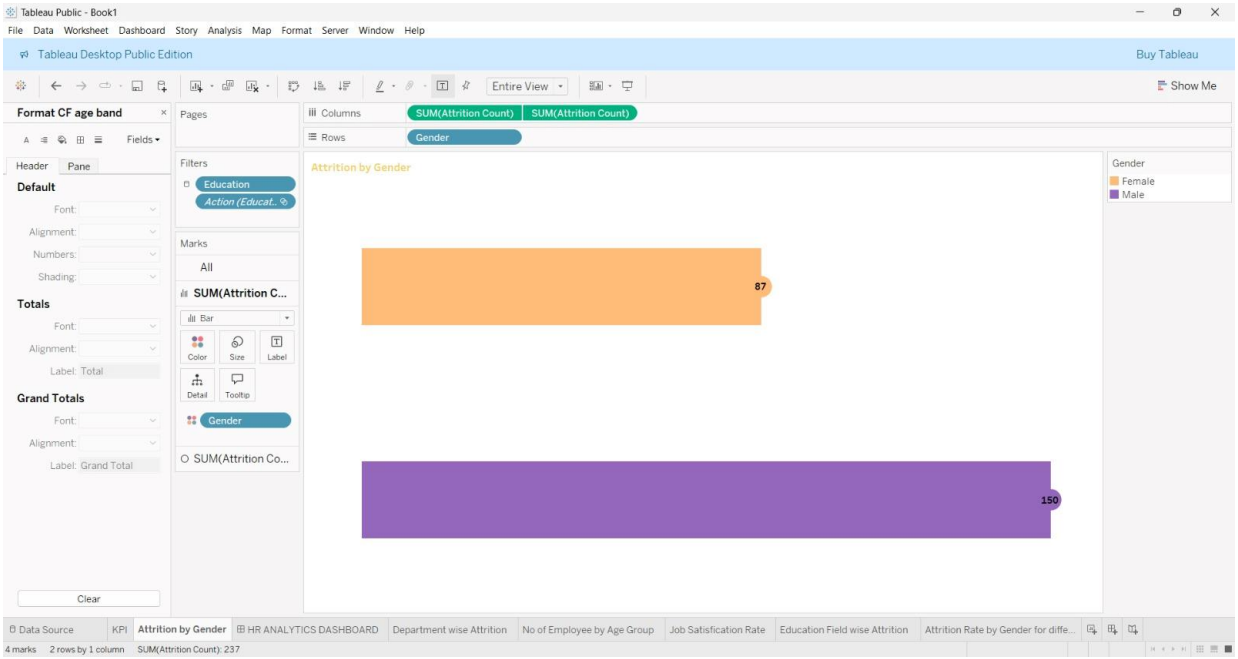
4. Add Labels:

- Create an additional instance of **Attrition Count**:

- Hold **Ctrl**, drag **Attrition Count**, and place it in the **Label** shelf for the **Circle** mark only.

- Adjust label placement to **Center** to display values within the circles.

5. **Format Text:** Customize the text appearance for better visibility.



Sheet 3: Department-Wise Attrition -

Steps:

1. Create a New Sheet:

- Open a new sheet and name it **Department-Wise Attrition.**

2. Set Up the Pie Chart:

- Change the chart type to **Pie.**

- Drag **Departmen**t to the Color shelf to differentiate each department by color.

3. Add Attrition Count to Angle:

- Drag **Attrition Count** (calculated field) to the Angle shelf. This will adjust the slice size for each department based on attrition numbers, showing larger slices for departments with higher attrition.

4. Customize Colors:

- Go to **Edit Colors:**

- Assign each department a custom color (e.g., HR - light blue, Sales - dark blue).

- Apply and close.

