



# Introduction to Power BI

# Agenda

## ➤ Power BI Platform

- ❑ Datasets, Reports and Dashboards
- ❑ Getting Started with Power BI Desktop
- ❑ Licensing
- ❑ Stay in Sync

# Business Intelligence

- Business Intelligence – focus on the health & performance of a business
  - Gather insights
  - Perform corrective actions in a timely fashion.
- BI projects comprise of
  - Data integration from multiple sources
  - Data Transformation
  - Analysis to get insights and patterns
  - Create Insightful reports and visualizations
  - Provide insights that are actionable.

# Industry Perspective of BI

- Organizations are experiencing new data proliferation and are not certain what to do with it.
  - Telemetry devices increase, IoTs, wearables
  - Devices generating data provides new dimension of data use
  - Market Disruptions – Uber, Airbnb
- Traditional BI and Analytics Shift
  - New types of data (structured, semi-structured and unstructured data)
  - Demands for self-service BI
  - Power Shift from IT to **Business**

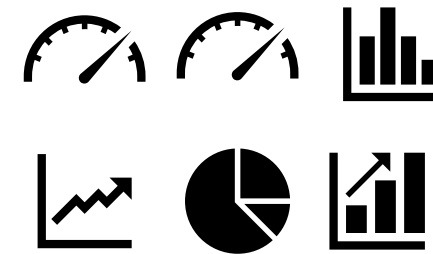
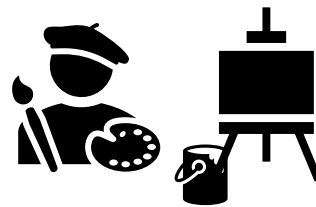
# Business Intelligence Aspects

Disparate data sources

Modeling

Design

Data Visualization



Power BI Connectors

Power BI Desktop

Power BI Service

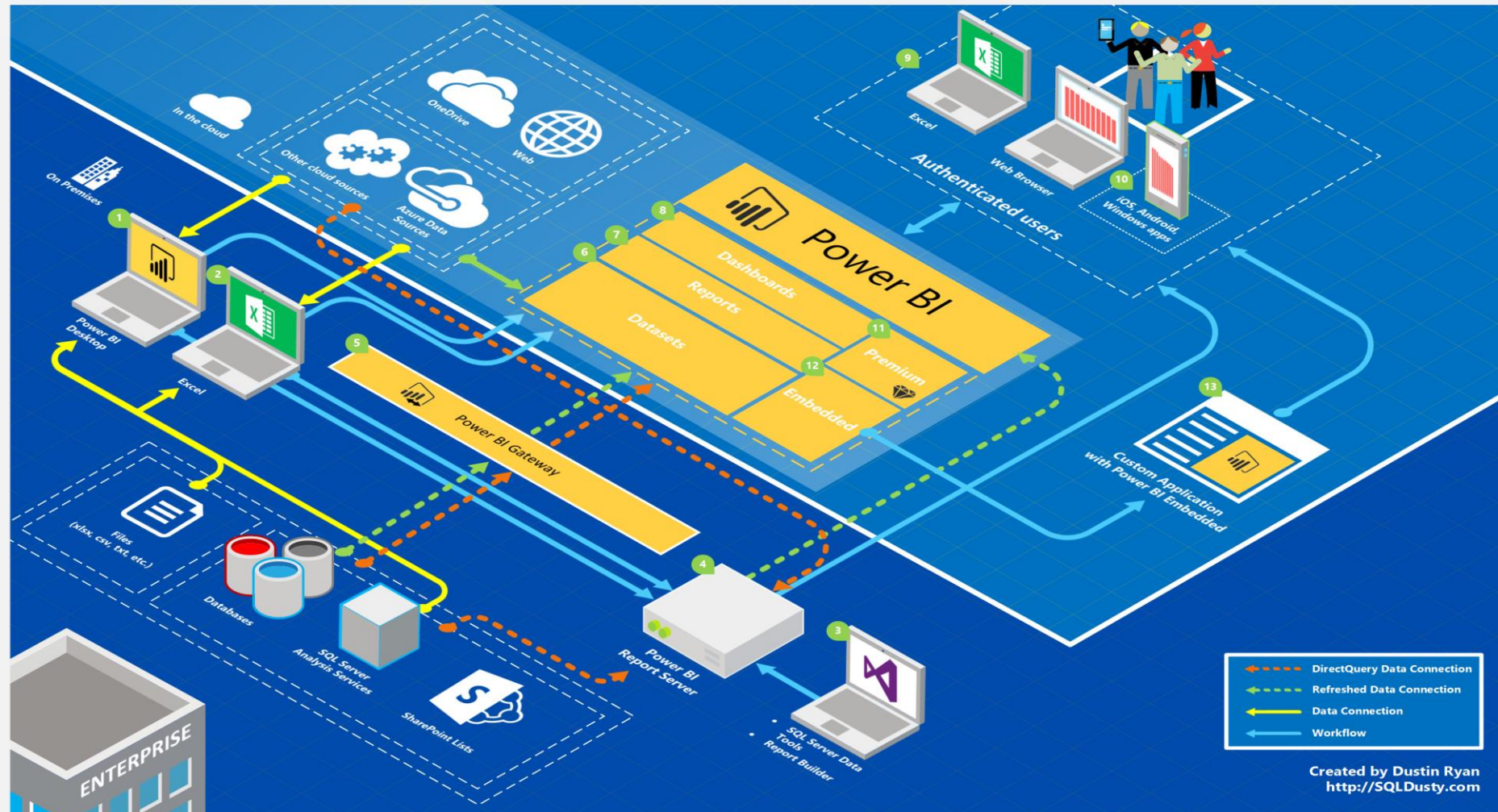
Power BI

Power BI is a collection of software services, apps and connectors that work together to enrich decision making through Data visualization and interactive insights.

# Power BI

- Cloud-based subscription service
  - On-Premise presence mimicking SSRS
  - Environment that promotes Self-Service BI to all business users
  - BI platform that assist in data ingestion, cleansing, analysis and visualization
- 
- Allows users to create something significant in under 5-min
  - Easy to subscribe.

