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6,272 \$2.25 \$0.92 \$8,377

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48 \$5 \$1.03 \$7,734

76 \$9 \$0.84 \$7,734

57 \$6 \$0.83 \$7,734

50 \$5 \$0.80 \$7,253

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5,556 \$2.06 \$0.85 \$6,770

5,575 \$1.89 \$0.69 \$6,756

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4,739 \$2.13 \$0.87 \$6,020

\$104K

QTD Profit

UNITED STATES

\$368K

XTD Profit

b Bing

HERE, © 2018 Microsoft Corporation

Customer City

Transactions

Albany 514

Altadena 194

Arcadia 104

Arcadia 230

UP & RUNNING WITH POWER BI SERVICE

With Power BI Expert Aaron Parry



COURSE STRUCTURE



This is a **practical**, **hands-on**, and **engaging** course for students looking to learn cloud-based business intelligence with Power BI Service

Course resources include:

- ★ **Downloadable PDF eBook** to serve as a helpful reference when you're offline or on the go (*or just need a refresher!*)
- ★ **Quizzes** and **Homework Exercises** to test and reinforce key concepts throughout the course, with detailed step-by-step solutions
- ★ **Interactive, hands-on demos** to keep you engaged, with **downloadable project files** that you can use to follow along from home

COURSE OUTLINE

1	Introducing Power BI Service	<i>Meet Power BI Service, its account tiers & user personas, interface, building blocks and workspaces</i>
2	Power BI Service Administration	<i>Review administration roles & types, admin settings & options, and tenant settings</i>
3	Connecting to Data	<i>Connect data to Power BI Service, and explore features like gateways, dataflows, and scheduled refresh</i>
4	Reports & Dashboards	<i>Create reports & dashboards, and explore tools like data driven alerts, Q&A, and quick insights</i>
5	Sharing & Collaboration	<i>Share workspaces & collaborate with your team, publish apps, publish to web, and more</i>
6	Row-Level Security	<i>Create static & dynamic roles with DAX to restrict data access to users</i>
7	Premium Per User	<i>Review core Premium Per User functionality, features, considerations, and use cases</i>

SETTING EXPECTATIONS



This course is designed as part of a **larger Power BI series**

- *It is strongly recommended that you complete Up & Running with Power BI Desktop before proceeding to Power BI Service, as it provides important context and covers several core topics in depth*



What you see on your screen **may not always match mine**

- *Power BI features are updated frequently, so tools and interface options may change over time*
- *I'm using a Chrome browser on a PC/Windows machine; some features are not available for Mac*



The goal is to get you **up & running** with Power BI Service

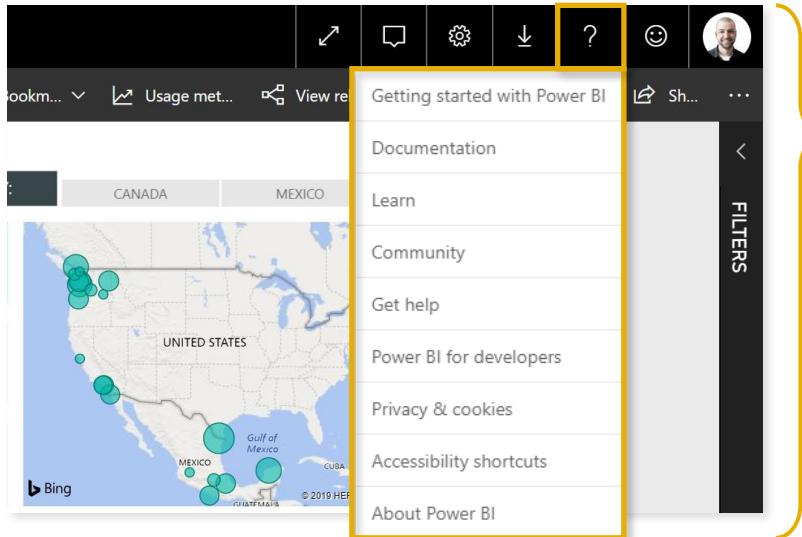
- *This course is designed to provide a foundational understanding of Power BI Service; some concepts may be simplified, and we won't cover some advanced tools (ML/AI, premium administration, etc.)*



You'll need a **compatible email address** to access PRO features

- *Sharing and collaboration features are only accessible with a pro license (60-day free trial available)*
- *Compatible emails must be associated with work or school addresses; personal email domains ending with gmail.com, hotmail.com, outlook.com, etc. will not work*

HELPFUL RESOURCES

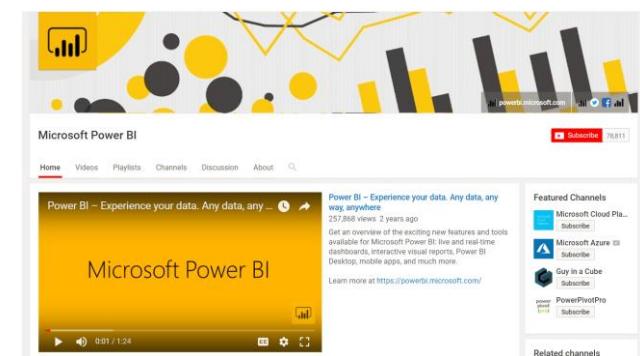


The **Power BI Community** is a place to connect, learn, and discuss business intelligence with your peers and experts (community.powerbi.com)

The “**Help & Support**” menu provides access to documentation and training videos from Microsoft support, as well as links to blogs, Power BI communities, and service updates



The **Microsoft Power BI blog** publishes monthly summaries of new features (powerbi.microsoft.com/blog)



The **Power BI YouTube Channel** publishes demos, feature summaries, and advanced tutorials (check out “**Guy in a Cube**” too!)

INTRODUCING THE COURSE PROJECT

THE SITUATION

Congratulations! You've just been hired as an analyst for **Maven Inspectional Services***, a restaurant health inspection agency based in Los Angeles, California

THE BRIEF

All you've been given is a collection of raw csv files containing health inspection records, along with details about each **restaurant**, **health inspector**, and **violations**

Your goal is to use **Power BI Service** (and Desktop) to build scalable reports & dashboards from the inspection data that can be shared across the company for collaboration

THE OBJECTIVES

- Load the raw Maven Inspectional Services data into Power BI Service
- Build reports & dashboards within a company workspace
- Automate dataflows and schedule updates
- Share and collaborate with your peers and teams



