

Data and Artificial Intelligence

Cyber Shujaa Program

Week 5 Assignment

DATA VISUALIZATION USING TABLEAU

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- Analyze company salaries across different educational levels for both genders
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Assignment Link: <https://github.com/JAS-D98/Cybershujaa-Exercises/tree/main/Week-5-Assignment-Tableau>

1. Introduction

This week's assignment was mainly aimed at us developing hands-on experience in putting together Powerful Visualizations using Tableau and publishing our work on the cloud.

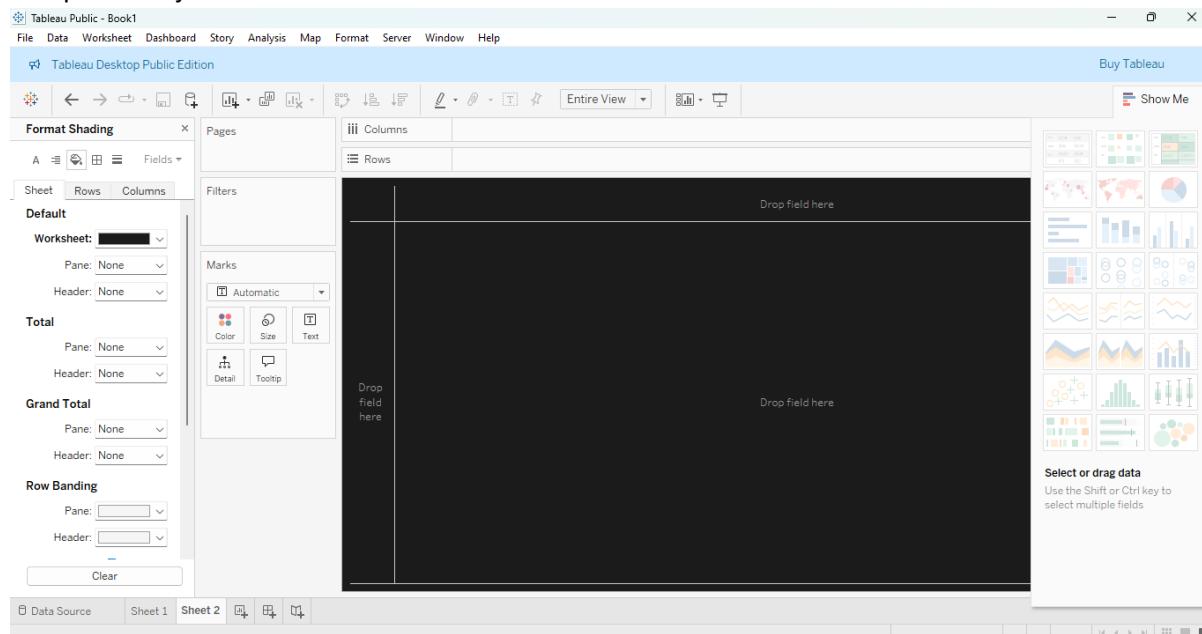
The objectives of the assignment were to:

1. Understand data visualization and storytelling concepts
2. Navigate the Tableau Public interface and its core features
3. Connect to and import data from various sources (e.g., Excel, CSV, Web)
4. Perform Data Wrangling within Tableau
5. Build interactive dashboards and reports using Tableau
6. Publish your end-to-end project on your portfolio website

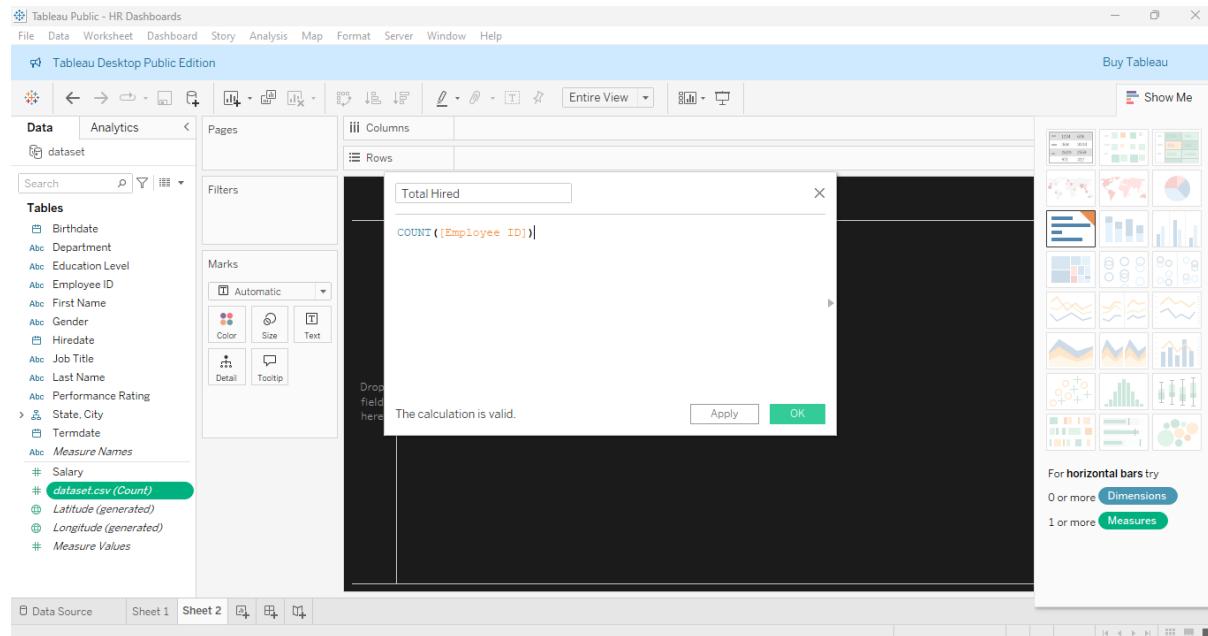
2. Tasks Completed

Overview

Setup The Project theme and fonts

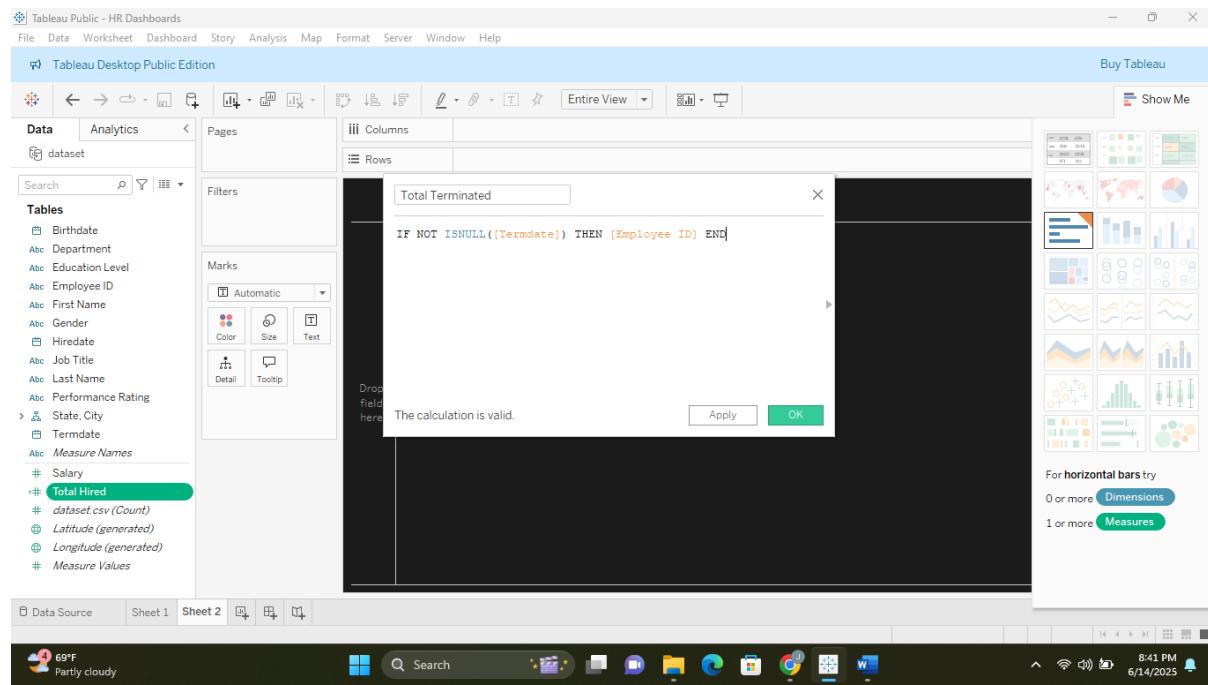


Create a new calculated field



The screenshot shows the Tableau desktop interface. In the top navigation bar, 'Tableau Public - HR Dashboards' is selected. The 'Data' tab is active in the left sidebar, which lists various tables and datasets. A calculated field named 'dataset.csv (Count)' is currently selected. In the center workspace, a 'Marks' card is open, showing the formula 'COUNT([Employee ID])'. A tooltip message 'The calculation is valid.' is displayed at the bottom of the formula input field. The right side of the screen features a 'Show Me' panel with various visualization options.

Create calculated field for getting terminated employees



This screenshot shows the continuation of the calculated field creation process. The formula entered is 'IF NOT ISNULL([Termdate]) THEN [Employee ID] END'. The rest of the interface is identical to the previous screenshot, including the 'Data' sidebar, the 'Marks' card with the formula, and the 'Show Me' panel on the right.

