

Experiment 16 [VGSales file]

Getting Started - Tableau Workspac, Tableau terminologies, basic functionality

→ Tableau workspace [MTCDS*SD]

1. Menu bar :- Located at top provide access various features like File, Data & Analysis.
2. Tool bar :- Contains icons for frequently used functions such as saving, undoing actions, & formatting.
3. Connection pane :- On the left where you can connect to data source, either local files or databases.
4. Data pane :- Below connection pane,
 - organized into dimensions (Qualitative data)
 - measures (Quantitative data)
5. Sheet Area :- Central part of the workspace
6. Show Me Panel :- Located on right this suggests different type of visualizations you could
7. Dashboard & Storyboard :- At the bottom, Create dashboard (collection of visualizations) & Stories (a sequence of visualizations to convey a narrative).

→ Tableau Terminologies [WSDM & FDS]

1. Workbook :- One file that contains one or more sheets, dashboards. It has .twb or .tws extension.
2. Sheet :- Single visualization, can be worksheet, dashboard.
3. Dimension :- Qualitative field.
4. Measure :- Quantitative field such as product name, sales, revenue.
5. Calculated Field :- New field created using existing fields & formulas.
6. Filter :- In your visualization based on specific criteria.
7. Dashboard :- Collection of different sheets displayed together on one canvas, allowing much easier analysis.
8. Story :- A sequence of visualizations that together tell a data-driven narrative.

[CCAC BS]

- Basic Functionalities &
1. Connecting to Data
 - Click on "Connect" to choose data source (Excel, SQL database, etc)
 - Import data & review QTR Structures in table
Row - Global sales
Row - Global sales
 2. Creating a visualization
 - Drag dimension a measure from Data pane
 - Use the "show me" panel to switch b/w different types of charts.
+ drag year to X-axis
 3. Adding filters
 - Drag a dimension or measure to the filter shelf to restrict data displayed on your visualization.
 4. Creating Calculated Field &
 - Right-click on one Data pane & add "New Calculated Field" to define custom calculation
 5. Building Dashboard
 - Click on "New Dashboard" option
 - Create a dashboard
 - Drag & drop sheet.
 6. Saving & Sharing
 - Save your workbook as a .tabo file
 - You can share your work via Tableau Server, Tableau Online, or Export as an image or PDF.
-) Add one more worksheet
Column - Year
Row - Global sales

Explained 2 & [Access] Tableau Join files]
Connecting to Data Source & Connecting to Database,
different types of Tableau Joins.

① Connecting to a Database in Tableau

1. Open Tableau & Launch Tableau Desktop
2. Connect to Data →
 - * On the start page you'll see the "Connect" button.
 - * Select "To a Server" →
 - File → Existing file
 - * Choose database type →
 - Click on the desired database option.
3. Enter Connection details →
 - * Server → The address of database Server.
 - * Database name of DB you want to connect to.
 - * Authentication → Provide username & password if required.
4. Select data & once connected, you can see database tables. Drag & drop desired table into canvas area to start building.

② Types of Tableau Joins

- ① Inner Join
- ② Left Join (Left Outer Join)
- ③ Right Join (Right Outer Join)
- ④ Full Outer Join

② Tableau Join file.xlsx Dataset

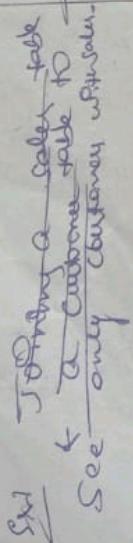
Demographic → MMSID & Name of Eon
→ Contact from Eon

Salary of Eon →
Eon Salary →

- * Drag & drop demo demographic table - type of joins
- * Drag & drop Salary table

Set Recovery Every time records have matching values on both tables.

Usage When you only want records that exist on both databases.



Product Returns all records from the left table to match records from right table. If no match, nulls are returned.

You want old records from Primary table & search for on secondary table.

It's a product of two tables.

Left Returns all records from left table to match records from right table. If no match, nulls are returned.

For example, if you want all records from left table.

Full Outer Join Returns all records from both tables. If one table has more rows than the other, nulls are returned for the extra rows.

