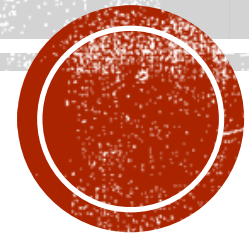


# INTRO TO POWER BI

Jamey Johnston, M.S.

@STATCowboy





# JAMEY JOHNSTON

## Sr. Data Scientist/Engineer



Project Coach & Professor  
Texas A&M Analytics

### Education

Texas A&M - MS in Analytics

LSU - BS in Spatial Analysis

### Photographer

<http://jamey.photos>

### Blog

<http://STATCowboy.com>

### Code

<https://github.com/STATCowboy/IntroPowerBI-TAMU>

### Power BI Desktop

- Windows app to author self-service data driven analytic reports
- Install from Microsoft Store (monthly updates automagically!)

### Power BI Service

- MS hosted service for publishing Power BI reports and dashboards
- <http://app.powerbi.com>

### Power BI Mobile

- App for Windows, iOS (phones and tablets) & Android

### On-premises Data Gateway

- Bridge to query & load data from on-premises data sources to Power BI Service

### Power BI Report Server

- On-premises version of the PowerBI.com service (limited features than cloud version)

# POWER BI OVERVIEW





# M

- Used in Power Query for Data Wrangling
- <https://docs.microsoft.com/en-us/powerquery-m/power-query-m-reference>

# DAX

- Used to create columns, measures, calculations in Power BI (in Excel, too!)
- <https://docs.microsoft.com/en-us/dax/data-analysis-expressions-dax-reference>

## POWER BI LANGUAGES





Python

Supports Python  
for data  
wrangling and  
visualizations



R

Supports R for  
data wrangling  
and  
visualizations



Dataflows

Integrates Data  
Lake and ETL  
technology  
directly into  
Power BI

<https://www.jamesserra.com/archive/2018/08/power-bi-dataflows/>

# POWER BI FEATURES





## Power BI Desktop

It's Free!



## Power BI Pro

Low price of \$9.99 month!  
Publish to Power BI Service



## Power BI Premium

Adds support for dedicated capacity and an enterprise pricing model and new features or per User  
Varies by dedicated capacity needs (i.e. Nodes) or Users