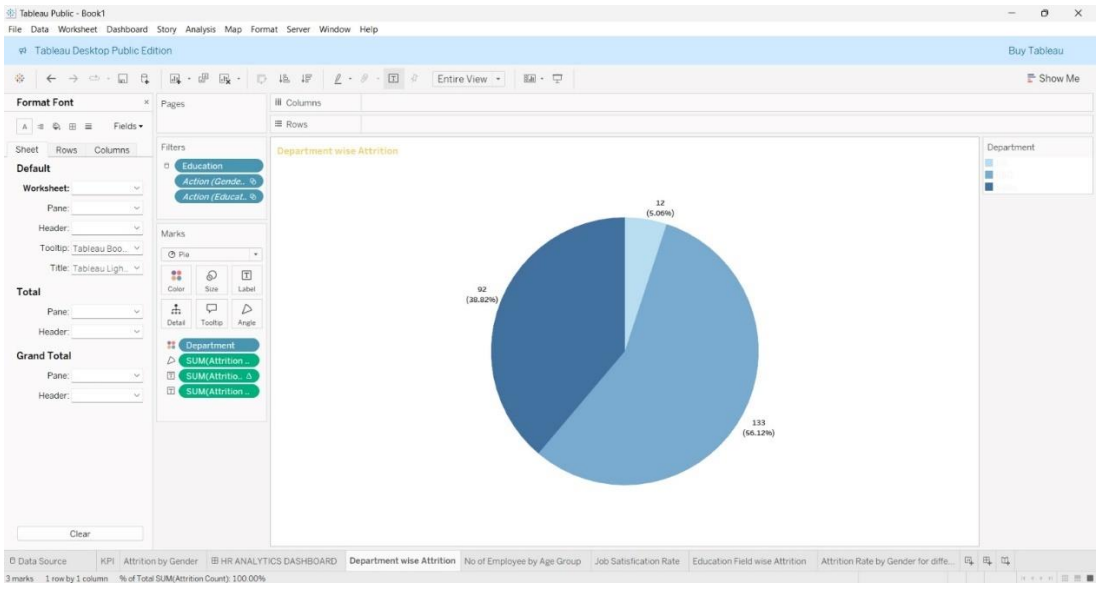
5. Label the Chart with Percentages:

- Add Percentage Labels

6. Display Total Numbers:

- Add Numeric Labels

7. Format Text: Customize the text appearance for better visibility.



Sheet 4: No of Employees by Age Group -

Steps:

Creating the Employee Count by Age Group Frequency Chart

1. Create a New Sheet:

- Open a new sheet and name it Employee Count by Age Group.

2. Set Up Age Bins:

- Right-click on the **Age** field and select **Create > Bins** to group ages into intervals.

- Set Default Bin Size:

- Change the default bin size to **3** to avoid fractions.

- **Create Bin Size Parameter:**

- In the **Create Bins** dialog, select **Create New Parameter** for dynamic bin adjustment.

- Name the parameter **Bin Size**, set the initial value to **3**, and configure as follows:

- **Minimum Value**: 2

- **Maximum Value**: 10

- **Step Size:** 1

- Click OK to create the parameter and bin.

3. Adjust and Show the Parameter:

- Add the **Bin Size** parameter to the view for easy access, allowing users to dynamically adjust bin sizes.

4. Build the Frequency Chart:

- Place Binned Age Field in Columns:

- Drag the **Age Bin** field to **Columns.**

- Add Employee Count:

- Drag **Employee Count** to **Rows** to display the frequency of employees within each age range.

- **Adjust View:**

- Change the view to **Entire View** and add **Labels** to display the count within each bin.

5. Customize Labels and View:

- Label Employee Count:

- Enable **Labels** for a clear display of employee numbers within each age bin (e.g., "18-20: 24 employees").

- Dynamic **Bin Size** Adjustment:

- Test different **Bin Sizes** to see how the chart updates, showing age gaps (e.g., 18-20 or 18-21) and frequencies for each.