# Power BI Architecture





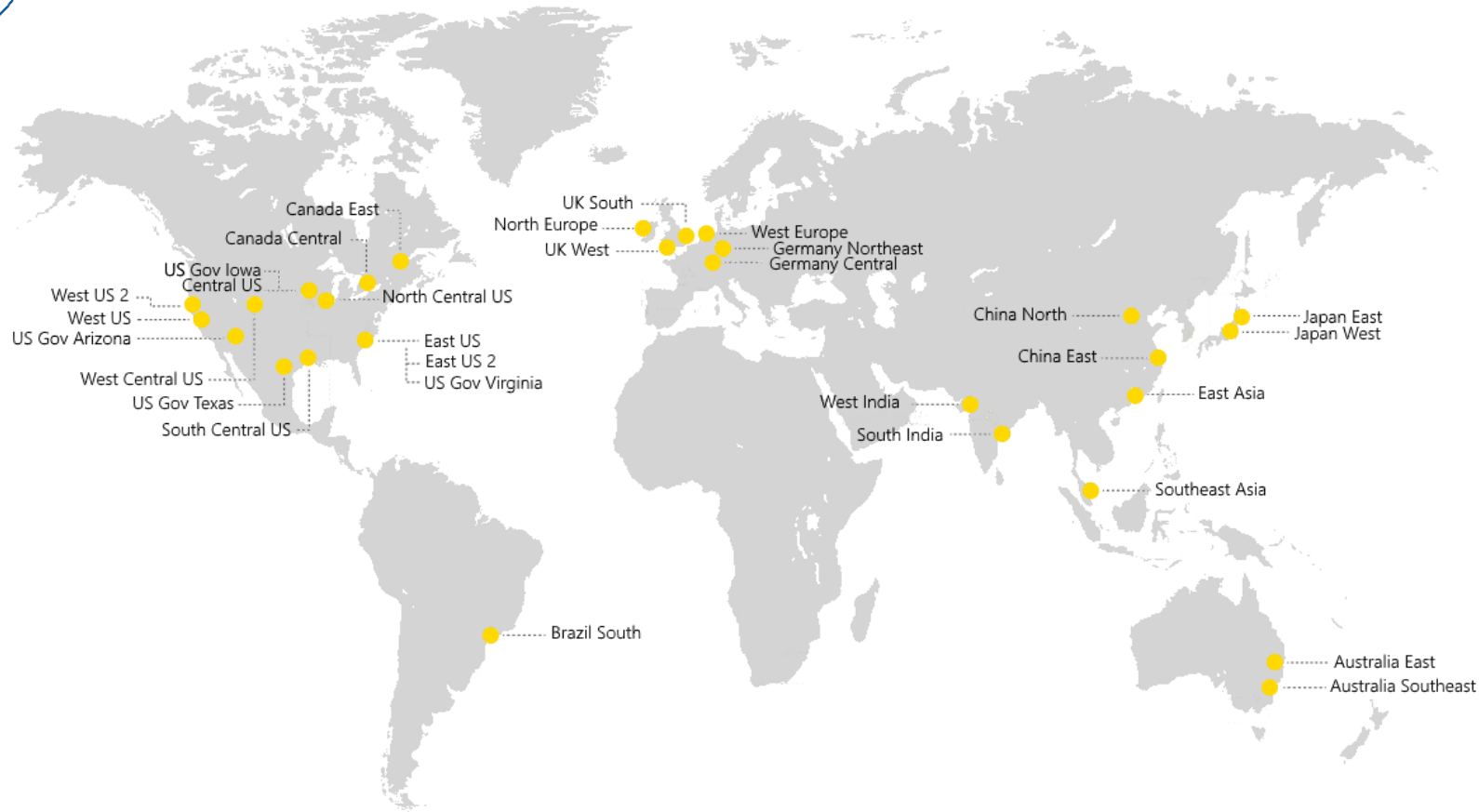
# Largest Global Footprint



EU Model Clauses



China GB 18030



43

Languages

34

Primary and backup  
datacenters worldwide

National Clouds

US Government  
China  
Germany

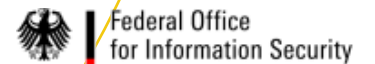
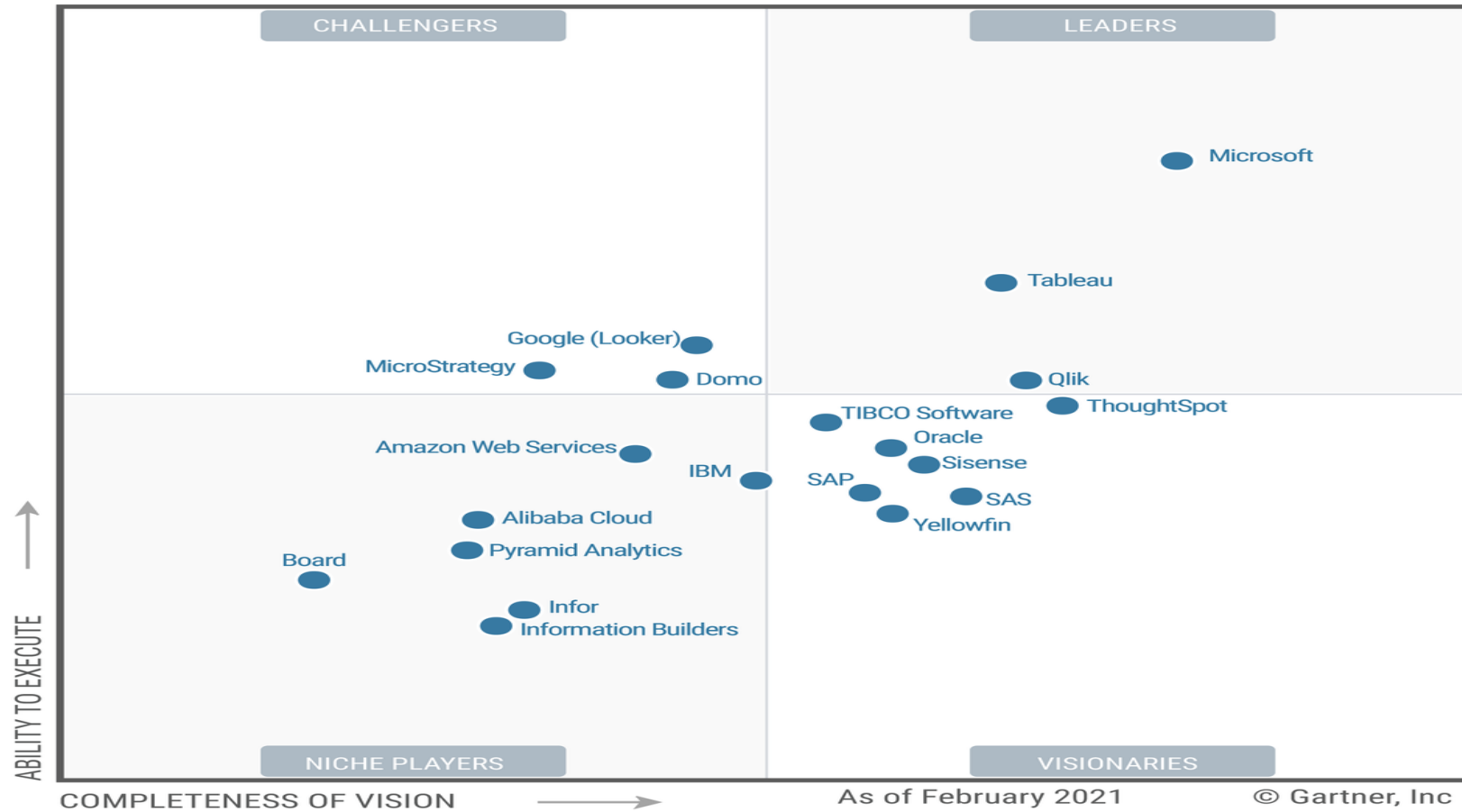




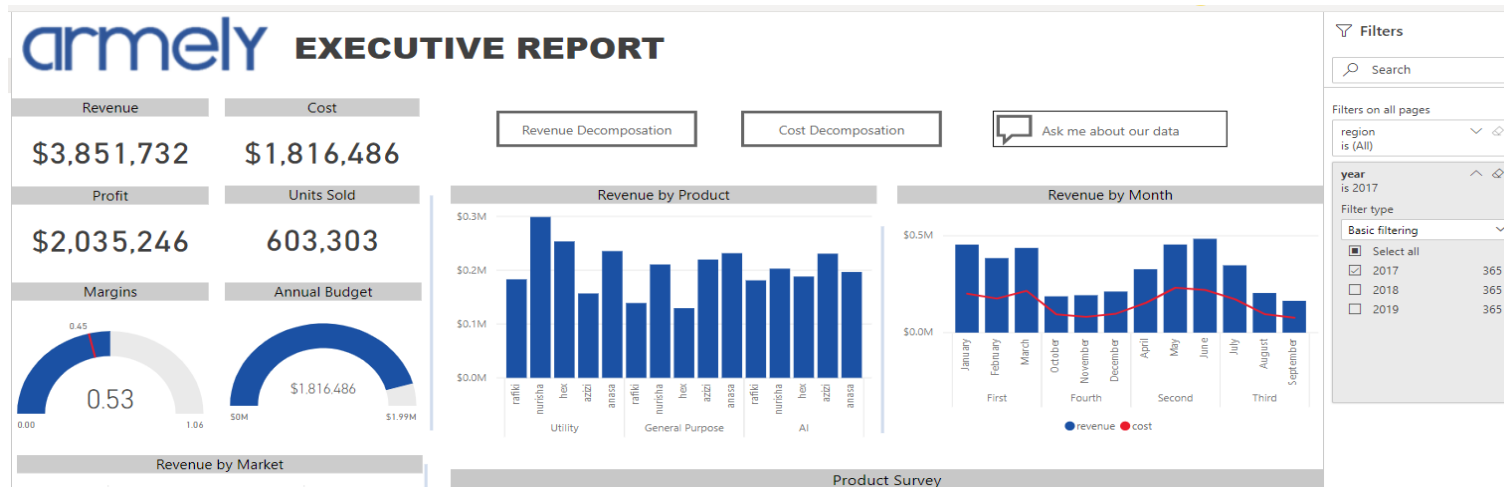
Figure 1: Magic Quadrant for Analytics and Business Intelligence Platforms