Test relationship between employee id, termination date and total terminated

Tableau Public - HR Dashboards

File Data Worksheet Dashboard Story Analysis Map Format Server Window Help

Tableau Desktop Public Edition

Buy Tableau

Employee ID, YEAR(Termination Date), Total Terminated

test

Employee ID	Year of Termination	Total Terminated
00-10001272	Null	Abc
00-10006914	Null	Abc
00-10008169	Null	Abc
00-10012470	Null	Abc
00-10017850	Null	Abc
00-10033114	Null	Abc
00-10047461	Null	Abc
00-10076576	Null	Abc
00-10076959	Null	Abc
00-10080009	Null	Abc
00-10113173	Null	Abc
00-10113880	Null	Abc
00-10122731	Null	Abc
00-10137666	Null	Abc
00-10146265	Null	Abc
00-10147197	Null	Abc
00-10159801	Null	Abc
00-10171954	Null	Abc
00-10183025	Null	Abc
00-10195370	Null	Abc

8950 marks 8950 rows by 1 column

69°F Partly cloudy 8:48 PM 6/14/2025

Get total terminated employee count

Tableau Public - HR Dashboards

File Data Worksheet Dashboard Story Analysis Map Format Server Window Help

Tableau Desktop Public Edition

Buy Tableau

Employee ID, YEAR(Termination Date), Total Terminated

test

Total Terminated

```
COUNT(IF NOT ISNULL([Termination Date]) THEN [Employee ID] END)
```

The calculation is valid. 1 Dependency ▾ Apply OK

Employee ID	Year of Termination	Total Terminated
00-10001272	Null	Abc
00-10006914	Null	Abc
00-10008169	Null	Abc
00-10012470	Null	Abc
00-10017850	Null	Abc
00-10033114	Null	Abc
00-10047461	Null	Abc
00-10076576	Null	Abc
00-10076959	Null	Abc
00-10080009	Null	Abc
00-10113173	Null	Abc
00-10113880	Null	Abc
00-10122731	Null	Abc
00-10137666	Null	Abc
00-10146265	Null	Abc
00-10147197	Null	Abc
00-10159801	Null	Abc
00-10171954	Null	Abc
00-10183025	Null	Abc
00-10195370	Null	Abc

8950 marks 8950 rows by 1 column

69°F Partly cloudy 8:51 PM 6/14/2025



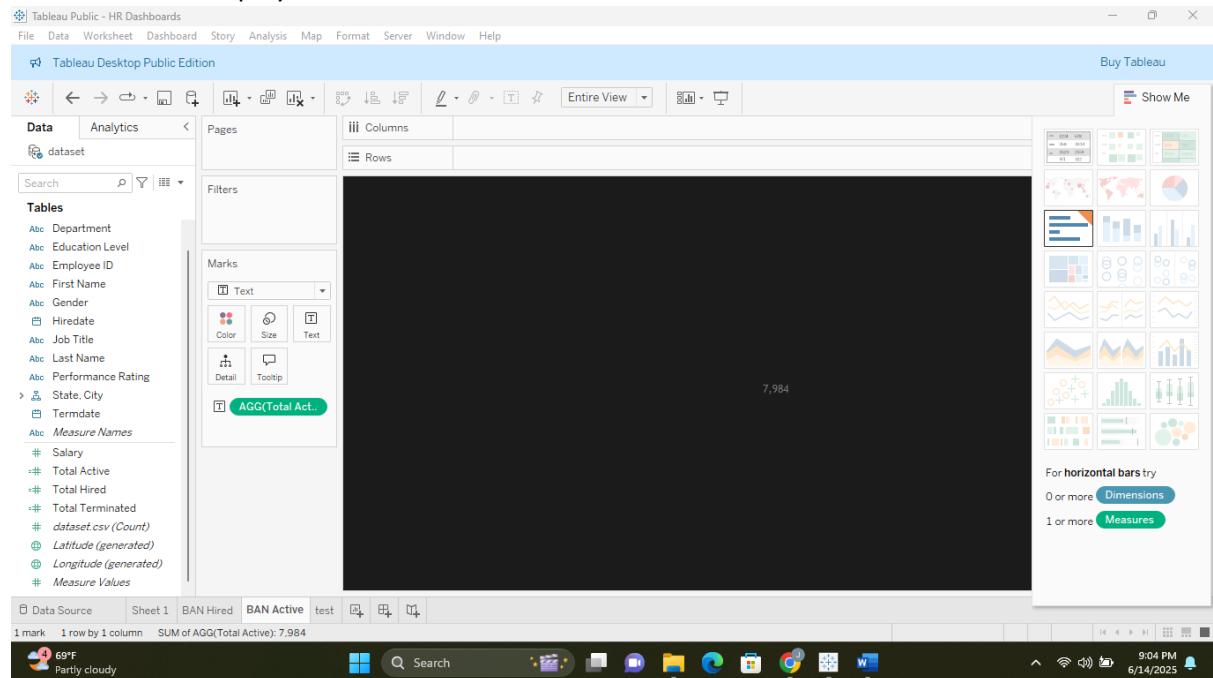
Get total active employees

The screenshot shows a Tableau Public dashboard titled "HR Dashboards". The top navigation bar includes File, Data, Worksheet, Dashboard, Story, Analysis, Map, Format, Server, Window, Help, and a "Buy Tableau" button. The left sidebar contains a "Data" section with a "dataset" icon, a "Search" bar, and a list of dimensions and measures. The "Dimensions" list includes Birthdate, Department, Education Level, Employee ID, First Name, Gender, Hiredate, Job Title, Last Name, Performance Rating, State City, Termdate, Measure Names, Salary, Total Hired, Total Terminated, dataset.csv (Count), Latitude (generated), Longitude (generated), and Measure Values. The "Measures" list includes 8950 marks and 8950 rows by 1 column. The main workspace shows a table with columns Employee ID and YEAR(Termdate). A context menu is open over the Employee ID column, displaying options like "Columns", "Rows", "Standard", and "Show Me". A tooltip for the "Employee ID" dimension shows the formula COUNT(IF ISNULL([Termdate]) THEN [Employee ID] END) / COUNT(expression). A message box indicates "The calculation is valid." with "Apply" and "OK" buttons. To the right, a "Show Me" panel displays various chart and visualization options. The bottom status bar shows the date as 6/14/2025 and the time as 8:54 PM.

Get total hired employees

The screenshot shows the Tableau Desktop Public Edition interface. The top menu bar includes File, Data, Worksheet, Dashboard, Story, Analysis, Map, Format, Server, Window, and Help. A blue header bar displays "Tableau Public - HR Dashboards". On the right, there's a "Buy Tableau" button and a "Show Me" icon. The left sidebar contains sections for Data (selected), Analytics, dataset, and Search. Below these are Tables and Measures lists. The main workspace is titled "Pages" and shows a single card with the text "8,950" and a callout "AGG(Total Hired)". To the right is a "Marks" shelf with various options like Text, Color, Size, Detail, and Tooltip. A large preview area on the right shows a grid of charts. A tooltip at the bottom right says "For horizontal bars try 0 or more Dimensions" and "1 or more Measures". The bottom navigation bar includes tabs for Data Source, Sheet 1, BAN Hired, test, and icons for Refresh, Save, and Print. The status bar at the bottom shows "1 mark 1 row by 1 column SUM of AGG(Total Hired): 8,950", the date "6/14/2025", and the time "9:01 PM".

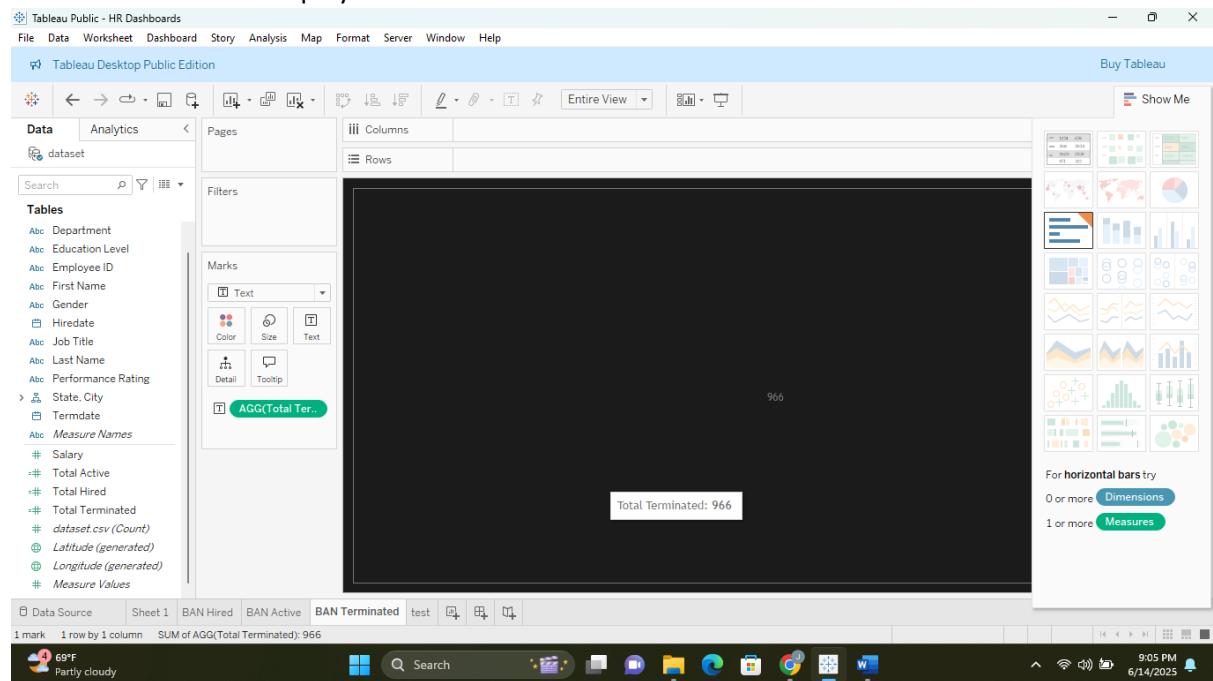
Get total active employees



The screenshot shows the Tableau desktop interface with a single horizontal bar chart. The chart displays a single data point: **7,984**. The interface includes a sidebar with tables and measures, and a shelf with various visualization options.

