Academy

Power BI

Introduction to POWER BI

DATA
XX01
XX02
XX03

Basic Core Data Concepts

What do companies in various industries like ecommerce, entertainment, healthcare, manufacturing, marketing, finance, and technology have in common?

Data

Data is a collection of facts such as numbers, descriptions and observations used in decision-making.

Characteristics of Relational Data

- Table: Data is stored in a table.
- Table consist of rows and columns.
- Row: each row represents a single instance of an entity.
- Column: define the properties of the Entity.
- Each column is defined by a Datatype.
- All rows have the same number of columns

Customers

Customer ID	Customer Name	Customer Address
C1	Fred	...
C2	Bert	...
C3	Jane	...

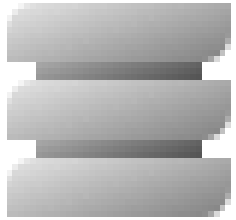
Products

Product ID	Product Name	Description
P1	Shirt	...
P2	Tie	...
P3	Collar	...

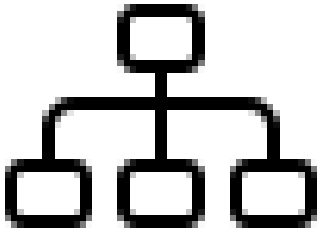
Orders

Order ID	Customer ID	Product ID	Quantity
1000	C1	P1	1
1001	C2	P1	3
1002	C1	P3	1
1003	C1	P3	2
1004	C2	P2	4
1005	C1	P2	2
1006	C3	P3	1

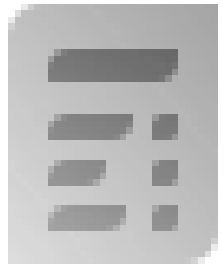
Data Classification



Structured Data

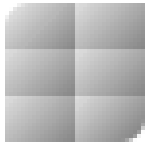


Semi-Structured Data

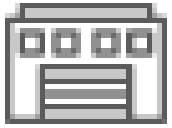


Unstructured Data

Structured Data



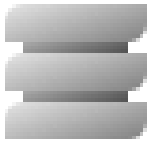
Structured data is typically tabular data that is represented by rows and columns in a database.



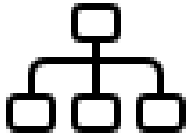
E.g.: Datawarehouse, ERP, CRM

CustomerKey	FirstName	MiddleName	LastName	BirthDate	MaritalStatus	Gender
11000	Jon	V	Yang	1971-10-06	M	M
11001	Eugene	L	Huang	1976-05-10	S	M
11002	Ruben	NULL	Torres	1971-02-09	M	M
11003	Christy	NULL	Zhu	1973-08-14	S	F
11004	Elizabeth	NULL	Johnson	1979-08-05	S	F
11005	Julio	NULL	Ruiz	1976-08-01	S	M
11006	Janet	G	Alvarez	1976-12-02	S	F
11007	Marco	NULL	Mehta	1969-11-06	M	M
11008	Rob	NULL	Verhoff	1975-07-04	S	F
11009	Shannon	C	Carlson	1969-09-29	S	M
11010	Jacquelyn	C	Suarez	1969-08-05	S	F
11011	Curtis	NULL	Lu	1969-05-03	M	M
11012	Lauren	M	Walker	1979-01-14	M	F
11013	Ian	M	Jenkins	1979-08-03	M	M
11014	Sydney	NULL	Bennett	1973-11-06	S	F
11015	Chloe	NULL	Young	1984-08-26	S	F
11016	Wyatt	L	Hill	1984-10-25	M	M
11017	Shannon	NULL	Wang	1949-12-24	S	F
11018	Clarence	D	Rai	1955-10-06	S	M
11019	Luke	L	Lal	1983-09-04	S	M
11020	Jordan	C	King	1984-03-19	S	M
11021	Destiny	NULL	Wilson	1984-03-02	S	F
11022	Ethan	G	Zhang	1984-04-10	M	M
11023	Seth	M	Edwards	1984-04-09	M	M
11024	Russell	NULL	Xie	1984-03-16	M	M
11025	Alejandro	NULL	Beck	1951-06-22	M	M

Semi-Structured Data



It has some organizational framework but does not have the complete structure that is required to fit in a relational database

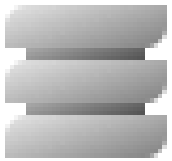


E.g.: – CSV, XML, JSON

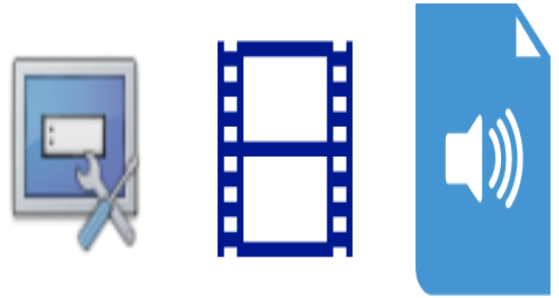
JSON

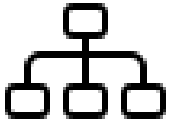
```
## Document 1 ##
{
   "customerID": "103248",
   "name":
   {
      "first": "AAA",
      "last": "BBB"
   },
   "address":
   {
      "street": "Main Street",
      "number": "101",
      "city": "Acity",
      "state": "NY"
   },
   "ccOnFile": "yes",
   "firstOrder": "02/28/2003"
}

## Document 2 ##
{
   "customerID": "103249",
   "name":
   {
      "title": "Mr",
      "forename": "AAA",
      "lastname": "BBB"
   },
   "address":
   {
      "street": "Another Street",
      "number": "202",
      "city": "Bcity",
      "county": "Gloucestershire",
      "country-region": "UK"
   },
   "ccOnFile": "yes"
}
```

Unstructured Data



Unstructured data is data which is not organized in any predefined manner.





E.g.: – audio and video files, and binary data files

Data Types

- Text
- Whole Number
- Decimal Number
- Date & Time
- Boolean

Let’s see, what is BI?

What is BI ?

- BI is a set of processes, architectures, and technologies that convert raw data into meaningful information.
- BI systems help businesses to identify market trends and spot business problems that need to be addressed.

How it Works ?

Need

What You need out of the data?