Source: Gartner (February 2021)

# Power BI Service

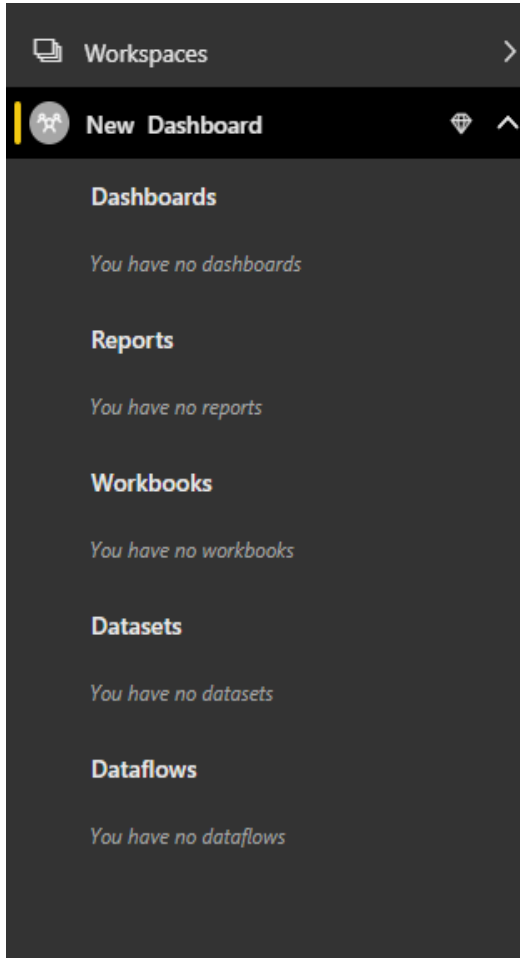
- Power BI Service
  - Cloud based foundation
  - Accessible through subscription
  - Accessible using a browser
    - <http://app.powerbi.com> → commercial cloud
    - <https://app.powerbigov.us> → government cloud \*\*



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  - Datasets, Reports and Dashboards
  - ☐ Getting Started with Power BI Desktop
  - ☐ Licensing
  - ☐ Stay in Sync

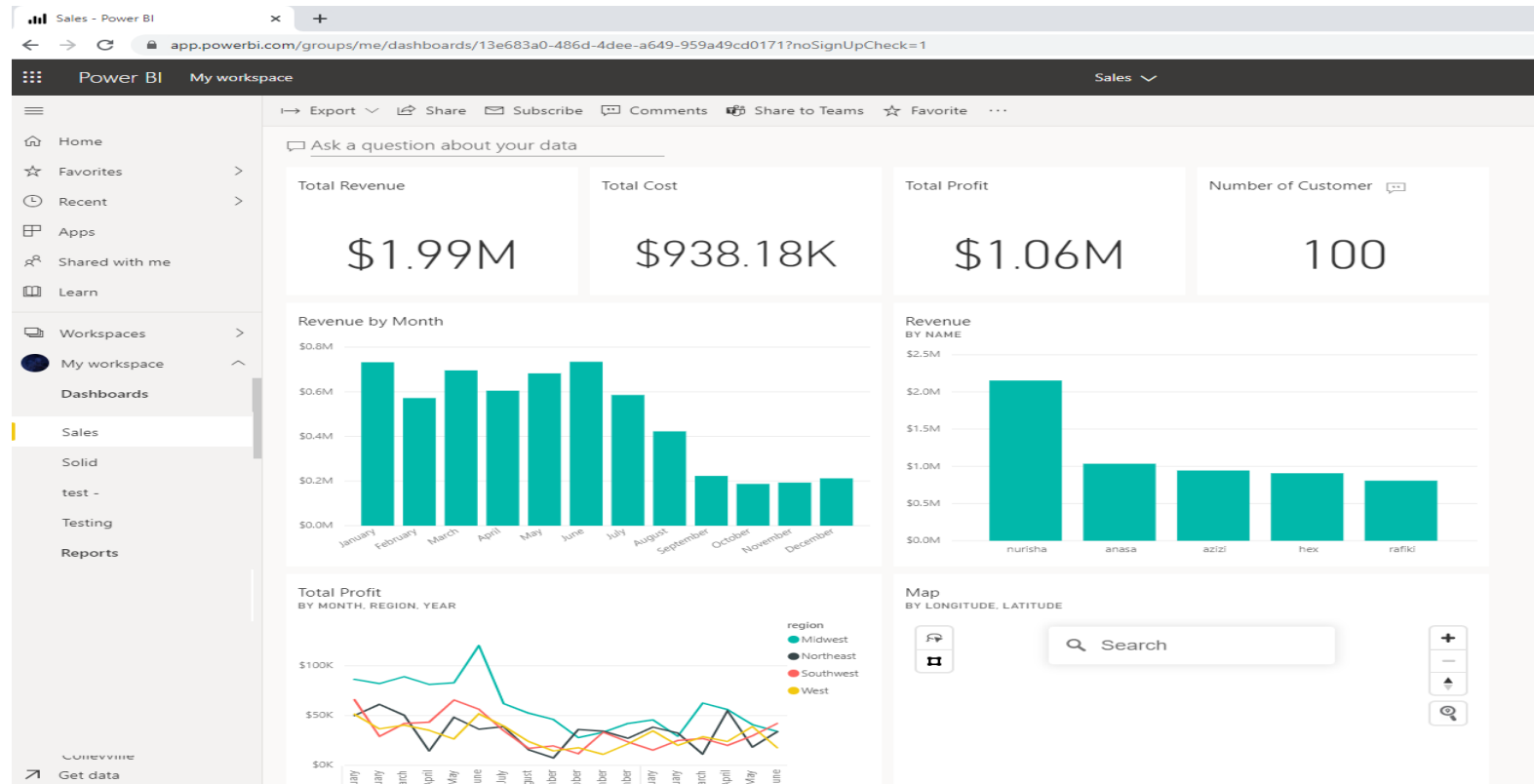
# Power BI Building Blocks



- **Workspace**
  - Provides user context and assets container
  - Every user has a personal workspace
  - Team development requires group workspace
- **Dashboard**
  - Consolidated view into reports and datasets
  - Custom solution entry point for mobile users
- **Reports**
  - Collection of pages with tables & visuals
  - Provides interactive control of filtering
- **Dataset**
  - Data model containing one or more tables
  - Can be simple or complex
- **Data Flows**
  - Collection of entities managed in Workspaces
  - ETL function of Power BI (can ingest, transform, integrate & enrich data)
  - Unifies disparate data sources.