Measure	Value
SUM of AGG>Total Active..	7,984

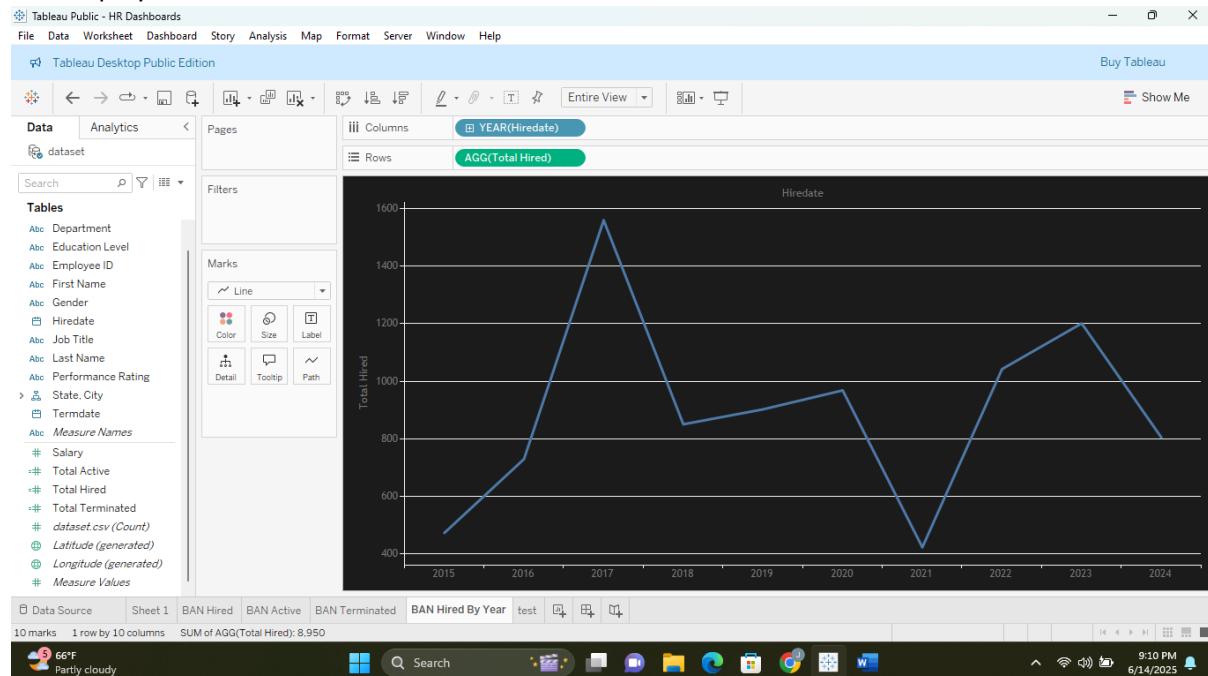
Get total terminated employees



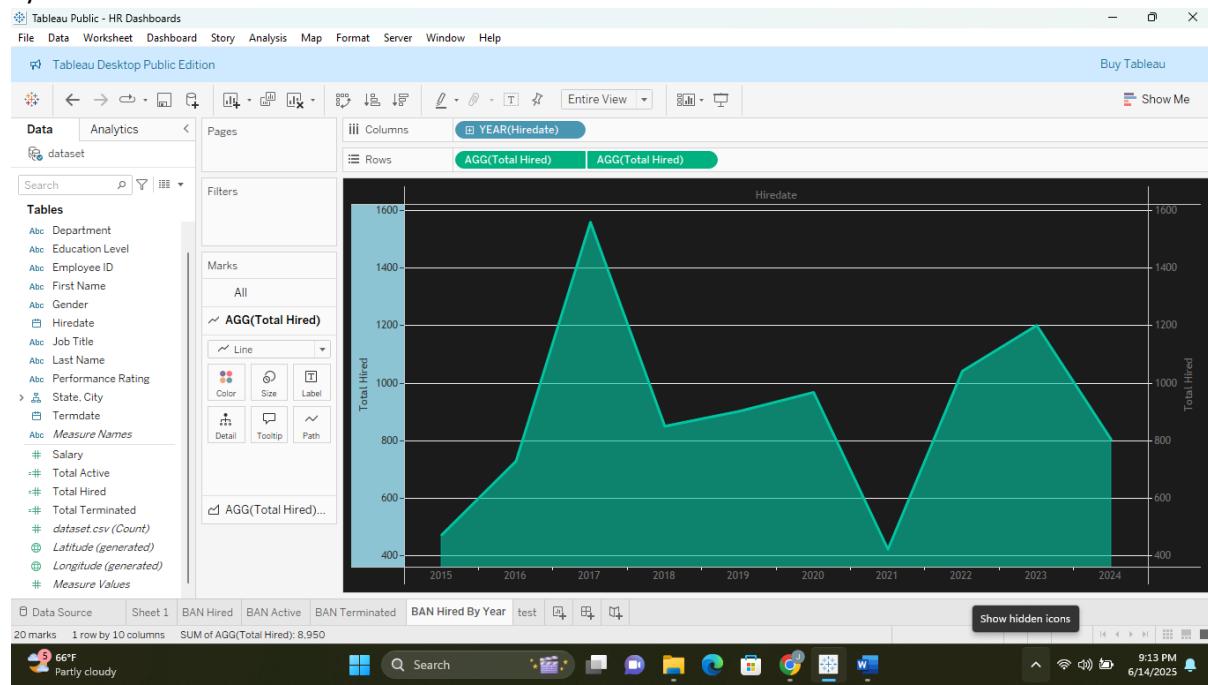
The screenshot shows the Tableau desktop interface with a single horizontal bar chart. The chart displays a single data point: **966**. The interface includes a sidebar with tables and measures, and a shelf with various visualization options.

Measure	Value
SUM of AGG>Total Ter..	966

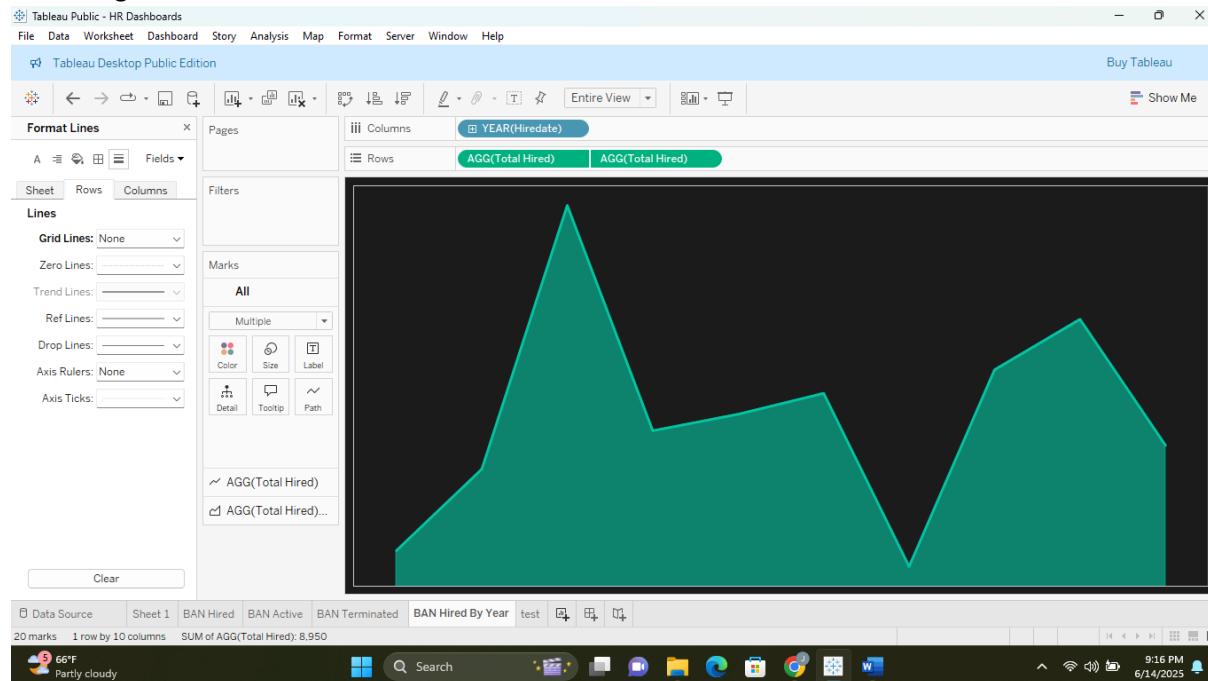
Get Employment hire information over time