Collecting

As Data could be from multiple sources

Analyze

To get into the data to analyze it

Visualize

Based on data, create report

Decision

Consumer of the report can make the decision

Benefits of BI

BI Tools

Best Business Intelligence Software Tools

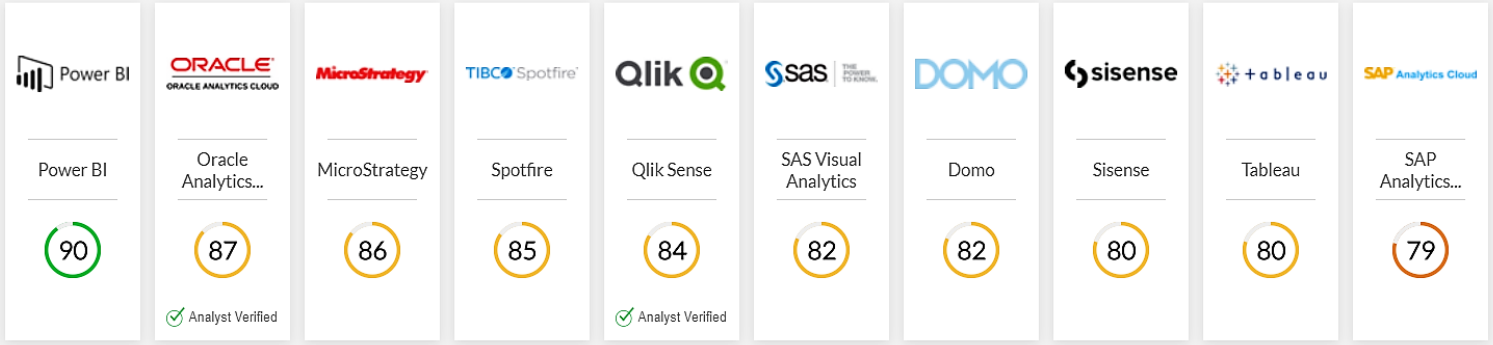
Business intelligence tools (BI tools) are types of software used to collect, organize, visualize and analyze data accumulated through business operations to highlight trends and patterns to allow for actionable data-based decision-making.

PRODUCTS | PRICE GUIDE | BUYER'S GUIDE

Top 10 Business Intelligence Tools Leaders by Analyst Rating (of 155 products)

GET THE IN-DEPTH REPORT

View ratings by: **Overall**



CHALLENGERS
LEADERS
Microsoft
Google
Salesforce (Tableau)
MicroStrategy
Amazon Web Services
Alibaba Cloud
Domo
Qlik
SAP
ThoughtSpot
Oracle
TIBCO Software
Pyramid Analytics
Sisense
Zoho
IBM
Incorta
Tellius
SAS
GoodData
NICHE PLAYERS
VISIONARIES
ABILITY TO EXECUTE
COMPLETENESS OF VISION
As of January 2023
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Let’s see, what is Power BI?

Power BI

What is POWER BI

It is a business intelligent tool that helps you to clean & convert data in visual format, where you can create different reports & dashboards.

Career in POWER BI

Data visualization is the future of business, & tools which are used to visualize the data will be in demand, so Power BI is going to be the most important tool for aspiring candidates.

Responsibility

The main roles and responsibilities of a Power BI developer are to create a detailed summary of large amounts of data where decision-makers look at the reports and take quick decisions based on the insights provided.

Duty

Data may not be in a ready format, so it is the duty of the Power BI Developer to organize and transform the data which is required for reporting purpose.

Skills Required to Get the Job

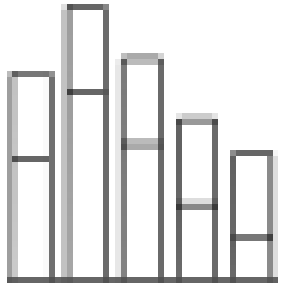
- Basic Excel Knowledge
- Basic SQL to Fetch Data
- Power Query
- Data Modeling
- Chart Selection
- Interactive Dashboard building
- Power BI Service
- DAX Query

Job Roles in Power BI

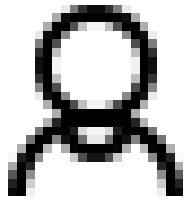
- Power BI Developer
- Power BI Data Developer
- Power BI Specialist
- Power BI Analyst
- Power BI Administrator
- Power BI Manager
- Power BI Technical Leads
- Power BI Consultant

Job Roles in Power BI

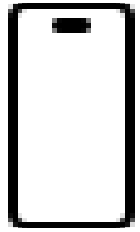
After that you can switch if you want to, to:



Data Analyst



Business Analyst



Power Platform Developer

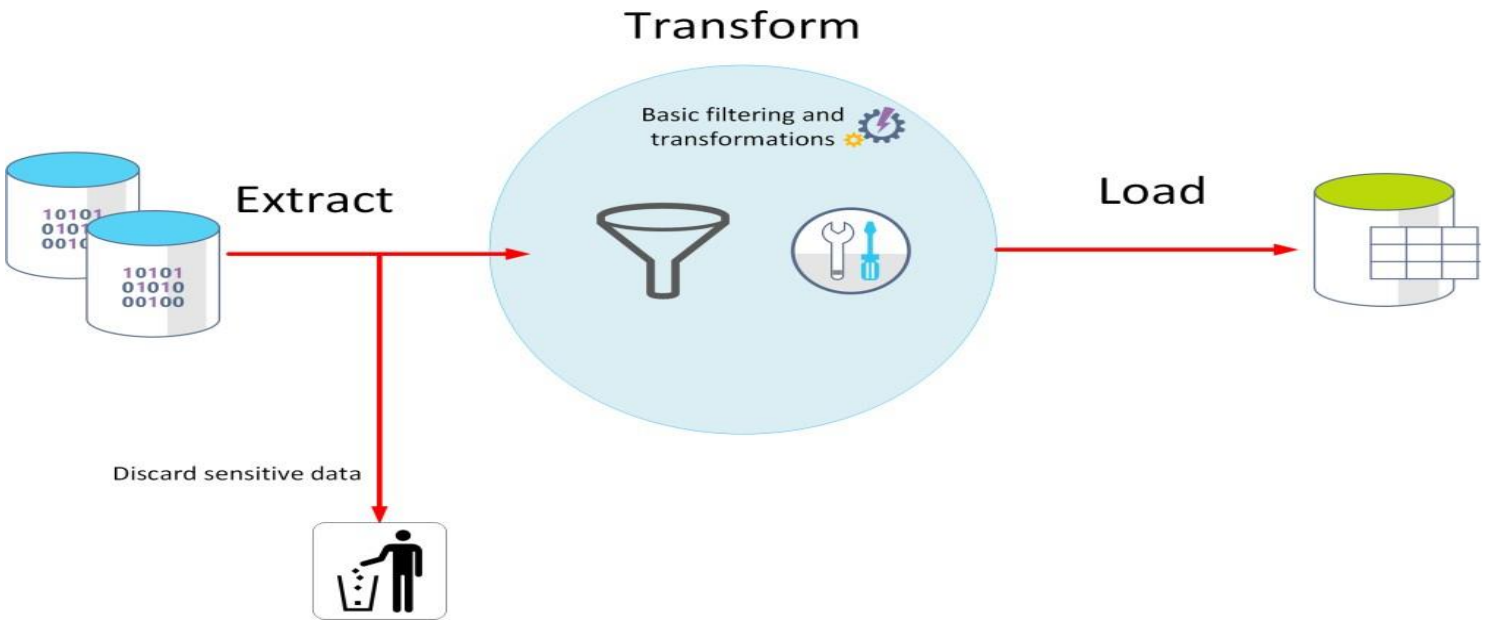
Power BI vs Excel

FEATURES	POWER BI	Excel
Performance when there is huge Data	Very Impressive	It Hangs
Report Interface	User friendly report Interface	No inbuild Report Interface
Visuals	30 & 250 + charts from Marketplace	Limited Charts
Data Insights & Trends	Possible	Not possible
Sharing	Available	Normal Sharing
Cost	Different Plans	Free

Power BI vs Tableau

FEATURES	POWER BI	TABLEAU
Default Charts	30 & 250 + charts from Marketplace	Only 24
Data Sources	99	77
ETL	Inbuild	3rd Party Downloadable
DAX Functions	Available	Not Available
Visuals	Improving	Smooth
Cost	Less	More

ETL – Extract, Transform, Load



ETL – Extract, Transform, Load

Raw data is retrieved and transformed before being saved

Suitable for systems that only require simple models

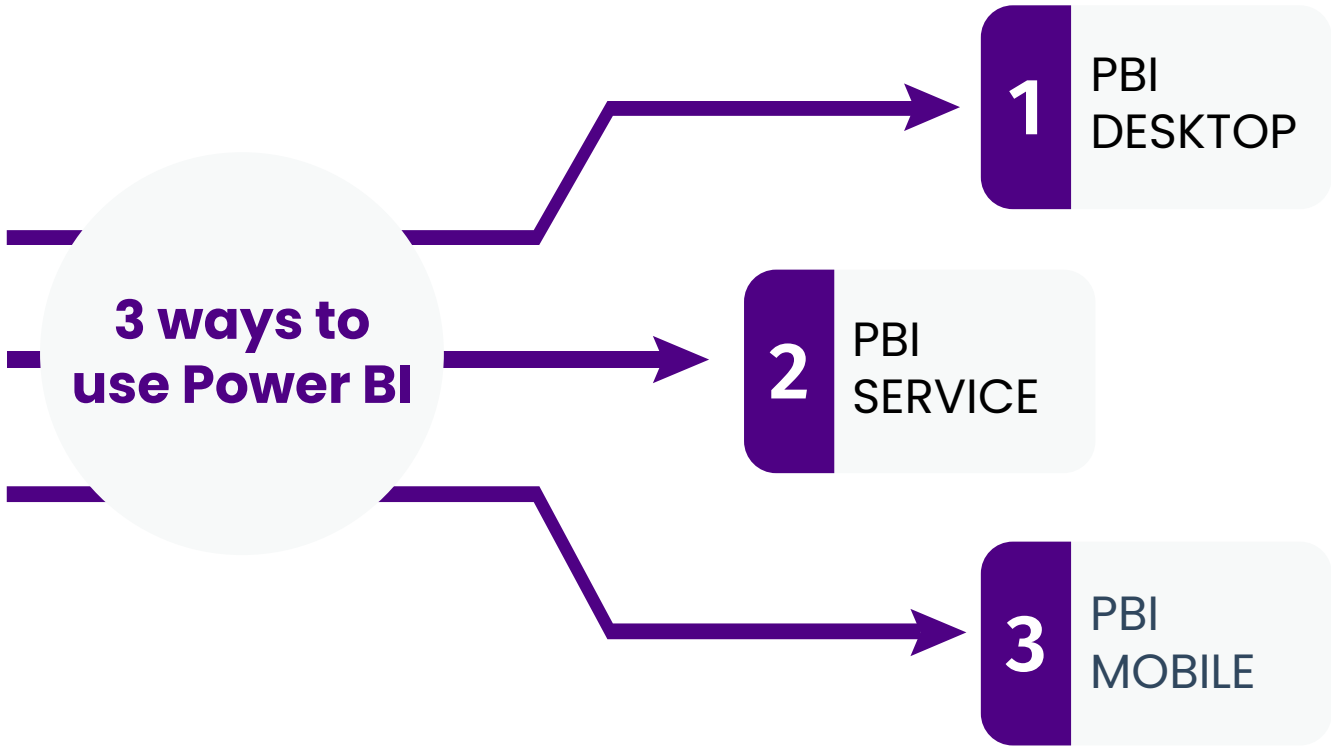
Basic data cleaning tasks, deduplicating data, and

reformatting the contents of individual fields.

ETL can help with data privacy and compliance, removing sensitive data before it arrives in your analytical data models.