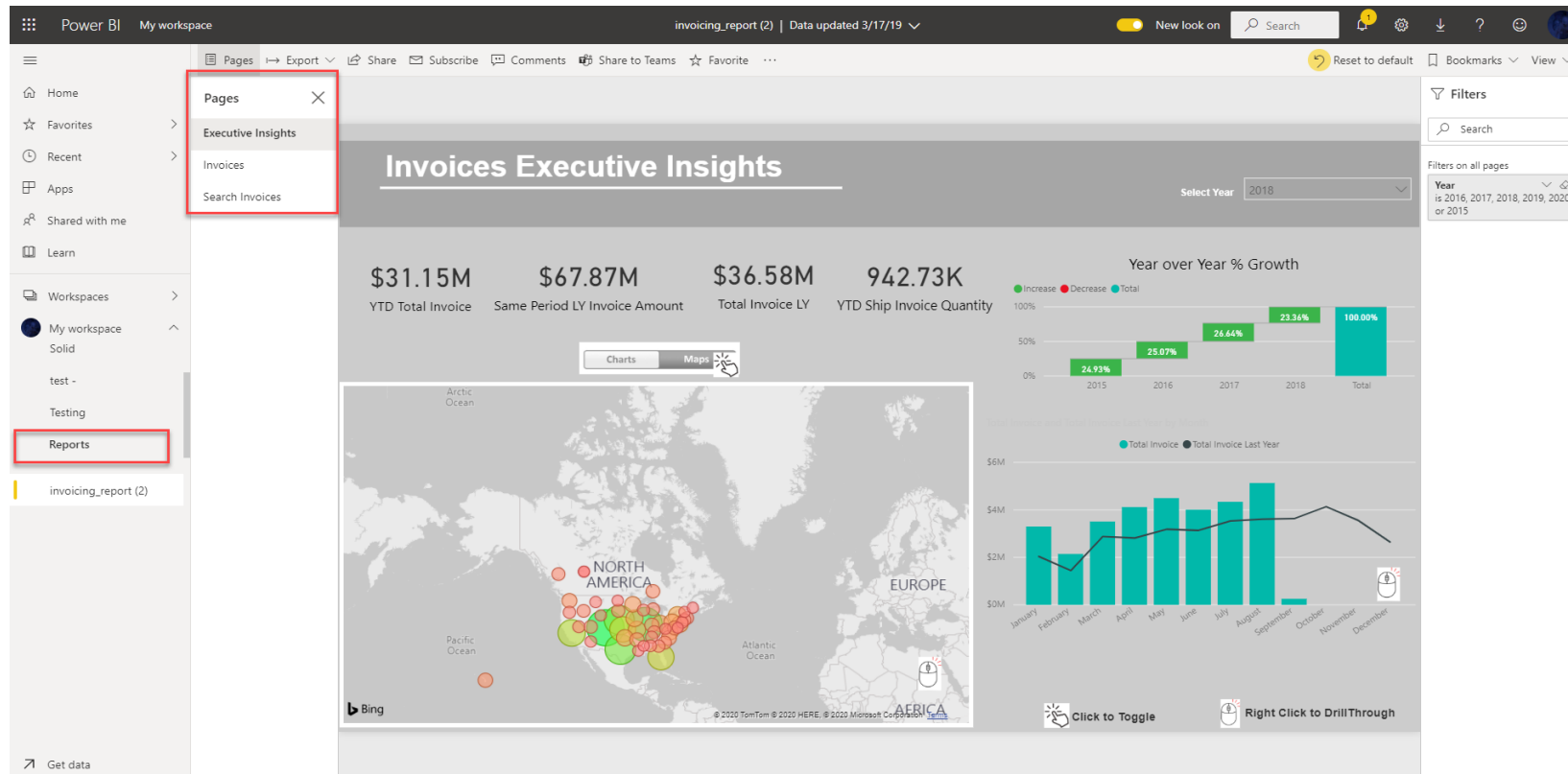
# Dashboard

- Dashboard is collection of tiles
  - Can be pinned from a report
  - Can be pinned from a Q&A results of a dataset



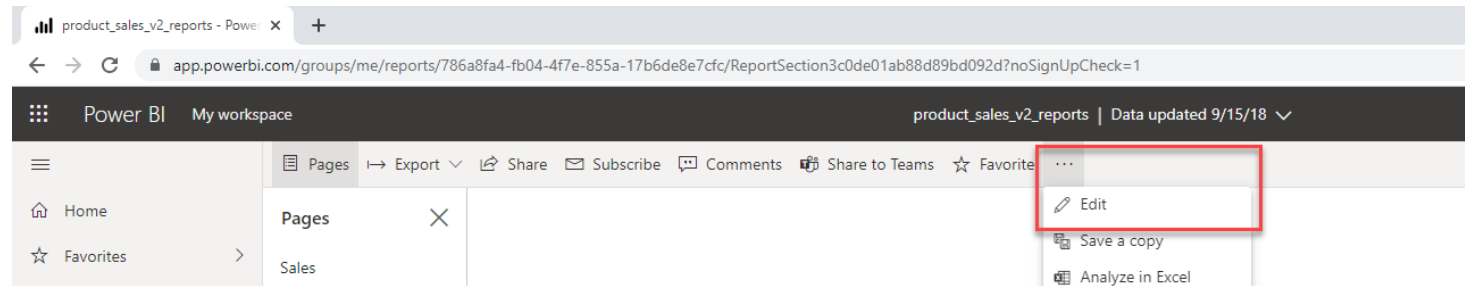
# Reports and Pages

- Reports contains one or more pages
  - Tab navigation located at the bottom of the report view
  - Each report is associated with only one dataset

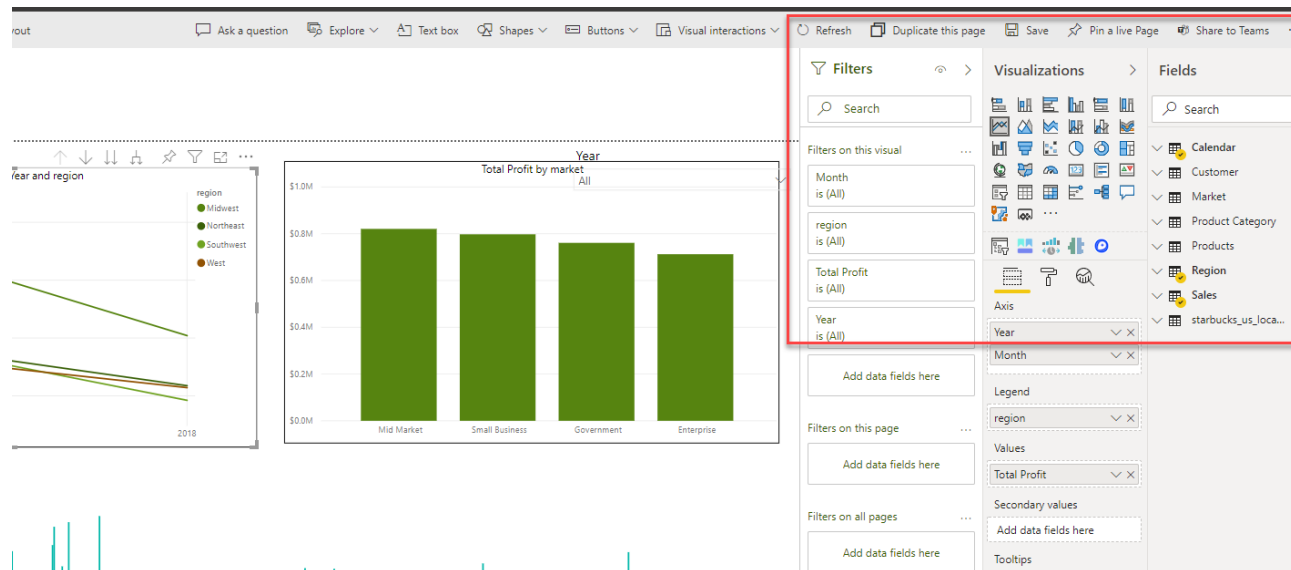


# Authoring Reports

- Reports can be authored from Power BI Service by clicking Edit



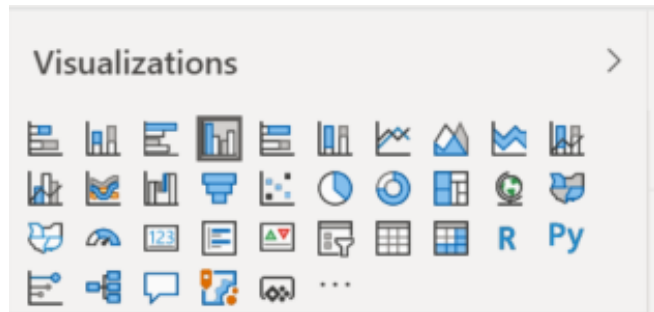
- Report designer appears on the right-hand side.