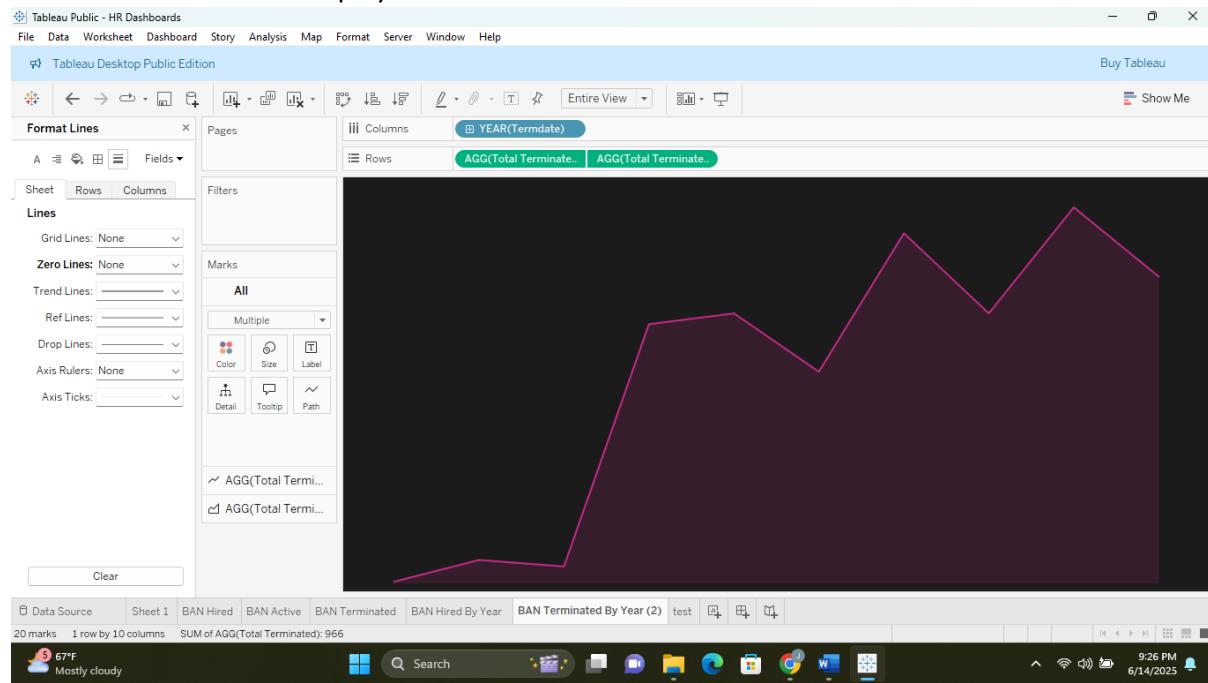
Synchronize axis



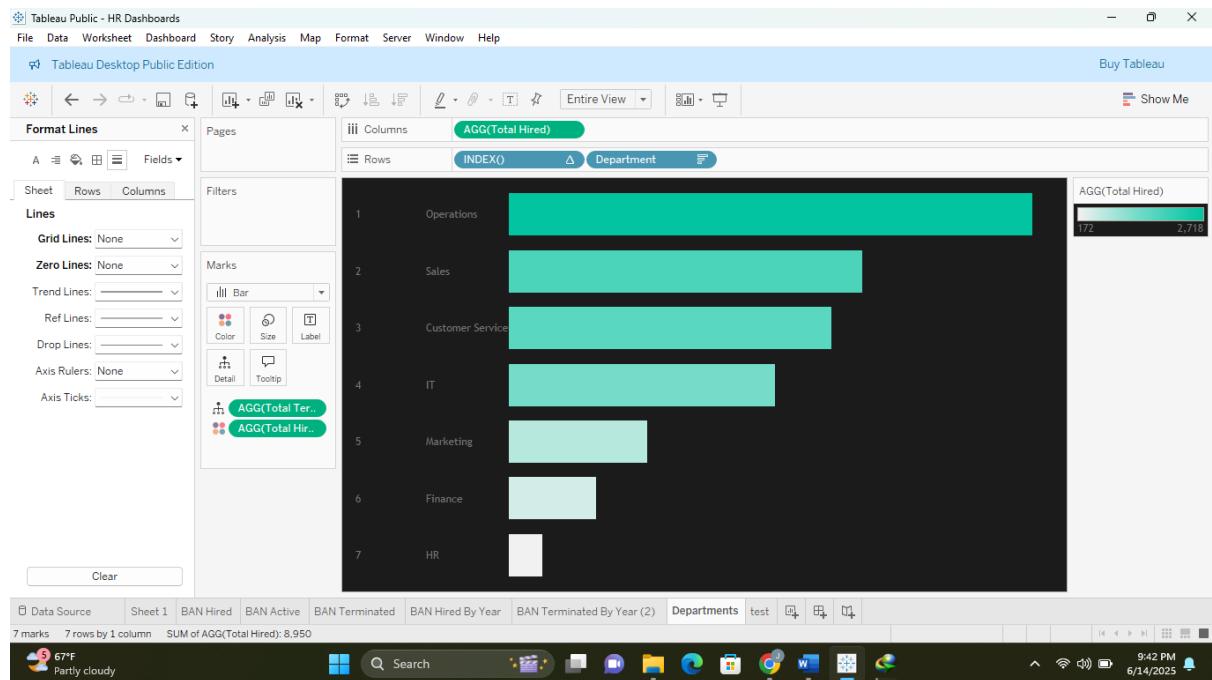
Remove grid lines



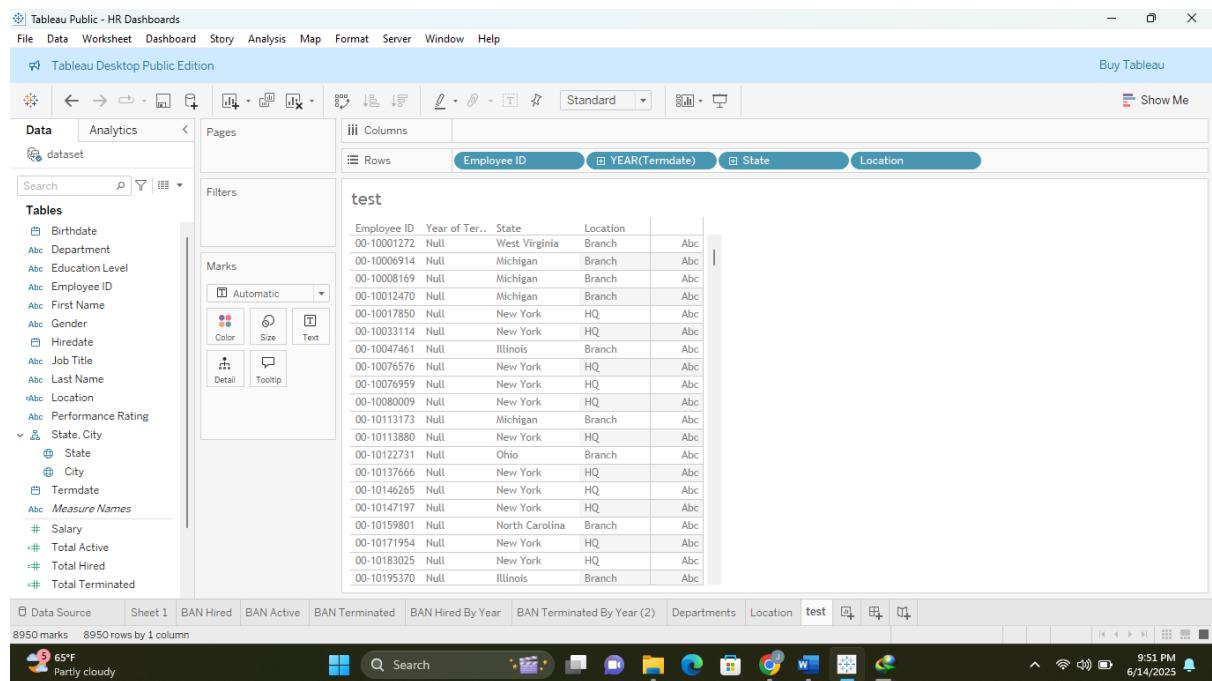
Provide a breakdown of employees terminated

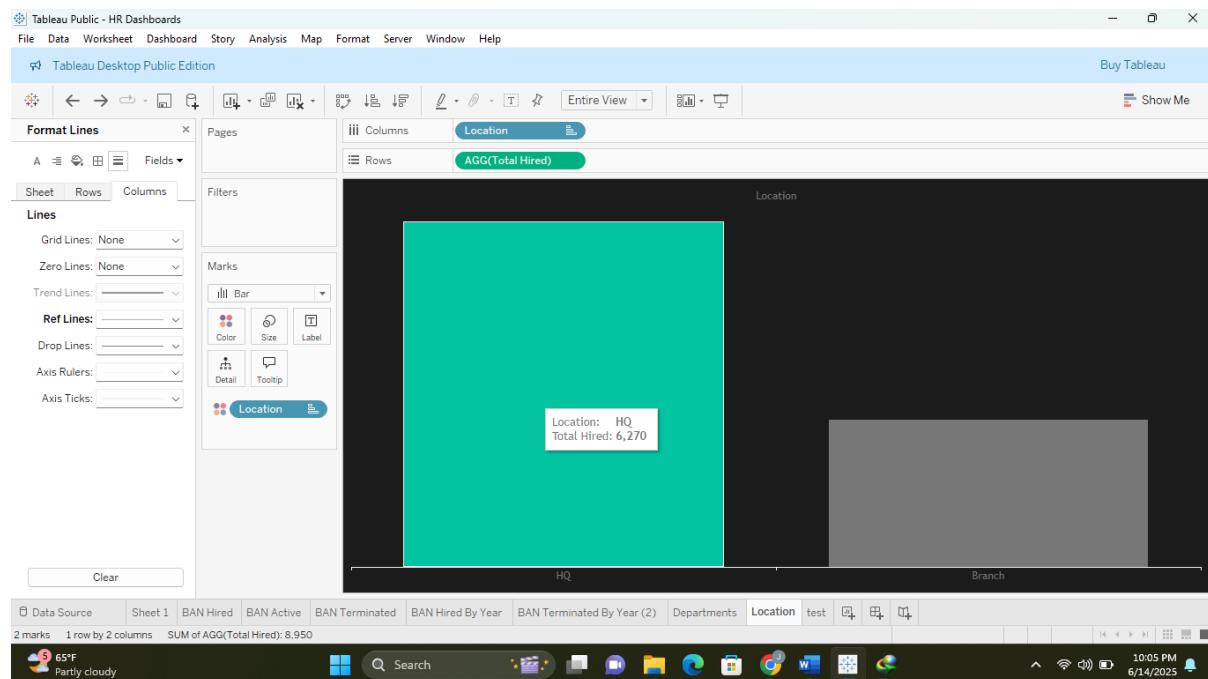
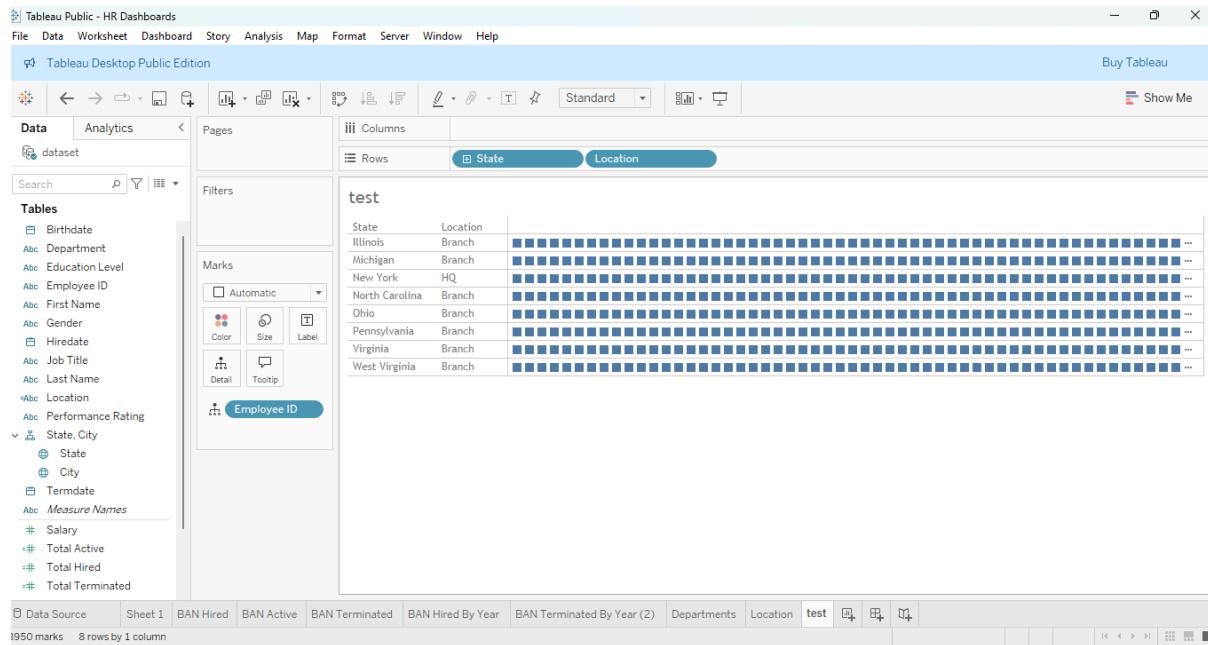


