Black Women Data 2022
Power BI Workshop

Case: You are a consultant working with a human capital division that provides people analytics services to Fortune 500 organizations. The organization has asked you to build a dashboard around their team and organizational performance and employee sentiment. This case is inspired by this Kaggle challenge.

Data: Introduction to the HR Dataset - Version 14 - Last Updated April, 2021. This HR Dataset is a synthetic data set created specifically to use for HR analytics cases and is updated every year or so, by the owners. Updates include additional columns, and to make slight changes to the underlying data.

Inspirational Questions: Here are some open-ended questions that you can explore and try to address through creating visualizations, or R or Python analyses.

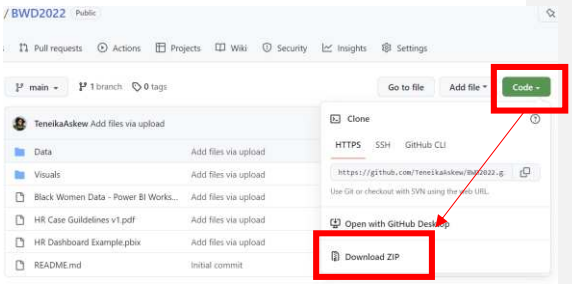
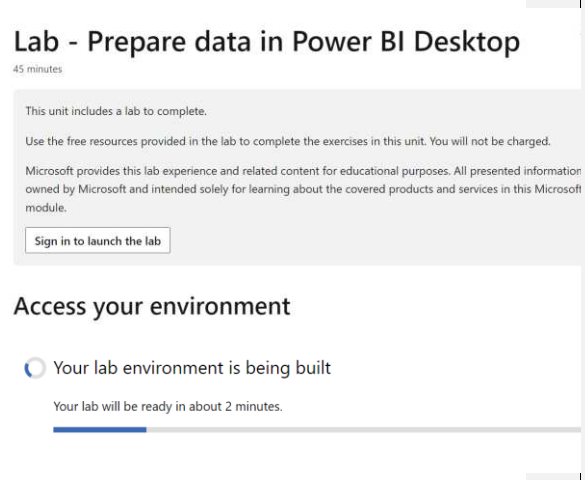
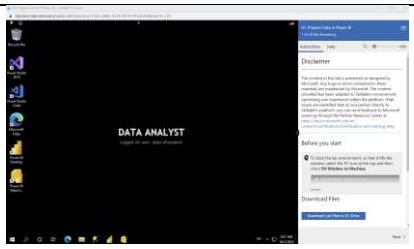
- ***Is there any relationship between who a person works for and their performance score?***
- ***What is the overall diversity profile of the organization?***
- ***What are our best recruiting sources if we want to ensure a diverse organization?***
- ***Can we predict who is going to terminate and who isn't? What level of accuracy can we achieve on this?***
- ***Are there areas of the company where pay is not equitable?***
- Is there any relationship between who a person works for and their performance score?
- What is the overall diversity profile of the organization?
- What are our best recruiting sources if we want to ensure a diverse organization?
- Can we predict who is going to terminate and who isn't? What level of accuracy can we achieve on this?
- Are there areas of the company where pay is not equitable?
- Is there a relationship between age and performance
- Does working on special projects affects performance