THE MAVEN INSPECTIONAL SERVICES DATA MODEL

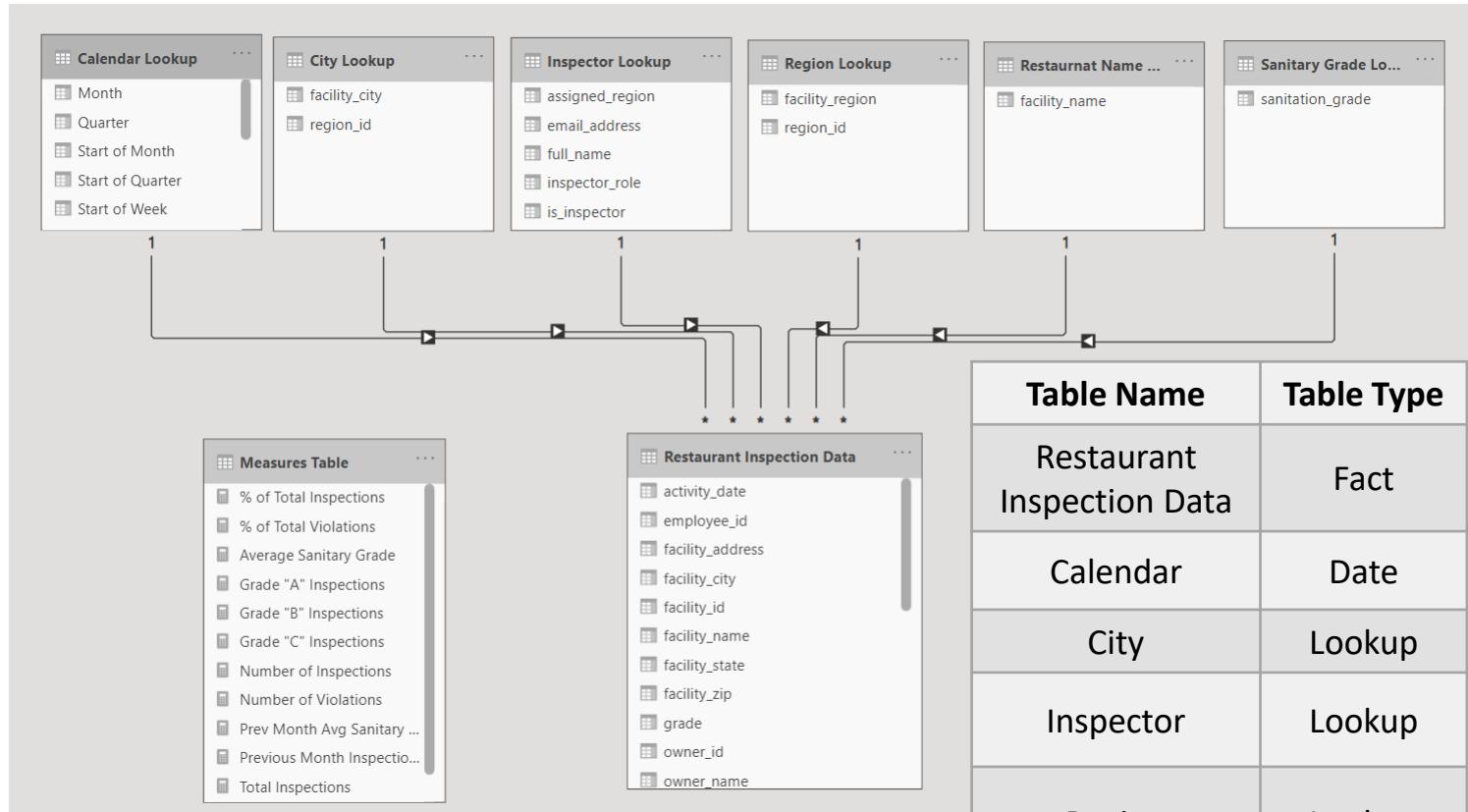


Table Name	Table Type	Definition
Restaurant Inspection Data	Fact	<i>This table contains inspection and violation data including date, facility, geo data, grade, etc.</i>
Calendar	Date	<i>Contains date, month, week, quarter and year details</i>
City	Lookup	<i>Two-column lookup table with facility city and region id</i>
Inspector	Lookup	<i>Multi-column table with inspector name, email, assigned region, role, etc.</i>
Region	Lookup	<i>Two column lookup table with facility region and associated region id</i>
Restaurant Name	Lookup	<i>One column lookup table with unique facility name</i>
Sanitary Grade	Lookup	<i>One column lookup table with A, B, or C values</i>

INTRODUCING POWER BI SERVICE

INTRODUCING POWER BI SERVICE



In this section we'll get you set up and familiarized with **Power BI Service**, including its different account tiers & user personas, interface, building blocks, and workspaces

TOPICS WE'LL REVIEW:

Power BI Ecosystem

Account Tiers

User Personas

Account Creation

Interface Overview

Workspaces

Building Blocks

MEET POWER BI SERVICE

- Power BI Ecosystem
- Account Tiers
- User Personas
- Account Creation
- Interface Overview
- Workspaces
- Building Blocks



Power BI

Power BI Service (aka Power BI online) is a cloud-based business intelligence service designed to help users visualize, analyze and share data in a centralized online environment

With Power BI Service, users can:

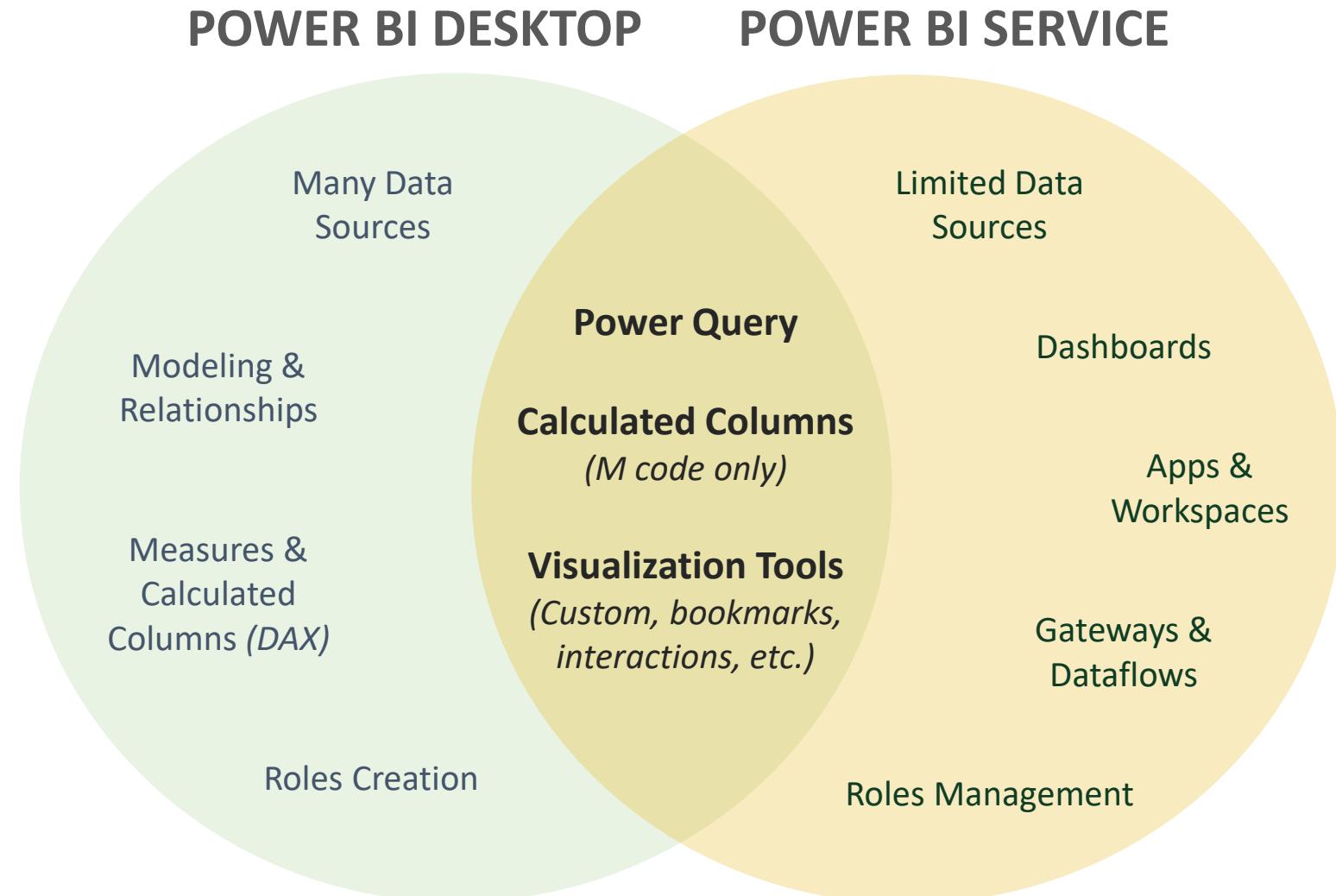
- Connect to online or on-premises data sources
- Build or publish reports and dashboards
- Collaborate through shared workspaces

More info at powerbi.microsoft.com



POWER BI: DESKTOP VS. SERVICE

- Power BI Ecosystem
- Account Tiers
- User Personas
- Account Creation
- Interface Overview
- Workspaces
- Building Blocks