Provide a breakdown of by total employees by department and job titles

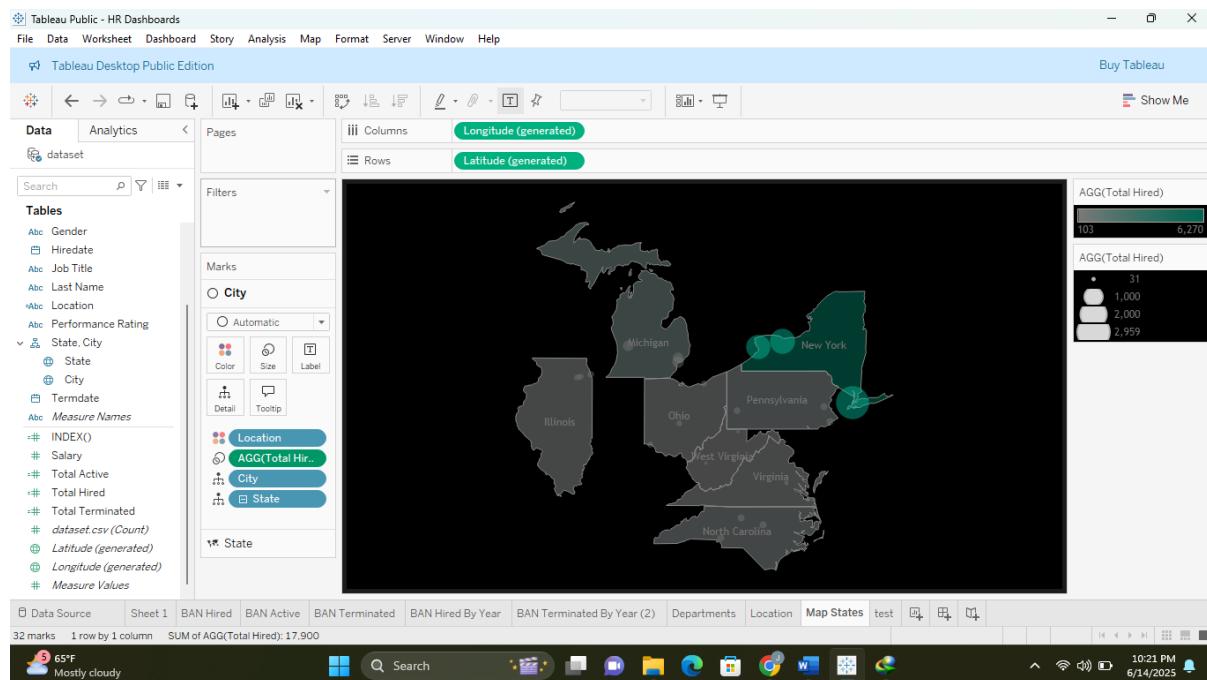
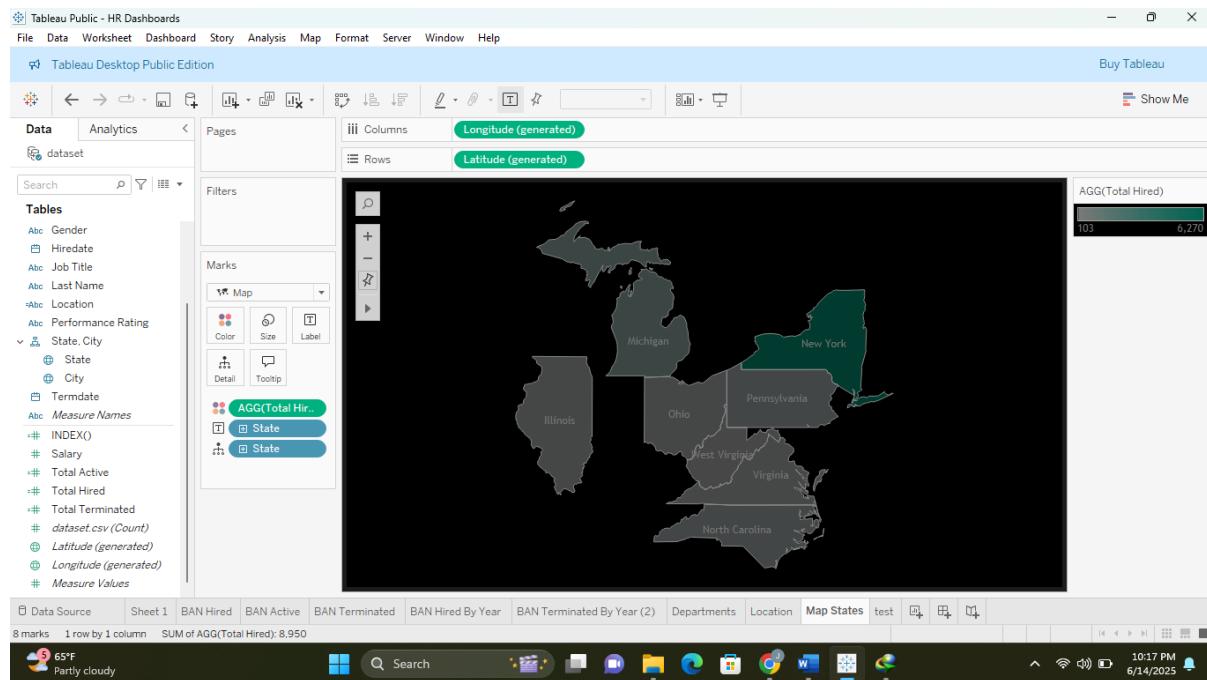


Compare total employees between headquarters (HQ) and branches (New York is the Head Quater)



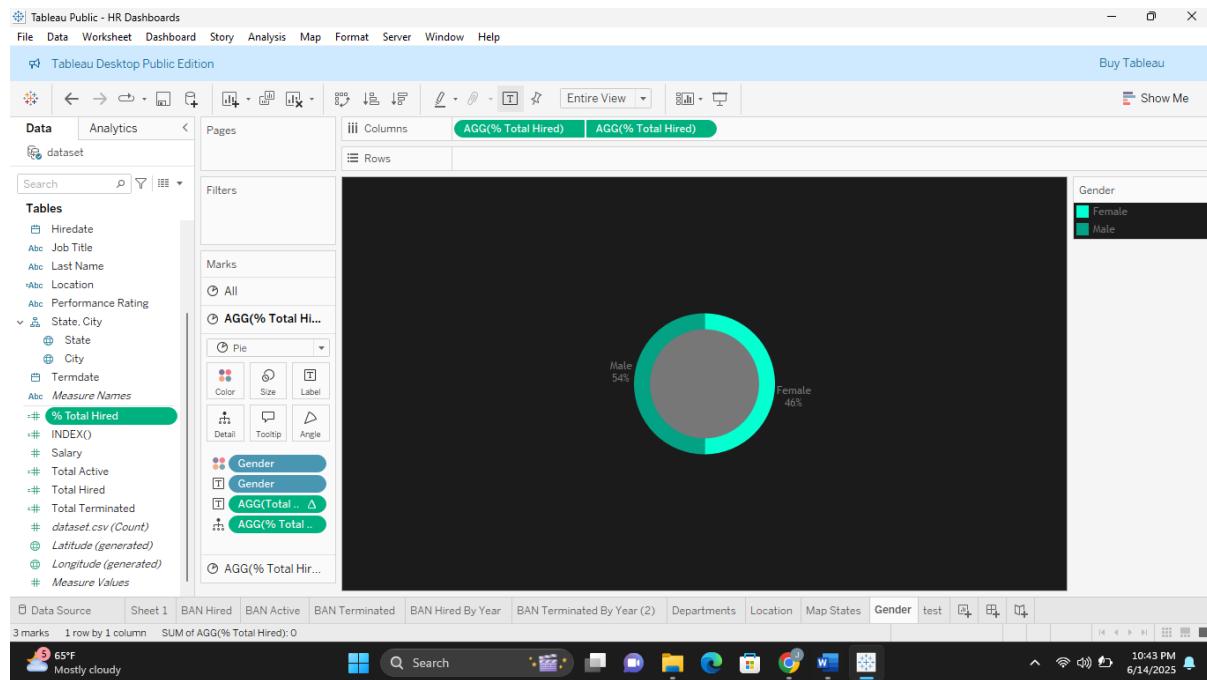


Show distribution of employees by city and state



4. Demographics

Offer insight into the composition of the workforce. i.e gender ratio



Visualize distribution of employees across age groups and education levels

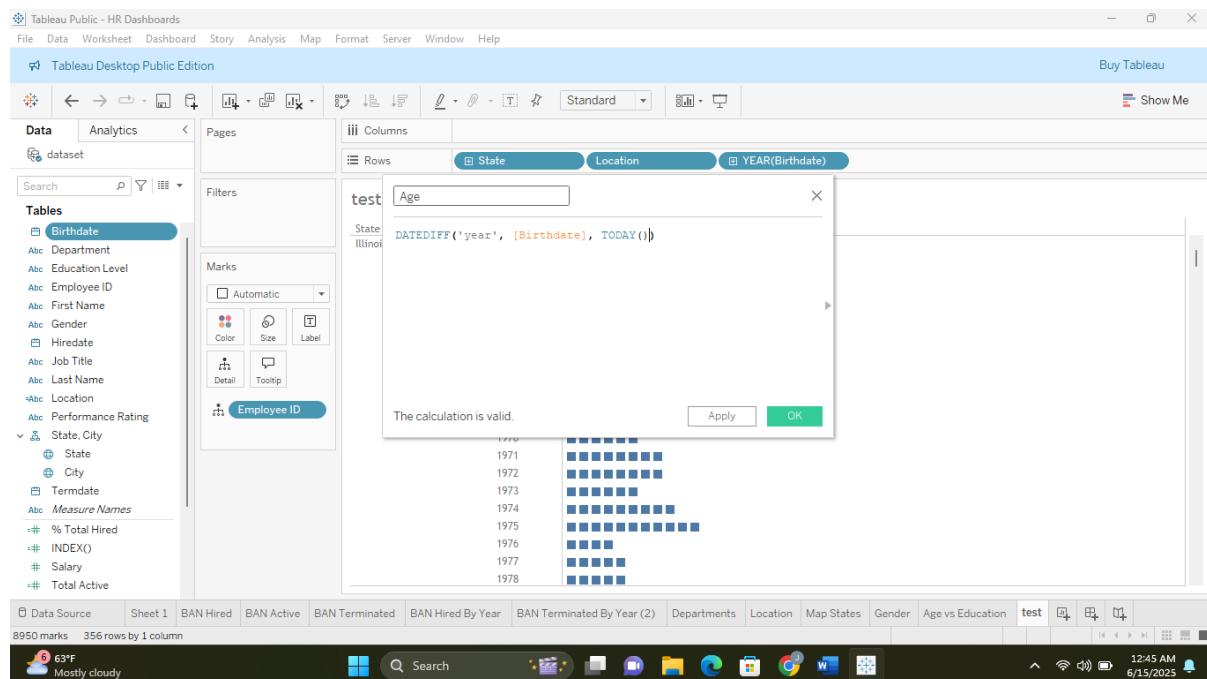


Tableau Public - HR Dashboards

File Data Worksheet Dashboard Story Analysis Map Format Server Window Help

Tableau Desktop Public Edition

Buy Tableau Show Me

Data Analytics < Pages

dataset

Search

Tables

- Birthdate
- Department
- Education Level
- Employee ID
- First Name
- Gender
- Hiredate
- Job Title
- Last Name
- Location
- Performance Rating
- State, City
- State
- City
- Termdate
- Measure Names
- % Total Hired
- Age
- INDEX()
- Salary