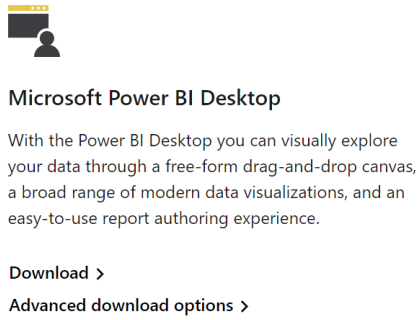
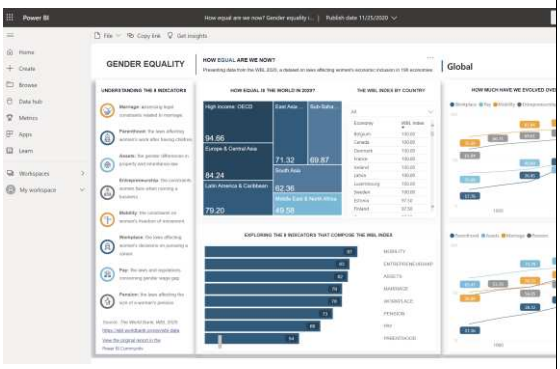
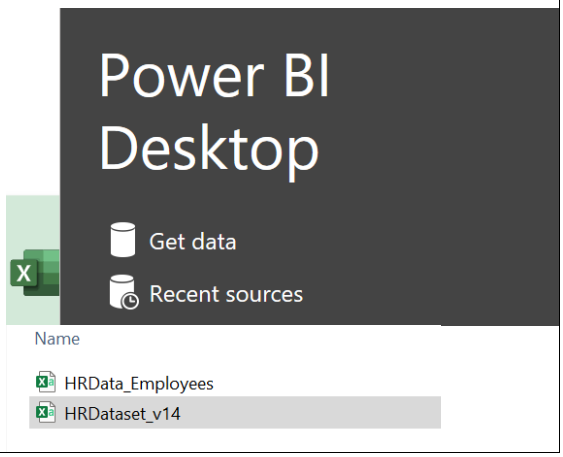
Data Dictionary:

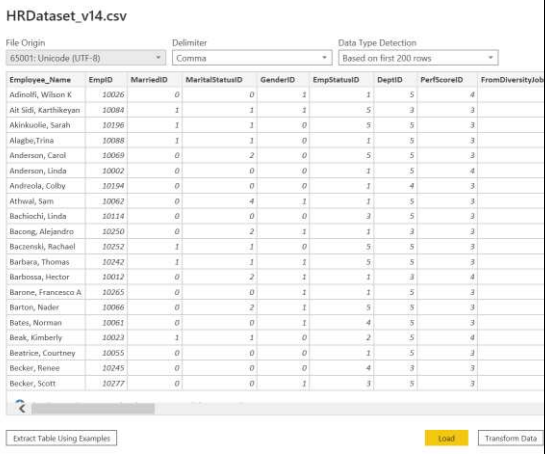
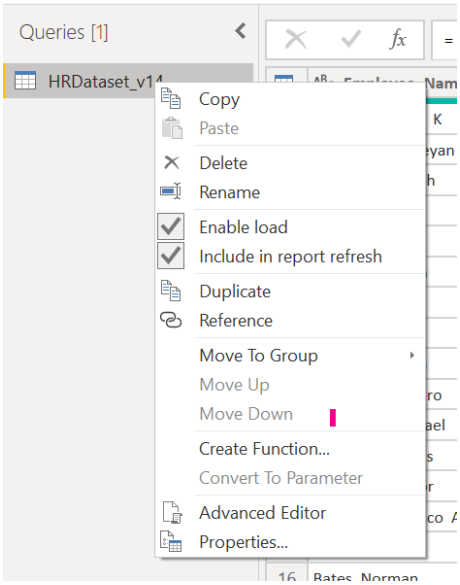
Feature	Description	DataType
Employee Name	Employee's full name	Text
EmpID	Employee ID is unique to each employee	Text
MarriedID	Is the person married (1 or 0 for yes or no)	Binary
MaritalStatusID	Marital status code that matches the text field MaritalDesc	Integer
EmpStatusID	Employment status code that matches text field EmploymentStatus	Integer
DeptID	Department ID code that matches the department the employee works in	Integer
PerfScoreID	Performance Score code that matches the employee's most recent performance score	Integer
FromDiversityJobFairID	Was the employee sourced from the Diversity job fair? 1 or 0 for yes or no	Binary
Salary	The person's yearly salary. $ U.S. Dollars	Float
Termd	Has this employee been terminated - 1 or 0	Binary
PositionID	An integer indicating the person's position	Integer
Position	The text name/title of the position the person has	Text
State	The state that the person lives in	Text
Zip	The zip code for the employee	Text
DOB	Date of Birth for the employee	Date
Sex	Sex - M or F	Text
MaritalDesc	The marital status of the person (divorced, single, widowed, separated, etc)	Text
CitizenDesc	Label for whether the person is a Citizen or Eligible NonCitizen	Text
HispanicLatino	Yes or No field for whether the employee is Hispanic/Latino	Text
RaceDesc	Description/text of the race the person identifies with	Text
DateofHire	Date the person was hired	Date
DateofTermination	Date the person was terminated, only populated if, in fact, Termd = 1	Date
TermReason	A text reason / description for why the person was terminated	Text
EmploymentStatus	A description/category of the person's employment status. Anyone currently working full time = Active	Text
Department	Name of the department that the person works in	Text
ManagerName	The name of the person's immediate manager	Text
ManagerID	A unique identifier for each manager.	Integer
RecruitmentSource	The name of the recruitment source where the employee was recruited from	Text
PerformanceScore	Performance Score text/category (Fully Meets, Partially Meets, PIP, Exceeds)	Text
EngagementSurvey	Results from the last engagement survey, managed by our external partner	Float
EmpSatisfaction	A basic satisfaction score between 1 and 5, as reported on a recent employee satisfaction survey	Integer
SpecialProjectsCount	The number of special projects that the employee worked on during the last 6 months	Integer
LastPerformanceReviewDate	The most recent date of the person's last performance review.	Date
DaysLateLast30	The number of times that the employee was late to work during the last 30 days	Integer
Absences	The number of times the employee was absent from work.	Integer