6. Add the Chart to the Dashboard:

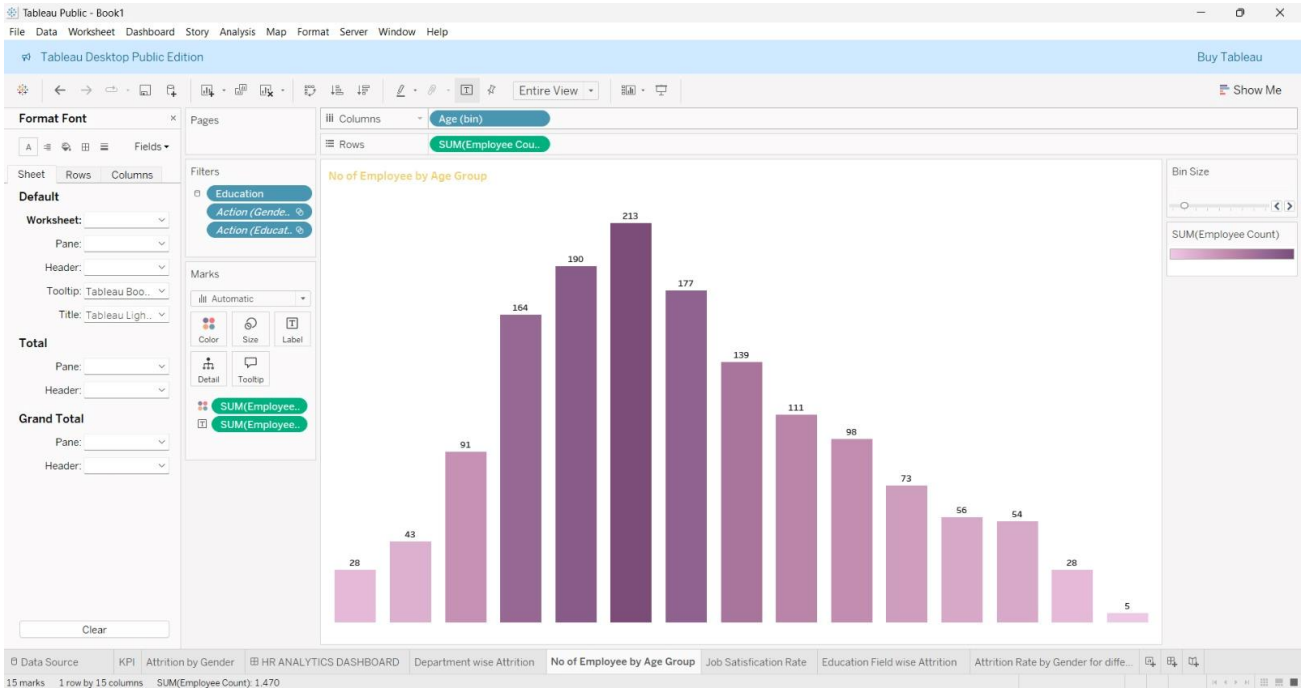
- Drag the Chart to the Dashboard:

- Go to your **Dashboard**, bring in the **Employee Frequency Chart** as required.

- Format Title:

- Edit the chart title, set the font to Semi-Bold, size 12, and use a yellow color for visibility.

7. Format Text: Customize the text appearance for better visibility.



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Sheet 5: Job Satisfaction Rating –

Steps:

1. Create a New Sheet:
- Open a new sheet and name it **Job Satisfaction Rating.**

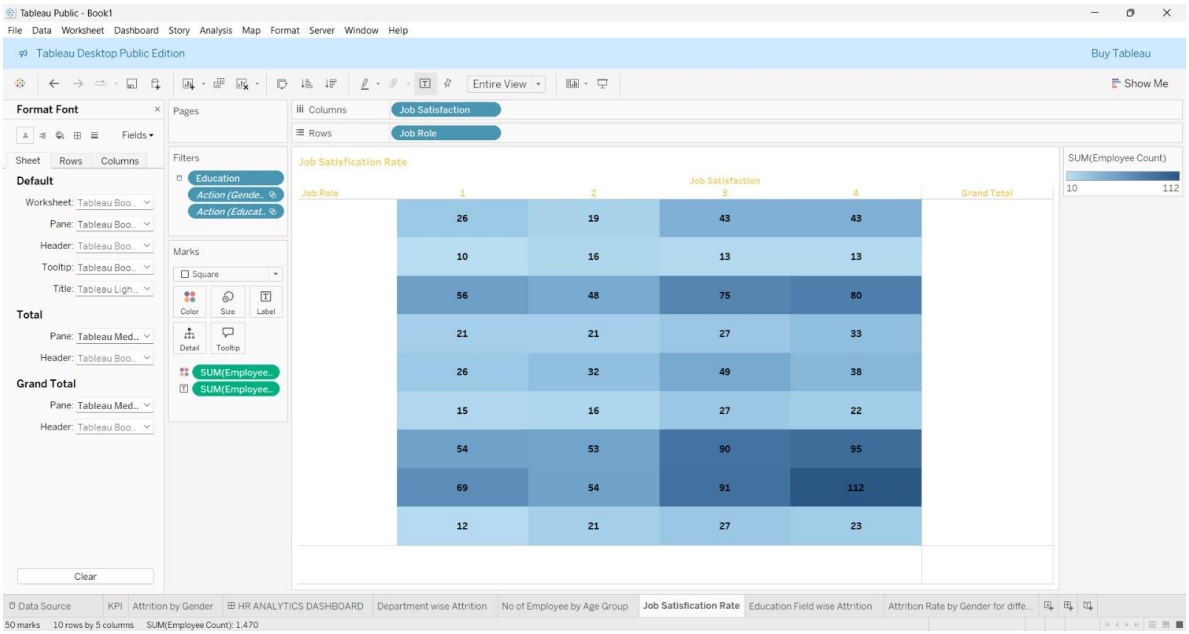
2. Set Up Rows and Columns:
- **Job Role in Rows:**
  - Drag **Job Role** to the **Rows** section to categorize employees by their roles.
- **Job Satisfaction in Columns:**
  - Drag **Job Satisfaction** to **Columns.**
  - **Convert to Dimension:**
    - If the **Job Satisfaction** field appears as a measure with aggregated values, right-click it, select **Convert to Dimension** to treat it as a categorical variable.

- This setup should now display distinct Job Satisfaction ratings (1, 2, 3, 4) without aggregating them, showing individual satisfaction levels.

3. Display Employee Count:
- Drag **Employee Count** to the **Text** field to show the number of employees with each satisfaction rating for each job role.

4. Interpret the Matrix:
- This matrix now reflects how many employees in each job role rate their job satisfaction from **1 (lowest)** to **4 (highest).**

5. Add Grand Totals:
- **Enable Grand Totals:**
  - Go to **Analysis > Totals** and **enable Show Row Grand Totals** and **Show Column Grand Totals** to display total counts for each job role and satisfaction rating.



Sheet 6: Education Field-wise Attrition. –

Steps:

1. Create a New Sheet:
- Open a new sheet and name it **Education Field-wise Attrition.**

2. Set Up Rows and Columns:

- Education Field in Rows:
- Drag **Education Field** to the **Rows** section to categorize by education level.

- Attrition in Columns:
- Drag **Attrition** count (or calculated field, if applicable) to the **Columns** section to display the attrition rate for each education field.