INDIVIDUAL ACCOUNT TIERS

Power BI
Ecosystem

Account Tiers

User Personas

Account Creation

Interface
Overview

Workspaces

Building Blocks

Power BI FREE

No license required but users have limited access and can't collaborate or distribute content

Capabilities:

- No license Required
- Connect to 110+ Data Sources (*desktop & service*)
- Publish to Web
- Export to PowerPoint, Excel, CSV
- Share with Pro or Premium

Power BI PRO

Individually licensed and can leverage all content creation and interaction features

Capabilities:

- All from *Free tier* +
- User-based License
- Workspaces
- Email Subscriptions
- Peer-to-Peer Sharing
- Publish Apps
- Analyze in Excel & Power BI Desktop

Power BI PREMIUM PER USER

Individually licensed and can leverage all content creation, interaction and most premium features

Capabilities:

- All from *Pro tier* +
- AI Capabilities (*ML, Impact Analysis, Cognitive Services*)
- Advanced Dataflows (*Direct Query*)
- Deployment Pipelines
- XMLA Endpoint Connectivity
- Paginated Reports
- Enhanced Automatic Page Refresh



ENTERPRISE ACCOUNT & COMPARISON

Power BI Ecosystem
Account Tiers
User Personas
Account Creation
Interface Overview
Workspaces
Building Blocks

Power BI PREMIUM



Licensing based on dedicated capacity vs. number of users; content can be viewed without additional per-user costs

Capabilities:

- Capacity-based license
- Publish company reports without need for individual user licenses
- Greater scale & performance than shared capacity
- Works with on premises Power BI Report Server

NOTE: Pro licenses still required to publish, share, and collaborate

	Pro	Premium per User	Premium
Licensing			
Individual (Shared Capacity)	✓	✓	-
Dedicated Capacity (Storage Allocation & Monitoring)	-	-	✓
Deployment & Administration			
On-premises & Paginated Reporting	-	✓	✓
Multi-geo Deployment	-	-	✓
Incremental Data Refresh (per day)	8	48	48
Widespread Content Distribution w/o Pro License	-	-	✓
Max Dataset Size	1G	10G	10G
Max Storage (per Tenant)	10G	100G	100G
AI, Adv. Dataflows, Deployment Pipelines, etc.	-	✓	✓
Bring Your Own Key	-	-	✓
Best-In-Class Security & Encryption	✓	✓	✓
Data Prep, Modeling & Consumption			
Creation of Visuals, Reports, Dashboards & Apps	✓	✓	✓
Access to Data Connectors & Dataflows	✓	✓	✓
Analyze Data in Excel	✓	✓	✓
View & Interact with Content (Web & Mobile App)	✓	✓	✓
Embed Content in Teams, SharePoint & other SaaS Applications	✓	✓	✓

For more detailed information about pricing and a full comparison of features, head to:

<https://powerbi.microsoft.com/en-us/pricing/#powerbi-comparison-table>

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COMMON USER PERSONAS

Power BI
Ecosystem

Account Tiers

User Personas

Account Creation

Interface
Overview

Workspaces

Building Blocks

Power BI Service can be used to serve different types of **user personas**



THE **CREATOR** – Creator's **design, build, and maintain reports & dashboards**

These users play a key role in the entire BI workflow – from data wrangling to modeling and visualization – and must have a deep, well-rounded Power BI skillset



THE **ANALYZER** – Analyzers **explore and manipulate data to extract key insights**

These users often create and edit visuals, define calculated measures and columns with DAX, and use features like Q&A, interactions, report filters and bookmarks



THE **COLLABORATOR** – Collaborators **publish and share reports, apps and workspaces** to ensure that everyone has access to the data they need

These users should be familiar with configuring user roles, row-level security (RLS), and app/workspace environments

CREATING A NEW POWER BI ACCOUNT

Power BI
Ecosystem

Account Tiers

User Personas

Account Creation

Interface
Overview

Workspaces

Building Blocks

1

Head to powerbi.microsoft.com/landing/signin and click TRY FREE

- Note: Head to Step 3 if you already have an account*

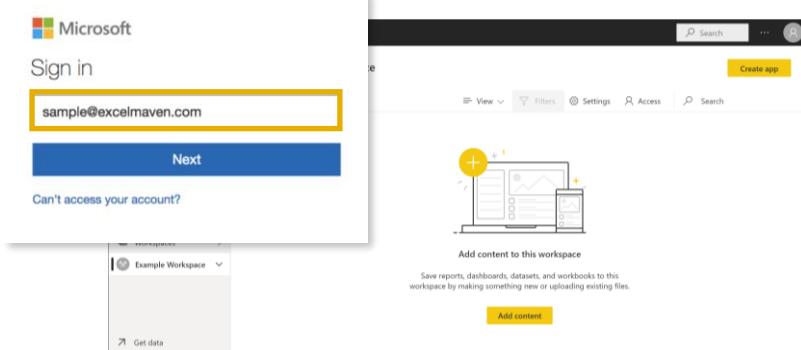
New to Power BI?

Power BI transforms your company's data into rich visuals for you to collect and organize so you can focus on what matters to you. Stay in the know, spot trends as they happen, and push your business further.

TRY FREE

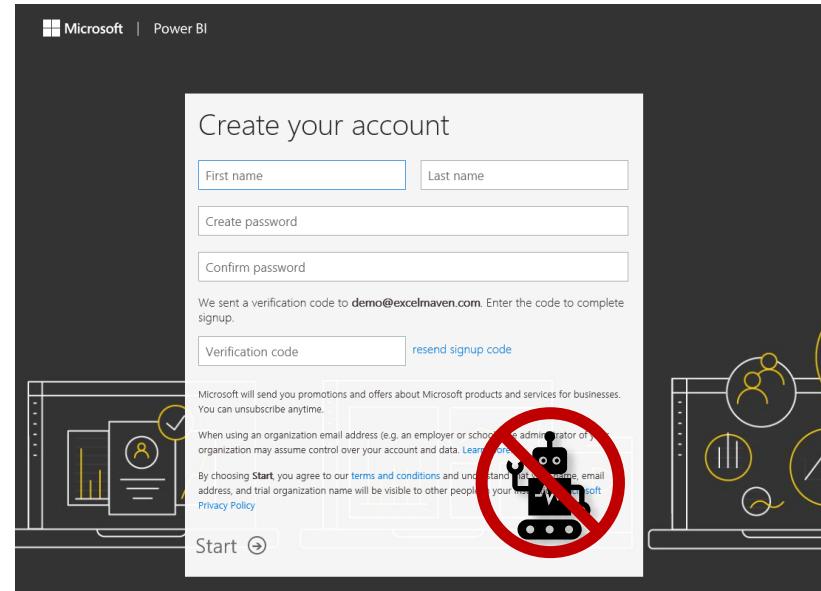
3

Once you've created your account, navigate directly to app.powerbi.com to log in



2

Enter your name, create a password, verify your e-mail, and confirm you're not a robot 😊



HEY THIS IS IMPORTANT!

Microsoft requires a **work or school email address**. Domains like @gmail, @yahoo, @outlook will not be accepted

PRO TIP: SIGNING UP WITH A NON-WORK/SCHOOL EMAIL

Power BI
Ecosystem

Account Tiers

User Personas

Account Creation

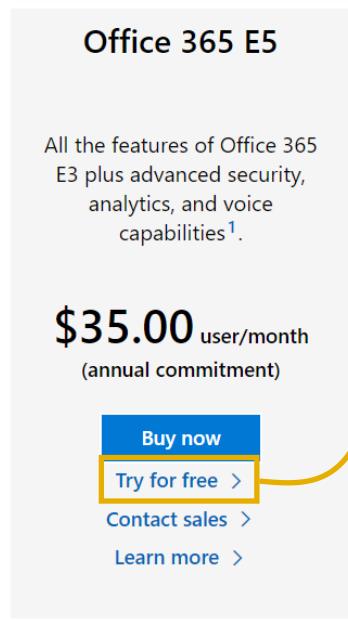
Interface
Overview

Workspaces

Building Blocks

You can sign up for a free Office 365 E5 trial account with **any email address**, which includes an automatic sign-up for Power BI Pro

- Head to: <https://www.microsoft.com/en-us/microsoft-365/enterprise/compare-office-365-plans>
- Select **Try for free** within the Office 365 E3 or E5 menu and receive a 30-day free trial



- 1 Enter your email and click **Set up account**
- 2 Fill in the required info and verify your phone number
- 3 Set up a domain name, username and password
- 4 You're ready to use Power BI Service (Pro)!