<https://powerbi.microsoft.com/Official-Site/Pricing>

# POWER BI LICENSING



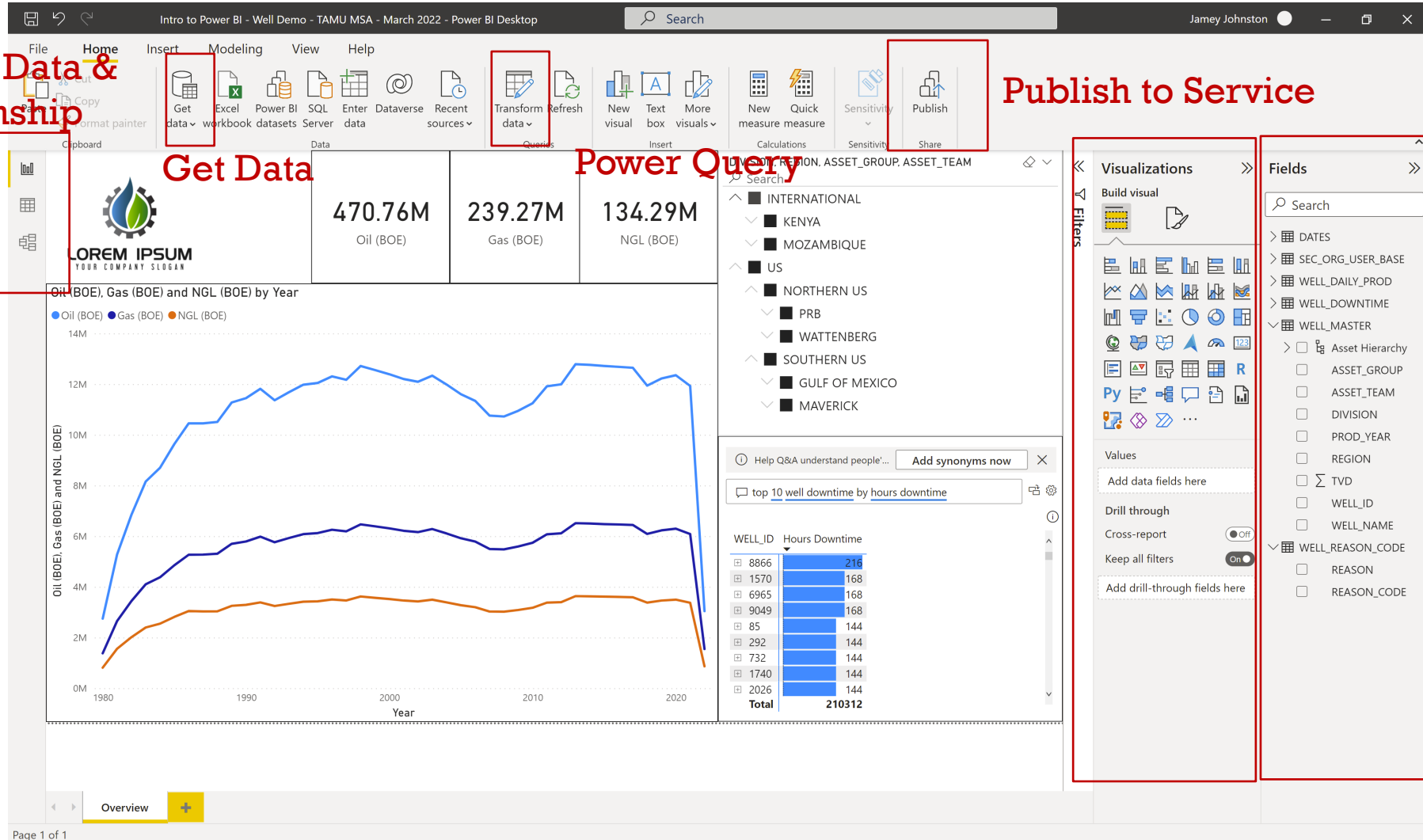
# POWER BI DESKTOP

Report, Data &  
Relationship  
View

Get Data

Power Query

Publish to Service





# POWER BI DESKTOP — POWER QUERY

Close  
&  
Apply

Intro to Power BI - Well Demo - TAMU MSA - March 2022 - Power Query Editor

File Home Transform Add Column View Tools Help

Close & Apply Close

New Source Recent Sources Enter Data

Data source settings Data Sources

Manage Parameters Parameters

Refresh Preview Query

Properties Advanced Editor Manage

Choose Columns Remove Columns Manage Columns

Keep Rows Remove Rows Reduce Rows

Split Column Group By Sort

Data Type: Whole Number Use First Row as Headers Replace Values Transform

Merge Queries Append Queries Combine Files Combine

Text Analytics Vision Azure Machine Learning AI Insights

Queries [6]

WELL\_MASTER

WELL\_REASON\_CODE

WELL\_DOWNTIME

WELL\_DAILY\_PROD

DATES

SEC\_ORG\_USER\_BASE

WELL\_ID WELL\_NAME DIVISION REGION ASSET\_GROUP ASSET\_TEAM PROD\_YEAR

1	1	WELL #1	US	SOUTHERN US	GULF OF MEXICO	TX GULF	2006
2	2	WELL #2	US	SOUTHERN US	GULF OF MEXICO	TX GULF	2010
3	3	WELL #3	INTERNATIONAL	KENYA	KENYA	KENYA	2014
4	4	WELL #4	INTERNATIONAL	MOZAMBIQUE	MOZAMBIQUE	MOZAMBIQUE	1986
5	5	WELL #5	US	SOUTHERN US	MAVERICK	MAVERICK NON-OPERATED	1995
6	6	WELL #6	US	SOUTHERN US	GULF OF MEXICO	TX GULF	1986
7	7	WELL #7	US	NORTHERN US	PRB	PRB OPERATED	2022
8	8	WELL #8	US	SOUTHERN US	GULF OF MEXICO	LA GULF	2000
9	9	WELL #9	US	SOUTHERN US	GULF OF MEXICO	TX GULF	2005
10	10	WELL #10	US	NORTHERN US	PRB	PRB OPERATED	2012
11	11	WELL #11	US	SOUTHERN US	GULF OF MEXICO	TX GULF	1984
12	12	WELL #12	INTERNATIONAL	MOZAMBIQUE	MOZAMBIQUE	MOZAMBIQUE	1994
13	13	WELL #13	US	NORTHERN US	PRB	PRB NON-OPERATED	2008
14	14	WELL #14	US	NORTHERN US	WATTENBERG	WATTENBERG OPERATED	1987
15	15	WELL #15	US	SOUTHERN US	GULF OF MEXICO	TX GULF	2010
16	16	WELL #16	US	NORTHERN US	WATTENBERG	WATTENBERG NON-OPERATED	2007
17	17	WELL #17	US	NORTHERN US	PRB	PRB OPERATED	1999
18	18	WELL #18	INTERNATIONAL	MOZAMBIQUE	MOZAMBIQUE	MOZAMBIQUE	2017
19	19	WELL #19	INTERNATIONAL	KENYA	KENYA	KENYA	2022
20	20	WELL #20	US	SOUTHERN US	GULF OF MEXICO	LA GULF	2017
21	21	WELL #21	INTERNATIONAL	KENYA	KENYA	KENYA	2003
22	22	WELL #22	US	NORTHERN US	PRB	PRB OPERATED	1995
23	23	WELL #23	INTERNATIONAL	KENYA	KENYA	KENYA	1985
24	24	WELL #24	US	SOUTHERN US	MAVERICK	MAVERICK NON-OPERATED	2010
25	25	WELL #25	INTERNATIONAL	KENYA	KENYA	KENYA	1980
26	26	WELL #26	US	NORTHERN US	WATTENBERG	WATTENBERG OPERATED	2015
27	27	WELL #27	US	NORTHERN US	PRB	PRB OPERATED	1996
28	28	WELL #28	US	NORTHERN US	WATTENBERG	WATTENBERG NON-OPERATED	1983
29	29	WELL #29	INTERNATIONAL	KENYA	KENYA	KENYA	2020
30	30	WELL #30	US	SOUTHERN US	GULF OF MEXICO	LA GULF	1986
31	31	WELL #31	INTERNATIONAL	MOZAMBIQUE	MOZAMBIQUE	MOZAMBIQUE	1989
32	32	WELL #32	US	NORTHERN US	PRB	PRB OPERATED	2000