Marks

Employee ID State Location Year of Birth.. Age

Employee ID	State	Location	Year of Birth..	Age
00-10001272	West Virginia	Branch	1975	50
00-10006914	Michigan	Branch	1980	45
00-10008169	Michigan	Branch	1959	66
00-10012470	Michigan	Branch	1989	36
00-10017850	New York	HQ	2000	25
00-10033114	New York	HQ	2001	24
00-10047461	Illinois	Branch	1992	33
00-10076576	New York	HQ	1999	26
00-10076959	New York	HQ	1963	62
00-10080009	New York	HQ	1977	48
00-10113173	Michigan	Branch	1987	38
00-10113880	New York	HQ	1986	39
00-10122731	Ohio	Branch	1969	56
00-10137666	New York	HQ	1977	48
00-10146265	New York	HQ	1982	43
00-10147197	New York	HQ	1984	41
00-10159801	North Carolina	Branch	1974	51
00-10171954	New York	HQ	1979	46
00-10183025	New York	HQ	1981	44
00-10195370	Illinois	Branch	1970	55

8950 marks 8950 rows by 1 column

63°F Mostly cloudy Search 12:47 AM 6/15/2025

Calculate age group

Tableau Public - HR Dashboards

File Data Worksheet Dashboard Story Analysis Map Format Server Window Help

Tableau Desktop Public Edition

Buy Tableau Show Me

Data Analytics < Pages

dataset

Search

Tables

- Birthdate
- Department
- Education Level
- Employee ID
- First Name
- Gender
- Hiredate
- Job Title
- Last Name
- Location
- Performance Rating
- State, City
- State
- City
- Termdate
- Measure Names
- % Total Hired
- Age
- INDEX()
- Salary

Marks

Employee ID State Location Year of Birth.. Age

Age Groups

```

IF [Age] <25 THEN '25'
ELSEIF [Age]>=25 AND [Age] <35 THEN '25-34'
ELSEIF [Age]>=35 AND [Age] <45 THEN '35-44'
ELSEIF [Age]>=45 AND [Age] <55 THEN '45-54'
ELSEIF [Age]>=55 AND THEN '55+'
END

```

The calculation contains errors ▾

Employee ID	State	Location	Year of Birth..	Age
00-10122731	Ohio	Branch	1969	56
00-10137666	New York	HQ	1977	48
00-10146265	New York	HQ	1982	43
00-10147197	New York	HQ	1984	41
00-10159801	North Carolina	Branch	1974	51
00-10171954	New York	HQ	1979	46
00-10183025	New York	HQ	1981	44
00-10195370	Illinois	Branch	1970	55

8950 marks 8950 rows by 1 column

Top Stories 12:52 AM 6/15/2025

Tableau Public - HR Dashboards

File Data Worksheet Dashboard Story Analysis Map Format Server Window Help

Tableau Desktop Public Edition

Buy Tableau Show Me

Data Analytics dataset

Tables

- Age Groups
- Birthdate
- Department
- Education Level
- Employee ID
- First Name
- Gender
- Hiredate
- Job Title
- Last Name
- Location
- Performance Rating
- State, City
- State
- City
- Termdate
- Measure Names
- % Total Hired
- Age
- INDEX()

Pages

Columns Employee ID, Age Groups, State, Location, YEAR(Birthdate), Age

Rows

Filters

Marks

Employee ID

Age Groups

- (All)
- 25-34
- 35-44
- 45-54
- 55+
- >25

test

Employee ID	Age Groups	State	Location	Year of Birth..	Age
00-10001272	45-54	West Virginia	Branch	1975	50
00-10006914	45-54	Michigan	Branch	1980	45
00-10008169	55+	Michigan	Branch	1959	66
00-10012470	35-44	Michigan	Branch	1969	36
00-10017850	25-34	New York	HQ	2000	25
00-10033114	>25	New York	HQ	2001	24
00-10047461	25-34	Illinois	Branch	1992	33
00-10076576	25-34	New York	HQ	1999	26
00-10076959	55+	New York	HQ	1963	62
00-10080009	45-54	New York	HQ	1977	48
00-10113173	35-44	Michigan	Branch	1987	38
00-10113880	35-44	New York	HQ	1986	39
00-10122731	55+	Ohio	Branch	1969	56
00-10137666	45-54	New York	HQ	1977	48
00-10146265	35-44	New York	HQ	1982	43
00-10147197	35-44	New York	HQ	1984	41
00-10159801	45-54	North Carolina	Branch	1974	51
00-10171954	45-54	New York	HQ	1979	46
00-10183025	35-44	New York	HQ	1981	44
00-10195370	55+	Illinois	Branch	1970	55

8950 marks 8950 rows by 1 column

65°F Mostly cloudy 12:55 AM 6/15/2025

Tableau Public - HR Dashboards

File Data Worksheet Dashboard Story Analysis Map Format Server Window Help

Tableau Desktop Public Edition

Buy Tableau Show Me

Data Analytics dataset

Tables

- First Name
- Gender
- Hiredate
- Job Title
- Last Name
- Location
- Performance Rating
- State, City
- State
- City
- Termdate
- Measure Names
- % Total Hired
- Age
- INDEX()
- Salary
- Total Active
- Total Hired
- Total Terminated
- dataset.csv (Count)

Pages

Columns Age Groups

Rows Education Level

Filters

Marks

AGGTotal Hired

Age Groups

- >25
- 25-34
- 35-44
- 45-54
- 55+

High School

Bachelor

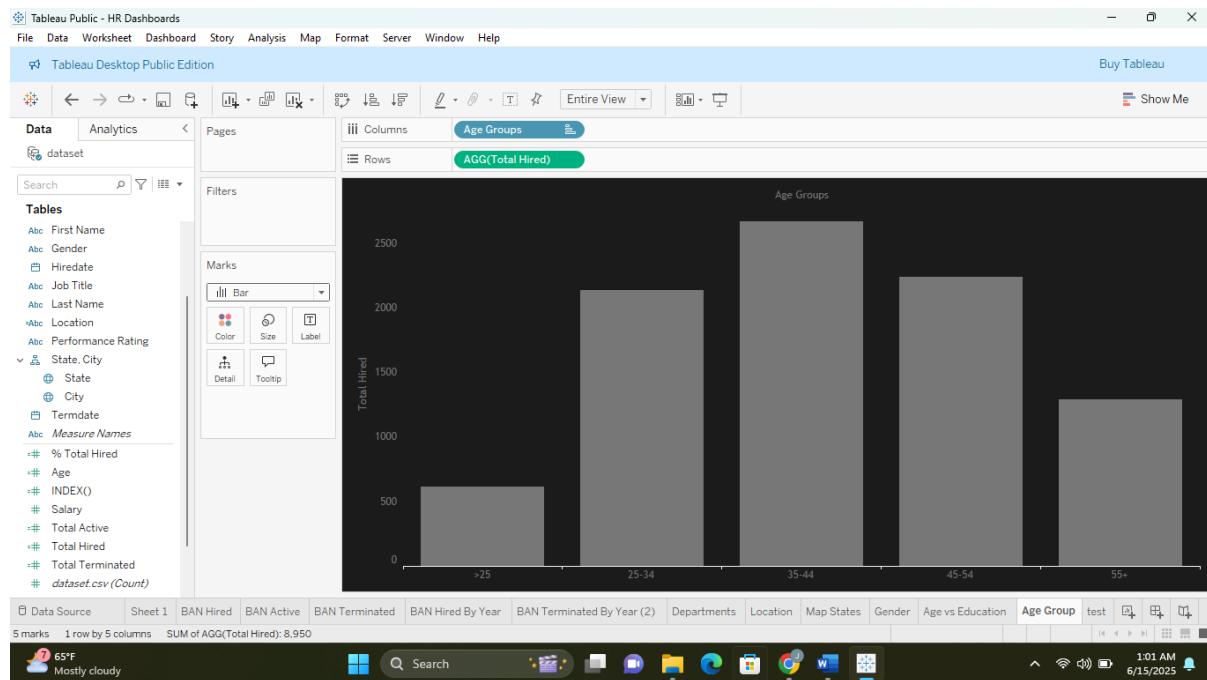
Master

PhD

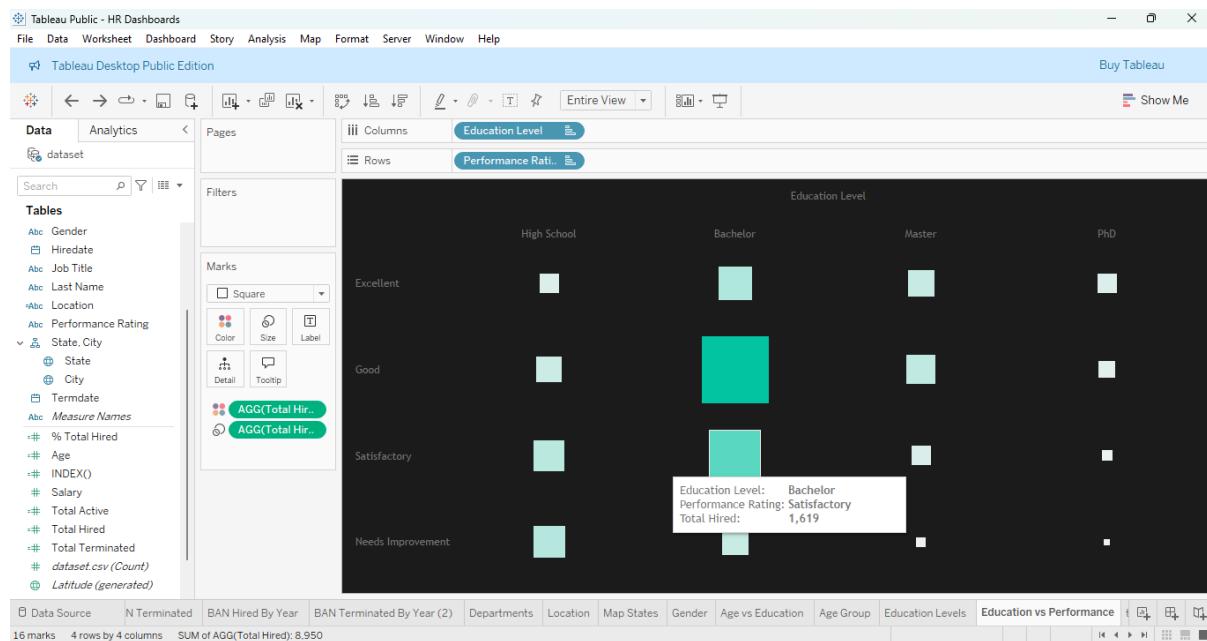
19 marks 4 rows by 5 columns SUM of AGG(Total Hired): 8.950