The sequence of screenshots illustrates the account setup process:

- Step 1: 'Set up account' - An email address is entered, and a 'Continue as' link is shown.
- Step 2: 'Enter a phone number' - A phone number is entered, and a note says "A text or phone call helps us make sure this is you. Enter a number that isn't VoIP or toll free."
- Step 3: 'Choose a domain name' - A custom domain name is chosen, and a note says "We don't save this phone number or use it for any other purpose."
- Step 4: 'You're all set' - The account is confirmed, and options to 'Check availability' and 'Next' are available.

ACTIVATING YOUR TRIAL

- Power BI Ecosystem
- Account Tiers
- User Personas
- Account Creation
- Interface Overview
- Workspaces
- Building Blocks

- 1 
- 2 Try Premium per user for free

To use this feature, upgrade to a Premium per user license. When you upgrade, you'll have access to all Premium features including paginated reports, deployment pipelines, and new AI capabilities.

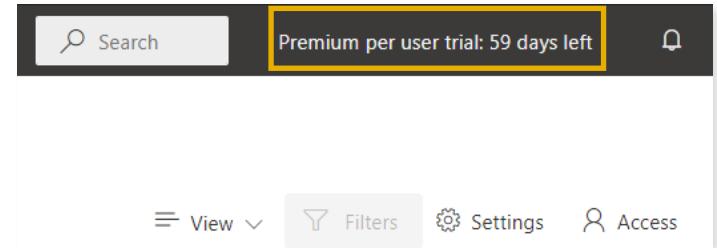
Try Premium per user free for 60 days. [Learn more](#)

[Start trial](#) [Cancel](#)
- 3 A Premium per user license is yours for 60 days

You get to use all Premium per user features for the next 60 days. If you love it, upgrade to a Premium per user license.

[Got it](#)

Your **trial period** lasts for **60 days**, and you'll see your remaining time in the header bar each time you log in



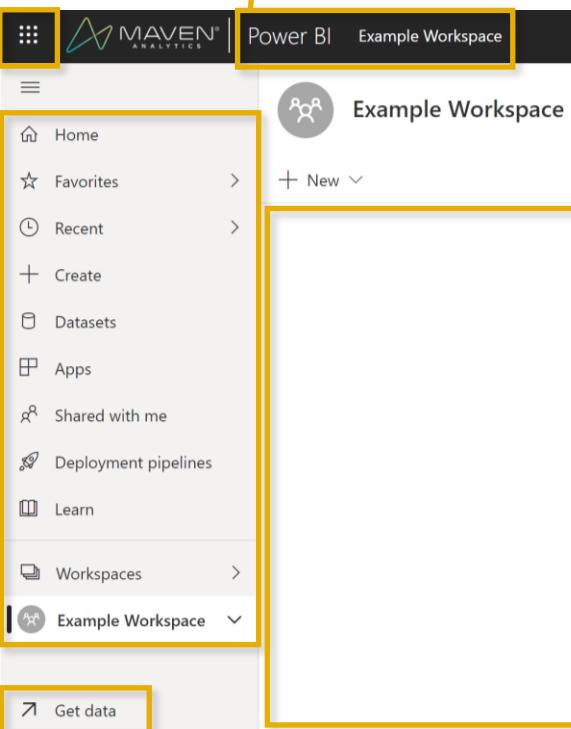
HEY THIS IS IMPORTANT!

We are activating a **Premium per User (PPU)** trial. All Pro features are included with a PPU trial, and we'll focus on additional features included with PPU later in the course.

QUICK TOUR OF THE INTERFACE

- Power BI Ecosystem
- Account Tiers
- User Personas
- Account Creation
- Interface Overview
- Workspaces
- Building Blocks

OFFICE 365 APP LAUNCHER *Email, OneDrive, Calendar, etc.*



NAVIGATION PANE *Key Power BI views, including Favorites, Apps, Workspaces, etc.*

NAVIGATION PATH

Highlights the active workspace, app, report or dashboard

WORKSPACE OPTIONS

Change view, update settings, manage access & search

SETTINGS MENU

Quick links for settings, help, feedback, downloads etc.



Add content to this workspace

Save reports, dashboards, datasets, and workbooks to this workspace by making something new or uploading existing files.



GET DATA

Import, create or discover new data connections & content

CONTENT CANVAS

Displays all your datasets, visuals, reports, dashboards, and workbooks

WORKSPACES

Power BI
Ecosystem

Account Tiers

User Personas

Account Creation

Interface
Overview

Workspaces

Building Blocks

There are *two types* of workspaces in Power BI Service: **My Workspace & Workspaces**

My Workspace

- **Personal workspace** for a single user (*Free or paid license*)
- **Only you** can access its content (*can't collaborate with others*)
- Content can be shared with **individual Pro/PPU users** (*shared with me*)
- Contains core **building blocks** (*datasets, workbooks, reports, and dashboards*)

Workspaces

- **Shared workspace** for many users (*with paid licenses*)
- **Multiple users** can access & collaborate on content
- Content can be created & shared **across your organization**
- Contains core **building blocks** (*datasets, workbooks, reports, and dashboards*) plus **dataflows**

CREATING A WORKSPACE

Power BI Ecosystem

Account Tiers

User Personas

Account Creation

Interface Overview

Workspaces

Building Blocks

Power BI My workspace

Home Favorites Recent Create Apps Shared with me Learn Workspaces My workspace

Get data Create a workspace

Add a **Name** (required) and optional **Description** for your workspace

Create a workspace

YOU'RE CREATING AN UPGRADED WORKSPACE
Enjoy new features, better sharing options, and improved security controls.
[Revert to classic](#) | [Learn more](#)

Workspace image

Workspace name

Description

[Learn more about workspace settings](#)