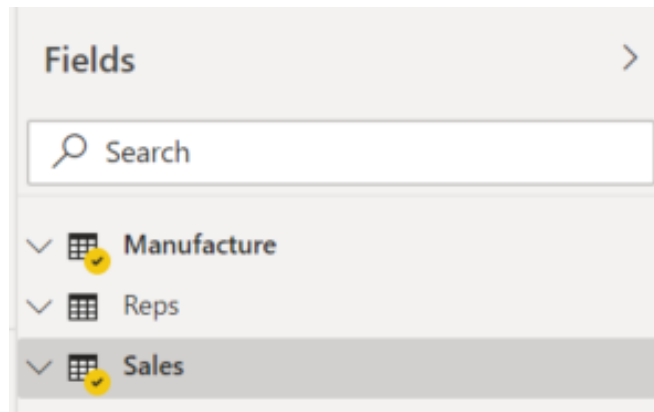


# Visuals

- Reports are designed using visuals
  - Each visual is based on underlying visualization type
  - Visualization type can be changed using Visualization pane

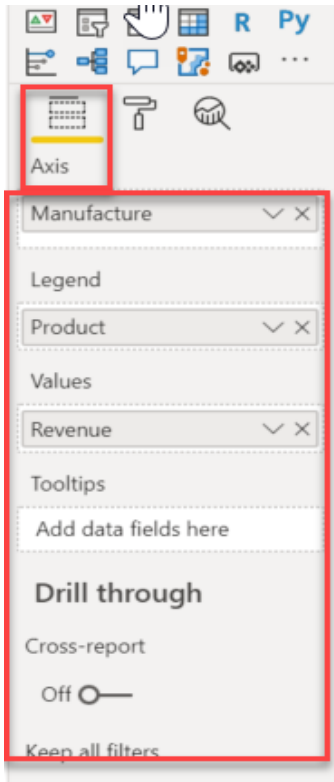


- Visuals are driven by fields from tables in datasets

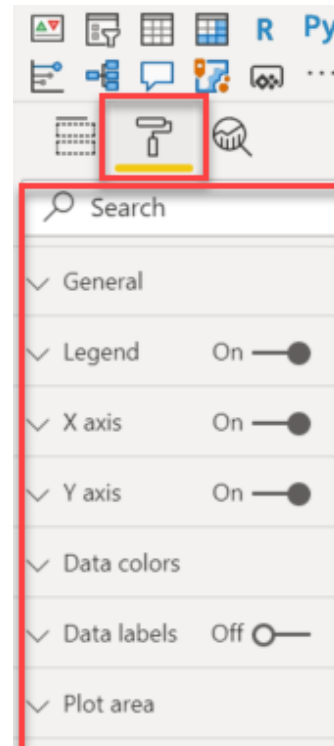


# Editing visuals Properties

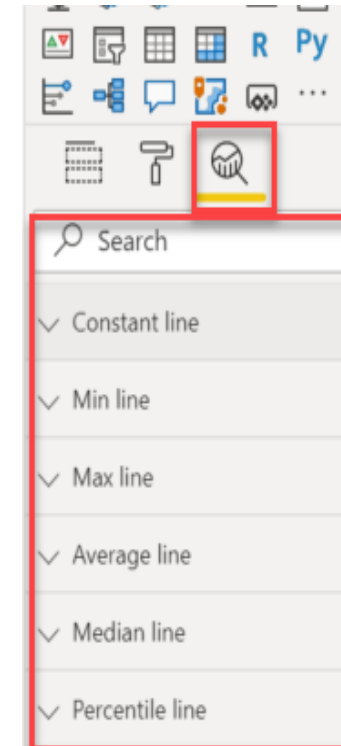
- Visuals properties modified using three property panes
  - Visual properties vary greatly depending on type of visualization (eg, Line graph will have Analytical Pane, Matrix Table will not)



Fields Pane



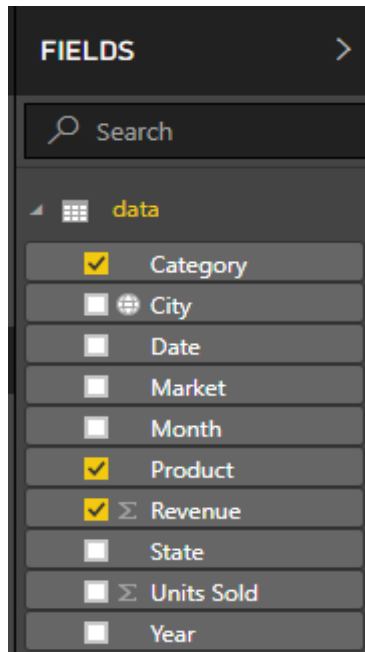
Format Pane



Analytics Pane

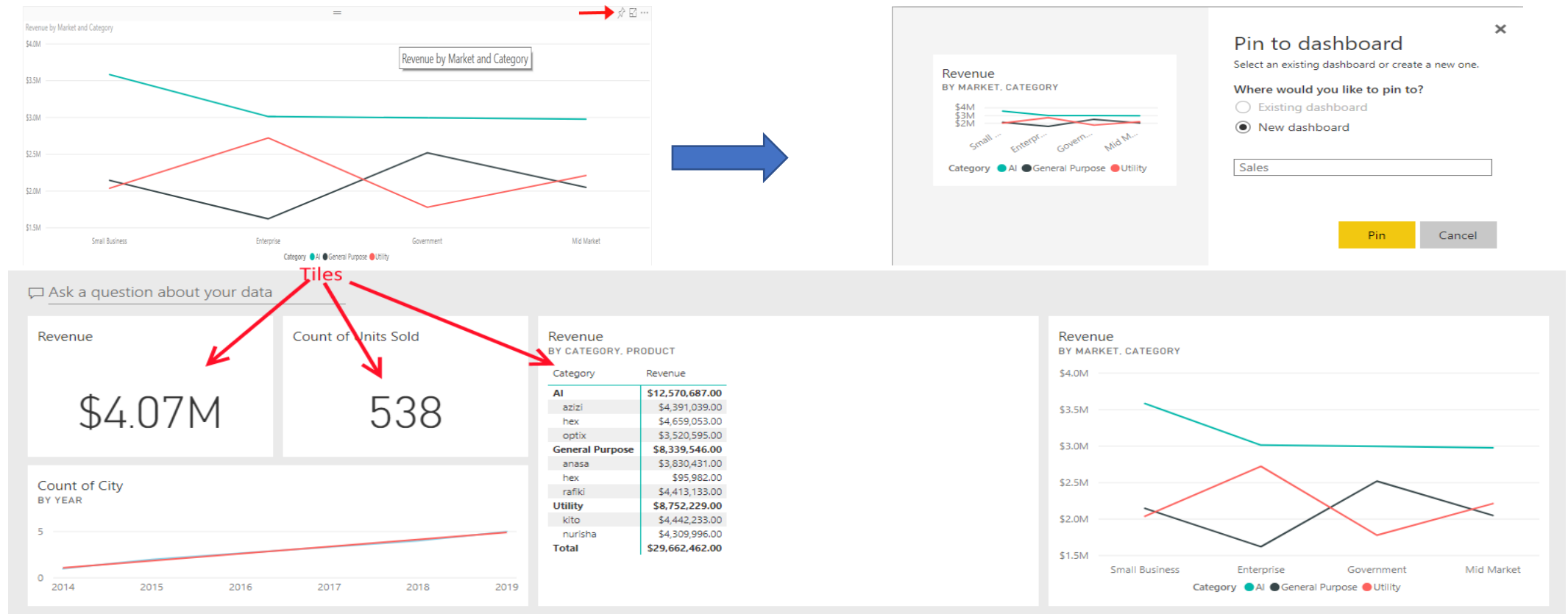
# Reports and Dataset

- Each report is based on an underlying dataset
  - Fields list in report designer shows tables and fields
  - Report author sees tables & fields as datasets consumer



# Creating Dashboards

- Dashboards contain tiles pinned from reports
- Tiles created from visual on report pages





# Datasets, Reports and Dashboards DEMO

# Agenda

- ✓ Power BI Platform
- ✓ Datasets, Reports and Dashboards
- Getting Started with Power BI Desktop
- ❑ Licensing
- ❑ Stay in Sync

# BI Solution Lifecycle

- Lifecycle
  - Data Discovery
  - Data Extraction (ETL/ELT)
  - Data Modeling – create datasets for analytics
  - Design and implement reports
  - Consolidate reports into dashboards
  - Deployment
  - Improvement