- Steps to Create Joins In Tabular
1. Drag tab left to your database, drag the 1st table into canvas
 2. Add another table. Drag 2nd table to want to see next table
 3. Select Join type
 - * Tabular you to choose type of join (I, L, R, Full outer)
 - * Select your desired join type from dropdown menu.
 4. Define Join conditions
 - * Specify the field from both tables that you want to join (join condition)
 5. Review Join Results
 - * After joining you can see combined data pane.

Creating a visualization Based on Joins

- * After performing the join, you can build different visualizations.

Based on Sheet 1B

Ex :-

- * Bar Chart :- No of employees & their salary
- * Drag Name of Employee to column
- * Drag Employee Salary to down
- * This chart will display the no of employees & their salary based on type of join.
- * Sort the records
- * Drag Employee Salary to marker - Select color label

Inner Join

- Returns only the records that have matching values on both tables.
- Use `inner join` to count records that exist in both datasets.

SQL
 \downarrow
 $\text{SELECT * FROM Employee}$ INNER JOIN Customer $\text{ON Employee.CustomerID} = \text{Customer.CustomerID}$

Left Join

- Returns all records from the left table, even if there are no matches in the right table.
- Use `left join` to count records from the primary table.

SQL
 \downarrow
 $\text{SELECT * FROM Employee}$ LEFT JOIN Customer $\text{ON Employee.CustomerID} = \text{Customer.CustomerID}$

Right Join

- Returns all records from the right table, even if there are no matches in the left table.
- Use `right join` to count records from the secondary table.

SQL
 \downarrow
 $\text{SELECT * FROM Employee}$ RIGHT JOIN Customer $\text{ON Employee.CustomerID} = \text{Customer.CustomerID}$

Outer Join

- Returns all records from both tables, even if there are no matches between them.
- Use `outer join` to count records from both tables.

SQL
 \downarrow
 $\text{SELECT * FROM Employee}$ OUTER JOIN Customer $\text{ON Employee.CustomerID} = \text{Customer.CustomerID}$

SQL
 \downarrow
 $\text{SELECT * FROM Employee}$ OUTER JOIN Customer $\text{ON Employee.CustomerID} = \text{Customer.CustomerID}$

Full Outer Join

- Returns all records from both tables, even if there are no matches between them.
- Use `full outer join` to count records from both tables.

SQL
 \downarrow
 $\text{SELECT * FROM Employee}$ FULL OUTER JOIN Customer $\text{ON Employee.CustomerID} = \text{Customer.CustomerID}$

Steps to Create Joins In Tabular

1. Drag tab left to your database, drag the 1st table into canvas.
2. Add another table next to it.

You want to join
select JOIN of

- Tabular you to choose type
- Select of join (T, L, R, Full outer)
- From dropdown menu.

Define JOIN Options

- Specify the field from both tables that you want to join by (inner).

Review JOIN Results

After joining you can see combined data pane.

Creating a Visualization Based on JOIN

- After performing the join, you can build different visualizations.

Press on Sheet 1B

Ex:-

- Bar Chart :- No of Employees by their salary
- Drag Name of Employee to column.
- Drag Employee Salary to data.
- The chart will display the no of employees based on their salary of join.
- Sort on descending.
- Drag Employee Salary to marker.
- Select color label.

Explain

Inner Join Result :- You will see only Employees whose Employee ID matches in both Demographic & Salary table.

Left Join

All Employees even if data in Salary Information without a match will be returned, matching on Salary will be NULL for those without a match.

Right Join

You will see all Employees even if they don't have Employee ID. Bonf Information will be NULL for those Salary with no matching Employee.

Full Outer Join

You will see all Employees & all Salary even if they don't have a match in the other table. NULL values will appear where there's no corresponding record.

③ Creating a new view
adding filters & defining parameters - creating calculated fields, formating charts.

Step 1B
* Connect to Data
* Open Tableau Desktop
* Connect to your Data source.

Step 2B
Create a Basic visualization.

