# Getting Started with Power BI Desktop

Agenda

- Getting Started with Power BI Desktop
- Creating Queries in Power BI Desktop
- Modeling Data in Power BI Desktop
- Designing Reports in Power BI Desktop
- Publishing Power BI Desktop Projects
- Understanding Parameters and Template Files

Project Lifecycle for a Custom BI Solution

- Lifecycle of a typical BI project includes...
  - Discover where the data lives
  - Extract, transform and load (ETL) data
  - Model data to create dataset for analytics and reporting
  - Design and implement reports on top of dataset
  - Consolidate reports into one or more dashboards
  - Package project artifacts for deployment
  - Deploy to production environment

Typical BI Project Lifecycle

Data Discovery → ETL → Data Modeling → Design Reports → Design Dashboards → Deploy Dashboards
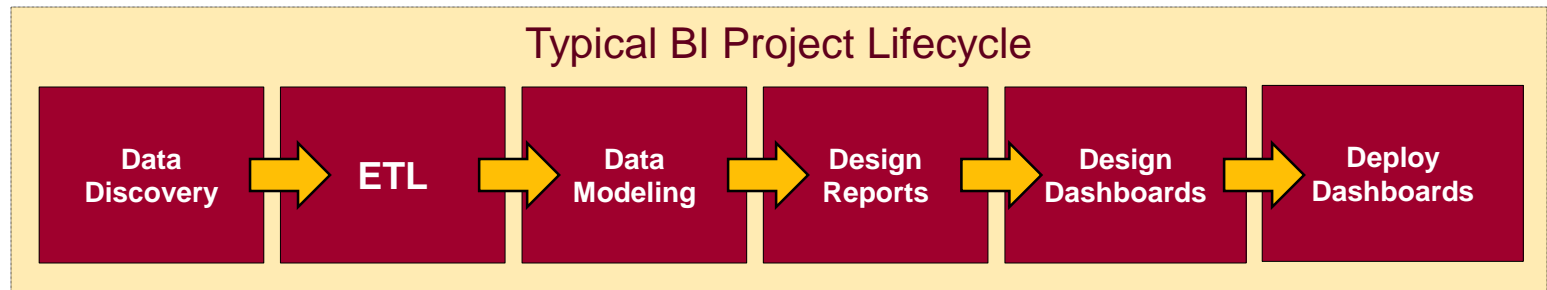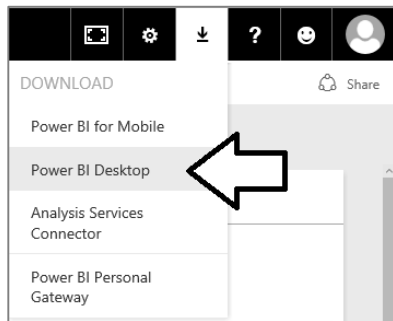
Working with Power BI Desktop

- Power BI Desktop focuses on first four phases
  - Query features for Data Discovery
  - Query features for ETL
  - Design features and DAX language for data modeling
  - Report design using a visual report designer
  - No support for designing dashboards
 - No support for packaging an entire solution

Assistance from Power BI Desktop

Data Discovery	ELT	Data Modeling	Design Reports	Design Dashboards	Deploy Dashboards
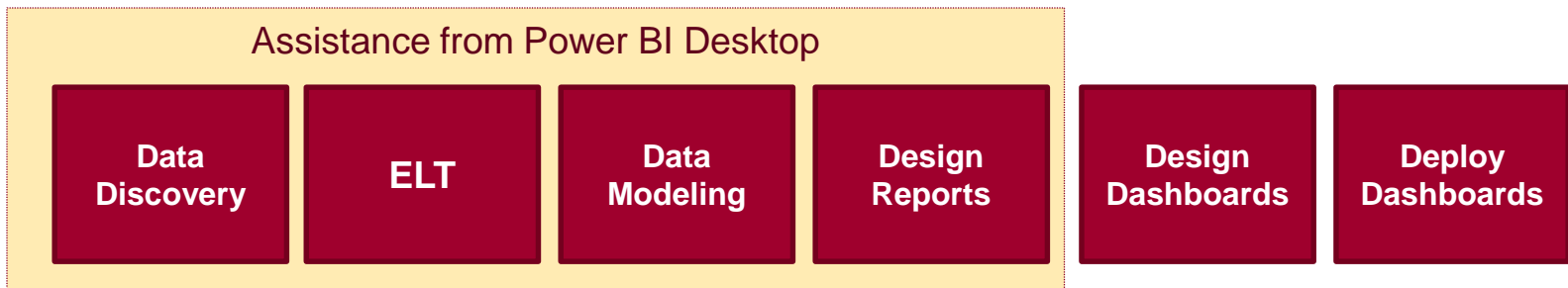
Installing Power BI Desktop

- Power BI Desktop quick & easy to install over the Internet
  - Select Power BI Desktop option from Power BI Download menu
 - Power BI Desktop downloads & installs in less than a minute

Working with Power BI Desktop

- Power BI Desktop is a Windows application
  - Work is saved and published in terms of projects
  - You can work on multiple projects at once
  - Each project runs in its own Power BI Desktop instance
  - Power BI Desktop can freeze up or act buggy
  - Quit & restart Power BI Desktop if it acts strangely
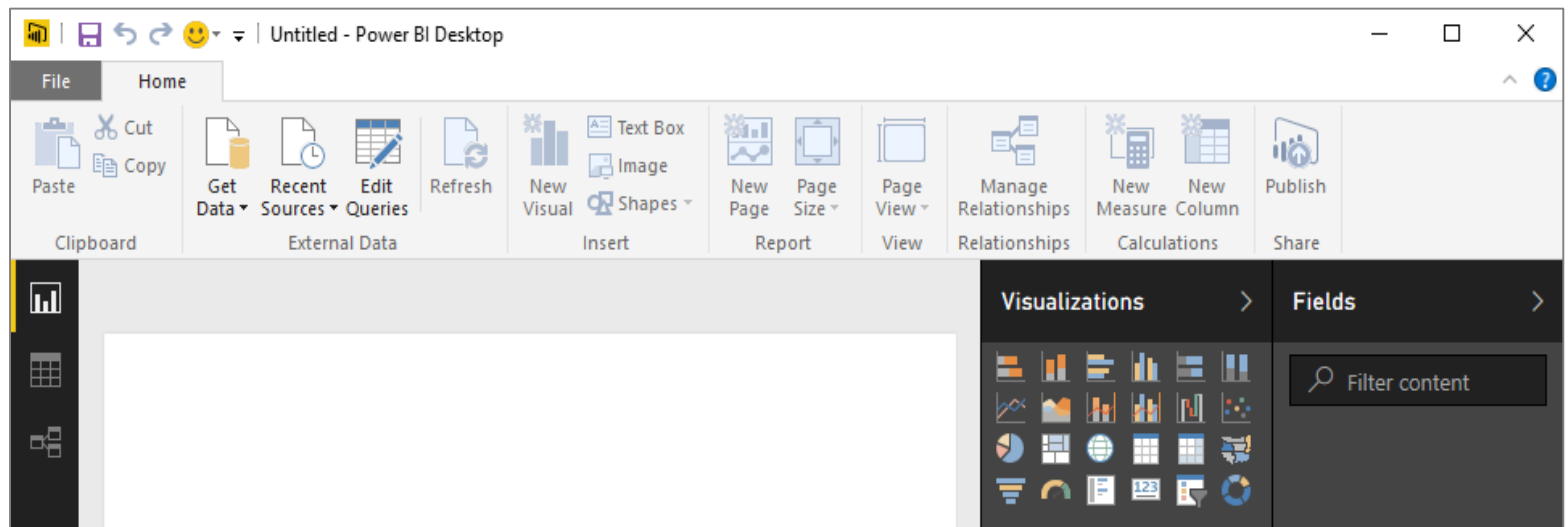
Projects and PBIX Files