SSIS can be used

3 Ways to Use Power BI



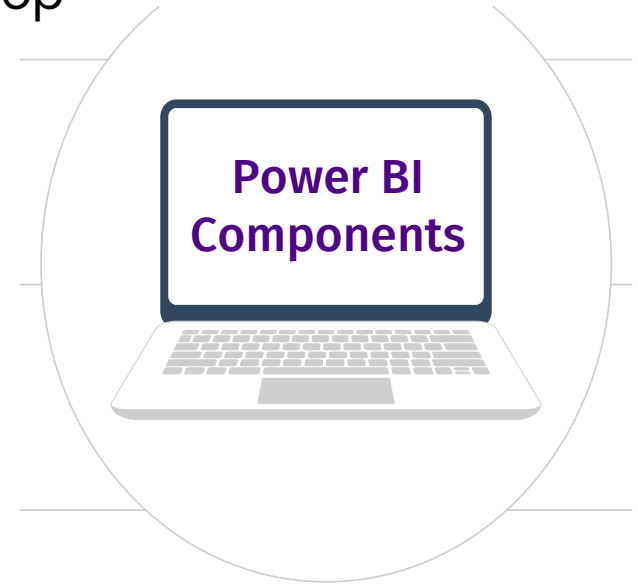
Power BI Components

01
Power BI Desktop

02
Power Query

03
Power Pivot

04
Power View



05
Power Map

06
Power Q&A

07
Power BI Service

08
Power BI Mobile

Building Blocks of Power BI

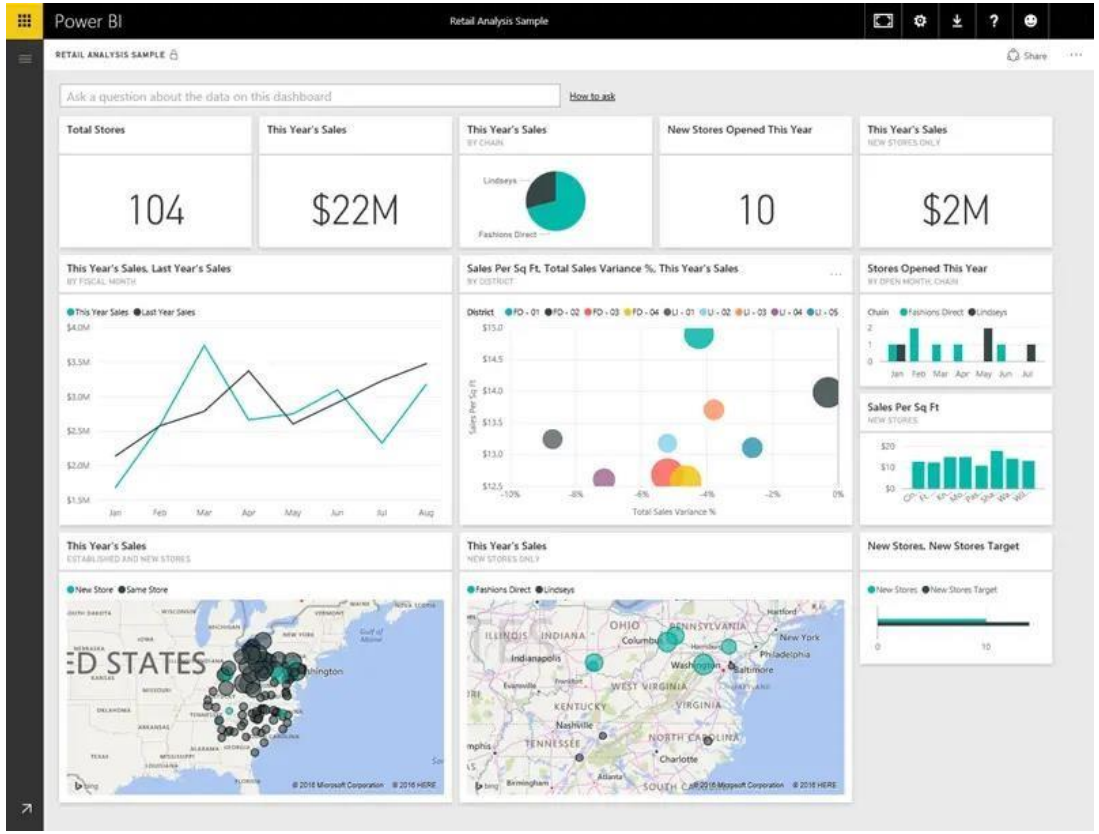
Dataset

- Collection of data that Power BI uses to create its visualization.
- Can also be a combination of many sources.
- It Should filter data before bringing in into Power BI
  Data Connectors

	C	D	E	F	G
	Month	Month Name	Calendar Month	Births	Births Per Day
2004	1	January	1/1/2004	2,937	94.7
2004	2	February	2/1/2004	2,824	97.4
2004	3	March	3/1/2004	3,128	100.9
2004	4	April	4/1/2004	2,896	96.5
2004	5	May	5/1/2004	3,008	97.0
2004	6	June	6/1/2004	3,047	101.6
2004	7	July	7/1/2004	2,981	96.2
2004	8	August	8/1/2004	3,079	99.3
2004	9	September	9/1/2004	3,219	107.3
2004	10	October	10/1/2004	3,547	114.4
2004	11	November	11/1/2004	3,365	112.2
2004	12	December	12/1/2004	3,143	101.4
2005	1	January	1/1/2005	2,921	94.2
2005	2	February	2/1/2005	2,699	96.4
2005	3	March	3/1/2005	3,024	97.5
2005	4	April	4/1/2005	3,037	101.2
2005	5	May	5/1/2005	3,231	104.2
2005	6	June	6/1/2005	3,163	105.4
2005	7	July	7/1/2005	3,119	100.6
2005	8	August	8/1/2005	3,156	101.8
2005	9	September	9/1/2005	3,439	114.6