- Create a new worksheet
- Drag Year to column
- Drag Global sales to Row
- Drag EU sales to Row

Line graph visualization

Change visualization type on Show report
→ bar chart → mark
→ measure mark

Formatting Charts :-

- * Format axis → Right-click on the Global Sales axis & select Format
- * In the format pane, adjust the font style & size as needed.
- * Add title & annotation
 - Click on the chart → Enter → Global sales by year
 - Add annotations to specific data points
 - right click → Select Annotate
 - select mark
 - press OK

Adding Filters

⇒ Drag Year to filter shelf
choose say (e.g. 2000-2016)

Creating Calculate Fields

⇒ right click → create → C.F. →
(Global sales) → (EU Sales)
calculation → Drag Colaration → In Row → Graph

Create a parameter

⇒ Drag Year On column
⇒ Drag Genee On row

Formulate

Program 5: Introduction Power BI &
Components of & flow of work. Power BI Desktop
Interface - the repeat key & much more.

- 1) Introducing Power BI & Power BI in a
powerful business analytical tool from
Microsoft that allows users to visualize
data insights & make informed decisions.
It provides a user-friendly interface,
for data modeling, visualization &
reporting.

Components of Power BI & [DGM&R]

- ① Power BI Desktop &
 - This is used to create reports
 - users can connect to various data sources, transform data & build visualizations
- ② Power BI Gateway & a bridge that facilitates
data transfer b/w on-premises data sources
& Power BI Services.
- ③ Power BI mobile apps & mobile apps for
iOS & Android that allow users to view
reports on their devices.

Power BI Services This is a cloud service
→ is used to publish power BI reports
→ Dv.

Power BI Report Server An on-premises
report server for hosting power BI reports

Program 5 : Introduction to Power BI & Components of & flow of work. Power BI is a reporting tool to make better business insights & make informed decisions. It provides a user-friendly interface for data modeling, visualization & reporting.

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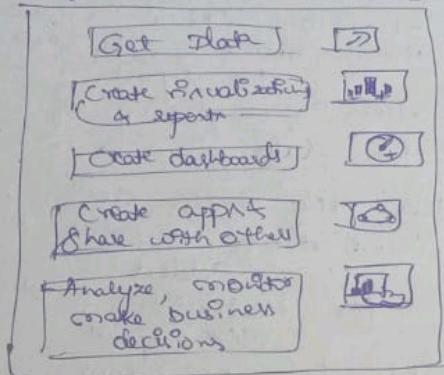
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- ③ Power BI mobile apps & mobile apps for iOS & Android that allow users to view & interact with reports on their devices.
- ④ Power BI Service → This is a cloud service
 - It is used to publish Power BI reports & Dv.
- ⑤ Power BI Report Server → An on-premises server for hosting Power BI reports.

PBI interface → Reports main areas

- Ribbon = the top ribbon contains most of the controls & options needed for building the report.
- View = This is made up of report view, the data view & model view.
- Canvas = This is the main design area where visualizations & other elements are added.
- Page Selectors = for navigation to other pages of the report.
- Filter = fields can be added here to filter the data.
- Visualizations = This contains the list of available visualizations.
- Field = This section contains the tables & fields that are available in the data model.

Flow of work in Power BI



① Data Connection

- Connect to various data sources (e.g., databases, Excel files, cloud services).

② Data Transformation

- Use Power Query to clean, shape & transform the data.

③ Data Modeling

- Create relationships b/w tables, defines calculated columns & measures.

④ Report Creation

- Build interactive visualizations & reports in Power BI Desktop.

⑤ Publishing & Sharing

- Publish reports to Power BI Service for sharing & collaboration.

⑥ Consumption & Analysis

- Power BI Services support mobile apps for analysis.

P6 f Querying Data from CSV -
Query Editor, connecting the data from
the Excel source, clean, Transform the data.

→ In Power Query Editor, you can build
queries & transform data, then load the
defined data model into Power BI
Desktop to create reports.

Connect to data {Get Data from different source}

Step 1: Click on blank report

Step 2: Select Home tab & Get Data, choose On Power BI Desktop text (CSV)

Step 3: Click on file you need & open the file.
with navigator appears.

Step 4: At this point can select Load

After Transform data press OK

Query Editor Launcher with a representation
of the table.

Clearing & transforming the data &

* Transforming data includes removing rows @
columns @ tables, removing rows @
columns @ changing data type.

To change a data type :-

→ Select column @ column to change.

→ Right Click on the column header, select
Change type. To change it.