- Power BI Desktop projects saved using PBIX files
  - PBIX file contains data source definitions
  - PBIX file contains query definitions
  - PBIX file contains data imported from queries
  - PBIX file contains exactly one data model definition
  - PBIX file contains exactly one report
  - PBIX file never contains data source credentials
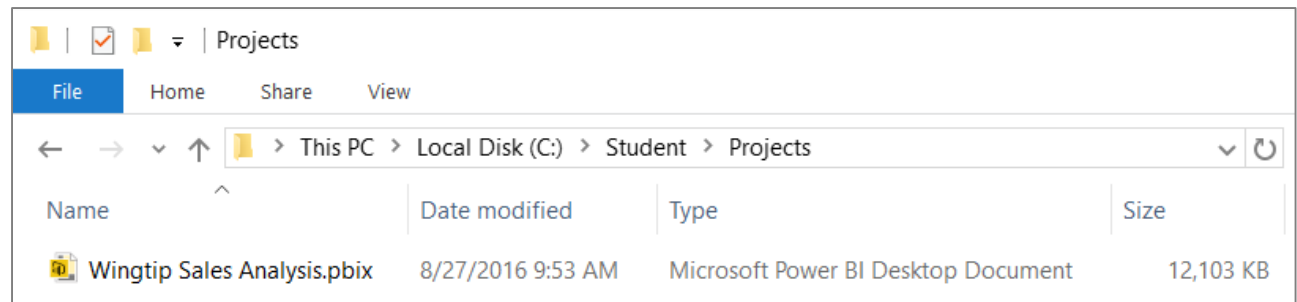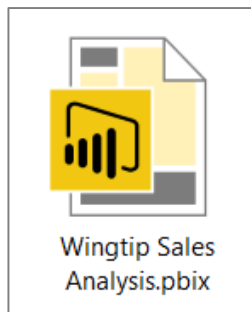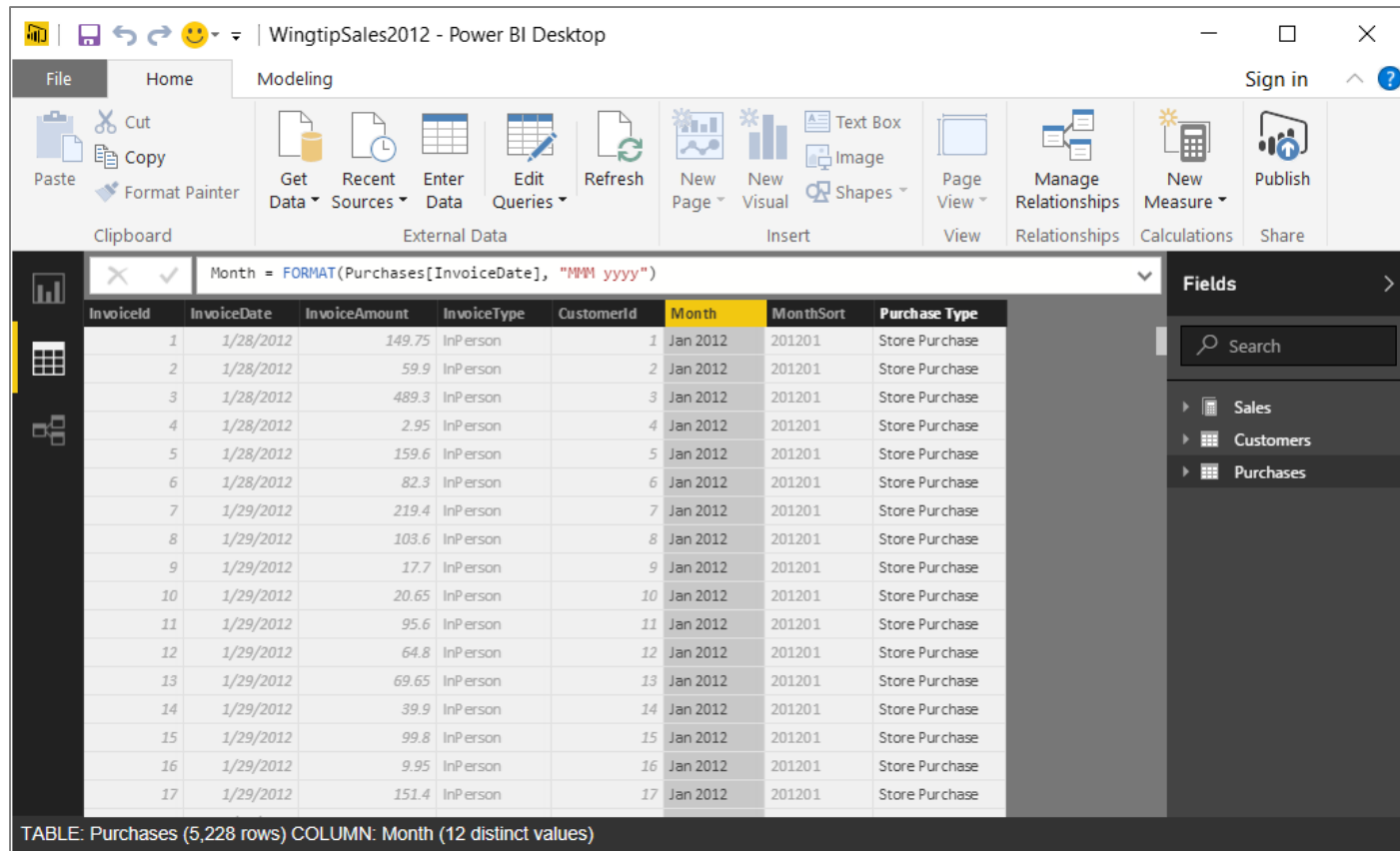
Getting Around in Power BI Desktop