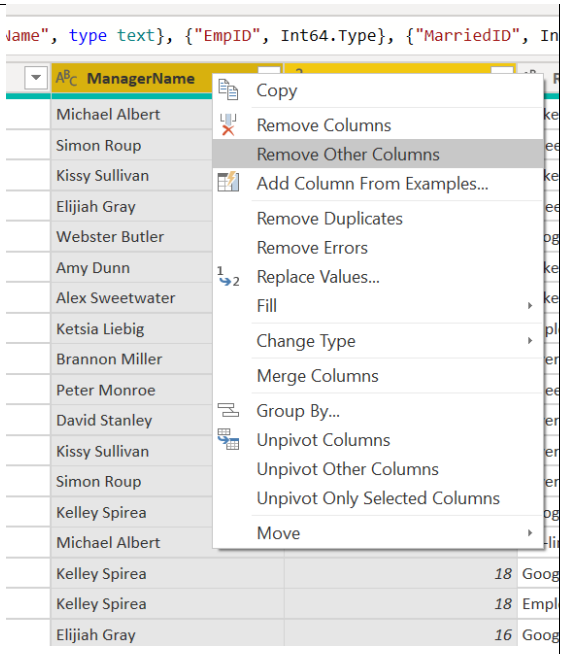
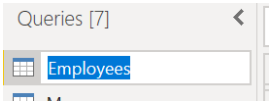
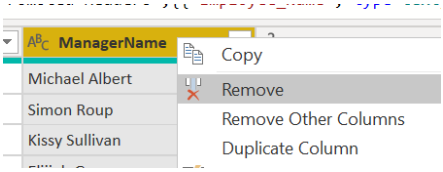
Power BI Steps:

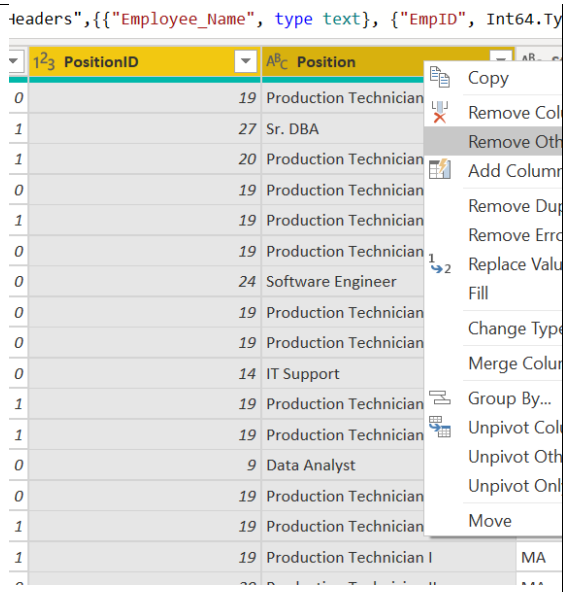
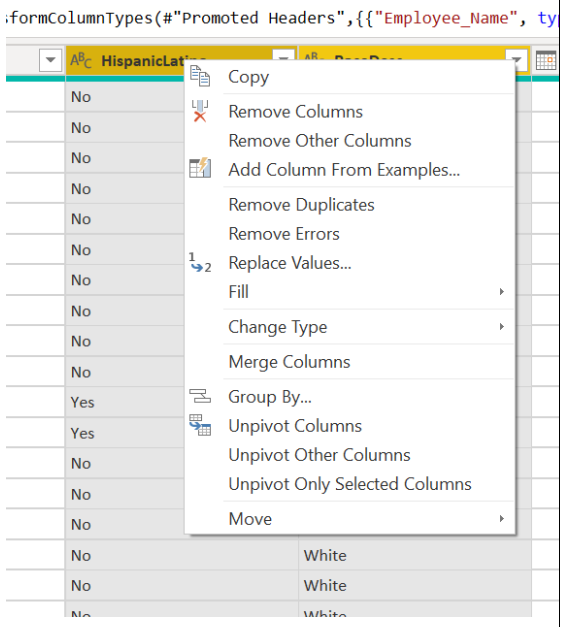
Outside of this workshop, you can follow the Microsoft Power BI learning path to dive deeper into Power BI.

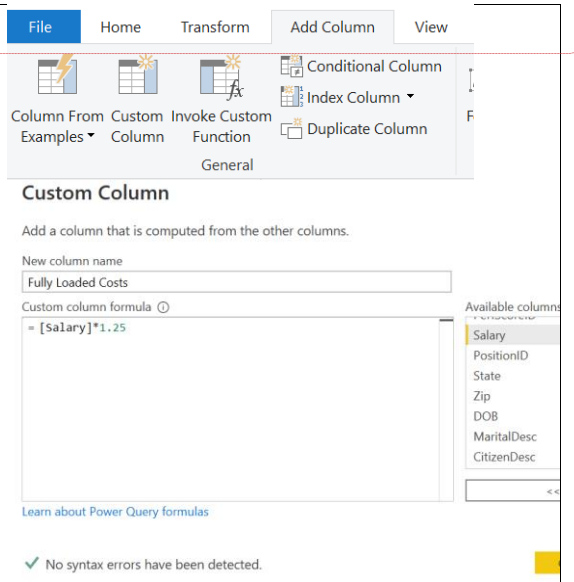
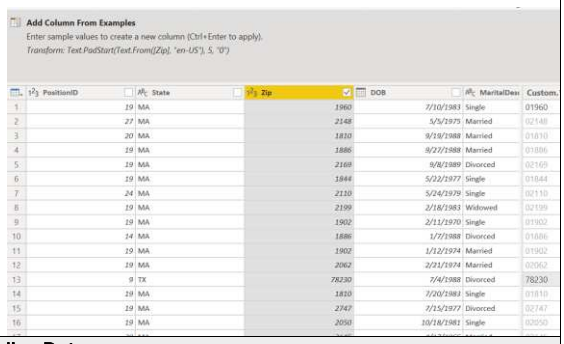
All files for this session are available on Github. You can download all files and relevant additional content there. Once files are downloaded, you will need to unzip files to your Desktop for ease of use or a file path that is solely for projects so files paths are easy to configure.	https://github.com/TeneikaAskew/BWD2022 
If you do not have a Microsoft account and want to use Power BI online or a virtual machine/lab without creating one,	here are training accounts I've created that you can access. https://docs.google.com/spreadsheets/d/15ckDqvglrplvwikV-NkpA5QJ5Eb876Aa0HUK7CV-jEE/edit?usp=sharing
Opening Power BI Options	
Option 1: • Open Microsoft Virtual Machine • Visit Become a Power BI Analyst Path • Open up this lab: ○ https://learn.microsoft.com/en-us/training/modules/get-data/lab-prepare • Sign in using your own account or a training account • Click on Start Lab • Lab environment will begin to build and open to a Windows environment where Power BI is readily available	
Lab Environment will look like this. The environment expires in 4 hours. If you would like to save your work, I suggest you log into a browser and sign into your Google drive and save your Power BI package there.	