3. Adjust the View:

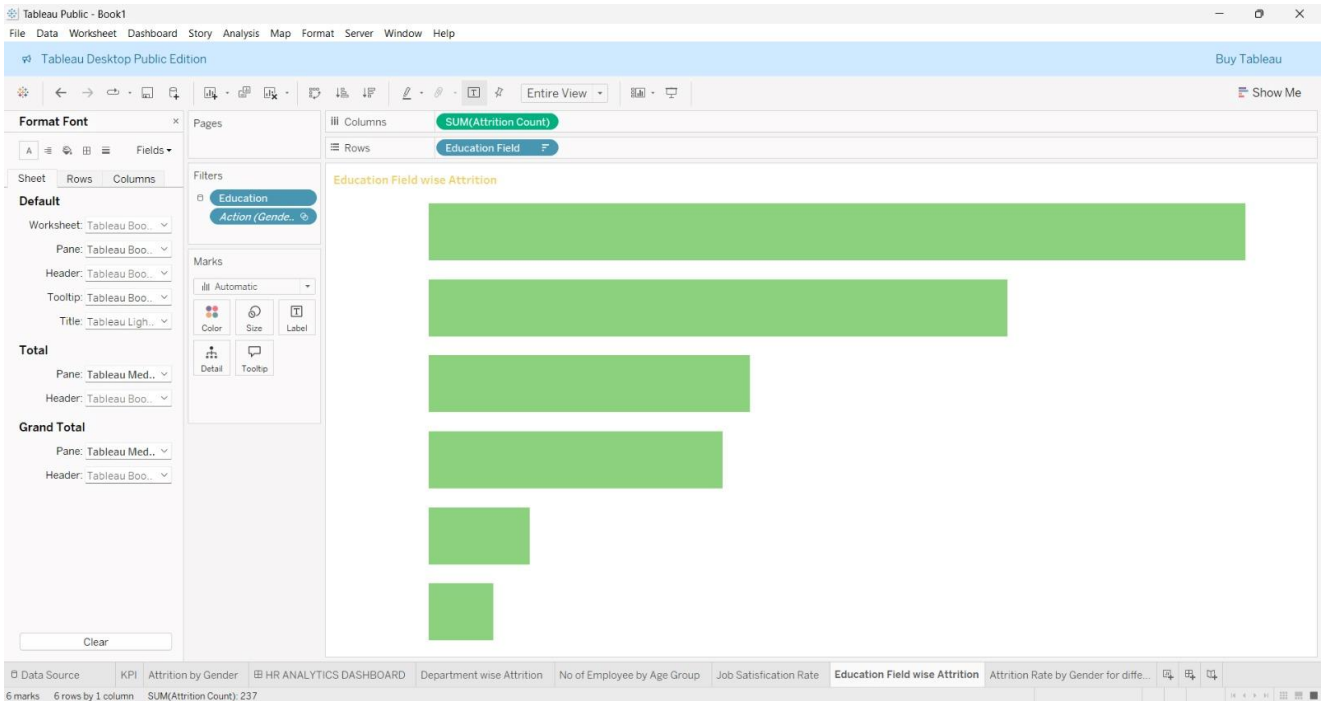
- Set Entire View:
- Go to the **View** options and select **Entire View** for better visualization.

- Sort Data:
- Sort the bar chart by **Attrition** from highest to lowest for easy comparison.

4. Enable Labels:

- Show Labels:
- Enable **Labels** to display attrition numbers directly on each bar.

5. Format Text: Customize the text appearance for better visibility.



Sheet 7: Attrition Rate by Gender for Different Age Groups -

Creating the Attrition Rate by Gender for Different Age Bands (Donut Chart)

Steps:

1. Create a New Sheet:

- Open a new sheet and name it **Attrition Rate by Gender**.

2. Add Age Band and Gender:

- **Age Band to Columns**: Drag **Age Band** to **Columns.**
- **Gender to Color**: Drag **Gender** to Color to differentiate by gender.

3. Set to Pie Chart and Adjust View:

- **Change to Pie Chart:**
  - In the **Marks** card, change the chart type to **Pie.**

- **Set to Entire View:**
  - Go to View options and select Entire View.

4. Add Attrition Count to Angle:

- Drag Attrition Count to Angle in the Marks card, so the pie chart reflects attrition distribution by gender.

5. Convert to Donut Chart:

- **Create Dummy Axis:**
  - In the Rows section, type `MIN(1)` to create a dummy axis, and press Enter.
- Duplicate the Axis:
  - Hold Ctrl and drag the MIN(1) field to duplicate it, creating two identical axes.
- Dual Axis:
  - Right-click on one of the axes and select Dual Axis to overlay them.

6. Format the Donut Chart:

- **Clear Second Marks Card:**
  - Go to the second Marks card and remove any fields (leave it blank).
  - Reduce the size of the second pie chart to create the "hole" of the donut.
- Adjust First Marks Card:
  - Increase the size of the first pie chart slightly to ensure a good fit.

7. Hide Unnecessary Elements:

- **Hide Headers:**
  - Right-click on the headers for both axes and select Hide to remove them.
  - Hide Age Band Header, if necessary, by right-clicking and selecting Hide.

