

| **MINI PROJECT ON POWER BI**  **HR ANALYTICS** |
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| **1. Project Introduction** |
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Looking for another chance to put your Power BI skills to work? You're in luck!

This time you'll be exploring a dataset for a fictitious software company called Atlas Labs.

Just like the AdventureWorks project, you'll work through the entire business intelligence workflow: **connecting and shaping the data, building a relational model, adding calculated fields,** and **designing an interactive report**.

I've attached all of the files you'll need to get started, including:

* **Datasets.zip** *(zipped folder containing the CSV files you'll need to build your report)*

When you're ready to dig in, continue on to **PART 1: Connecting & Shaping the Data** for more instructions.

Good luck!

| **PART 1: Connecting & Shaping the Data** |
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#### Open a new Power BI Desktop file, and complete the following steps:

* In Power BI, import **EducationLevel.csv**, **Employee.csv**, **PerformanceRating.csv**, and **SatisfiedLevel.csv** from the **Datasets** folder on the Desktop.
* Add either “Fact” OR “Dim” at the beginning of each table mane, depending on the type of table it is.
* Review your newly loaded tables, and ensure that the columns are correctly formatted as text, numbers, and dates where expected. Refer to the metadata sheet for guidance on the expected formatting.

| PART 2: Creating the Data Model |
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* In a Power BI report, a dedicated date table is highly recommended for accurate date and time reporting. In this part, we will start by creating a dedicated date table to use throughout this case study.
* Create a new calculated table that uses the DAX code from **DimDate.txt** in the **Datasets** folder.
* Now that we’ve created our new table, **DimDate**, let’s connect it to the **FactPerformanceRating** table.
* Next, connect the **DimDate** table to the **DimEmployee** table. This relationship will be inactive because Power BI cannot have more than one active relationship between the same tables at once.
* Connect the **DimEducationLevel** table to the **DimEmployee** table.
* In the **FactPerformanceRating** table we have four different types of performance ratings: **EnvironmentSatisfaction,** **JobSatisfaction**, **RelationshipSatisfaction**, and **WorkLifeBalance**.  
  These all have numbers from one to five, but we have no context on what these ratings mean.
* Connect these columns with **DimSatisfiedLevel** and use **EnvironmentSatisfaction** as the active relationship, using the *Manage Relationships* menu.

| PART 3: Adding New Column & DAX Measures |
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#### Using your report from Part 2, complete the following steps:

**1)** In the **DATA** view, add the following **new columns**:

* In the **DimDate** table, add a column named "***Column***"
  + DAX: column = 1
* In the **DimEmployee** table, add a column named **“*Agebin*”** use by Conditional Column
  + Equals **“<20”** if Age is **< 20**, **“20-29”** if age is between **20** and **29**, **“30-39”** if Age is between **30** and **39**, **“40-49”** if Age is between **40** and **49** and **“50<”** otherwise
* In the **DimEmployee** table, add a column named **“*DistanceBins*”** use by Conditional Column
  + Equals **“<5 kms”** in DistanceFromHome **(KM)** is **< 5**, **“10-15 kms”** in DistanceFromHome(KM) is between **10** and **15**, **“15-20 kms”** in DistanceFromHome (KM) is between **15** and **20**, and **“>20 kms”** otherwise
* In the **DimEmployees** table, add a column named "***FullName***" use by Merge columns
  + Ctrl + Select **“FirstName”** and **“LastName”** Columns then use Merge Columns functions.
  + Rename Merged Column to **“FullName”**

**2)** In the **REPORT** view, create an empty table (\_Measures) to add the following **measures** :

* Create a folder named “Active Employees”
  + Create new measures named **“ActiveEmployees”**, which takes the counts of active employees.

ActiveEmployees = CALCULATE(COUNT(DimEmployee[EmployeeID]), DimEmployee[Attrition] = "No")

* + Create new measures named **“ActiveEmployeesDate”** that uses the *CALCULATED()* function on our previous measure and the *USERELATIONSHIP()* function in the filter, which takes the counts of active employees by **Date**.

ActiveEmployeesDate = CALCULATE([ActiveEmployees], USERELATIONSHIP(DimDate[Date],DimEmployee[HireDate]))

* + Create new measures named **“Active Employees\_Last year”**, which takes the counts of active employees last year.  
    Active Employees\_Last year = CALCULATE([ActiveEmployeesDate], SAMEPERIODLASTYEAR(DimDate[Date]))
  + Create new measures named **“Active Employees\_Last period”**, which takes the counts of all employees last period.