→ Select a new Data type

- ~~From~~ ~~Remove~~ [Delete the Rows] Home tab Select
 - Remove Row > Remove Rows & Remove Button Row.
 - RBR → dialog box with OK Select OK
 - Remove Column &
 - ~~From~~ ~~Remove~~ [Select Manage Columns group] Home tab Select Remove column
- once all the required transformation are done the report should be created on Power BI Desktop.
- Selecting Close & Apply from Home tab.
- Click on Home Tab on Power Query Editor & Select Close & Apply to load the transformed data into Power BI.

After all this work done, select any field to transform data. You can now create reports & dashboards using the cleaned data in Power BI.

D 7A Creating Reports & Visualizations
Different types of charts with Title, colors.

- Type of charts available on power BI
most common chart available on power BI
- > Bar → Line → Pie → Funnel & Heatmap
 - > Matrix → Area → Histogram → Tree map.

-> Open Power BI Desktop on ribbon pane
on Get Data on Excel worksheet option.

-> Click on

Transform Data button

-> Click new column → Add column → change datatype → whole
→ click Add column → change datatype → whole

-> Click on "close & apply".

Hit Data Values

Formatting charts &

Select chart → add that

Dept

Legend → Dept

Value → sum of Atticow

Dept

(3) Stacked column chart

x → CF-age band
y → sum of emp
leg → Gender

P8 Dashboard - Filters In Power BI Formatting Dashboards, HR Day

→ Filter pane & you can apply filter in the filter pane directly on the filter pane. The filter pane shows the fields in the individual visual & any other filter in the report designer add.

Focus Standard types of filter:

1. Visual filter → applies to a single visual on report page.
 - * You see visual-level on canvas.
 - * Even if you can't edit a report, you can select a visual & filter.
2. Page filter & applies to all the visual on the report page
3. Report filter applies to all pages in the rpt.
4. Drill through filter with drill through. There allow user to right-click on a data point & "dt" to another report page filter specifically for selected data point.

9.

a. filled Map

Step 1 :- take filled Map.

Location :- State

Legend :- Revenue.

b. Line chart:

X-axis :- Month.

Y-axis :- Revenue

c. Stacked column chart:

Customer Age to bin size

(New group) — bin size - 10

X-axis :- Customer Age (Bin)

Y-axis :- Revenue

d. Donut chart:

X-axis

Legend :- State.

Value :- Revenue

Zero areas → format → Data label

position : inside.

e. butterfly chart:

Stacked bar chart

X-axis :- Revenue

Y-axis - product category.

format :- X-axis — invert range - On

f. Table:

State

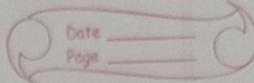
Average revenue

Profit Status.

(q8i) pie chart -

Legend :- Dept

values: attraction count



Date _____
Page _____

(ii) Bar chart:

y-axis: Age (b/w) 5

x-axis: employee count

(iii) Matrix

Rows - job role

Col - job satisfaction

Val - employee count

(iv) Unstacked bar chart

y-axis - education field

x-axis - attraction count

(vii) Multiple donut chart

Legend - gender

Value - attraction weight

(12) (i) Donut chart

Legend - type

Value - title

(ii) Filled map

location - country

~~state~~

(i) Area chart

x - year (below year)

y - title

(v) SICER -

col - title

description

(q8i) Stacked Bar chart

y-axis - listed-in (genres)

x-axis - title

listed-in (genres)

filter type - top n

new measure:

Average revenue = Average x G value, (SalesTable[State]),
Calculate (Sum / SalesTable [Revenue])

new column:

Profit greater : profit status = if (SalesTable [Average revenue] >
1000, "profit+", "non profit+").

(ii) → HR Dataset.

Transform.

- split column by delimiter.

use first row as header.

(i). New measure.

e-count = count (HR'[Employee number])

A-count = count rows (filters ('[HR]', 'HR'[Attrition]) = "yes")

A-PartP = [e-count] - [A-count]

A-rate = divide ([A-count], [e-count], 0) * 100

Avg. age : Average (HR[Age])

(ii) Lollipop chart

→ line and clustered column chart.

X - Gender.

Y - Axe - attrition count

Line Y-axis - attrition rate.

format

marker: size - 20.

lines: Transparency - 0-100.

Column layout 75%.