- What do you need to learn to use Power BI Desktop?
  - Query features for importing data
  - Design features for modeling data
  - Report designer for creating reports

- Navigating between view modes
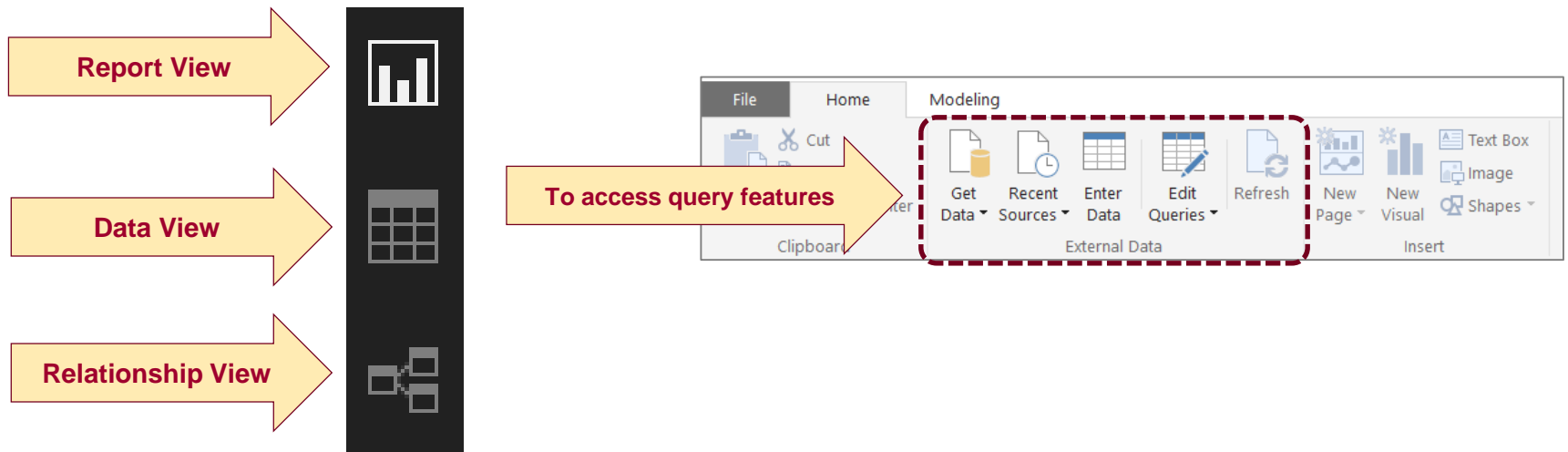
Data View

- Data view is used for data modeling
  - Data View displays columns and rows of data for each table
 - Data View used to create calculated columns and measures

Relationship View

- ## Displays tables, fields and relationships
  - ### Used to view tables, fields and relationships in project's dataset
  - ### Used to create relationships when importing new tables
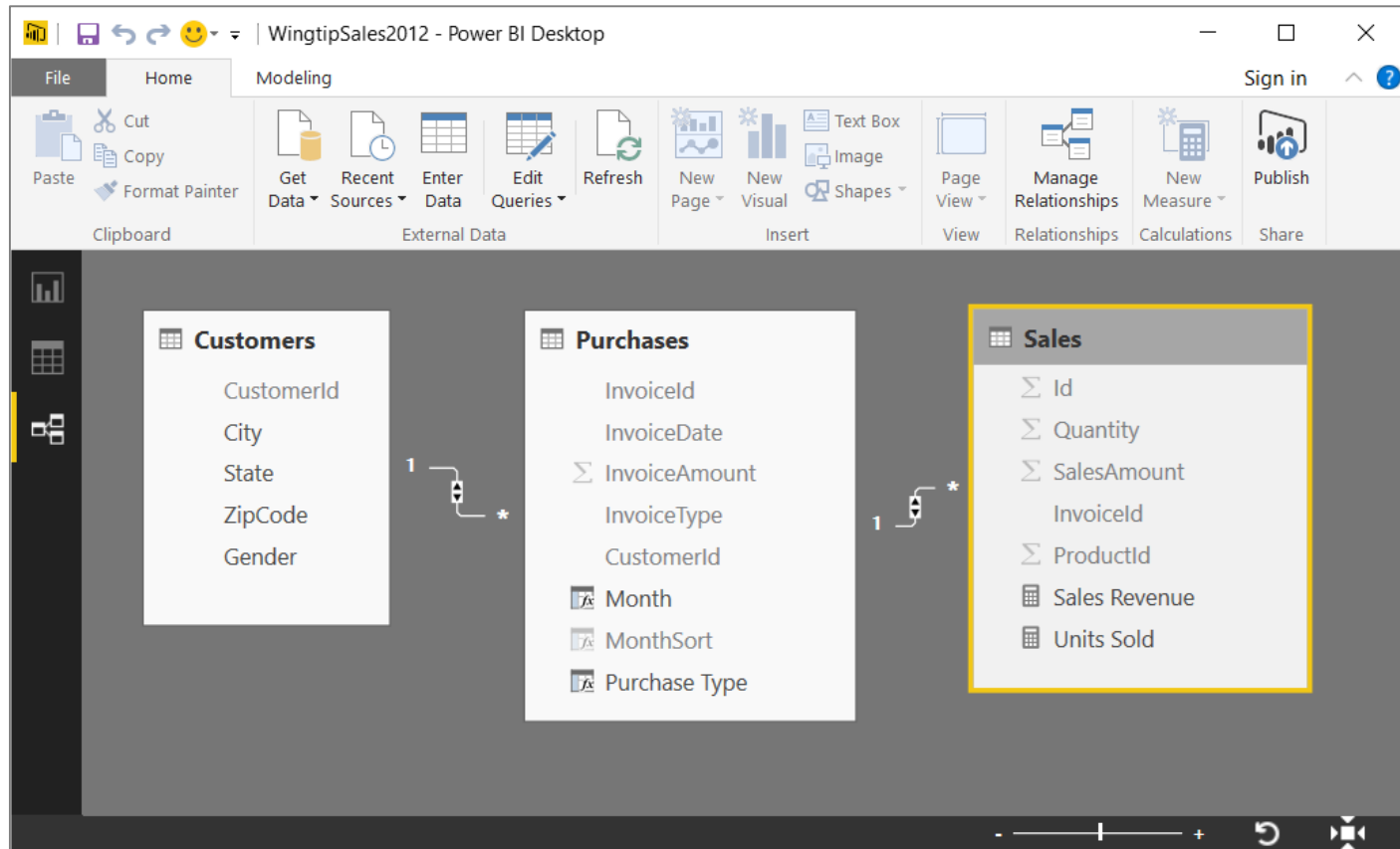
Report View