65°F Mostly cloudy 12:59 AM 6/15/2025

Show total employees in each age group



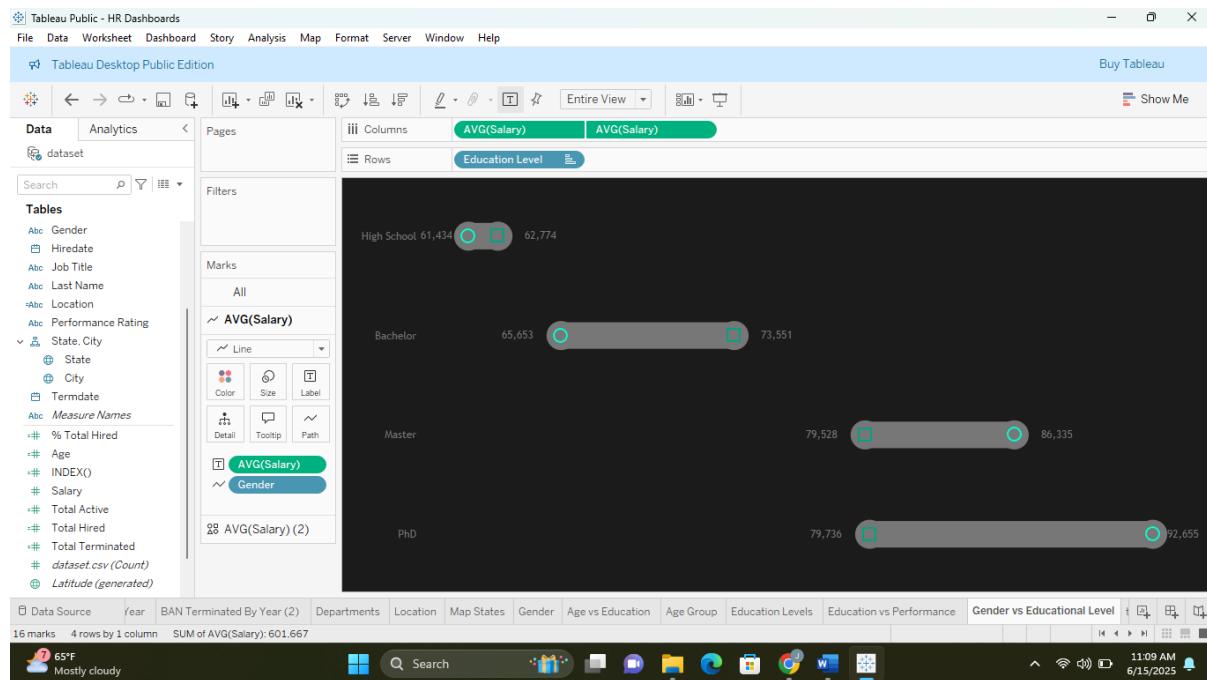
Present correlation between employees' educational backgrounds and their performance ratings.



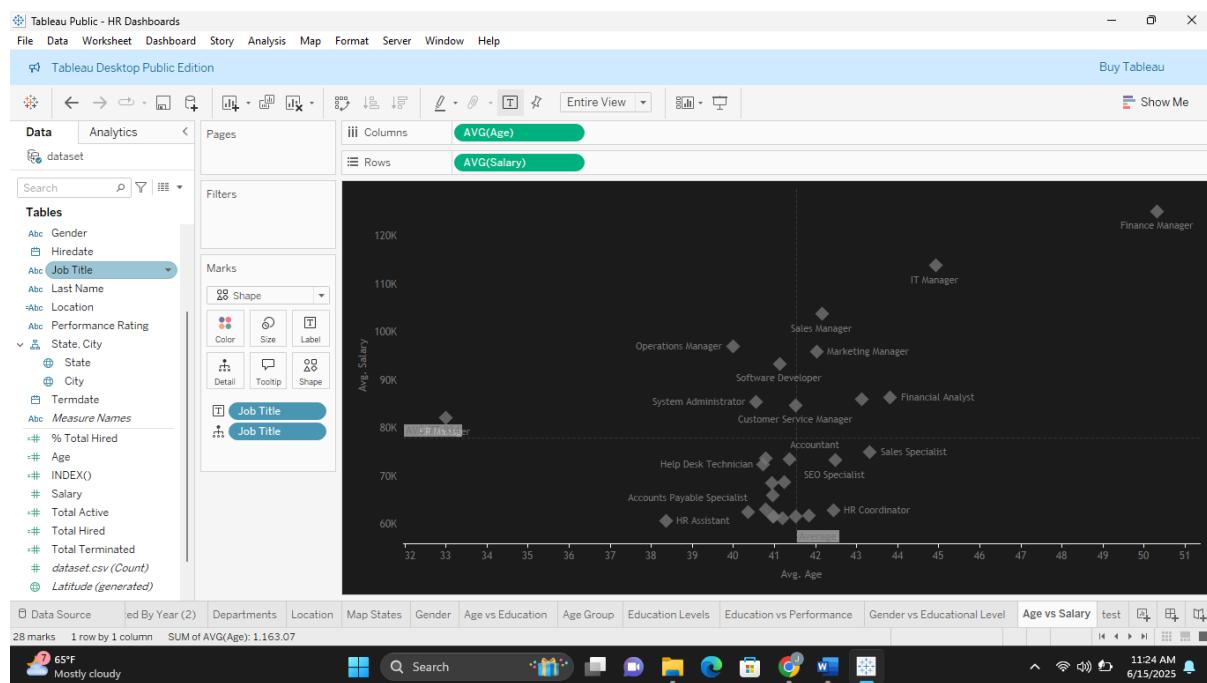
5. Income

The income analysis section should focus on salary related metrics including ;

Company salaries across different educational levels for both gender to identify any discrepancies or patterns