10 COLUMNS, 999+ ROWS

Query Settings

PROPERTIES

Name

WELL\_MASTER

All Properties

APPLIED STEPS

Source

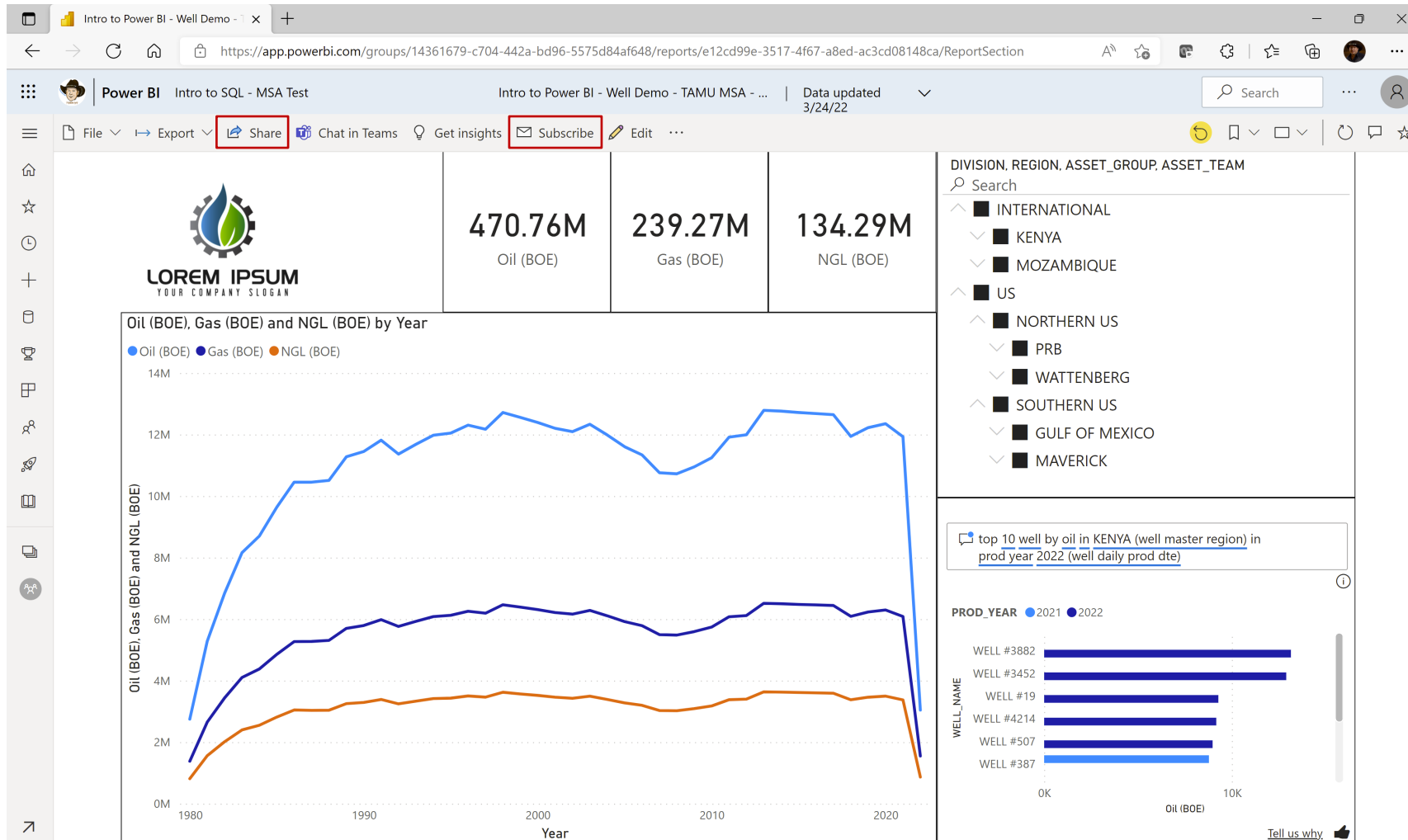
Navigation





# POWER BI SERVICE

Share & Subscribe





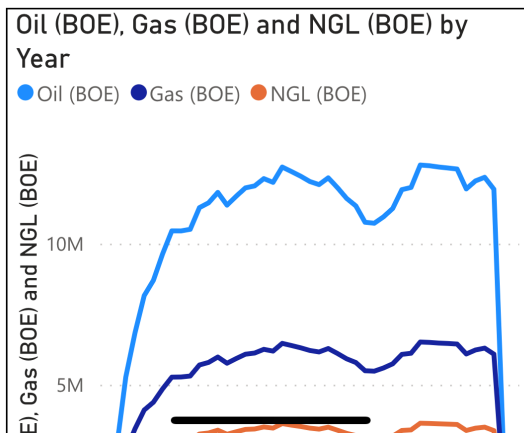
470.... Oil (BOE)	239.... Gas (BOE)	134.... NGL (BOE)
----------------------	----------------------	----------------------

DIVISION, REGION, ASSET\_GROUP, ASSET\_T...