- Report view used to design report for current project
  - Report designer is very similar to Power BI service
  - Dataset can be simplified for Report View by hiding fields
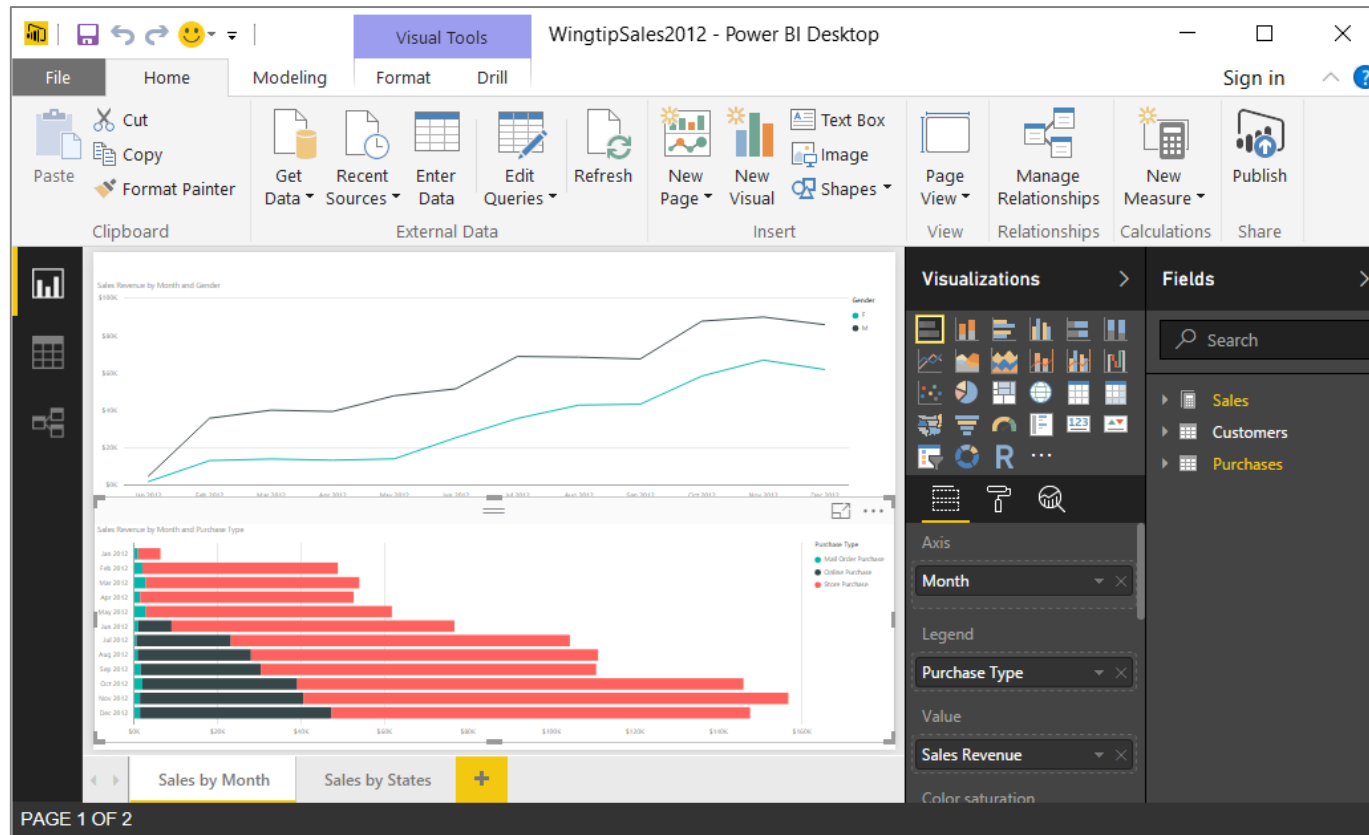
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**Getting Up and Running
with Power BI Desktop**

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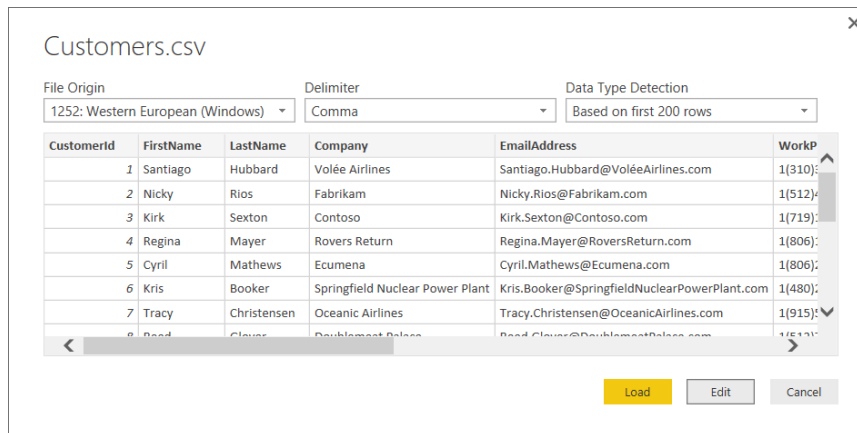- • Understanding Parameters and Template Files

Creating Queries

- Power BI Desktop provides powerful query features
  - Get started by creating a new query
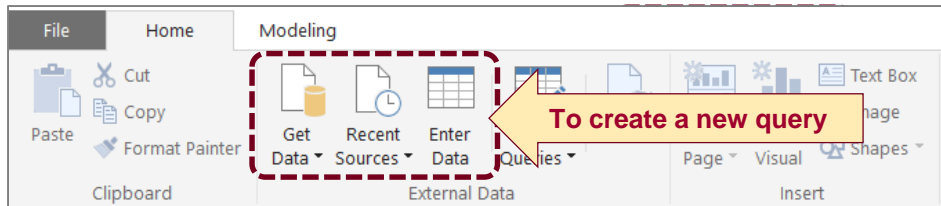
- The difference between Load versus Edit
  - **Load** command creates and execute new query without editing query
 - **Edit** command creates new query & opens it in Query Editor window