Advanced ▾

Save

Cancel

Power BI Maven Analytics

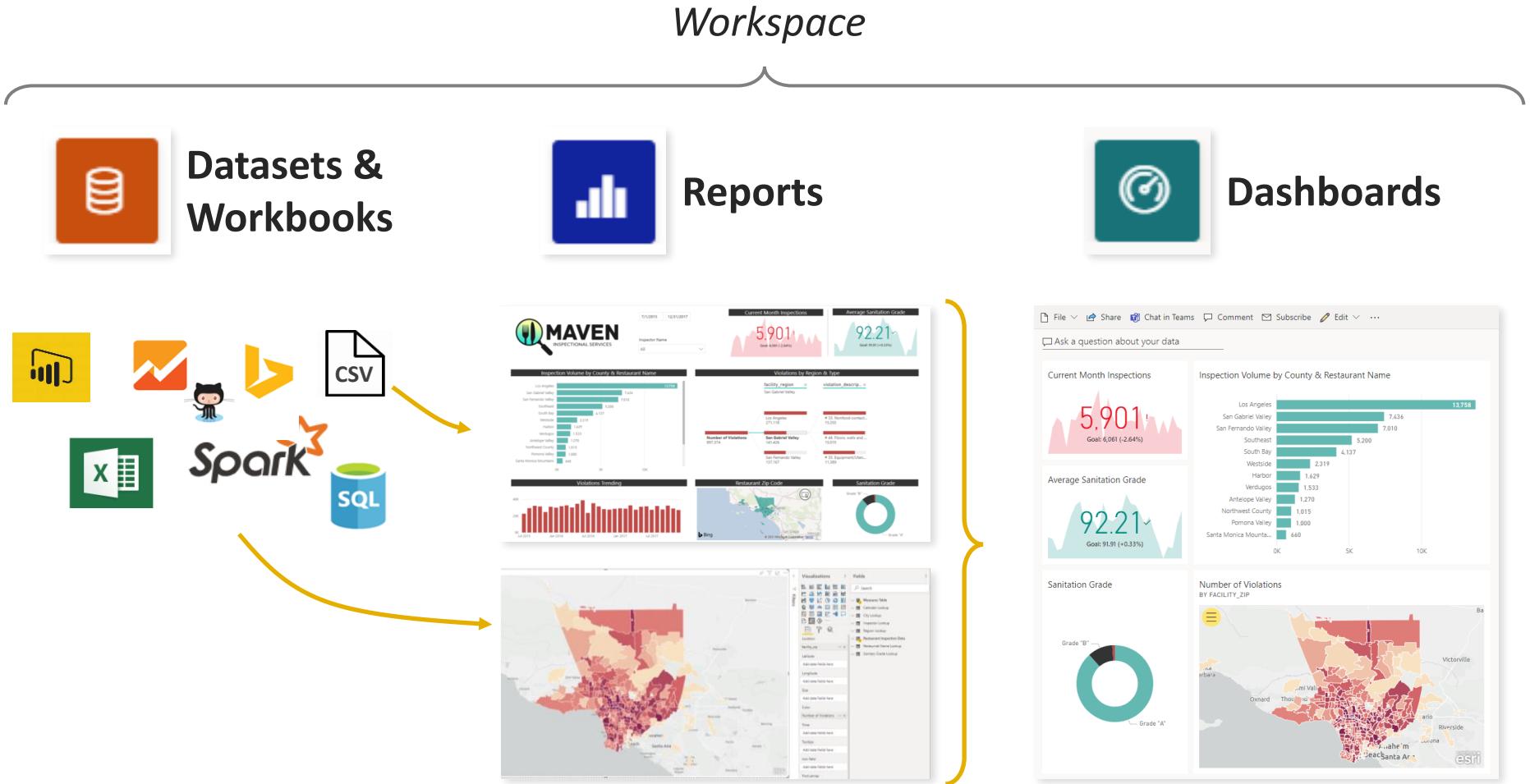
Home Favorites Recent Create Datasets Apps Shared with me Learn Workspaces Maven Analytics

COMMON WORKSPACE ACTIONS

Power BI Ecosystem	<h2>Content</h2>		<h2>Datasets + Dataflows</h2>	
Account Tiers		<p>Share – Reports & Dashboards with colleagues & coworkers</p>		<p>Refresh Now – Refresh underlying source data</p>
User Personas		<p>Favorite – Add selected report or dashboard to Favorites</p>		<p>Scheduled Refresh – Set automated refresh schedule</p>
Account Creation		<p>More – Contextual menu with additional settings & options</p>		<p>More – Contextual menu with additional settings & options</p>
Interface Overview	<h3>Reports</h3>	<h3>Dashboards</h3>	<h3>Datasets</h3>	<h3>Dataflows*</h3>
Workspaces	<ul style="list-style-type: none">Analyze in ExcelDeleteQuick InsightsSave a CopySettingsView Usage MetricsView Lineage	<ul style="list-style-type: none">DeleteSettingsView Usage MetricsView Lineage	<ul style="list-style-type: none">Analyze in ExcelCreate ReportDeleteQuick InsightsSecurityRenameSettingsDownload (.pbix or .rdl)Manage PermissionView Lineage	<ul style="list-style-type: none">DeleteEditExport .jsonPropertiesRefresh HistorySettingsView Lineage
Building Blocks	<h3>Workbooks</h3> <ul style="list-style-type: none">Refresh NowEditSettingsDelete	<small>*Dataflows not available through My Workspace</small>		

BUILDING BLOCKS OF POWER BI SERVICE

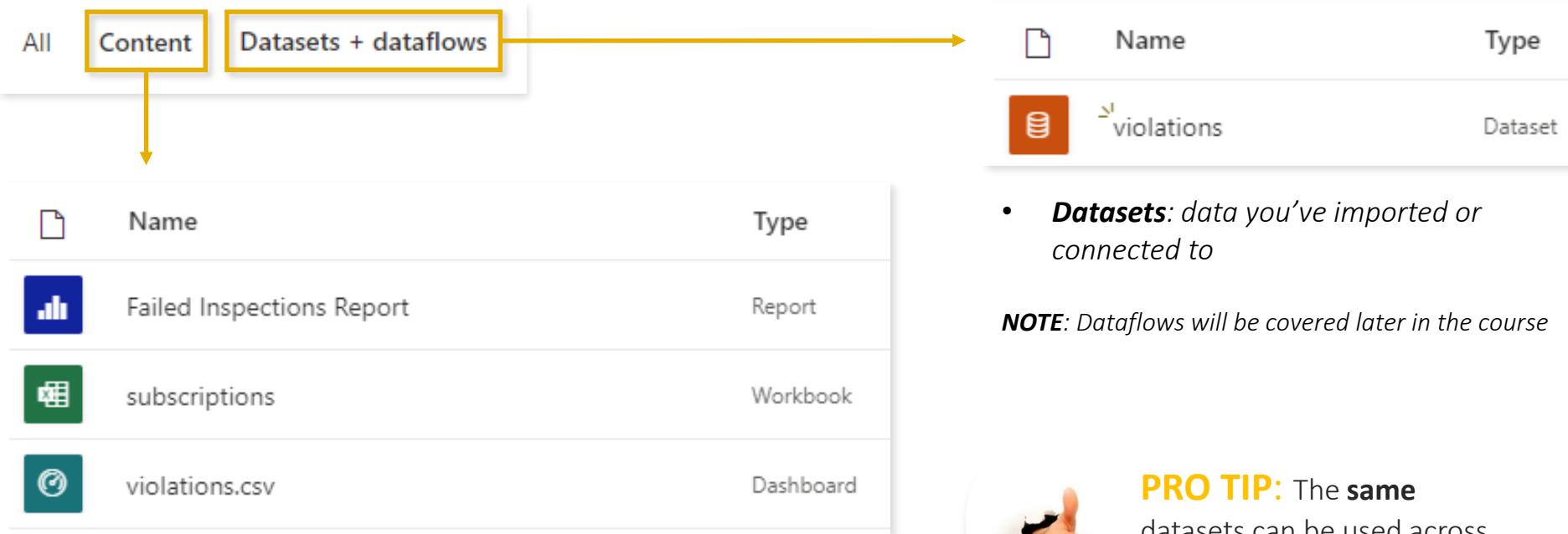
- Power BI Ecosystem
- Account Tiers
- User Personas
- Account Creation
- Interface Overview
- Workspaces
- Building Blocks



BUILDING BLOCKS OF POWER BI SERVICE

- Power BI Ecosystem
- Account Tiers
- User Personas
- Account Creation
- Interface Overview
- Workspaces
- Building Blocks

Power BI Service's building blocks are **datasets, workbooks, reports, and dashboards**

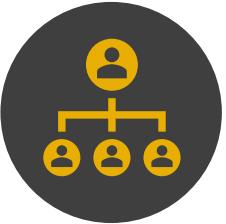


- Reports:** visuals built from individual datasets or workbooks
- Dashboards:** collections of reports and tiles from multiple datasets

PRO TIP: The **same** datasets can be used across multiple reports, workspaces, visualizations and dashboards

POWER BI SERVICE ADMINISTRATION

POWER BI SERVICE ADMINISTRATION



In this section we'll provide an overview of the core **Power BI administration** roles and types, common admin settings and options, along with an introduction to tenant settings

TOPICS WE'LL COVER:

Admin Roles

Admin Portal

Tenant Settings

Custom Branding

COMMON USE CASES:

- *Enabling features and functionality for your organization*
- *Managing individual user and team roles and permissions*
- *Configuring and customizing your Power BI tenant*

ADMIN ROLES & TYPES

There are four **types of admin roles** related to Power BI:

- 1 **MS O365** admins can manage, configure & monitor all Microsoft 365 services
- 2 **Power BI Premium** admins can create, manage & monitor Premium capacities
- 3 **Power Embedded** admins can create, manage & restart Embedded capacity
- 4 **Power BI Service** admins can manage tasks & users, enable & disable features, analyze usage, etc.