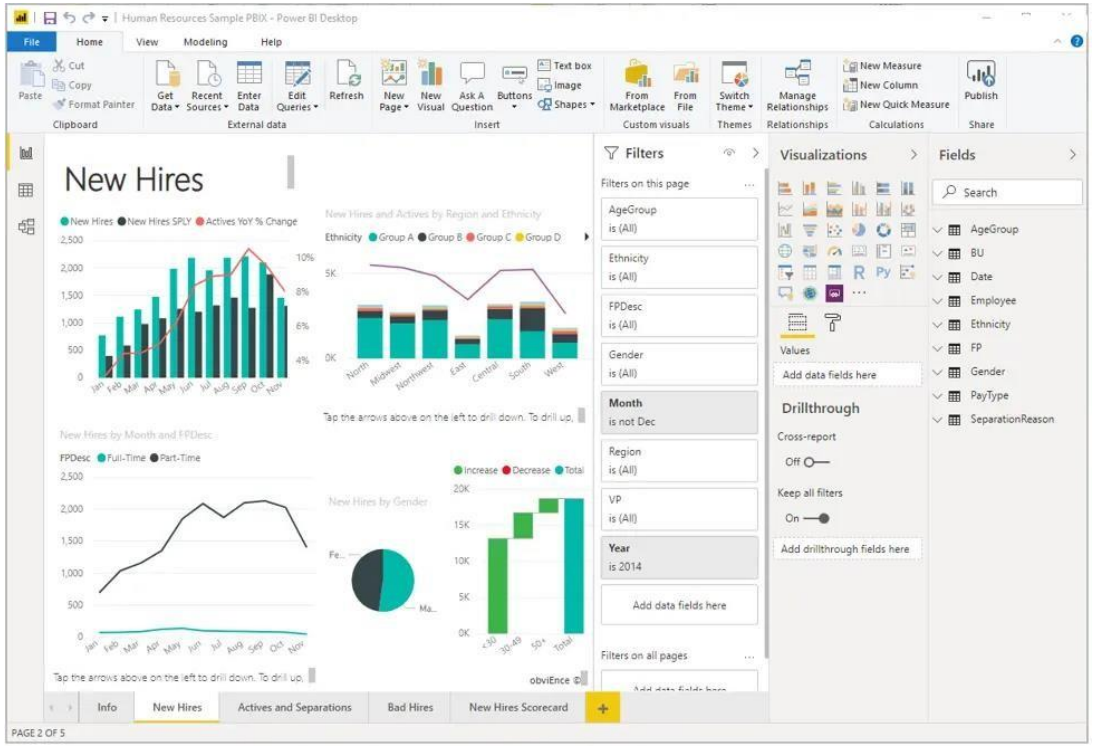
Visualization

Visualizations (known as visuals for short) display insights that have been discovered in the data. A Power BI report might have a single page with one visual or it might have pages full of visuals.



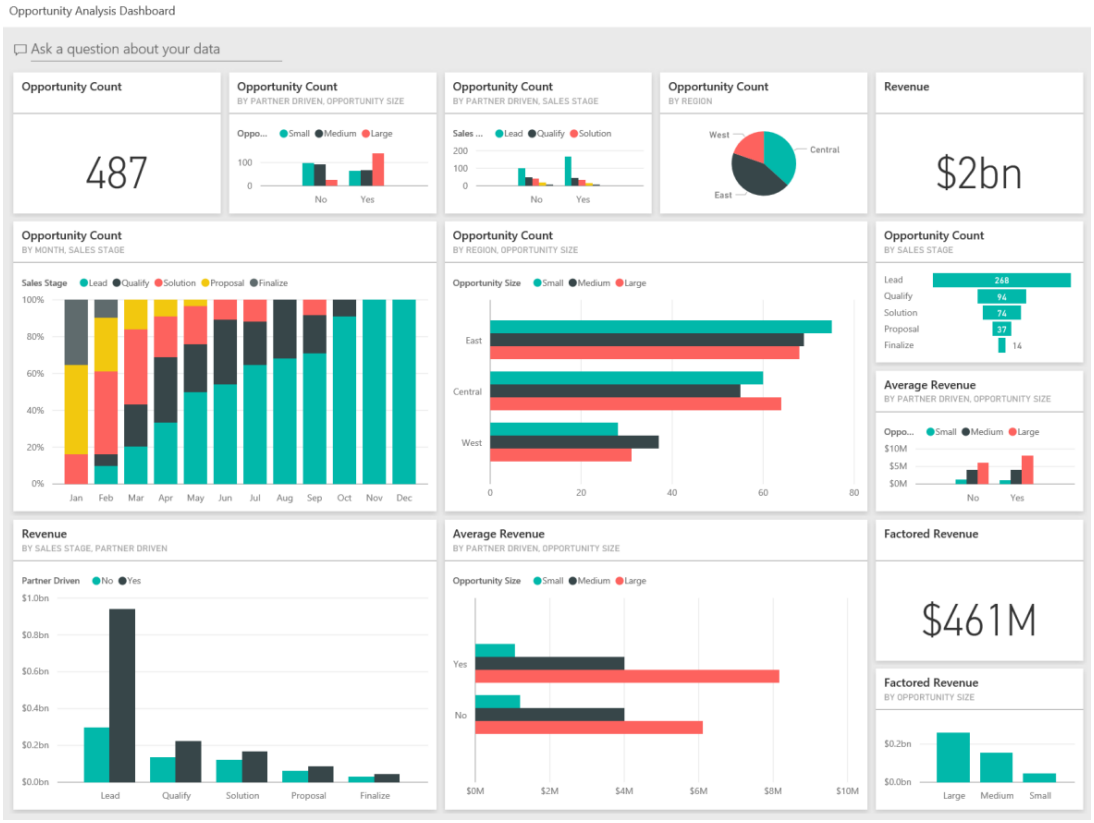
Report

A Power BI report is one or more pages of organized visuals. Power BI designers create reports and share them directly with business users, or add them to an app.

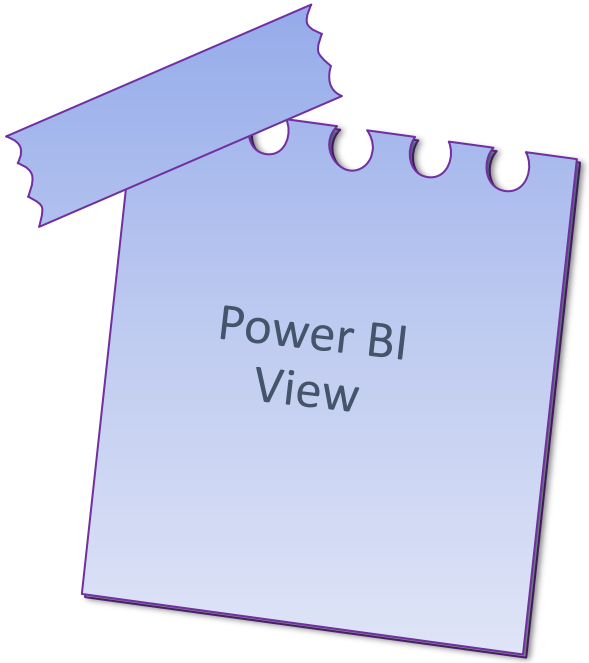


Dashboard

Power BI dashboard is a single page, often called a canvas, that tells a story through visualizations. Because it's limited to one page, a well-designed dashboard contains only the highlights of that story.