Query Editor Window

- Power BI Desktop provides separate Query Editor window
  - Provides powerful features for designing queries
  - Displays list of all queries in project on the left
  - Displays **Properties** and **Applied Steps** for selected query on right
  - Preview of table generated by query output shown in the middle
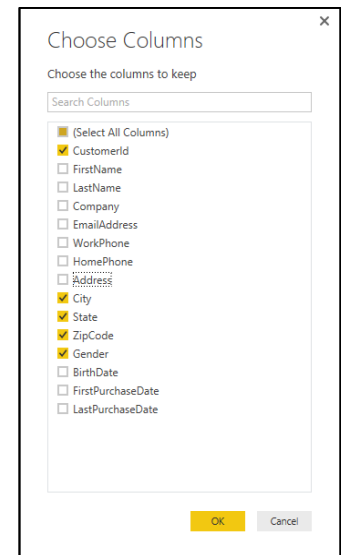 - Query can be executed using **Apply** or **Close & Apply** command
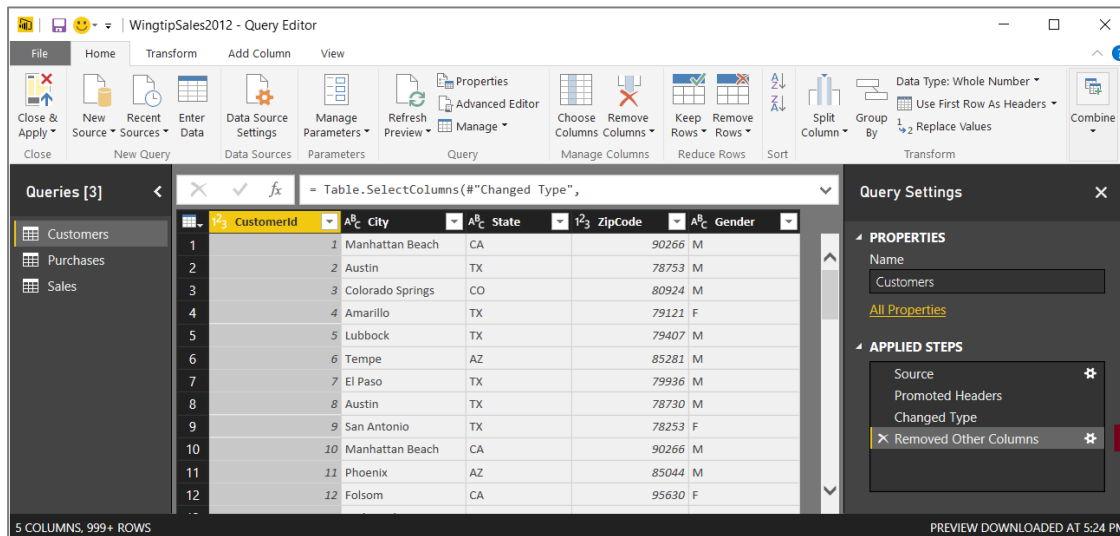
Queries Are Defined as Sequence of Steps

- Here is an example of adding a query step
  - Click a column header then click **Choose Column** button in ribbon
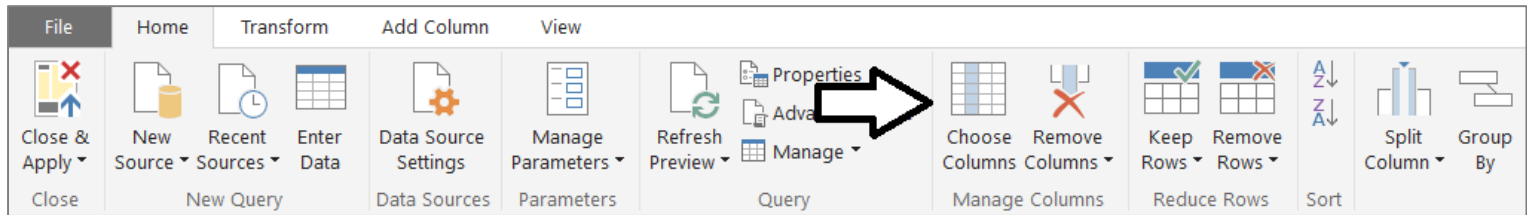
  - Query definition is modified by adding new step

Designing Queries to Import Data

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The Project's Data Model

- Each PBIX project defines a data model
  - Data model contains tables, fields and relationships
- Tables contain three different types of fields
  - Native columns
  - Calculated columns
  - Measures
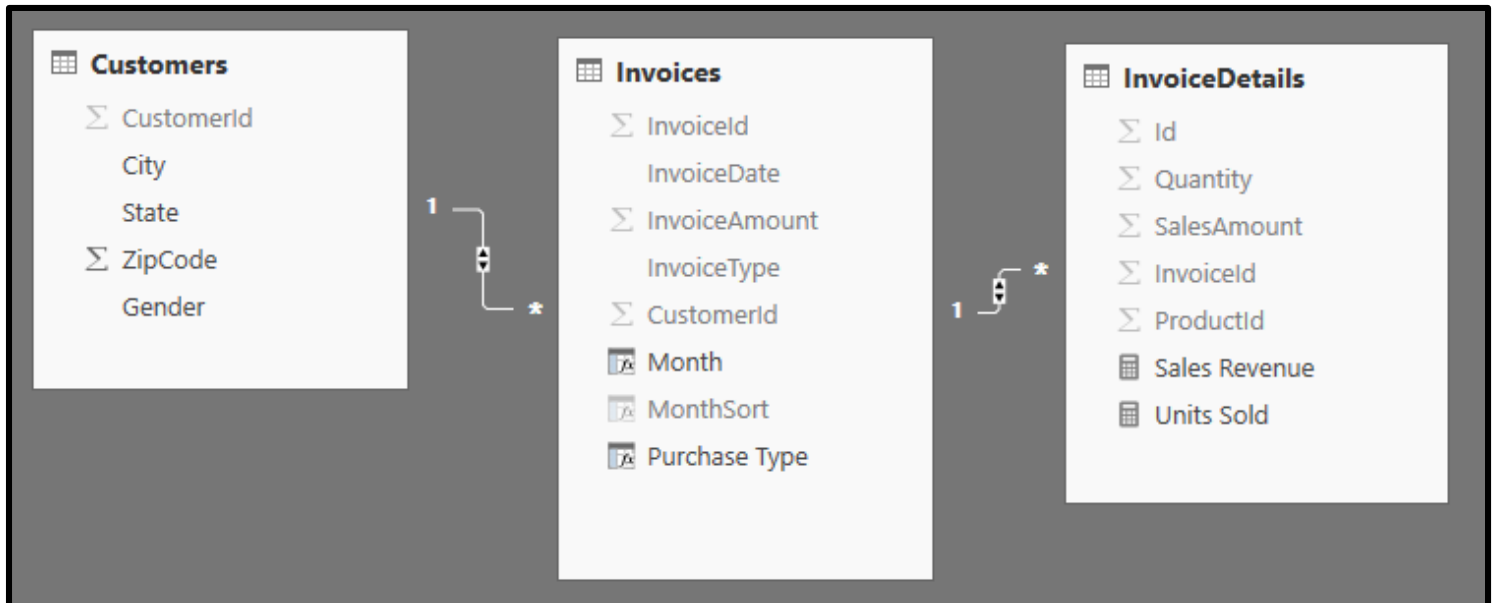
Data Analysis eXpression Language (DAX)