8. Add Labels and Percentages:

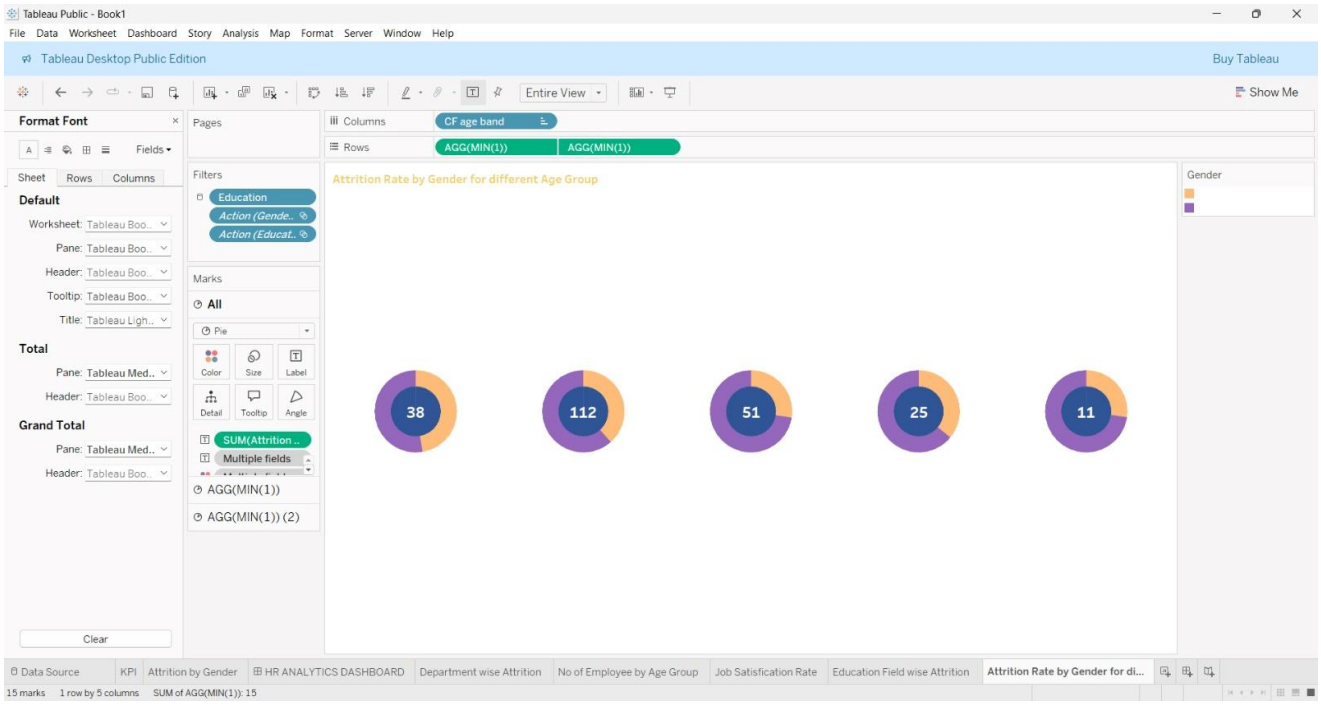
- **Attrition Percentage:**
  - In the first Marks card, drag Attrition Count to Label and apply a Quick Table Calculation for Percentage of Total.

- **Total Count Label:**
  - Drag Attrition Count again to Label to display the total count in addition to the percentage.
  - Format the label as desired (e.g., with brackets).

9. Reorder Age Bands:

- Right-click on Age Band in the Rows section, select Sort, and set to Manual.
- Drag and arrange the age bands in order (e.g., Under 25, 25-34, etc.).

10. Format Text: Customize the text appearance for better visibility.



Dashboard: HR ANALYTICS DASHBOARD –

Dashboard Design Setup

1. Start Dashboard Design:

- Begin designing the dashboard based on personal preference for chart display.

2. Create a New Dashboard:

- Name the new dashboard HR Analytics Dashboard.

3. Set Custom Size:

- **Use custom dimensions for the dashboard:**
  - **Width:** 1400 px
  - **Height:** 800 px
- Adjust the size according to your system resolution to avoid scroll bars.

Background Design

1. Create Background in PowerPoint:

- Design a custom background using PowerPoint.
- Options for backgrounds include gradient fill colors (e.g., black and blue, purple and black, plain backgrounds) with or without wallpapers.

2. Save Background as PNG:

- **Export the PowerPoint slide as a PNG:**
  - Go to File > Save As.
  - Select PNG format and save it on your desktop (e.g., name it magic HR background final).
  - Choose to save only the current slide when prompted.