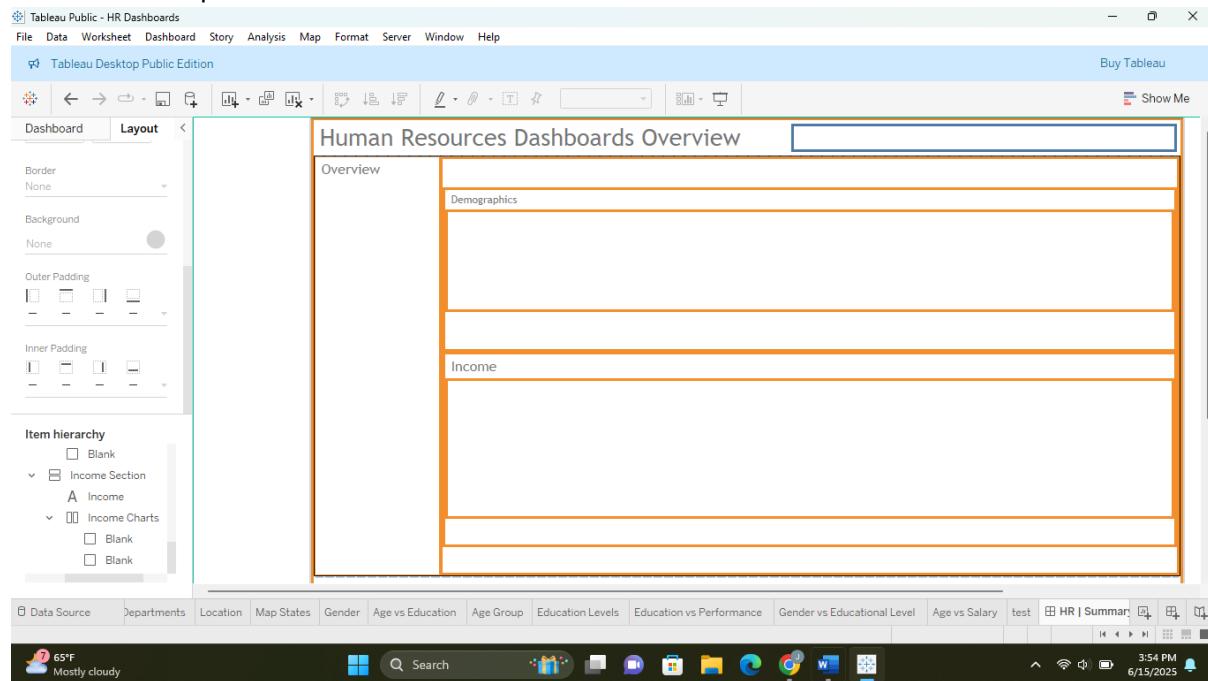


Present how age correlate with salaries of employees in each department



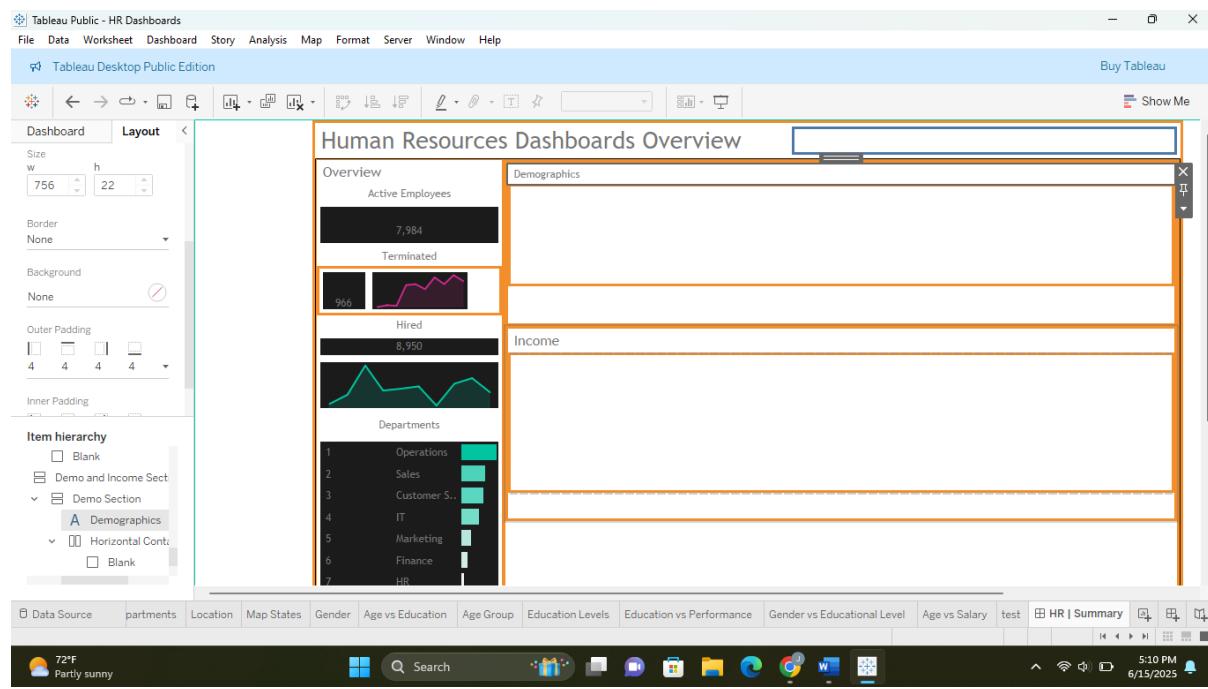
6. Dashboard

Dashboard Setup

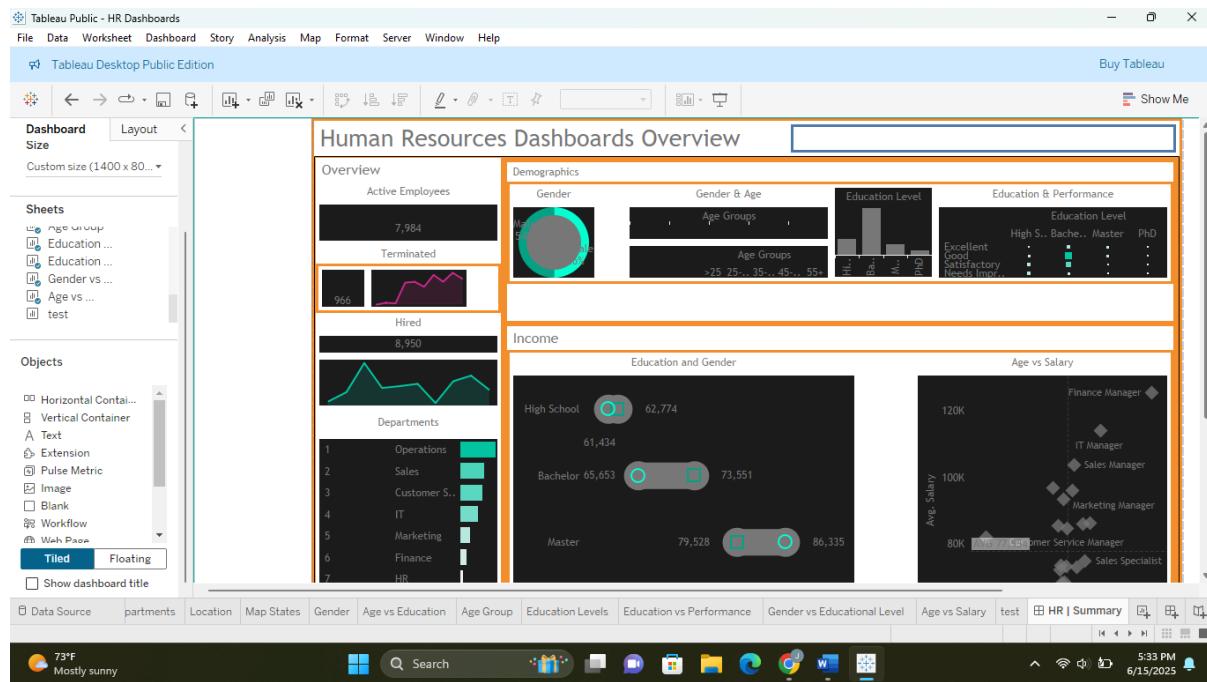


The screenshot shows the Tableau Desktop Public Edition interface. The main window displays the 'Human Resources Dashboards Overview' dashboard. The dashboard has a blue header with the title and a blue footer. The main content area contains two sections: 'Demographics' (selected) and 'Income'. The 'Demographics' section includes a bar chart showing active employees (7,984), terminated employees (966), and hired employees (8,950). The 'Income' section is currently empty. On the left, the 'Layout' pane shows various styling options like border, background, and padding. A sidebar on the left lists items under 'Item hierarchy', with 'Income Section' expanded to show 'Income' and 'Income Charts'. The bottom of the screen shows a taskbar with weather information (65°F, mostly cloudy), system icons, and the date/time (6/15/2025, 3:54 PM).

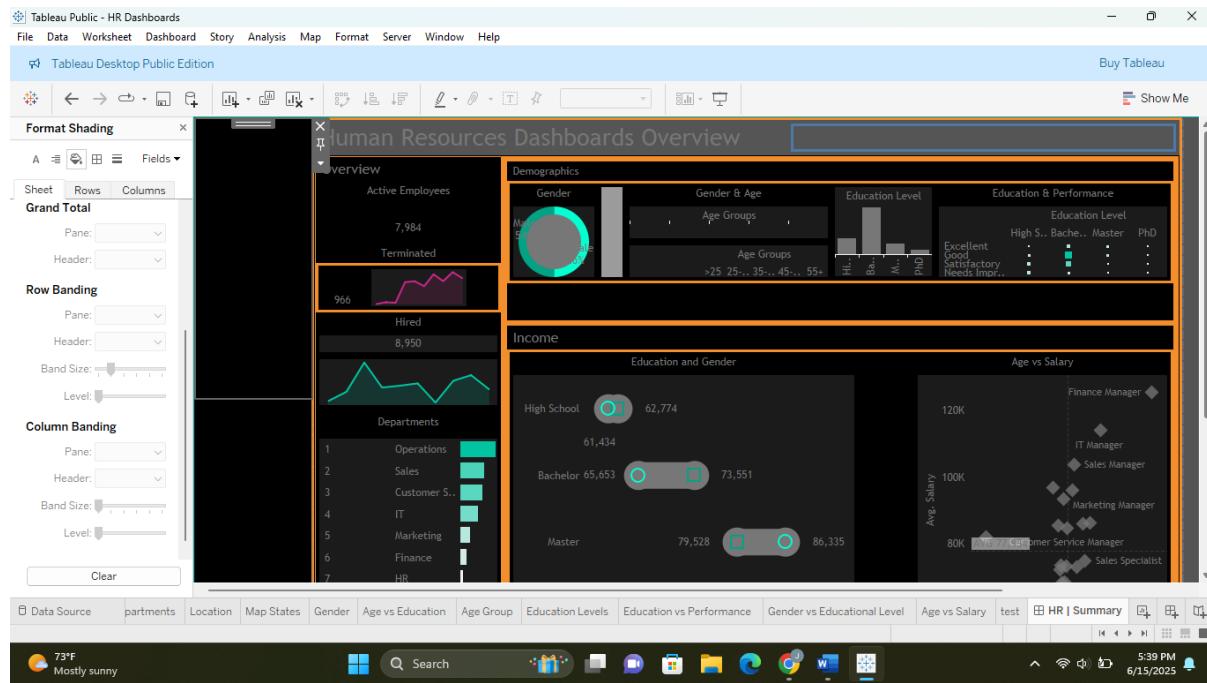
Overview Dashboard Section

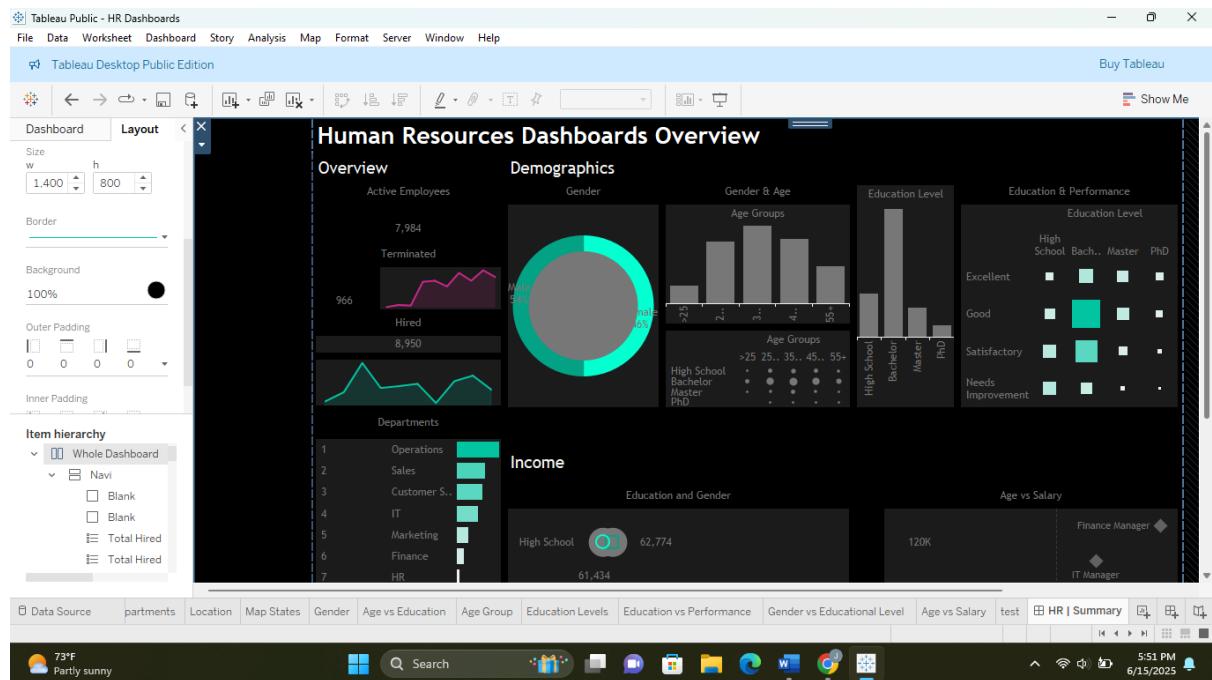


This screenshot shows the same dashboard as above, but with additional data in the 'Departments' section. The 'Departments' section now contains a horizontal bar chart with the following data: Operations (7), Sales (2), Customer S. (3), IT (4), Marketing (5), Finance (6), and HR (7). The other sections ('Demographics' and 'Income') remain the same. The 'Layout' pane on the left shows settings for size, border, background, padding, and item hierarchy, with 'Demo and Income Sect' selected. The bottom of the screen shows a taskbar with weather information (72°F, partly sunny), system icons, and the date/time (6/15/2025, 5:10 PM).



Dark theme setup





Conclusion

This week's assignment provided me with valuable hands-on experience in data visualization using Tableau. I look forward to applying these techniques to more complex datasets and further developing my ability to communicate data-driven insights effectively.