- Calculated columns and measures created using DAX

  - DAX is programming language used by tabular database model

  - Calculated columns and measures created with DAX Expressions

```
=SUM('Sales'[SalesAmount])
```

- DAX expressions are similar to Excel formulas

  - They always start with an equal sign (=)

  - DAX provides many built-in functions just like to Excel

- DAX Expressions are not the same as Excel formulas…

  - DAX expressions cannot reference cells (e.g. A1 or C4)

  - Instead DAX expressions reference columns and tables

Creating Calculated Columns

- Calculated column can be added to table
  - Calculated column created by clicking **New Column** button
  - Calculated column created as named DAX expression
  - DAX expression for calculate column evaluated at table load time

Creating Measures

- Measure defined as named DAX expression
  - Measure created by clicking **New Measure** button in ribbon
  - Measure expression is evaluated at query time

Formatting Columns and Measures

- Each column & measure has formatting properties
  - Make sure you set formatting for columns and measures
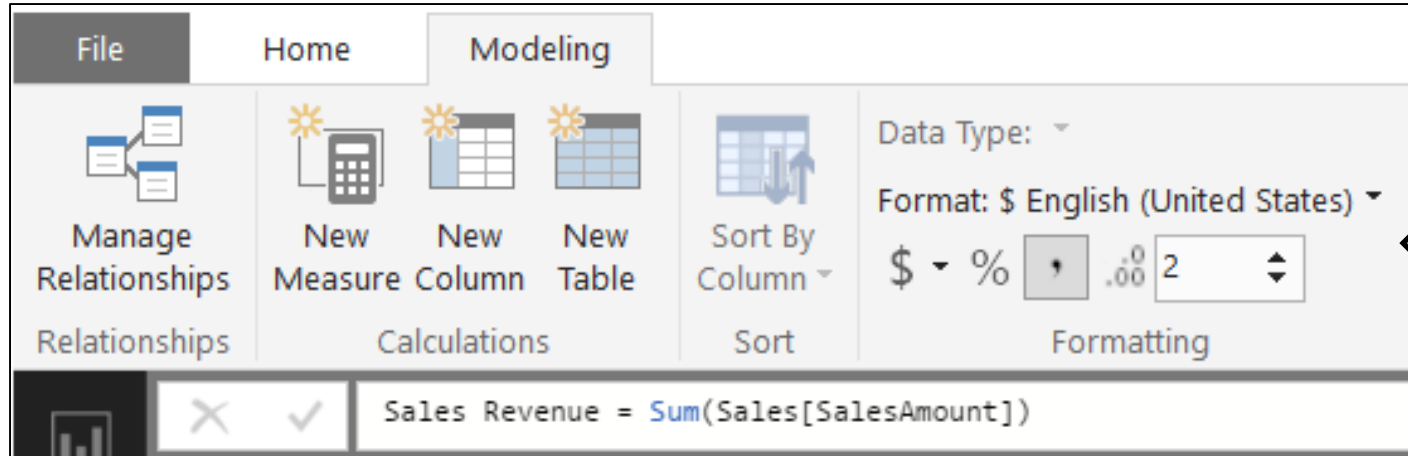
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Modeling Data using Power BI Desktop

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Designing Reports

- Report View is used to design reports
  - You design reports by adding visuals & configuring them
  - Report design is very similar to experience in browser

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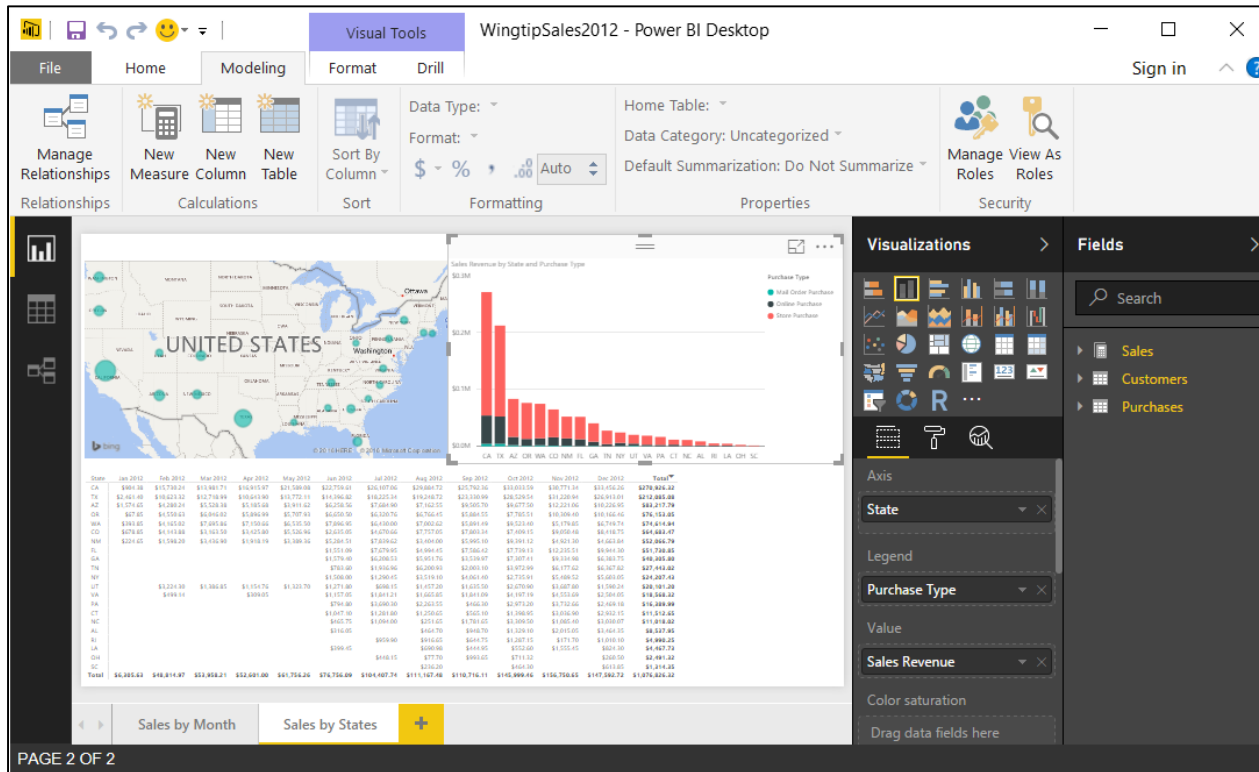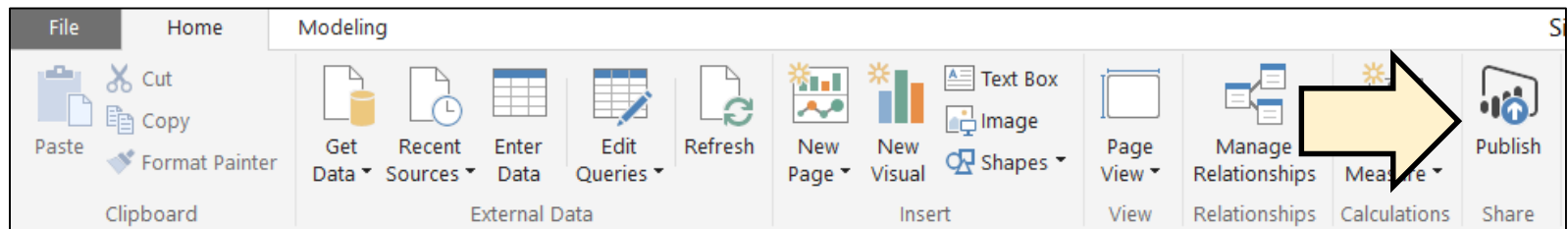Designing a Report in Power BI Desktop