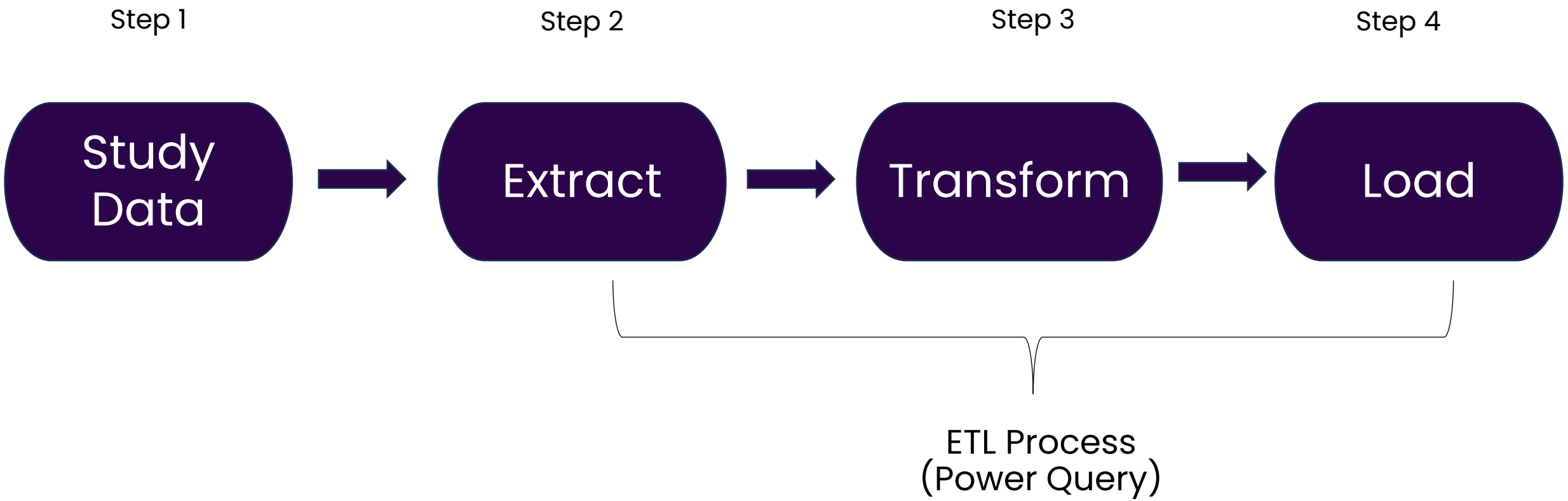


Power BI View

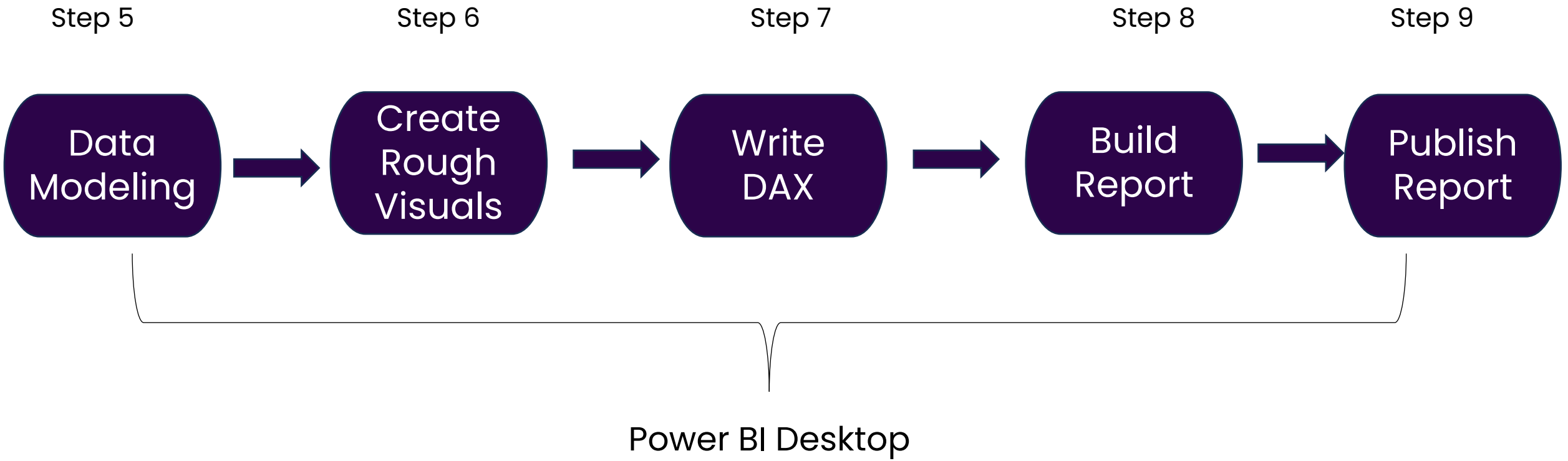


- Report View
- Data View
- Model View

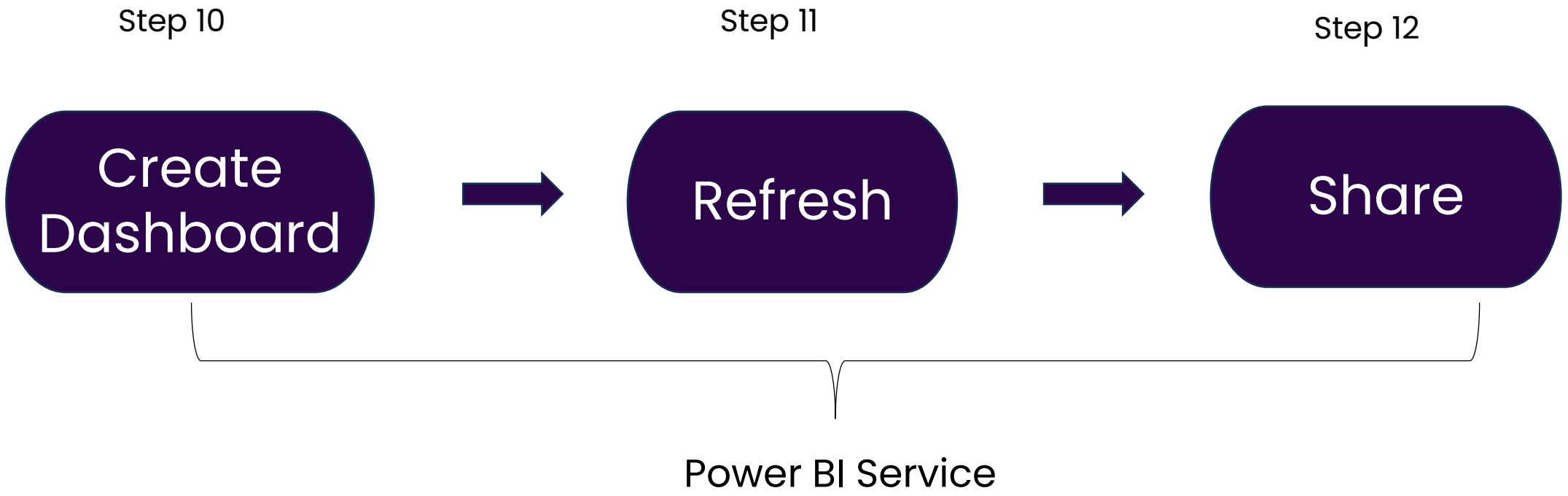
Power BI Flow



Power BI Flow

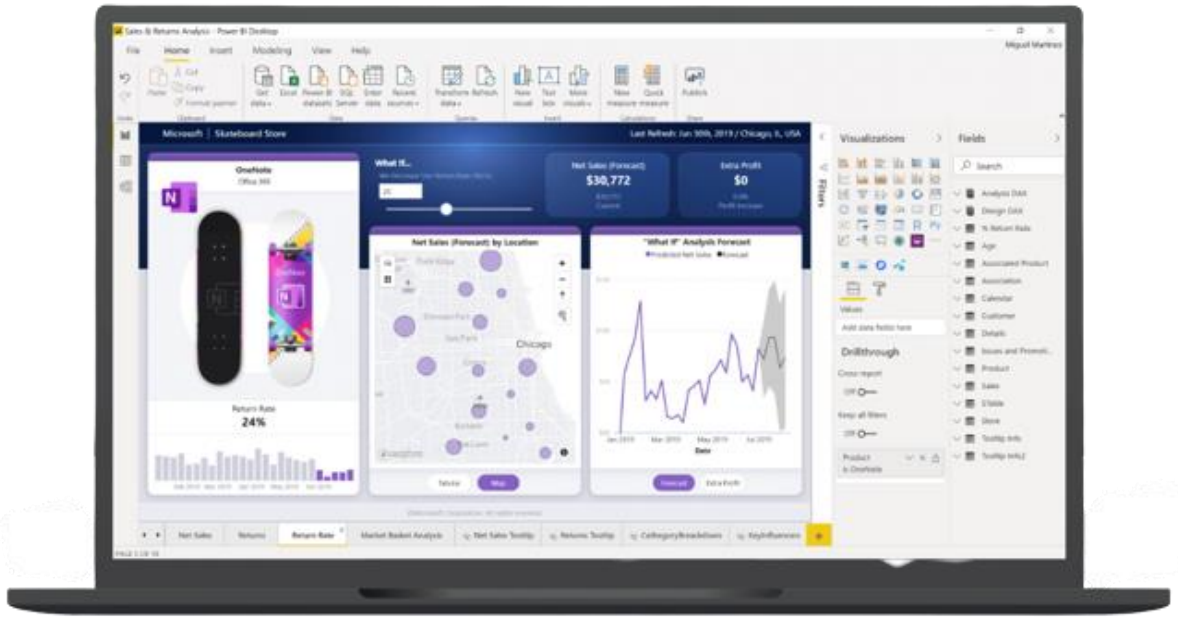


Power BI Flow



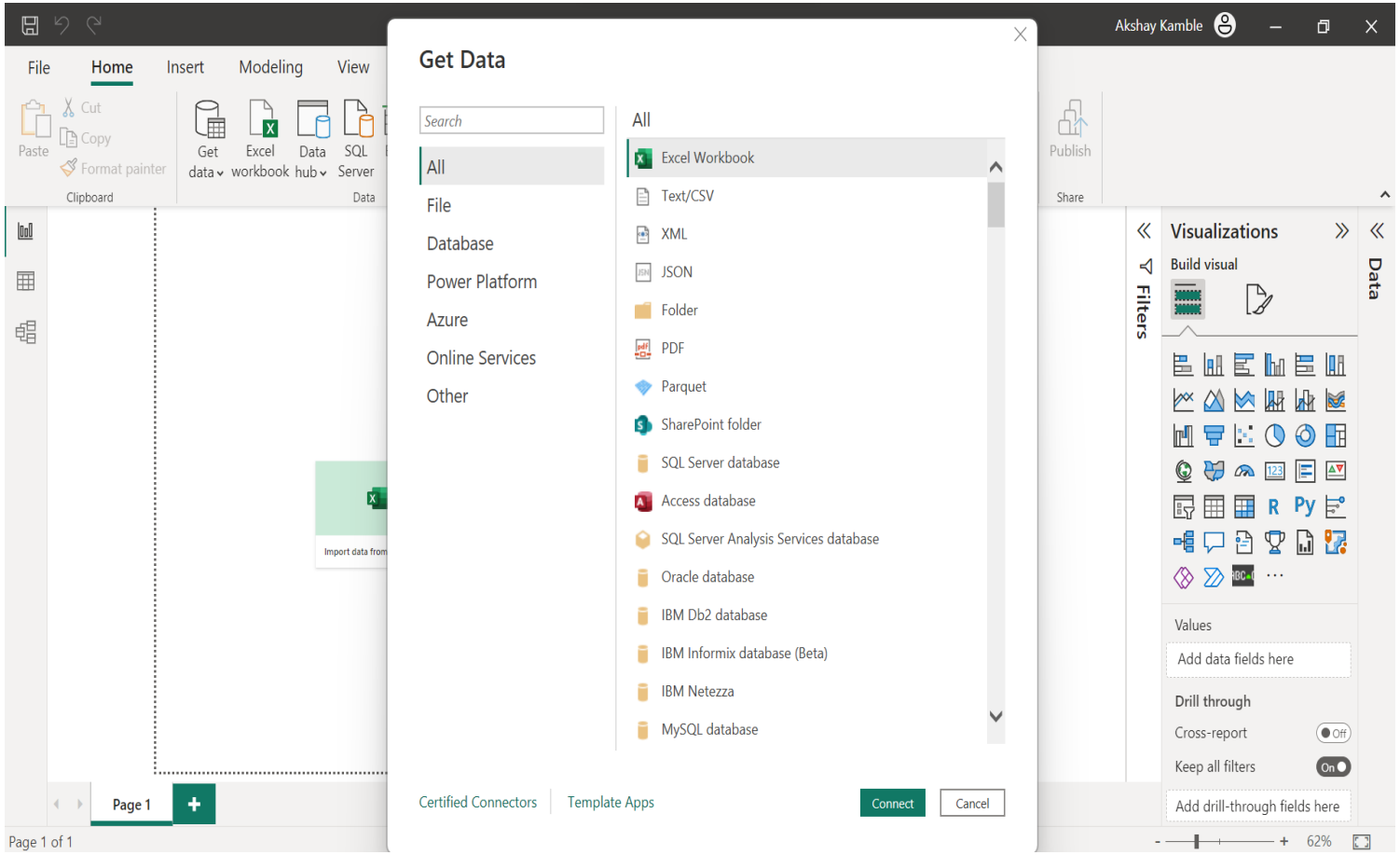
POWER BI Desktop

Let’s Install POWER BI



Let’s Start Working with Flipkart Dashboard

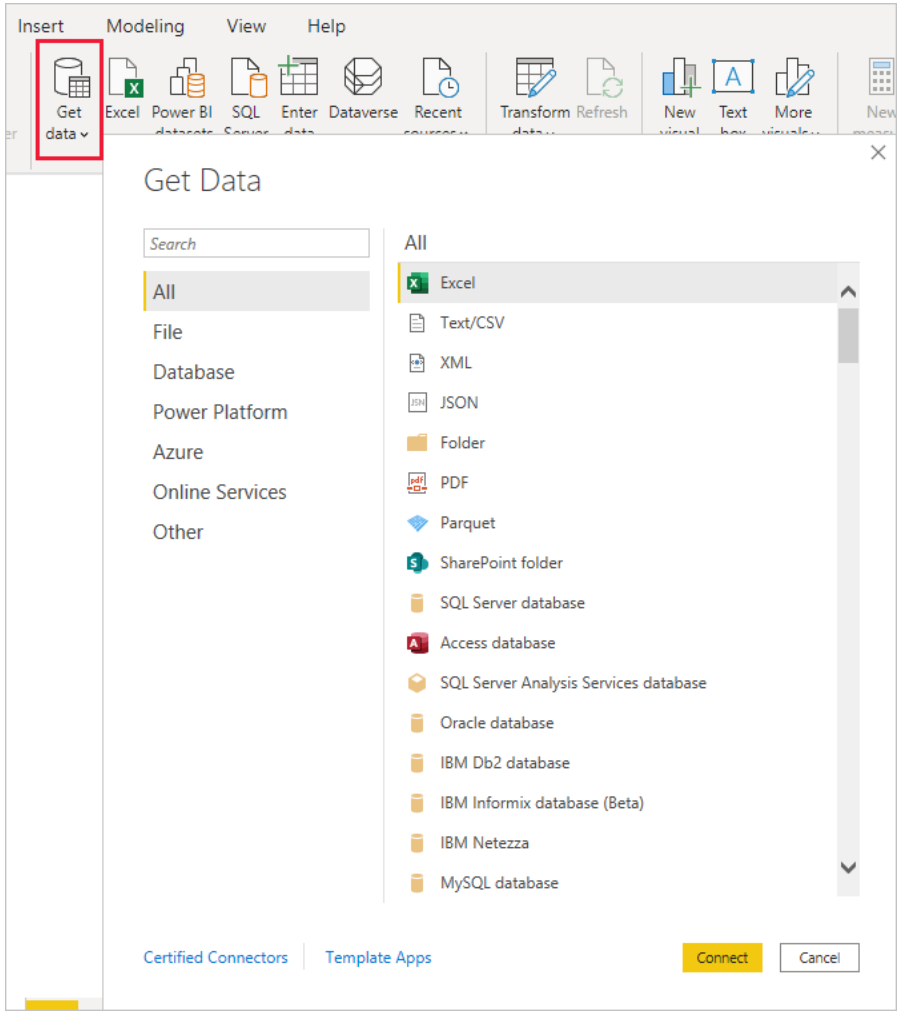
Connecting Datasets In Power BI



POWER QUERY

Power Query: Edit Queries

Let’s add few tables in Power BI



Assignment 1: Add Tables

Install

Install Power BI and understand its functionalities.

Add

Add Customer Tables in Power Query.

Remove

Remove Unwanted Columns, Rename the Columns Properly.