Admin Roles

Admin Portal

Tenant Settings

Custom Branding

Scope & Admin Role	Tasks	Typical Role
Microsoft O365		
Global Admin	-Unlimited access to all organizational features -Assigns roles to other users	IT / Business Owner
Billing Admin	-Manage subscriptions -Purchase Licenses	
License Admin	-Assign or remove licenses for users	
User Admin	-Create and manage users and groups -Reset user passwords	
Power BI Service		
Power BI Admin	-Full access to Power BI management tasks -Enable & disable Power BI Features -Report on Usage & Performance -Review & manage auditing	IT / Director / Manager / Team Lead
Power BI Premium		
Power BI Premium Admin	-Assign workspaces to the capacity -Manage user permission to the capacity -Manage workloads to configure memory usage -Restart the capacity	IT / Director / Team Lead
Power BI Embedded		
Power BI Embedded Admin	-Assign workspaces to the capacity -Manage user permission to the capacity -Manage workloads to configure memory usage -Restart the capacity	IT / Director / Team Lead

For more detailed information about admin roles and types visit:

<https://docs.microsoft.com/en-us/power-bi/admin/service-admin-administering-power-bi-in-your-organization>

*Copyright 2021, Maven Analytics, LLC

ADMIN PORTAL SETTINGS & OPTIONS

Admin Roles

Admin Portal

Tenant Settings

Custom Branding

Admin portal

Usage metrics

Users

Premium per user (preview)

Audit logs

Tenant settings

Capacity settings

Refresh summary

Embed Codes

Organizational visuals

Azure connections (preview)

Workspaces

Custom branding

Protection metrics

Featured content

The admin portal allows you to:

- Monitor usage across your organization
- Manage users and access audit logs (O365 admin center)
- Configure your tenant settings
- Set capacity settings for Power BI Premium & Embedded
- Manage, View, and Edit
 - Embed Codes
 - Organizational visuals
 - Workspaces
 - Featured Content
- Apply custom branding
- Monitor data protection metrics and sensitivity labels

HEY THIS IS IMPORTANT!

Admin portal features may not be available to everyone!

Reach out to the person in your organization that fills the IT role & ask for access



TENANT SETTINGS

Tenant Settings are a way to configure and manage the different capabilities and features within Power BI Service

Admin Roles

Admin Portal

Tenant Settings

Custom Branding

- ✓ Tenant-wide New Look Settings
- ✓ Help & Support Settings
- ✓ Workspace Settings
- ✓ Export & Sharing Settings
- ✓ Content Pack & App Settings
- ✓ Power BI, R, and Python Visuals
- ✓ Audit & Usage Settings
- ✓ Dashboard Settings
- ✓ Dataflow Settings
- ✓ Q&A Settings

- *Information Protection (requires Azure Information Protection Premium P1 or P2 license)*
- *Integration Settings (XMLA endpoints, ArcGIS maps, SSO, etc.)*
- *Developer Settings*
- *Template App Settings*
- *Advanced Networking*

HEY THIS IS IMPORTANT!

Some options could expose your organization to risk; always configure your tenant to align with your organization's policies and best practices



PRO TIP: CONFIGURING CUSTOM BRANDING

Custom branding allows you to customize the look and feel of your Power BI tenant for your entire organization

- Admin Roles
- Admin Portal
- Tenant Settings
- Custom Branding

Admin portal

Custom branding

Customize the look of Power BI for your whole organization. [Learn more](#)

Logo
For best results, upload a logo that's saved as a .png, 10 KB or smaller, and at least 200 x 30 pixels.

 [Upload](#) [Delete](#)

Cover image
For best results, upload a cover image that's saved as a jpg or .png, 1 MB or smaller, and at least 1920 x 160 pixels.

 [Upload](#) [Delete](#) [Crop](#)

Theme color

 #252525

[Remove custom branding](#)

[Preview](#) [Publish](#)

Logo – Add your company or client's logo that'll appear on the top left of the navigation pane

Cover Image – Add a cover image that'll be featured from the Home screen

Theme Color – Customize the color used for the background of the top navigation bar on every page

BEST PRACTICES: POWER BI SERVICE ADMINISTRATION



Set & adjust common tenant settings

- *Make sure teams across your organization have the tools they need to perform their jobs*
- *Activate features within **Workspace**, **Dashboard**, and **Dataflow** settings to easily provide access*



Enable option to publish helpful links & resources

- *The “Publish Get Help Information” feature allows you to link to your organizations’ **training documentation**, **discussion forums**, **licensing requests**, and internal **help desk***



Adhere to your organizations’ policies & best practices

- *Sharing content with external users or publishing to web can open your organization to unnecessary risk*
- *Add information protection and incident & service outage notifications as management tools*



Use custom branding to customize your tenant

- *It’s a great way to bring life to your Power BI tenant and let your team & clients feel more at home*

CONNECTING TO DATA

CONNECTING TO DATA



In this section we'll cover different ways to **connect to data** in Power BI Service, and explore features like gateways, dataflows, and scheduled refresh

TOPICS WE'LL COVER:

Connection Options

Local Files

Data Gateways

Dataflows

Scheduled Refresh

Automation

COMMON USE CASES:

- *Adding new content by connecting to flat files or publishing Power BI Desktop reports*
- *Connecting data between a local computer or on-premises source to Power BI Service*
- *Building independent queries that run within Power Query in the cloud*
- *Keeping reports up to date with scheduled refresh*

DATA CONNECTION OPTIONS

Connection Options

Local Files

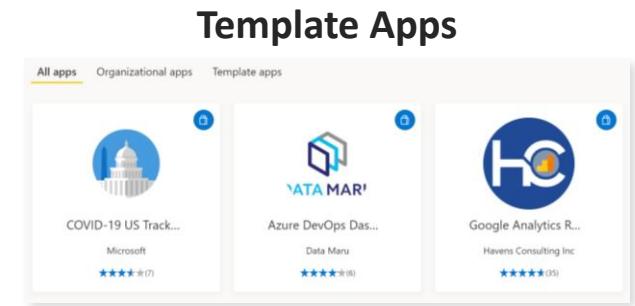
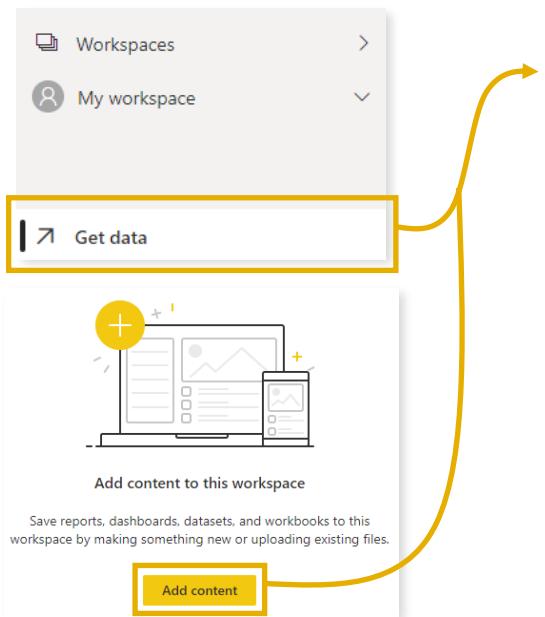
Data Gateways