3. Add Background to Dashboard:

- Drag the saved image into the Tableau dashboard.
- Fit the image to the canvas and center it appropriately.

Chart Placement

1. Import Sheets:

- Drag and place the KPI sheet and other relevant sheets into the dashboard area.
- Ensure they fit well within the design layout.

2. Use Floating Containers:

- **Set the charts to floating mode:**
  - Right-click the chart and select Floating.
- This allows for flexibility in positioning charts within the dashboard without being restricted by containers.

Formatting:

1. Title Formatting: Change the title to semi-bold and font size to 12; apply yellow color.

2. Number Formatting: Change the background to none, and remove row bordering for headers.

3. Text Formatting: Change employee count color, set font size to 9, and align to center.

4. Grand Totals Formatting: Change grand totals color to white.

5. Color Gradient: Highlight maximum numbers in dark using a color gradient and convert numbers to a heat map format.

6. Bar Chart Formatting: Make grid lines and axis lines white; numbers should also be semi-bold and white.

7. Chart Formatting: Hide grid lines and set colors to white for various elements in the charts.

Borders:

1. Removing Borders: Set all borders to none for clarity in charts.

2. Grid Lines: Get rid of all grid lines for a cleaner appearance.

Filtering:

Data Source Filter: Apply a filter on charts to allow for dynamic data changes based on selections.

Shading

1. Background Color: Match donut chart's center color with the background color for a cohesive look.

2. Highlighting: Use shading to differentiate maximum ratings visually.

Publishing the Dashboard to Tableau Public -

1. **Sign Up on Tableau Public:**
    - Go to the Tableau Public website.
    - Click **Sign Up** if you don't have an account, or **Sign In** if you already do.
2. **Save the Dashboard:**
    - In Tableau Desktop, after finishing the dashboard, go to **File**.
    - Select **Save to Tableau Public As**.
    - If prompted, log in with your Tableau Public credentials.
3. **Publishing the Dashboard:**
    - Name the dashboard appropriately (e.g., "HR ANALYTICS DASHBOARD").
    - Click **Save**. Tableau will upload the workbook to your Tableau Public profile.
    - Once uploaded, you'll be able to see the dashboard in your Tableau Public profile.
4. **Access the Dashboard Locally:**
    - After publishing, you can access the dashboard anytime online.
    - To access the dashboard locally or share it:
        - Go to your **Tableau Public Profile**.
        - Open the dashboard and copy the **URL**.
        - You can now share this URL with others to view the dashboard.
        - Alternatively, you can embed the dashboard into websites or blogs by using the embed code provided.