View Tab

Monospaced – Text Format
Column Quality – % of Valid, Error & Empty values in column
Column Distribution – Count of Distinct & non-distinct Values in a column
Column Profile – In depth info about a column
Applied Steps – Its like your work History / Undo button

Some Important Things

Distinct – Count of Category
Unique – Count of non repetitive values

Assignment 2: Save

Add

Add Product Table in Power Query.

Remove

Remove the Product SKU, Description, and Model Name columns from it

Load

Load the Data and Save your file properly.

Different tabs in Power Query

Transform - Replacing The Original Column

Add Column – Adds New Column at the end of the table

View - Basic Column Operations

Assignment 3: Merge Column

Add Column

Add New Column by merging Prefix, First Name, and Last Name.

Transform

Replace the Existing columns Prefix, First Name, and Last Name with the New Column Full Name.

Assignment 4: Data Types

Data Types

Change the data types for the columns.

If Error

If Error Changing the Data Types, then check the error and work on it.

Date Error

For Date error, change Regional settings by going to Options & setting.

Assignment 5: Adding More Tables

Add

Add other Tables like Location, Return, Category, Subcategory, Salesperson and Employee tables in Power BI.

Remove

Remove Region column from Location table

Load

Load the Data and Save your file properly.

Academy

THANK YOU...!!!