Dataflows

Scheduled Refresh

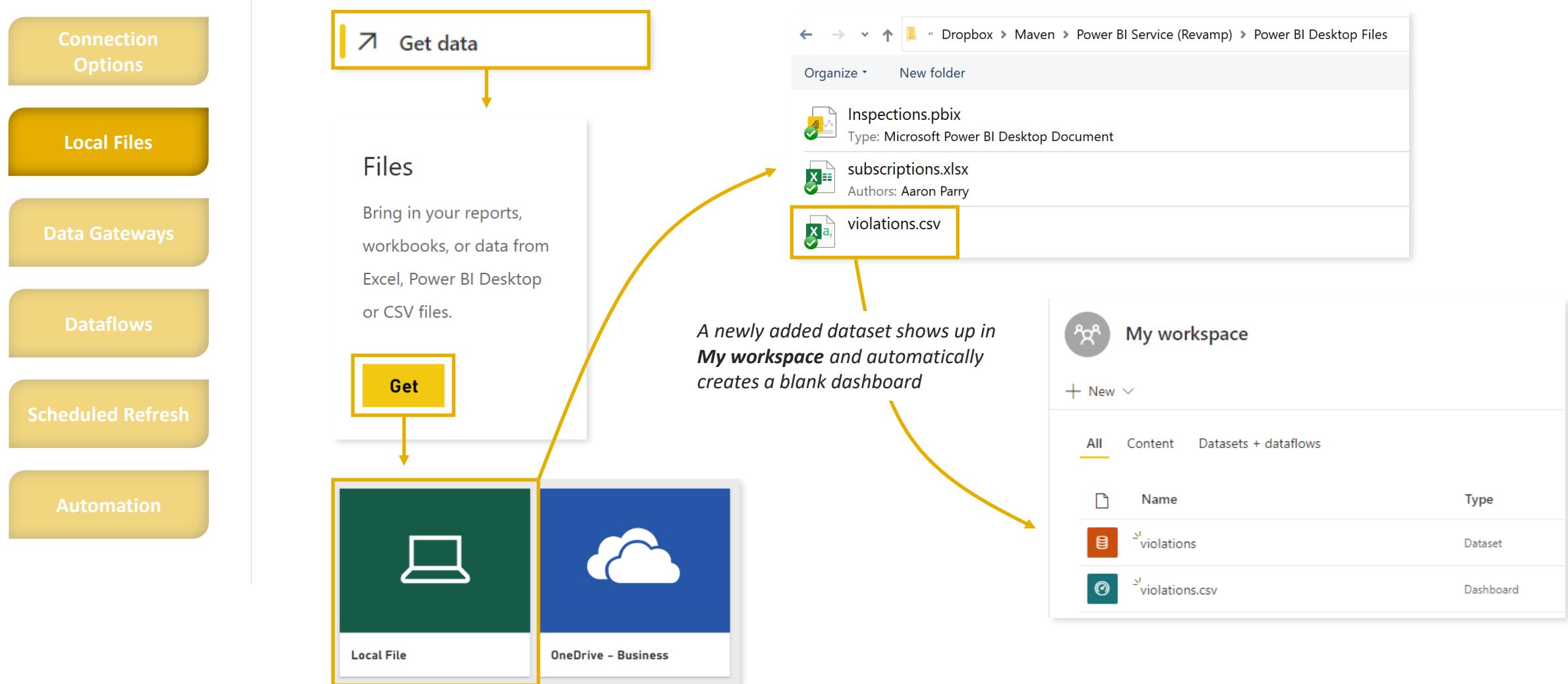
Automation

Power BI Service can **connect** to many types of **data sources**, but is not as robust as the Desktop environment



PRO TIP: Use Power BI Desktop to connect to database sources and build your relational models, then publish the .pbix file to Power BI Service to make your reports available on the cloud