Search

INTERNATIONAL

US



9:56

Search

**Microsoft Power BI**  
Microsoft Corporation

OPEN

4.7 ★★★★★  
5.43K Ratings

4+  
Age

**What's New** [Version History](#)

Version 17.1 6d ago

- When you receive a link in a report that has an active URL filter (query string) applied to it, the report will open pre-filtered. [more](#)

**Preview**

Monitor your most important business information, all in one place

Interact with y to discover nev

Today Games Apps Updates Search







Power BI  
Demo

DEMO

<https://pbiaitutorials.blob.core.windows.net/textanalytics/FabrikamComments.csv>



## Power BI Docs & Blog

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

## Guy in a Cube YouTube Channel

- <https://guyinacube.com/>
- <https://www.youtube.com/channel/UCFp1vaKzpfvoGai0vE5VJ0w>

## Power BI YouTube Channel

- <https://www.youtube.com/user/mspowerbi>

## RADACAD

- <http://radacad.com/>

## SQL BI

- <https://www.sqlbi.com/>

## STATCowboy

- <https://www.statcowboy.com>
- <https://www.youtube.com/channel/UCRfDzZXUgr7O4A6YsL9rW2Q>

# RESOURCES

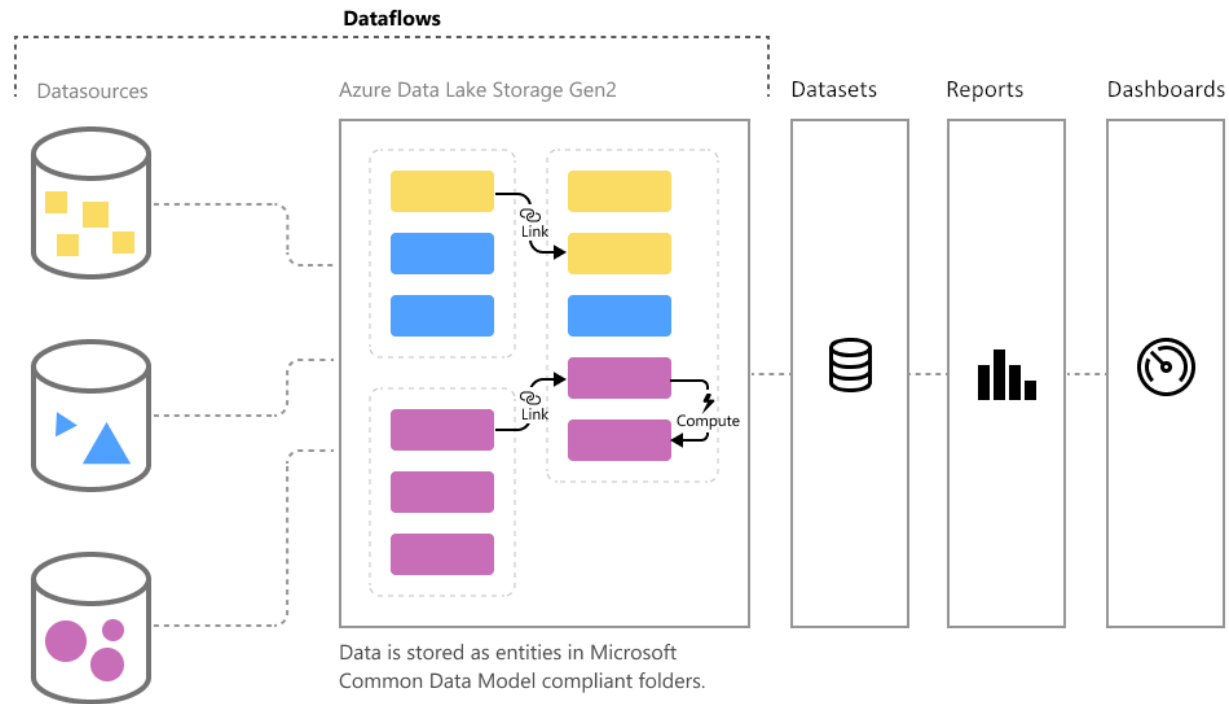






# APPENDIX

Wait ... there is more!



# POWER BI DATAFLOWS



<https://docs.microsoft.com/en-us/power-bi/service-dataflows-overview>

<https://powerbi.microsoft.com/pt-pt/blog/introducing-power-bi-data-prep-with-dataflows/>

**Add entities to start creating your dataflow**

**Define new entities**  
Choose a data source to define the entities for your dataflow. You can map your data to standard Common Data Model entities, or define custom entities instead.  
[Learn more](#)  
**Add new entities**

**Link entities from other dataflows**  
Linking to entities from other dataflows reduces duplication and helps maintain consistency across your organization.  
[Learn more](#)  
**Add linked entities**

**Power BI - Power BI dataflow demo (1) > New dataflow (unsaved)**

**Choose data source**

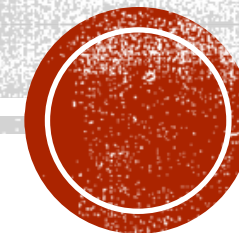
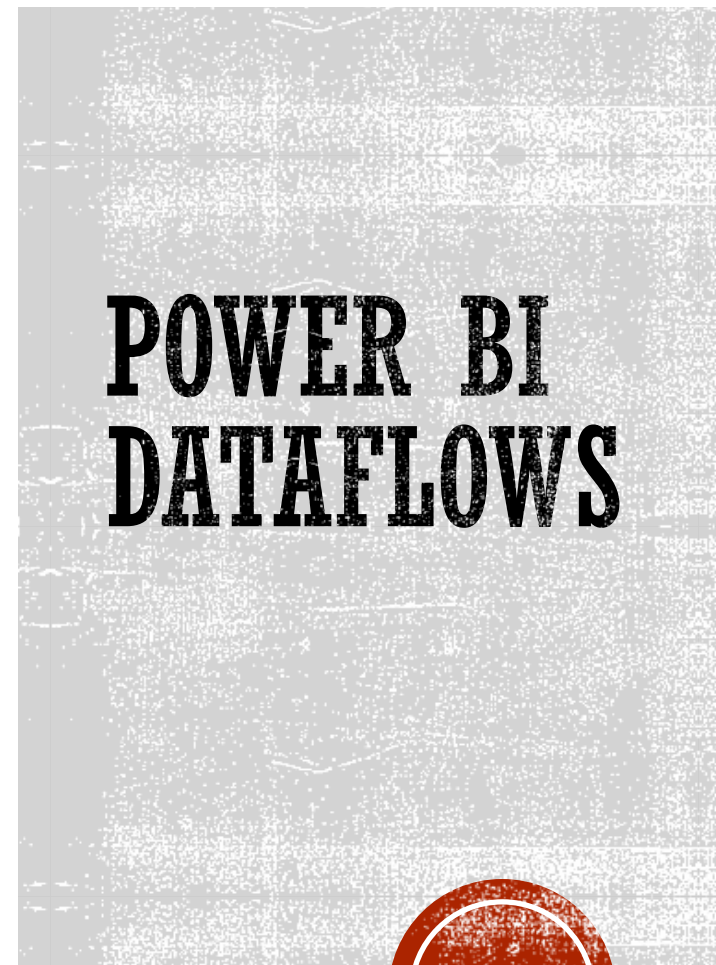
All categories | File | Database | Power BI | Azure | Online services | Other