Option 2: • Download Power BI Desktop • https://www.microsoft.com/en-us/download/details.aspx?id=58494 • You can download Power BI through the download option that redirects to the ***Microsoft App Store*** or download the executable in ***Advanced download options***.	
Option 3: • Power BI online is available, but this version will look different from the Desktop version. https://app.powerbi.com/	
Getting Started	
Open Power BI and Get Data • To simplify this process we will use one data source: HR Dataset v14 • Select Text/CSV • In the File Dialog, navigate to **HRDataset_v14** ○ You should only use the Excel Workbook option should you fall behind and need the tables we will build in the lab	

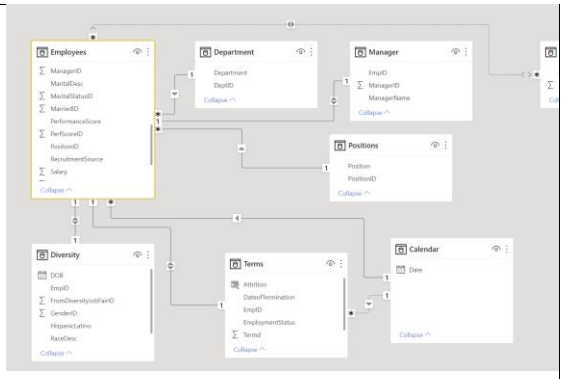
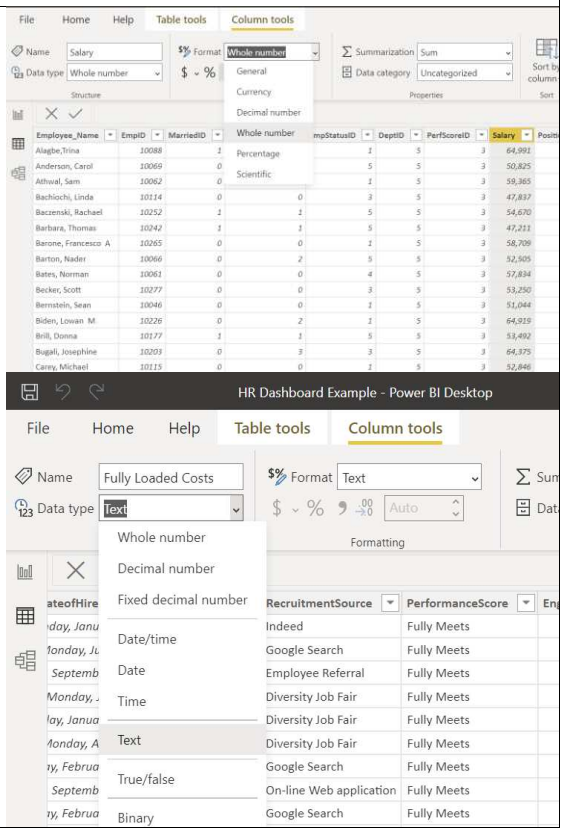
Preview the file then click Transform Data to begin data preparation	
Begin with duplicating the table. Right click on the table and click **Duplicate Table**	
Right Click on the table and name this Manager Remove other columns except ManagerName, Manager ID and EmpID	