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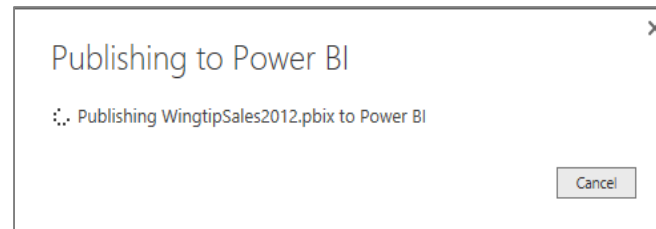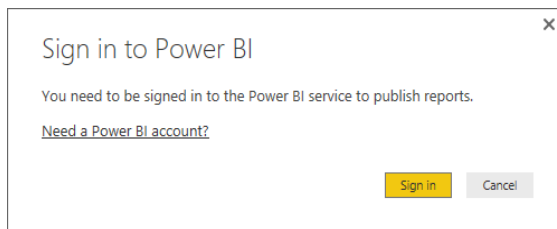- • Understanding Parameters and Template Files

Publishing a Power BI Desktop Project

- Power BI Desktop provides **Publish** command
  - Used to publish project to Power BI service

  - Requires logging into your Office 365 account

  - Published articles added to target workspace

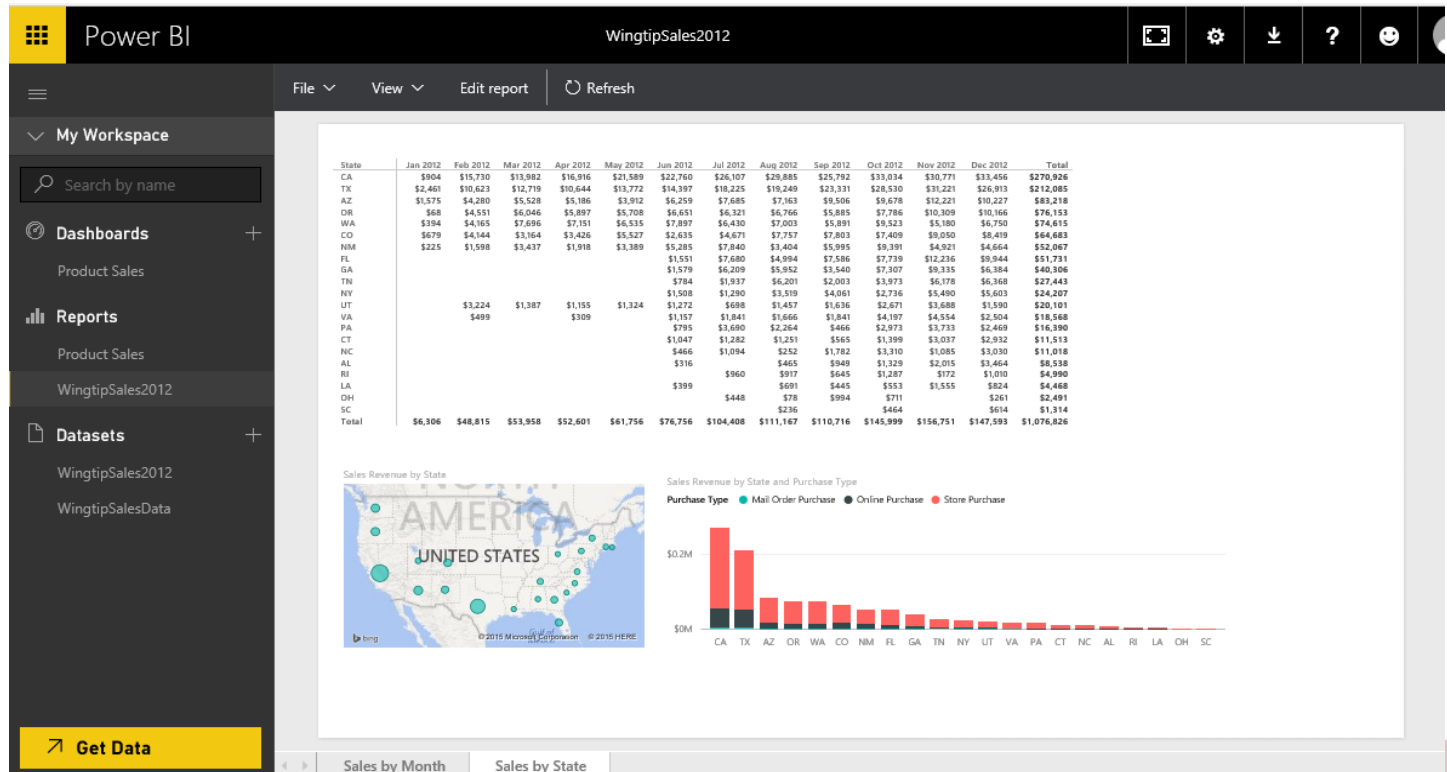# A Published Power BI Desktop Project

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Publishing a Data Analysis Project using Power BI Desktop