Access File | Excel File | JSON File | IBM DB2 database Database | SQL Server database Database | Azure SQL Data Warehouse Azure | Common Data Service for Apps Online services | Salesforce reports

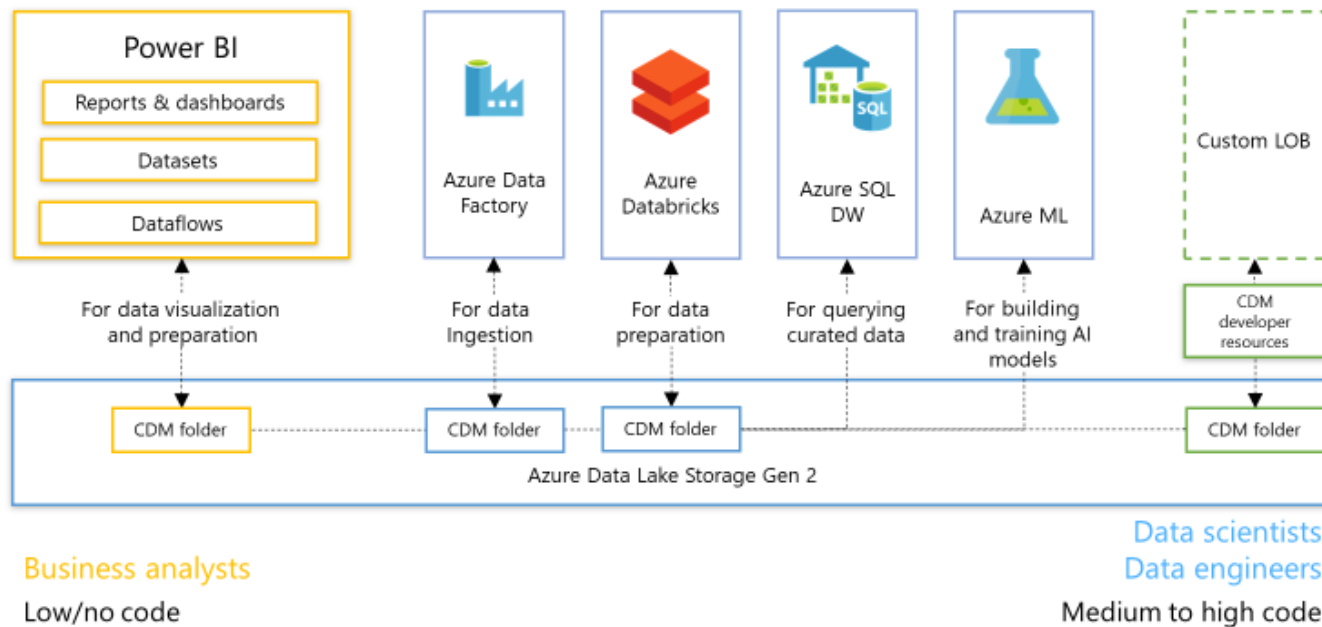
Text/CSV File | XML File | Microsoft Exchange Online Online services | Salesforce objects

Power BI dataflows Power BI | Azure Blobs Azure | Azure SQL database Azure | Azure Tables Azure | SharePoint Online list

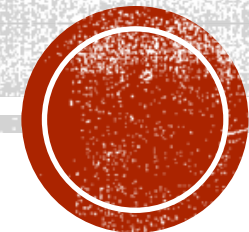
Visualizations: Map of North America, Bar chart showing cost of living and weather by state, Line chart showing overall rank and weather by state.