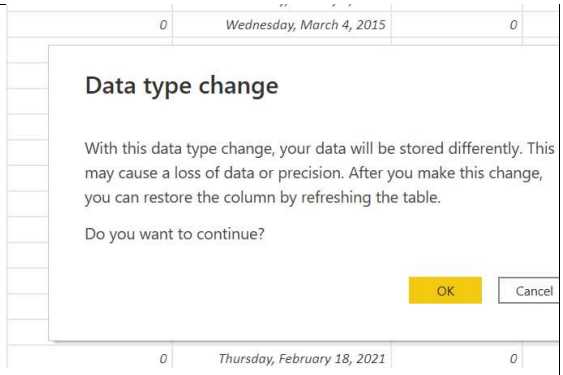
	
Go to the original table and rename this table from HR Dataset v14 to Employees	
Remove ManagerName from Employees	
Repeat steps to duplicate the Employees table. Delete Position from original data table	

	
Repeat steps to duplicate the Employees table and create Diversity table Delete diversity data fields from original data table	
Go back to Employees table and create a custom field.	

Add Fully Loaded Cost	
Update Zip Code column to ensure leading zero is back. We will use the Column from Examples feature. Name this column Zip_c	
Modeling Data	
In this exercise we will not need to model the data as Power BI has autodetected the relationships. In future dashboards you may need to create the relationships between tables.	

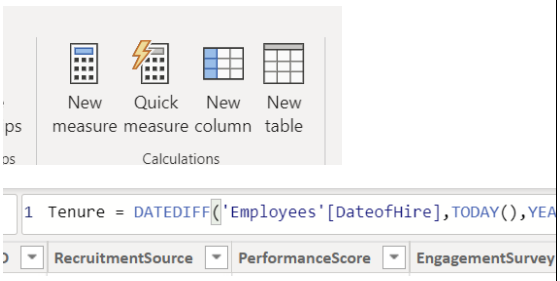
Commented [TA1]: When you think about adding a new employee to your payroll, determine what the actual financial cost of doing so means to your business. This includes the dollars and cents over and above the basic wage or salary you agree to pay. There's a rule of thumb that the cost is typically 1.25 to 1.4 times the salary, depending on certain variables. So, if you pay someone a salary of $35,000, your actual costs likely will range from $43,750 to $49,000. Some added employment costs are mandatory, while others are a little harder to pin down. Fortunately, there may be tax savings to offset some of the costs.

	
Now we are done in Power Query and move to the model. The first step is to update Salary and fully loaded cost -change type to currency.	



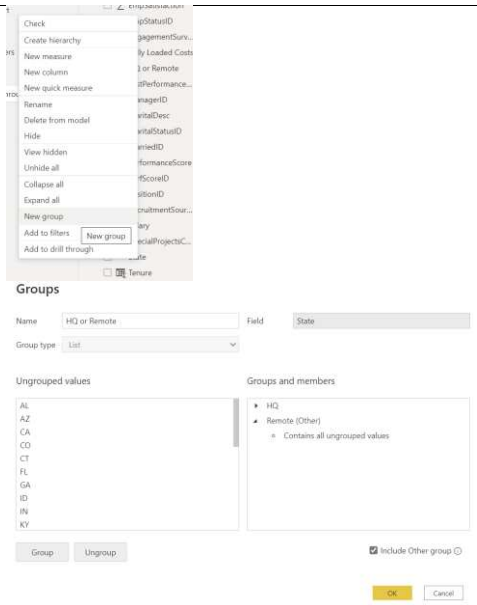
Add a Tenure field to the model using **DAX**