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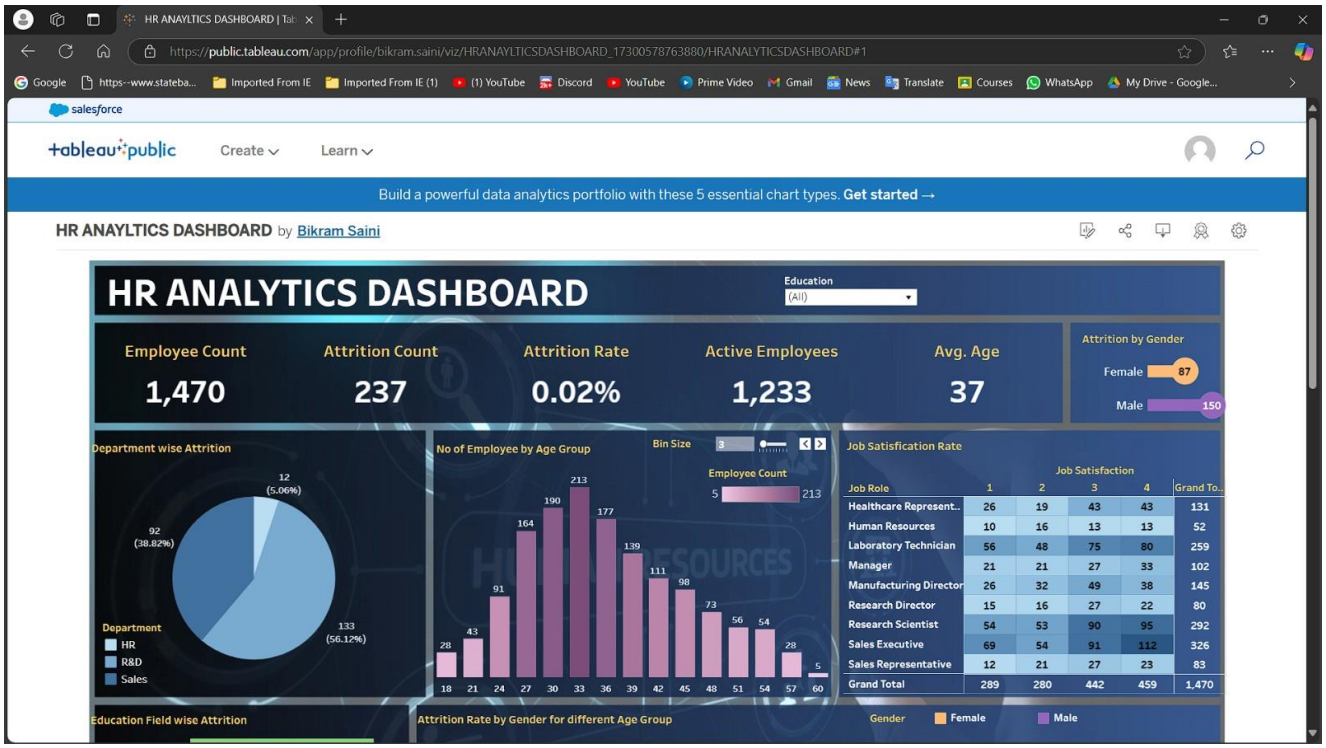

Analysis -

Trends and Patterns:

Analysis of HR Dashboard Data

Trends and Patterns:

1. **Employee Turnover Rates:**

   Observation: The data shows fluctuations in employee turnover rates over the past few years, with certain peaks correlating to specific events such as organizational changes or economic conditions.

   Insights: A consistent increase in turnover rates during particular periods may indicate issues related to employee satisfaction, workplace culture, or external job market conditions.

2. **Recruitment Metrics:**

   Observation: The average time taken to fill positions has gradually increased, suggesting potential challenges in the recruitment process.

   Insights: This trend might highlight the need for improved recruitment strategies or a review of job descriptions to attract suitable candidates more efficiently.

3. **Diversity and Inclusion:**

   Observation: The dashboard reflects a growing focus on diversity metrics, showing improvements in the hiring of underrepresented groups.

   Insights: Positive trends in diversity hiring can enhance organizational culture and innovation, indicating effective diversity initiatives.

4. **Employee Performance Ratings:**

   Observation: Performance ratings show a steady distribution, with a significant portion of employees rated as “exceeds expectations.”

   Insights: High performance ratings could suggest effective talent management practices and a motivated workforce, but may also require a review to ensure ratings are consistent across departments.

5. **Training and Development Participation:**

   Observation: Participation in training programs has increased, indicating a commitment to employee development.

   Insights: Higher engagement in training can lead to improved job performance and employee satisfaction, suggesting that employees value growth opportunities.

Conclusion -

- Employee Turnover: Identifies challenges in retention; requires strategic interventions to reduce turnover rates.

- Recruitment Metrics: Highlights inefficiencies in hiring processes; suggests the need for streamlined recruitment strategies.

- Diversity & Inclusion: Emphasizes the importance of fostering an inclusive workplace; reflects commitment to workforce development.

- Comparative Analysis: Allows for targeted improvements by identifying specific departmental issues and recruitment source effectiveness.

- Actionable Recommendations:

- Enhance employee retention through targeted programs.
- Optimize recruitment strategies to improve efficiency.
- Promote diversity initiatives to create an inclusive culture.

- Continuous Monitoring: Emphasizes the necessity for ongoing analysis and adaptation of HR strategies to meet evolving organizational needs.

- Organizational Growth: Overall, effective implementation of these insights can lead to a more engaged and productive workforce, benefiting both employees and stakeholders.