<https://docs.microsoft.com/en-us/power-bi/service-dataflows-create-use>

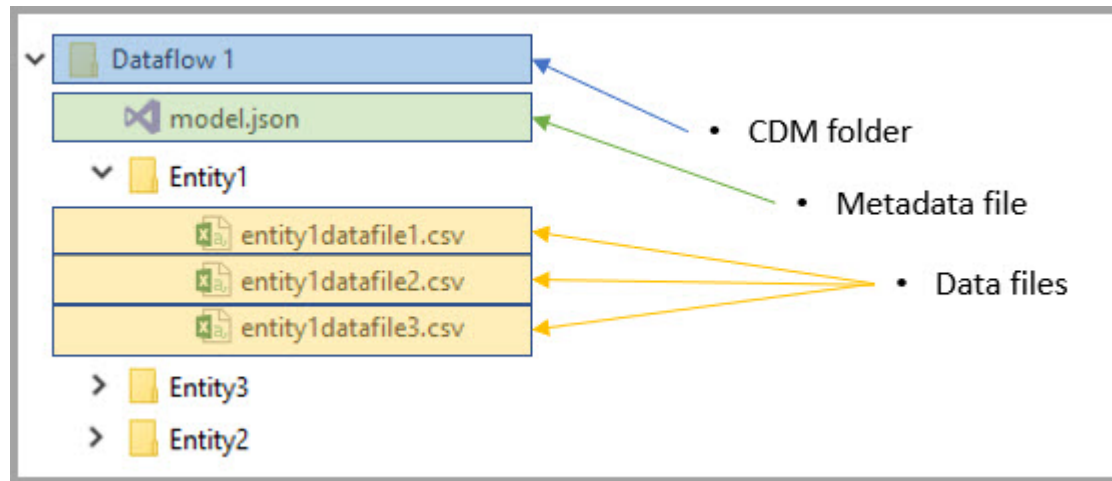


# POWER BI DATAFLOWS & ADLS INTEGRATION



<https://docs.microsoft.com/en-us/azure/storage/blobs/data-lake-storage-introduction>





# POWER BI DATAFLOWS CDM FOLDER



Admin portal

- Usage metrics
- Users
- Audit logs
- Tenant settings
- Capacity settings
- Embed Codes
- Organization visuals
- Dataflow settings (preview)

### Dataflow storage (preview)

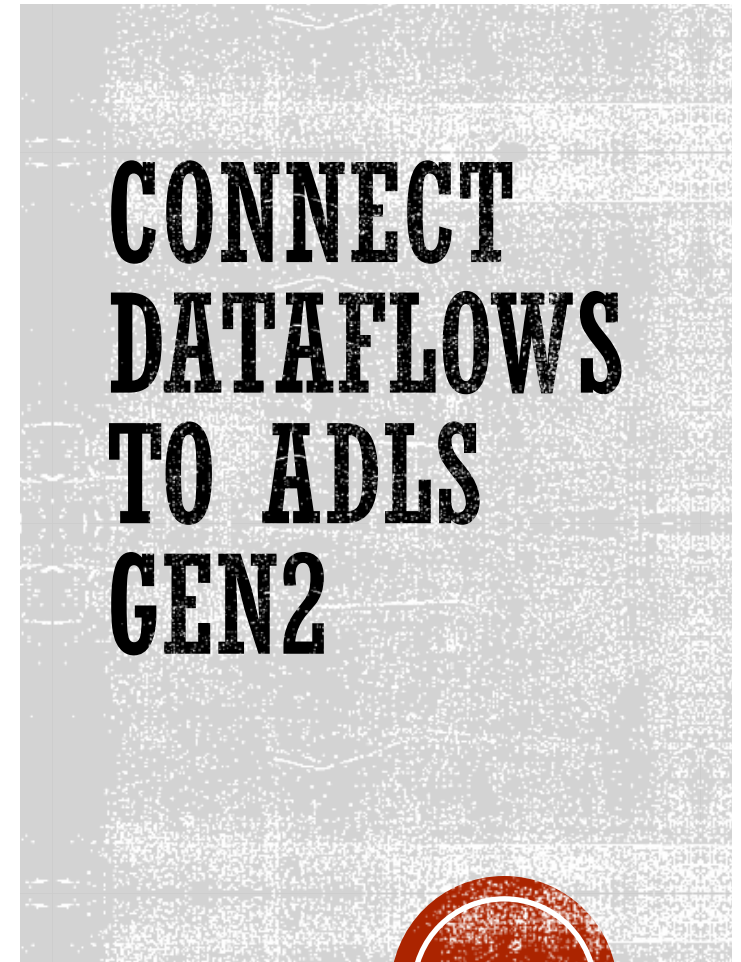
Connect to Azure Data Lake Storage Gen 2

Enter your Azure Data Lake Storage details. [Learn more](#)

Subscription ID

Resource group name

Storage account name



<https://docs.microsoft.com/en-us/power-bi/service-dataflows-connect-azure-data-lake-storage-gen2>

## Create an app workspace

Advanced ^

Dedicated capacity ⓘ

☒ On

Choose an available dedicated capacity for this workspace

P2 capacity - Central US ▼

[Learn more about Premium capacity.](#)

Dataflow storage (preview) ⓘ

☒ On

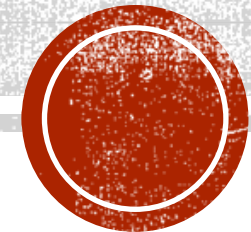
All new dataflows and dataflow data in this workspace will be stored in your organization's Azure Data Lake Storage Gen2 account.