Active Employees\_Last period =

var first\_date = FIRSTDATE(DimDate[Date])

var last\_date = LASTDATE(DimDate[Date])

var khoang = DATEDIFF(first\_date, last\_date,DAY) +1

return

CALCULATE([ActiveEmployeesDate], DATEADD(DimDate[Date],-khoang,DAY))

* Create a folder named “Terminations”
  + Create new measures named **“InactiveEmployees”**, which takes the counts of all inactive employees.

InactiveEmployees = CALCULATE(COUNT(DimEmployee[EmployeeID]), DimEmployee[Attrition] = "Yes")

* + Create new measures named **“InactiveEmployeesDate”** that uses the *CALCULATED()* function on our previous measure and the *USERELATIONSHIP()* function in the filter, which takes the counts of inactive employees by **Date**.

InactiveEmployeesDate = CALCULATE([InactiveEmployees], USERELATIONSHIP(DimDate[Date],DimEmployee[HireDate]))

* + Create new measures named **“Inactive Employees\_Last year”**, which takes the counts of inactive employees last year.  
    Inactive Employees\_Last year = CALCULATE([InactiveEmployeesDate], SAMEPERIODLASTYEAR(DimDate[Date]))
  + Create new measures named **“Inactive Employees\_Last period”**, which takes the counts of inactive employees last period.

Inactive Employees\_Last period =

var first\_date = FIRSTDATE(DimDate[Date])

var last\_date = LASTDATE(DimDate[Date])

var khoang = DATEDIFF(first\_date, last\_date,DAY) +1

return

CALCULATE([InactiveEmployeesDate], DATEADD(DimDate[Date],-khoang,DAY))

* Create a folder named “Total Employees”
  + Create new measures named **“TotalEmployees”**, which takes the counts of all employees.

Total Employees = COUNT(DimEmployee[EmployeeID])

* + Create new measures named **“TotalEmployeesDate”** that uses the *CALCULATED()* function on our previous measure and the *USERELATIONSHIP()* function in the filter, which takes the counts of all employees by **Date**.

TotalEmployeesDate = CALCULATE(COUNT(DimEmployee[EmployeeID]), USERELATIONSHIP(DimDate[Date],DimEmployee[HireDate]))

* + Create new measures named **“Total Employees\_Last year”**, which takes the counts of all employees last year.  
    Total Employees\_LastYear = CALCULATE([TotalEmployeesDate], SAMEPERIODLASTYEAR(DimDate[Date]))
  + Create new measures named **“Total Employees\_Last period”**, which takes the counts of all employees last period.

Total Employees\_Last period =

var first\_date = FIRSTDATE(DimDate[Date])

var last\_date = LASTDATE(DimDate[Date])

var khoang = DATEDIFF(first\_date, last\_date,DAY) +1

return

CALCULATE([TotalEmployeesDate], DATEADD(DimDate[Date],-khoang,DAY))

* Create a folder named **“Attrition Rate”**
  + Create new measures named **“%Attrition Rate”** to calculate the ratio of terminations to total employees.

%Attrition Rate = [InactiveEmployees] / [Total Employees]

* + Create new measures named **“%AttritionRateDate”** to calculate the ratio of terminations to total employees by **Date**.

%AttritionRateDate = DIVIDE([InactiveEmployeesDate],[TotalEmployeesDate])

* + Create new measures named **“%Attrition Rate\_Last year”** to calculate the ratio of terminations to total employees last year.  
    % Attrition Rate\_Last year = CALCULATE([%AttritionRateDate], SAMEPERIODLASTYEAR(DimDate[Date]))
  + Create new measures named **“%Attrition Rate\_Last period”** to calculate the ratio of terminations to total employees last period.

Total Employees\_Last period =

%Attrition Rate\_Last period =

var first\_date = FIRSTDATE(DimDate[Date])

var last\_date = LASTDATE(DimDate[Date])

var khoang = DATEDIFF(first\_date, last\_date,DAY) +1

return

CALCULATE([%AttritionRateDate], DATEADD(DimDate[Date],-khoang,DAY))

* Create a folder named “Others”
  + Create new measures named **“AVG YearAtCompany”**, which takes the average of years since the employee joined the organization.