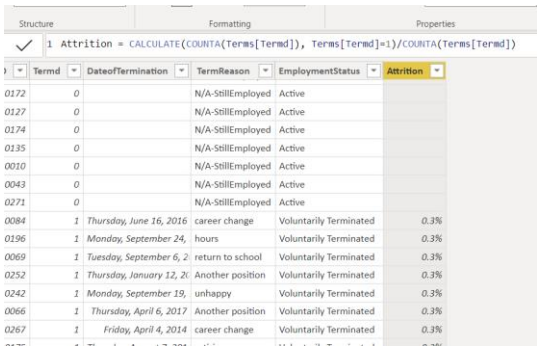
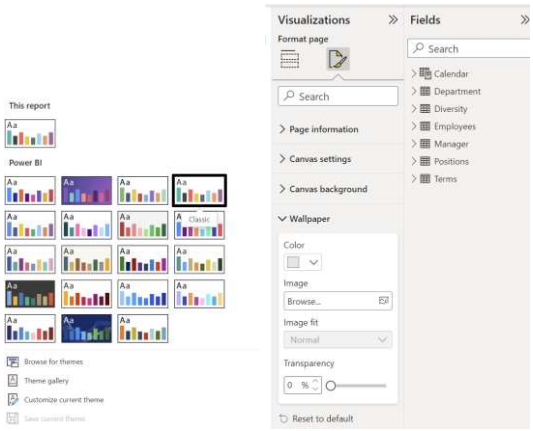
```
Tenure =
DATEDIFF('Employees'[DateofHire],TODAY(),YEAR)
```

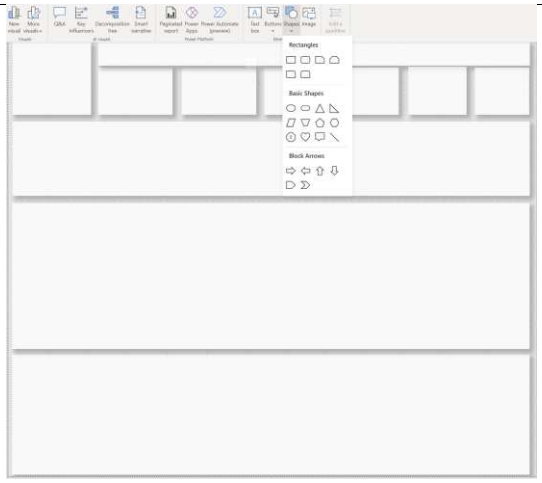
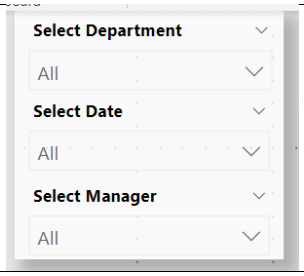


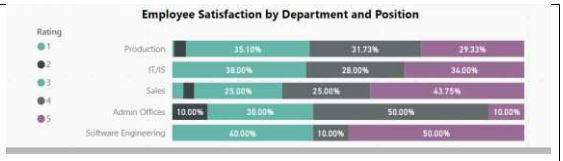
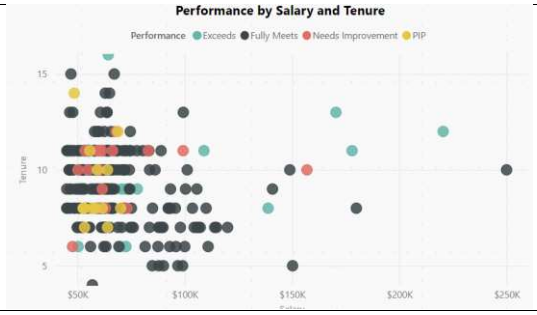
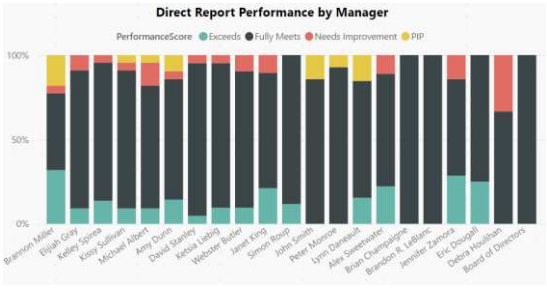
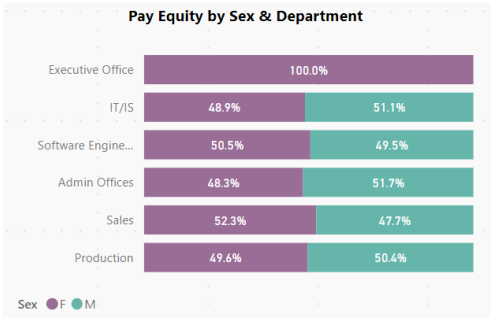
Add a **HQ or Remote** field to the model using **Groups**