- Linked entities will only be supported between workspaces in the same storage account.
- Dataflow permission management may be affected. [Learn more](#)

Save

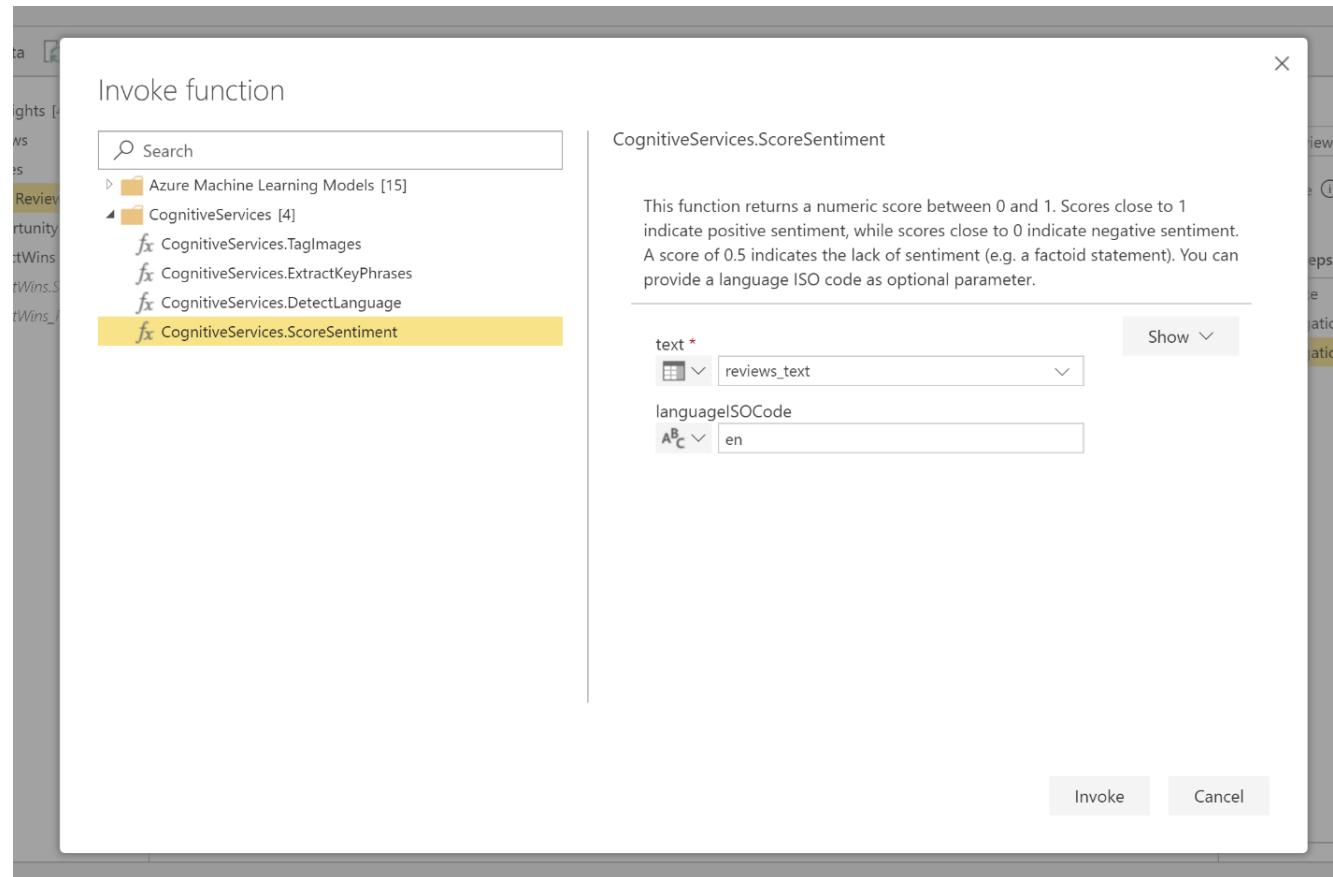
Cancel

# CONFIGURE WORKSPACE FOR POWER BI DATAFLOWS

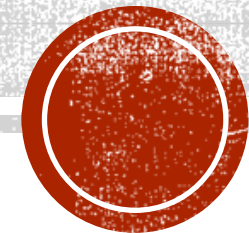


<https://docs.microsoft.com/en-us/power-bi/service-dataflows-configure-workspace-storage-settings>