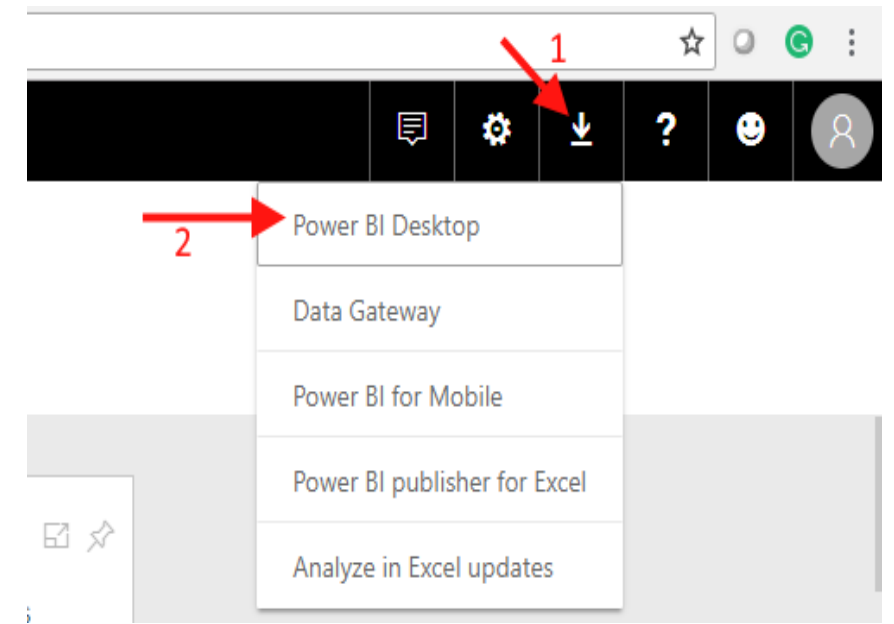
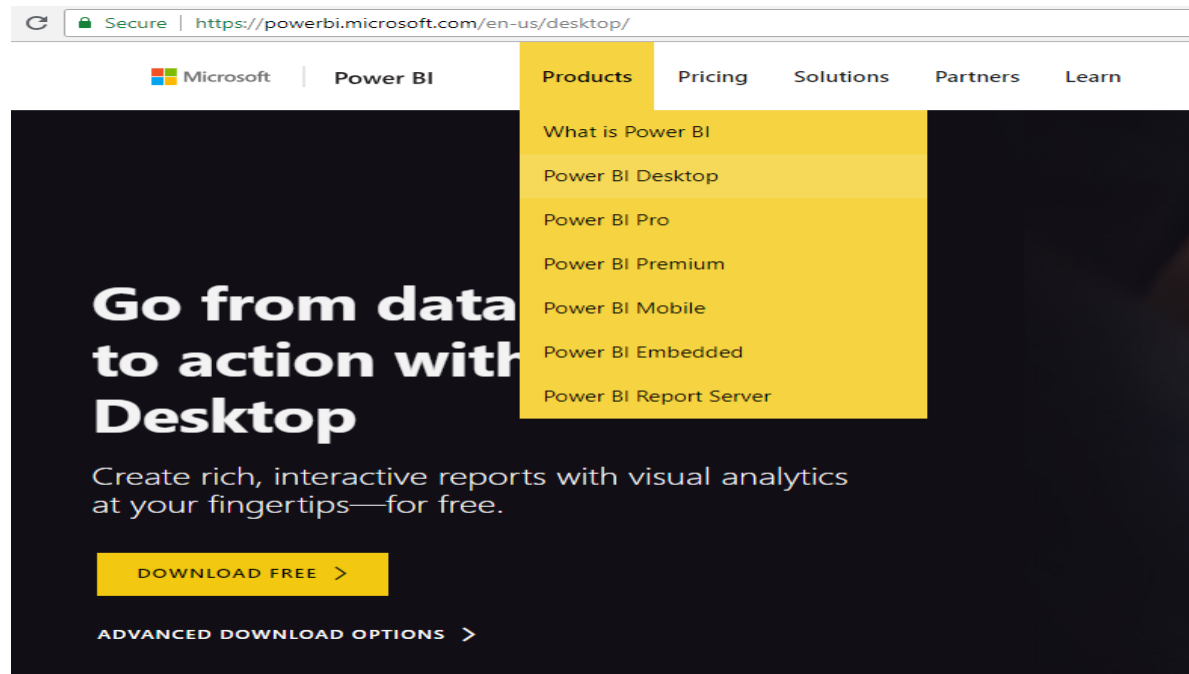
# Power BI Desktop Solution Lifecycle

- Query for Data Discovery
- Data Extraction (ETL)
- DAX Data Modeling
- Implement reports
- Consolidate reports into dashboards
- Dashboard design not supported
- Packaging for custom dashboard solutions not supported.



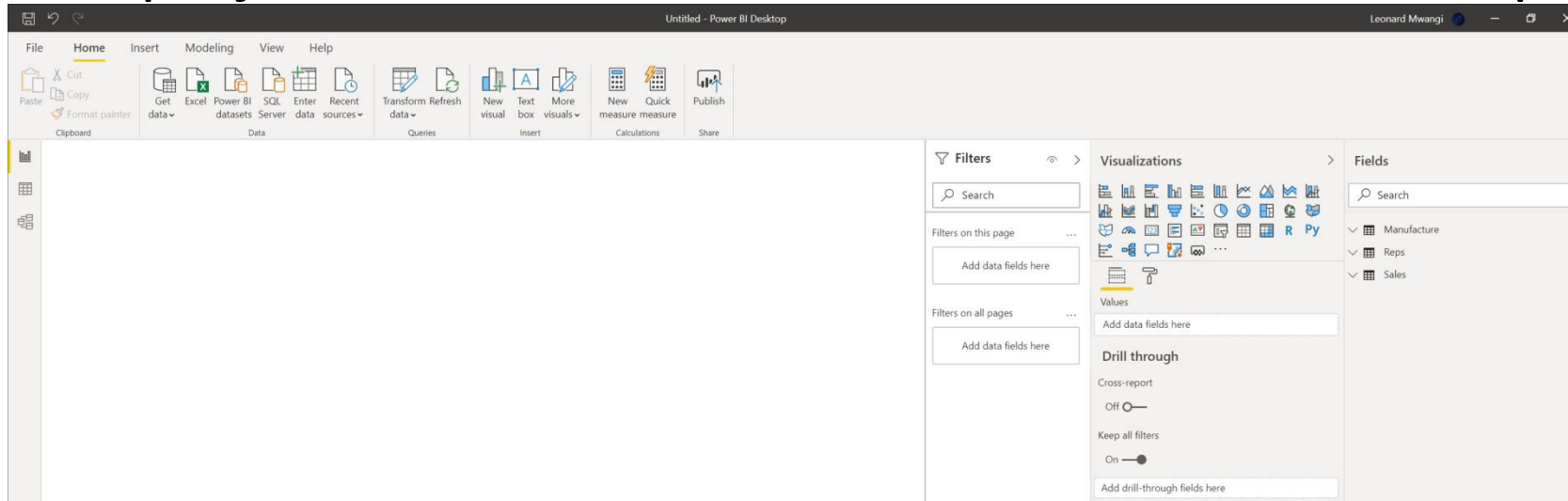
# Installing Power BI Desktop

- Power BI Desktop download from [www.powerbi.com](https://www.powerbi.com)
  - Depending on you machine download either x64 or x86 edition.



# Power BI Desktop files

- Windows Application
- Work is saved as projects (.pbix)
- Multiple projects can be accessed at once
- Each project runs its own instance of Power BI desktop



# Project files

- Saved as PBIX file (a zip file with the following files)
  - Contains data source definition
  - Contains query definitions
  - Contains a single data model definition
  - Contains data imported from queries
  - Contains a single report
  - Does not hold data source credentials