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Query Parameters

- What is a Query Parameter?
  - Configurable setting with project scope
  - Strongly-typed value to which you can apply restrictions
  - Can be referenced from a query
  - Can be referenced from DAX code in data model

- Where are Parameters commonly used
  - To parameterize data source connection details
  - To filter rows when importing data

Creating Query Parameters

- Parameters can be created using **Manager Parameters** menu
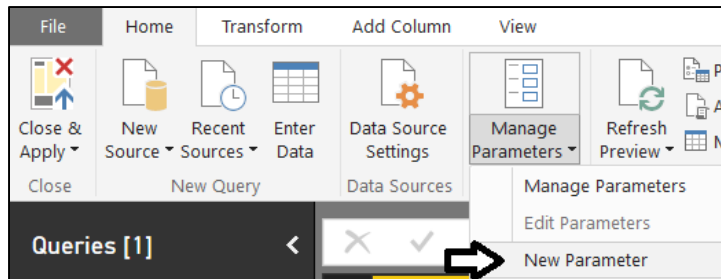
- Parameter properties
  - Name
  - Description
  - Required
  - Allowed Values
  - Default Value
  - Current Value

Referencing Parameters in a Query

- ## Parameters can be referenced inside query
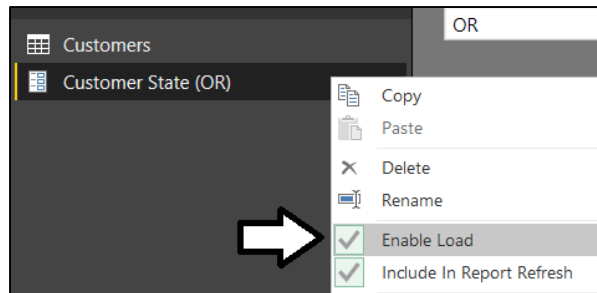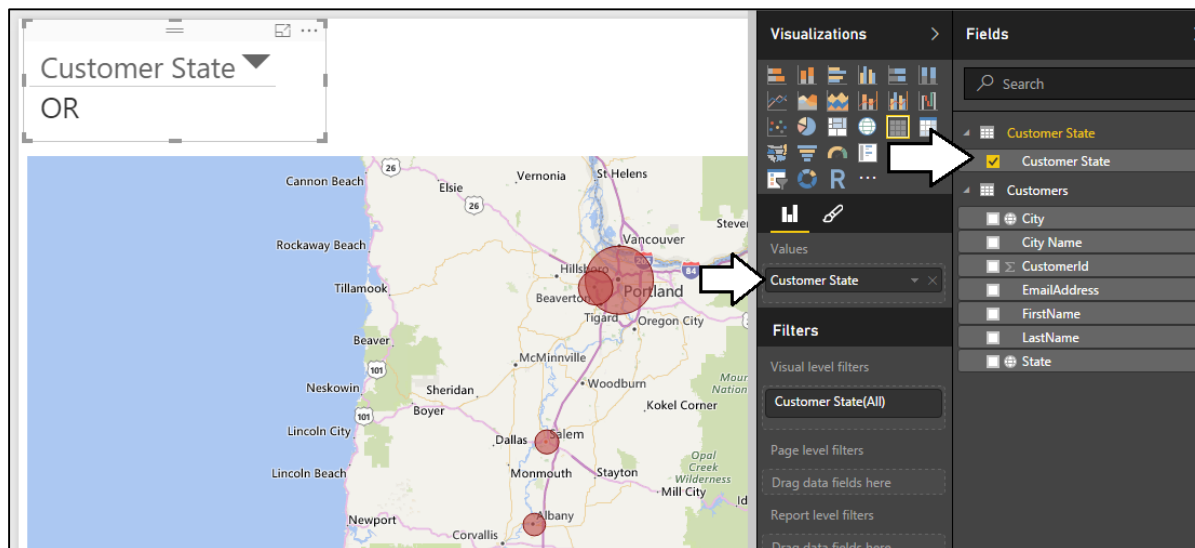 - ### Next query execution uses current parameter value

Making Parameters Available to Data Model

- Configure parameter's Enable Load setting

- Parameter becomes visible within fields list in report view

Power BI Project Template Files

- PBIX project can be exported to project template file
  - Template file created with PBIT file extension
  - Generated template files contains everything except for the data
  - PBIT template file can be imported to create new PBIX projects
  - Template files are powerful when used together with parameters
- How are template files used?
  - Export PBIX project to create a PBIT template file
  - Import the PBIT template file to create a new PBIX project
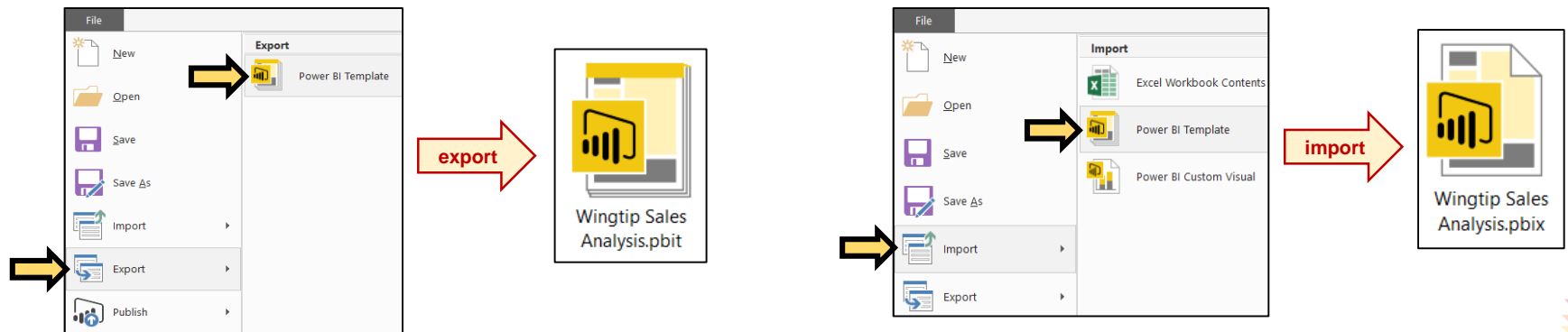
Summary

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