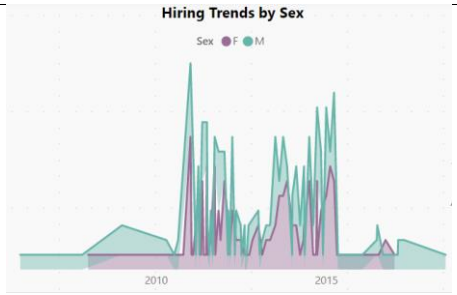
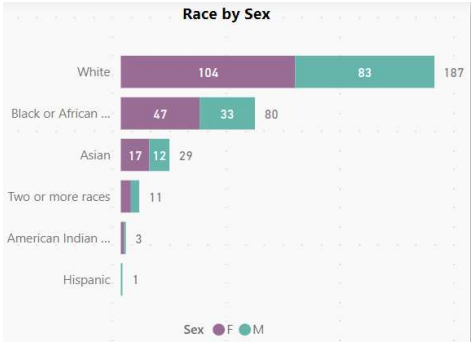
- Right-click on State
- Click on ***New Group***
- Click on MA then Group
- Rename the Group ***HQ***
- Check ***Include Other group***
- Rename the Group to **Remote**



Add Attrition Field to **Terms** table `Attrition = CALCULATE(COUNTA(Terms[Termd]), Terms[Termd]=1)/COUNTA(Terms[Termd])`	
Add a calendar table in the model using **DAX** `Calendar = CALENDAR(FIRSTDATE('Employees'[DateofHire]),LASTDATE('Employees'[DateofHire]))`	
Visualizing Data	
Select your color palette for the report • In this example we use Classic • You can also upload custom themes Add a grey background • Select the page • Click the format icon • Click **Wallpaper** • Select Grey	
Create your layout using the shapes option and begin to highlight your page layout of	

	
Add a Title • Select the text box and add it to the top shape	**Organizational Engagement and Diversity**
Slicers (Filters) • Select the slicer visual • Check Department • Repeat for Date and Manager	
Hero Stats / BANs • Select the Card visual • Check Fully Loaded Costs • Repeat for Employee ID, Absences, Tenure (Median), Avg Performance Score	
Location of Employees and Recruitment Sources • Check Fully Loaded Costs • Repeat and check Recruitment Source	
Employee Satisfaction • Drag Department to Y-axis • Drag Emp ID to X-axis	

• Add Performance Score to Legend • Rename EmpSatisfaction to Rating in visual • Exclude executive office from satisfaction. May want to exclude executive office with only 1 person in that office	
Performance by Salary and Tenure • Add Salary to X-axis • Add Tenure to Y-axis • Add Performance Score to Legend	
Direct Report Performance by Manager • Add Manager Name to X-axis • Add Performance Score to Y-axis • Add Performance Score to Legend	
Pay Equity by Sex and Department • Add Department to X-axis • Add Salary to Y-axis • Add Sex to Legend	
Hiring Trends by Sex • Add Date to Hire to X-axis • Add Employees to Y-axis • Add Sex to Legend	

	
Diversity by Race and Sex • Add Race Desc to X-axis • Add Employees to Y-axis • Add Sex to Legend	

Result

Inspiration:

https://www.kaggle.com/code/abdelrahmanralarqan/hr-visualization/notebook

https://public.tableau.com/app/profile/ed.myers/viz/ExploratoryDashboard_16183795969740/Dashboard2

https://public.tableau.com/app/profile/decisive.data/viz/HumanResources-HR9Box/9BoxEmployeeRatings

https://public.tableau.com/app/profile/techknomatic.services.pvt.ltd./viz/AttritionDashboard_15576673167290/AttritionAnalysis

https://public.tableau.com/app/profile/ajay.varghese/viz/RWFD1-HRDASHBOARD/Overview

https://public.tableau.com/app/profile/spencer.baucke/viz/The500HRClub/The500HRClub