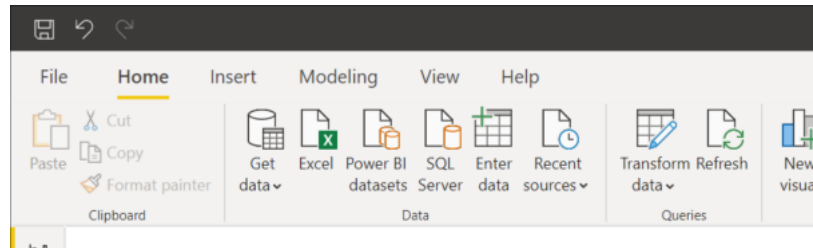
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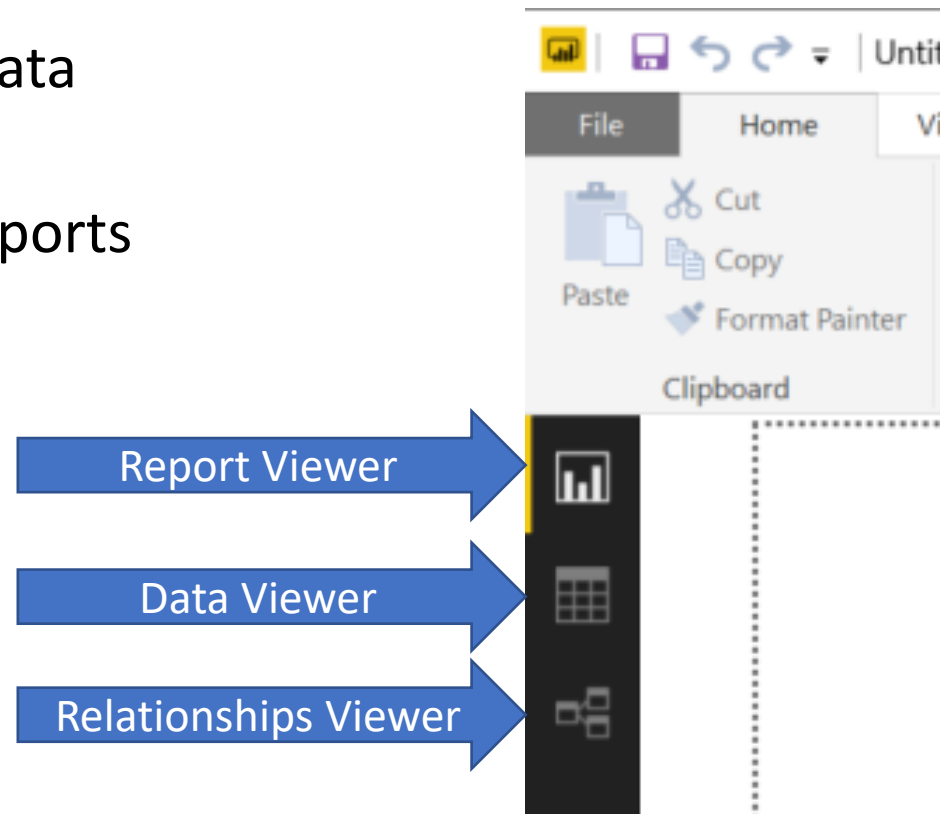
Microsoft Power BI Desktop Doc...

# Getting Around

- In Power BI Desktop
  - Query features for importing data
  - Design for modeling data
  - Report designer for creating reports
- Navigation

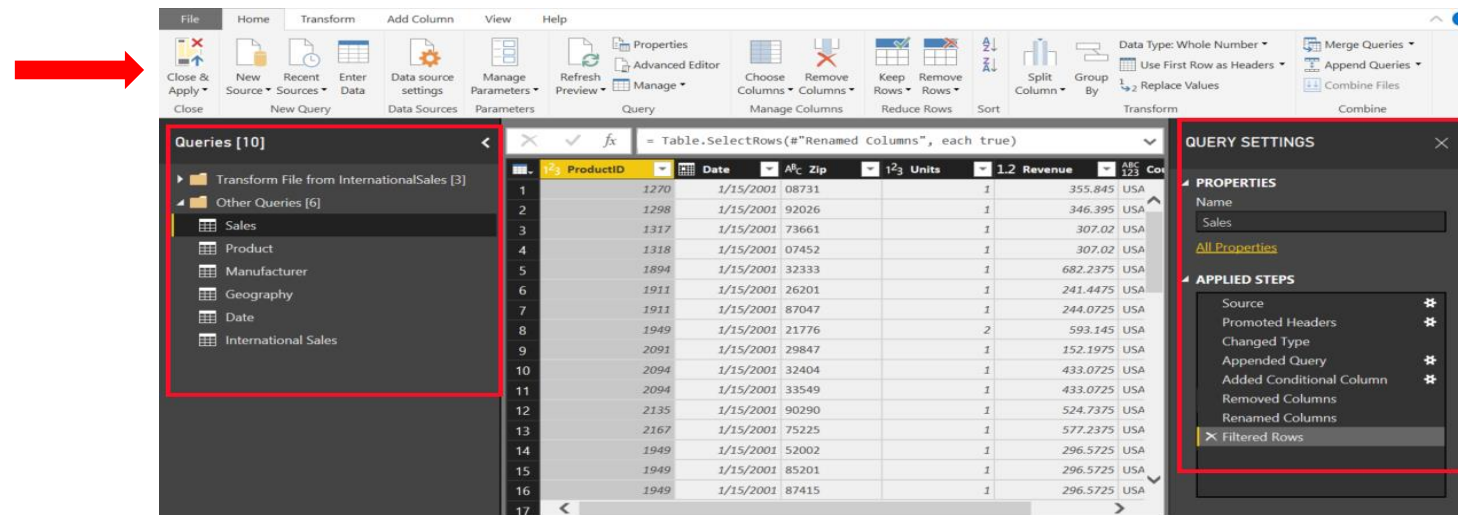


Queries Access features



# Query Editor

- Power Provides a separate Query Editor window
  - Complex design queries
  - Provide list of queries in project
  - Display Properties and Applied Steps for selected queries on right
  - Preview of table generated by query output shown in the middle
  - Query can be executed using apply or close & Apply command



# Data View

- Used for Data Modeling
  - Columns and Rows of data for each table
  - Can Create Calculate Columns and Measures

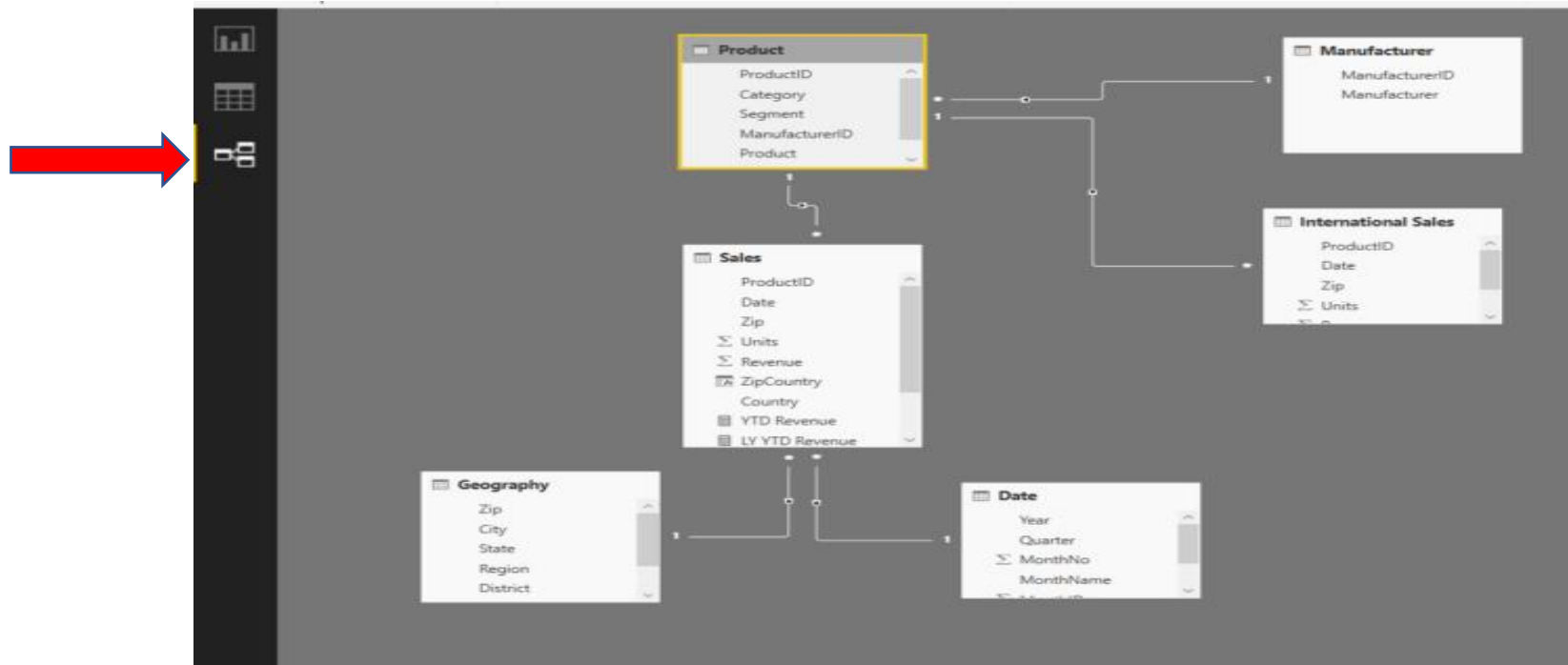
The screenshot shows the Power BI Data View interface. The top ribbon includes tabs for File, Home, Modeling, and Help. The Modeling tab is active, showing options like Get Data, Recent Sources, Enter Data, Edit Queries, Refresh, New Page, New Visual, Ask A Question, Buttons, Text box, Image, Shapes, From Marketplace, From File, Manage Relationships, New Measure, New Column, New Quick Measure, and Publish. The main area displays a table with columns: ProductID, Date, Zip, Units, Revenue, ZipCountry, and Country. The 'Sales' table is selected, and a tooltip shows its name, storage mode (Import), and last refresh time (8/29/2018 10:41:30 PM). The right-hand pane shows the 'FIELDS' list with categories like Date, Geography, International Sales, Product, and Sales.