AVG YearAtCompany = AVERAGE(DimEmployee[YearsAtCompany])

* + Create new measures named **“OldestEmployee”** , which takes the oldest employee

OldestEmployee = Max(DimEmployee[Age])

* + Create new measures named **“YoungestEmployee”** , which takes the youngest employee

YoungestEmployee = Min(DimEmployee[Age])

* + Create new measures named **“LastReviewDate”** , which takes the last review date of the employee

LastReviewDate =

IF (

MAX (FactPerformanceRating[ReviewDate]) = BLANK (),

"No Review Yet",

MAX (FactPerformanceRating[ReviewDate])

)

* + Create new measures named **“NextReviewDate”** , which takes the next review date of the employee

NextReviewDate =

VAR reviewOrHire =

IF (

MAX ( FactPerformanceRating[ReviewDate] ) = BLANK (),

MAX ( DimEmployee[HireDate] ),

MAX ( FactPerformanceRating[ReviewDate] )

)

RETURN

reviewOrHire + 365

| PART 4: Building the Report |
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#### *Using your report from Part 3, complete the following steps to produce the report shown below (or design your own!)*

***I/.*** *Rename the tab "****Overview****"*

**1)** Add a **KPI Card** to show **Total EmployeesDate**, with **Column** as the trend axis and **Total Employee\_Lastyear** as the target goal

* Update the title to "**Total Employees**", Target Label to “Last Year”, and format as you see fit
* Make sure to update titles, and change the Direction at Trend axis to color coding to "High is Good"
* Create two more copies: Active Employees, Inactive Employees (Low is Good), Attrition Rate (Low is Good)

**2)** Add a **Map** visual to show **Total EmployeesDate** by State and a **Treemap** visual to break down **Total EmployeesDate** by Department & Job Role.

**3)** Add slicer for **Year** and **Fiscal Quarter** & Add slicer for **Date**

Add a bookmark called **“Last Year”** and Hide **“Date”** in Selection   
Add a bookmark called **“Last Period”** and Hide **“Year”** and **“Fiscal Quarter”** in Selection  
Create 2 buttons to add **“Last Year”** and **“Last Period”** bookmark.

**4)** Add a **Stacked Area Chart** to show **Hiring Trend (Active Employees & Inactive Employees)** by Date, and format as you see fit

**5)** Add a **Line Chart** to show **Attrition Rate Trend** by Date, and format as you see fit

***II/.*** *Add the new tab "****Employee****"*

**1)** Create new parameter called **“Parameter Employee”** contains **“AgeBin”, “Education”, “DistanceBins”, “ Ethnicity”, “ Gender” ,“Marital Status”**

**2)** Add Slicer for **“Parameter Employee”**

**3)** Add a **Donut Chart** to show **Total EmployeesDate** by **“Parameter Employee”** and **Date**, and format as you see fit

**4)** Add a **Line Chart** to show **%AttritionRateDate** by **“Parameter Employee”**, and format as you see fit

**5)** Add a **Line and clustered column Chart** to show **Total EmployeesDate** (column)and **%AttritionRateDate** (line) by **“Parameter Employee”**, and format as you see fit

**6)** Add 2 **Card Charts** to show **Youngest Employee** and **Oldest Employee**

**7)** Add Slicer for **Department** and Slicer for **Date**

***III/.*** *Add the new tab "****AttritionbyJob****"*

**1)** Create new parameter called **“Job Parameter”** contains **“BusinessTravel”, “JobRole”, “OverTime”, “YearsAtCompany”, “YearsInMostRecentRole”, “YearsSinceLastPromotion”**

**2)** Add Slicer for **“Job Parameter”**

**3)** Add a **Donut Chart** to show **Total EmployeesDate** by **“Job Parameter”** and **Date**, and format as you see fit

**4)** Add a **Line Chart** to show **%AttritionRateDate** by **“Job Parameter”**, and format as you see fit

**5)** Add a **Line and clustered column Chart** to show **Total EmployeesDate** (column)and **%AttritionRateDate** (line) by **“Job Parameter”**, and format as you see fit

**6)** Add a **Line and clustered column Chart** to show **Average of Salary by JobRole** (Change X-axis to Average of Salary)

**7)** Add Slicer for **Date**

***IV/.*** *Add the new tab "****PerformanceTracker****"*

**1)** Add Slicer for **Department** and Slicer for **FullName**

**2)** Create a **Table Chart** to show **SatisfactionID** and **SatisfactionLevel**

**3)** Create a **Table Chart** to show **RatingID** and **RatingLevel**

**4)** Add 3 **Card Charts** to show Earliest **HireDate, LastReviewDate, NextReviewDate**

**5)** Add a **Line Chart** to show Job Satisfaction (Y-axis: Max of **JobSatisfaction**) by **Year** (X-axis) of each employee.

**6)** Create five more copies: **Environment Satisfaction, Relationship Satisfaction, Work-Life Balance, Self Rating, Manager Rating**

*Get creative! Practice creating new visuals, pages, or bookmarks to continue exploring the data!*