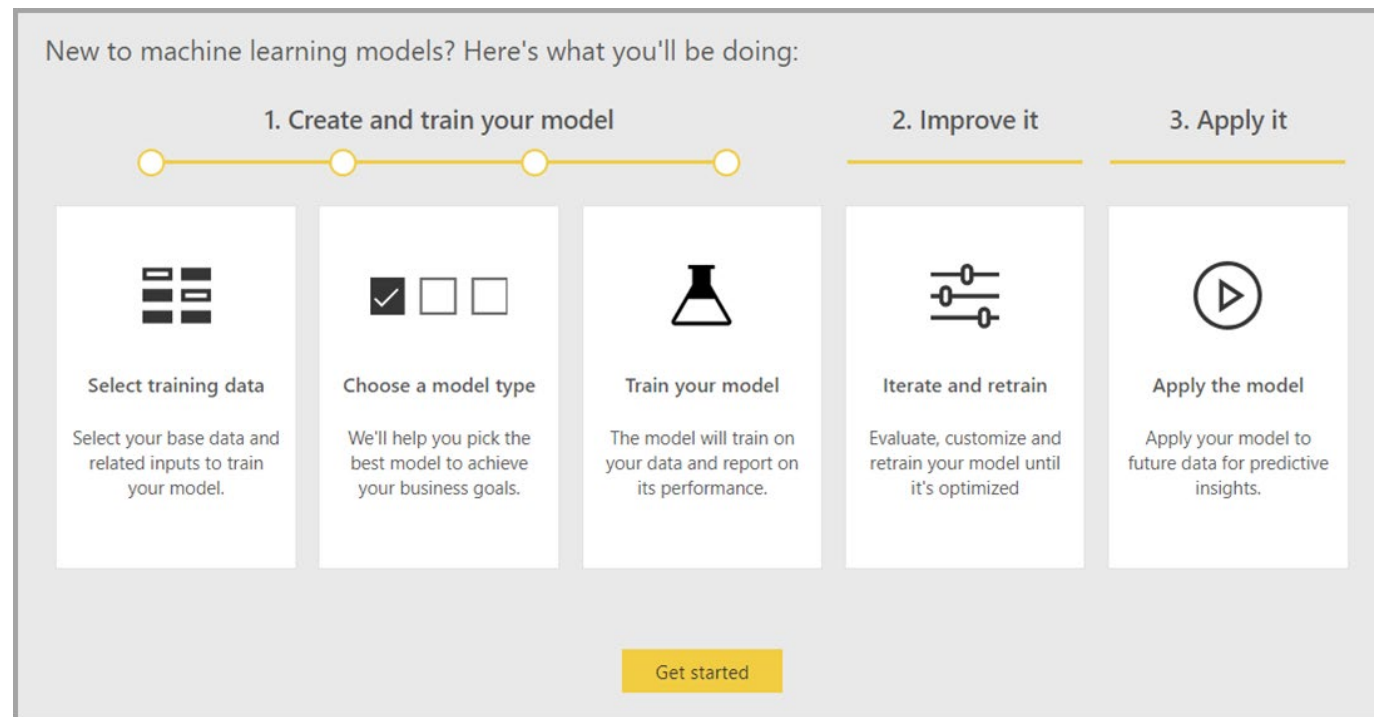


# COGNITIVE SERVICES IN POWER BI DATAFLOWS

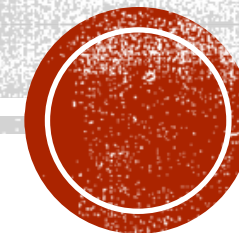


<https://docs.microsoft.com/en-us/power-bi/service-cognitive-services>

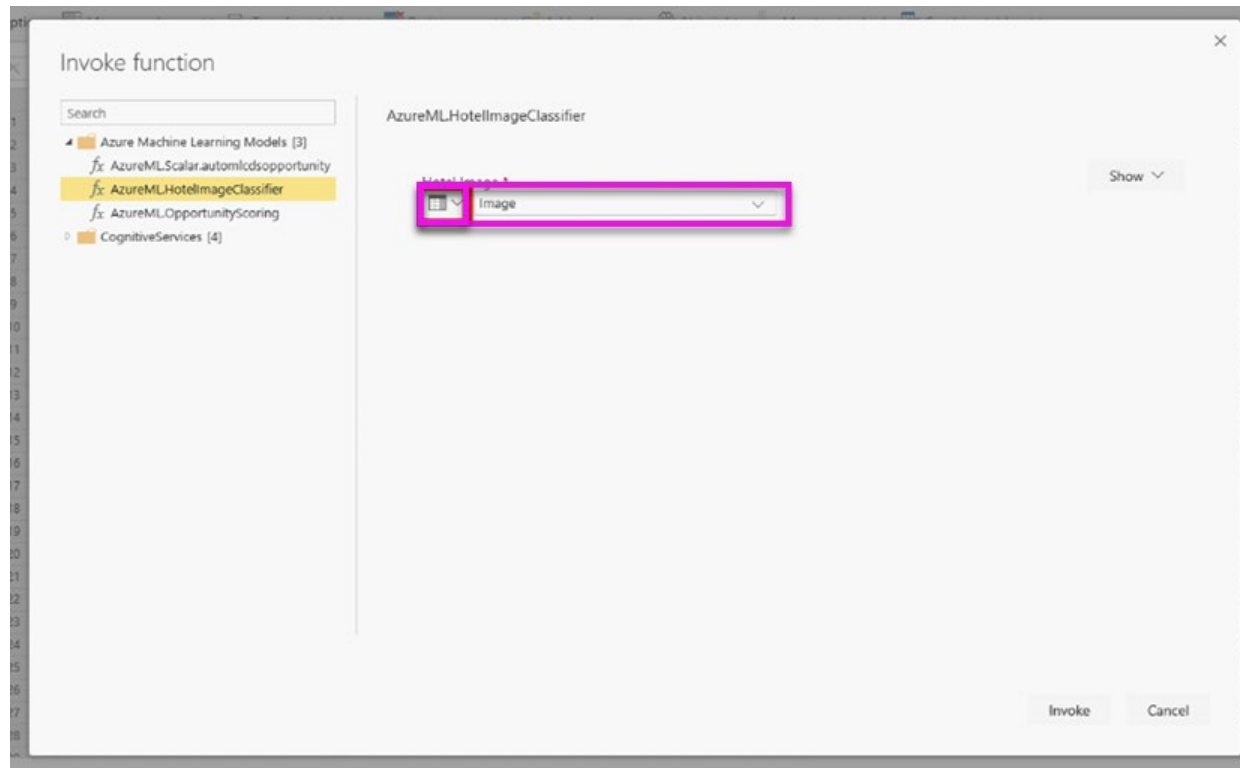




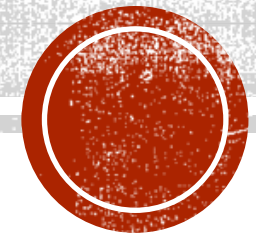
# AUTOMATED ML IN POWER BI DATAFLOWS



<https://docs.microsoft.com/en-us/power-bi/service-machine-learning-automated>



# AZURE ML IN POWER BI DATAFLOWS



<https://docs.microsoft.com/en-us/power-bi/service-machine-learning-integration>