ProductID	Date	Zip	Units	Revenue	ZipCountry	Country
2388	April 15, 2001	07834	1	309.6975	07834,USA	USA
2388	April 15, 2001	29501	1	309.6975	29501,USA	USA
2388	April 15, 2001	37079	1	309.6975	37079,USA	USA
2388	April 15, 2001	55410	1	309.6975	55410,USA	USA
2388	April 15, 2001	58801	1	309.6975	58801,USA	USA
2388	April 15, 2001	66049	1	309.6975	66049,USA	USA
2388	April 15, 2001	70532	1	309.6975	70532,USA	USA
2388	April 15, 2001	70560	1	309.6975	70560,USA	USA
2388	April 15, 2001	71459	1	309.6975	71459,USA	USA
2388	April 15, 2001	74872	1	309.6975	74872,USA	USA
2388	April 15, 2001	78681	1	309.6975	78681,USA	USA
2388	April 15, 2001	87413	1	309.6975	87413,USA	USA
2388	April 15, 2001	92064	1	309.6975	92064,USA	USA



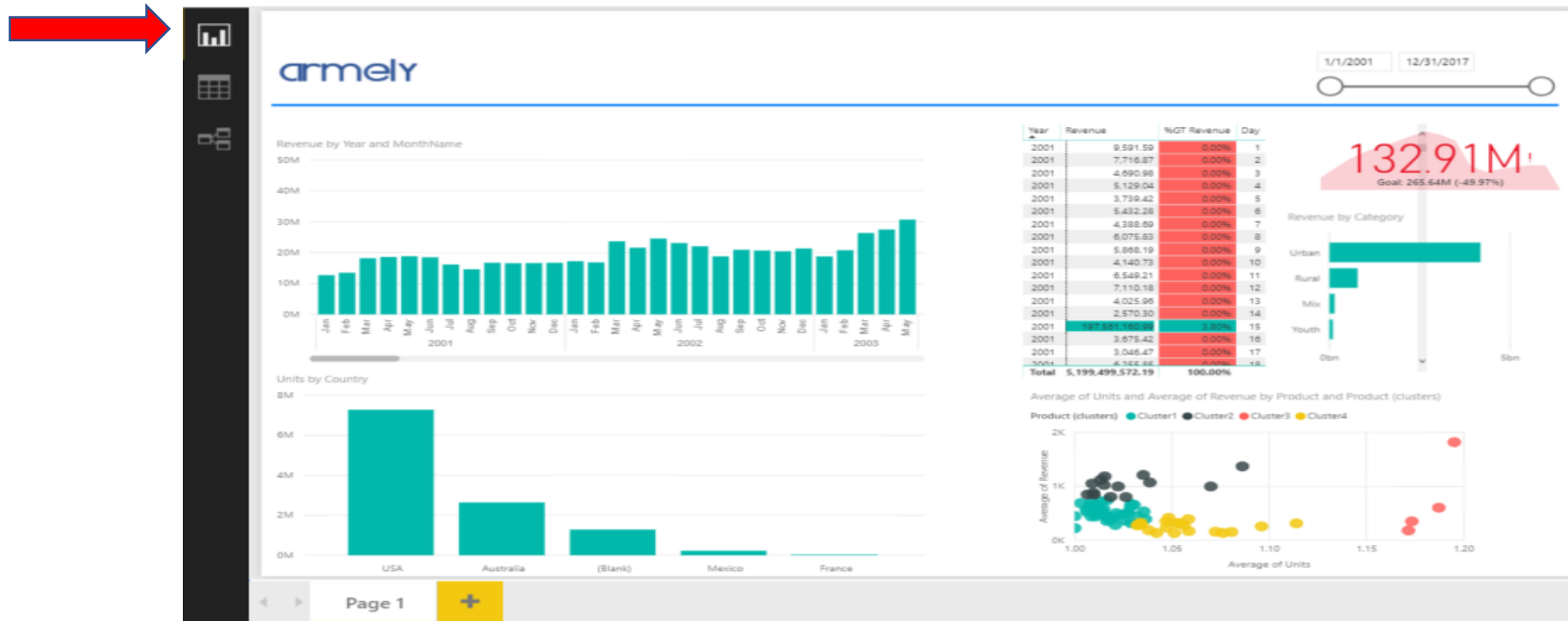
# Relationships

- Display tables, fields and relationships
  - View tables, fields and relationships in project dataset
  - Create relationship when importing new tables.



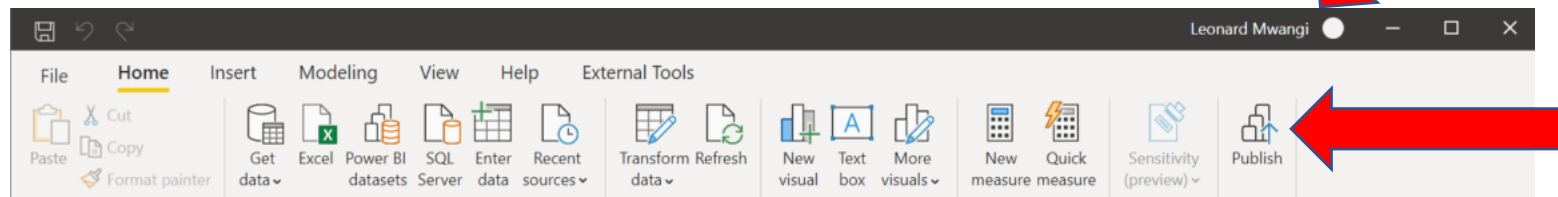
# Report View

- Used to design reports for current Project
  - Report designer similar to Power BI Service
  - Ability to hide Pages and fields



# Publishing Power BI Desktop

- Power BI Provides Publish Command
  - Used to publish project to Power BI Service
  - You have to be authenticated
  - Reports are published to a target workspace.





# Power BI Desktop DEMO

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# Staying in Sync

- Monthly Updates through Power BI Blog
  - New features
  - Preview features

<https://powerbi.microsoft.com/en-us/blog>

## What's new with ArcGIS for Power BI

Announcements

Power BI

February 23, 2021 by [Will Thompson](#)

ArcGIS for Power BI is a custom data visualization tool built within Power BI that brings mapping capabilities to your reports and dashboards. ArcGIS for Power BI is now available on Power BI Report Server. This functionality will enable all Esri Enterprise users who use Report Server to seamlessly use ArcGIS for Power BI.

» Read more

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## Power BI February 2021 Feature Summary



# Community

<https://community.powerbi.com>

Forums (8 Items)

TITLE		POSTS
 <b>Desktop</b> Data shaping, modeling, and report building in the Power BI Desktop app. Latest Topic - <a href="#">hide a line but have it show when you drill down</a>		
 <b>Service</b> Dashboards, reports, sharing, and everything else you do at app.powerbi.com. Latest Topic - <a href="http://www.supplementdaddy.com/max-test-ultra-cana...">http://www.supplementdaddy.com/max-test-ultra-cana...</a>		
 <b>Report Server</b> Report viewing, installation, configuration, and everything else in Power BI Report Server (on-premises). Latest Topic - <a href="http://www.usahealthguide.com/nutraher-lean/">http://www.usahealthguide.com/nutraher-lean/</a>		

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