LOADING A LOCAL FILE



LOADING DATA FROM EXCEL

Connection Options

Local Files

Data Gateways

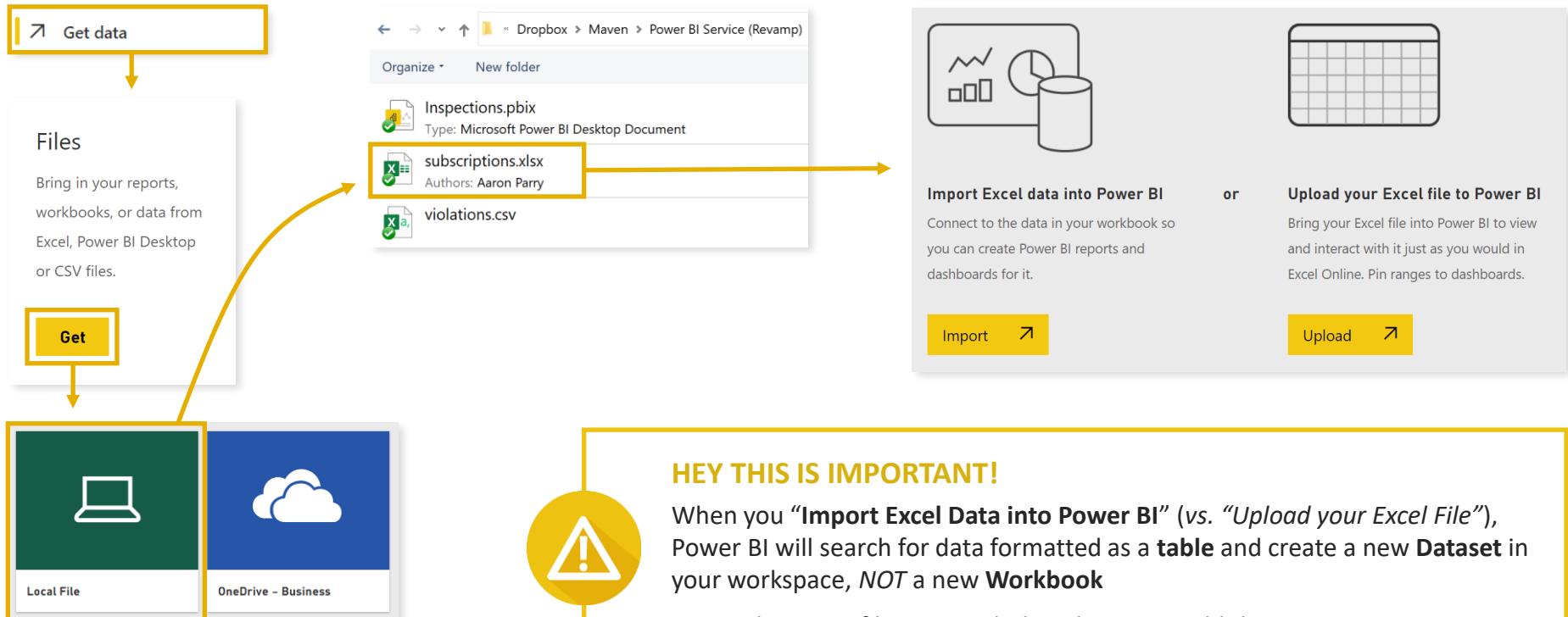
Dataflows

Scheduled Refresh

Automation

You can load Excel data as a **data table** or as a **workbook**

- NOTE: Workbooks are a special type of dataset within Power BI Service



PRO TIP: LOADING DATA FROM SHAREPOINT

Connection Options

Local Files

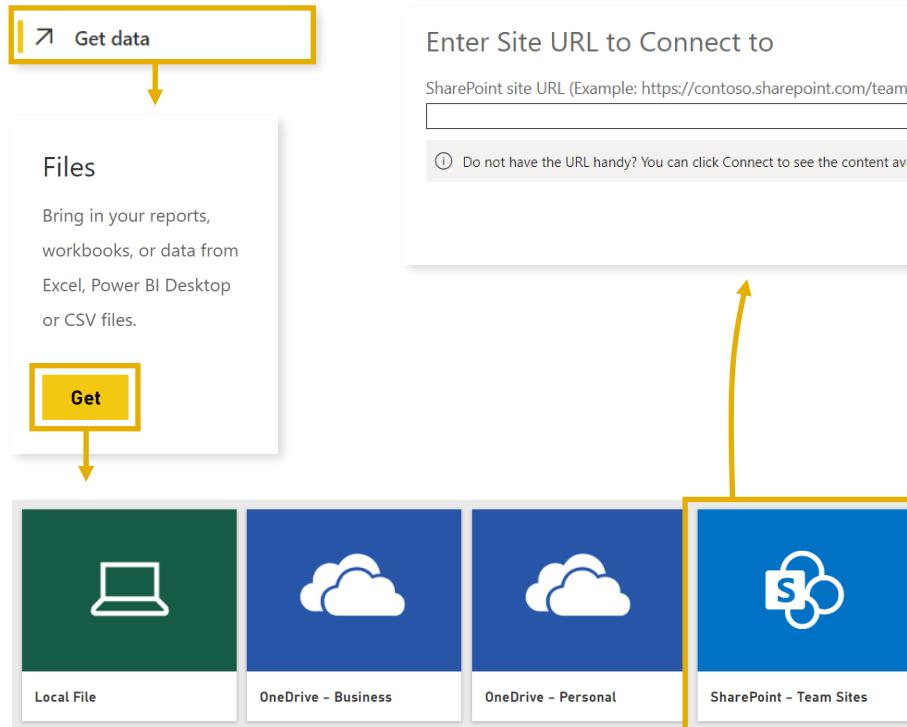
Data Gateways

Dataflows

Scheduled Refresh

Automation

You can load SharePoint data by entering the site URL or clicking *Connect* and navigating to the root



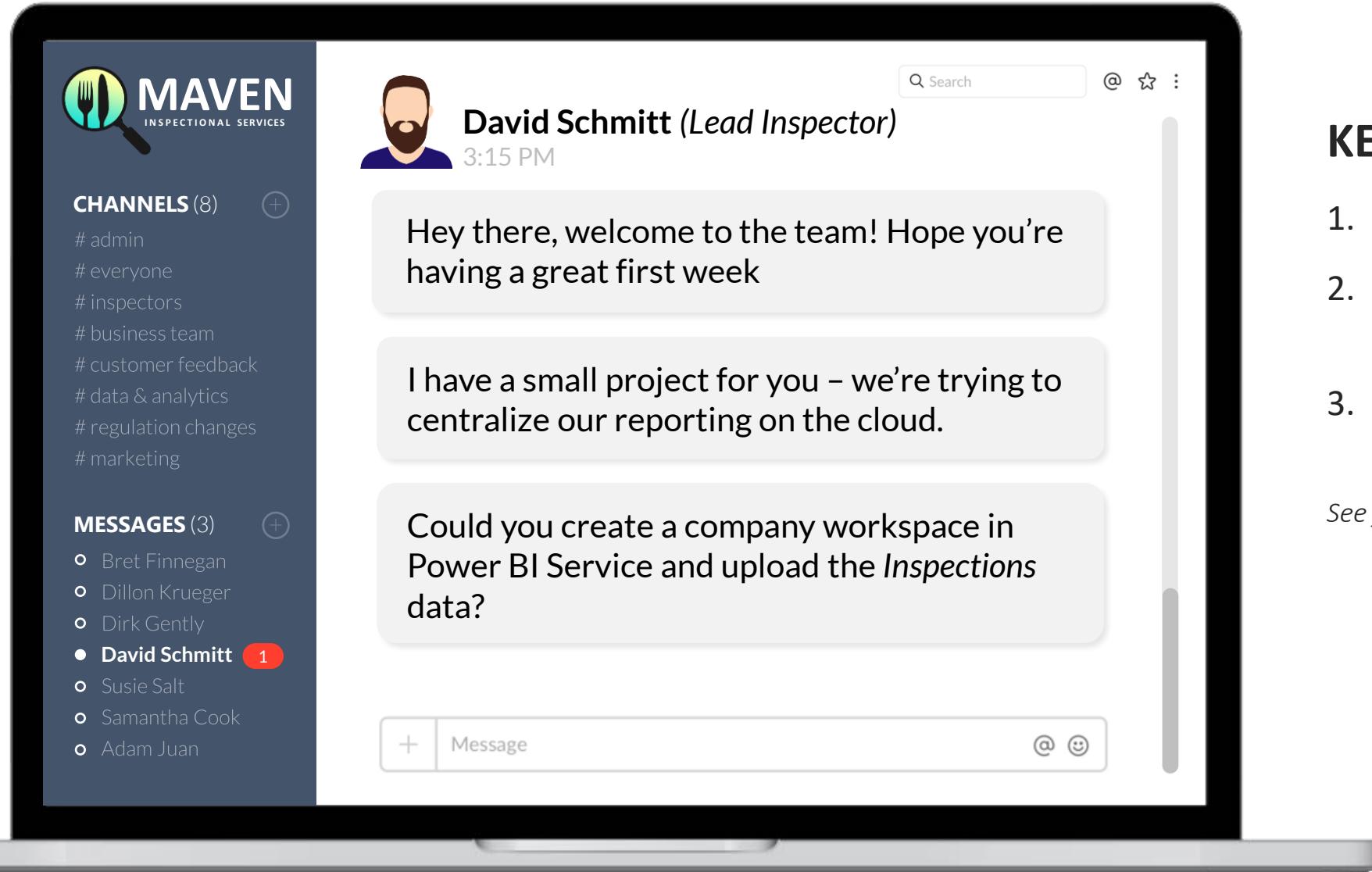
HEY THIS IS IMPORTANT!

Excel in Power BI is **view only**, so any changes made will not be saved

Click "Edit" to launch the desktop app or Excel online

A	B	C	D	E	F	G	H	I	
1	activity_dat	employee_i	facility_address	facility_cit	facility_id	facility_name	facility_stat	facility_zi	grade
2	5/9/2017 EE0000593	17660 CHATSWO GRANADA HI	FA0175397 HOVIK'S FAMO CA						91344 A
3	4/10/2017 EE0000126	3615 PACIFIC CO	TORRANCE	FA0242138 SHAKEY'S PIZZA CA					90505 A
4	4/4/2017 EE0000593	17515 CHATSWO GRANADA HI	FA0007801 BAITH AL HALA CA						91344 A
5	8/15/2017 EE0000971	44455 VALLEY CE	LANCASTER	FA0013858 FOOD 4 LESS #: CA					93536 A
6	9/26/2016 EE0000145	11700 SOUTH ST	ARTESIA	FA0179671 PHO LITTLE SAI CA					90701 A
7	5/11/2016 EE0000720	1309 S HOOVER	LOS ANGELES	FA0179745 HAPPY TACOS 1CA					90006-4903 A
8	2/28/2017 EE0000741	4959 PATATA ST	CUDAHY	FA0012590 EL POTRERO CL CA					90201 B
9	11/3/2016 EE0000721	524 S MAIN ST	LOS ANGELES	FA0051633 THE NICKEL DIN CA					90013 A
10	2/17/2016 EE0000742	333 W BONITA A	CLAREMONT	FA0062434 FULL OF LIFE B/CA					91711 A
11	4/18/2017 EE0000745	11954 E CARSON	HAWAIIAN G	FA0007900 CARSON LIQUIC CA					90716 A
12	8/30/2016 EE0000721	1151 W VENICE	LOS ANGELES	FA0031441 SABOR MEXICA CA					90015 B
13	6/1/2016 EE0000998	1604 MONTEBELLO	CA	FA0025866 GREAT KHAN'S CA					90640 A

ASSIGNMENT: LOADING LOCAL DATA TO A WORKSPACE



KEY OBJECTIVES:

1. Create a new **workspace**
2. Load Excel data as a **table** & as a **workbook**
3. **BONUS:** Practice loading data from SharePoint

See following text lesson for instructions

UNDERSTANDING DATA GATEWAYS

Connection Options

Local Files

Data Gateways

Dataflows

Scheduled Refresh

Automation

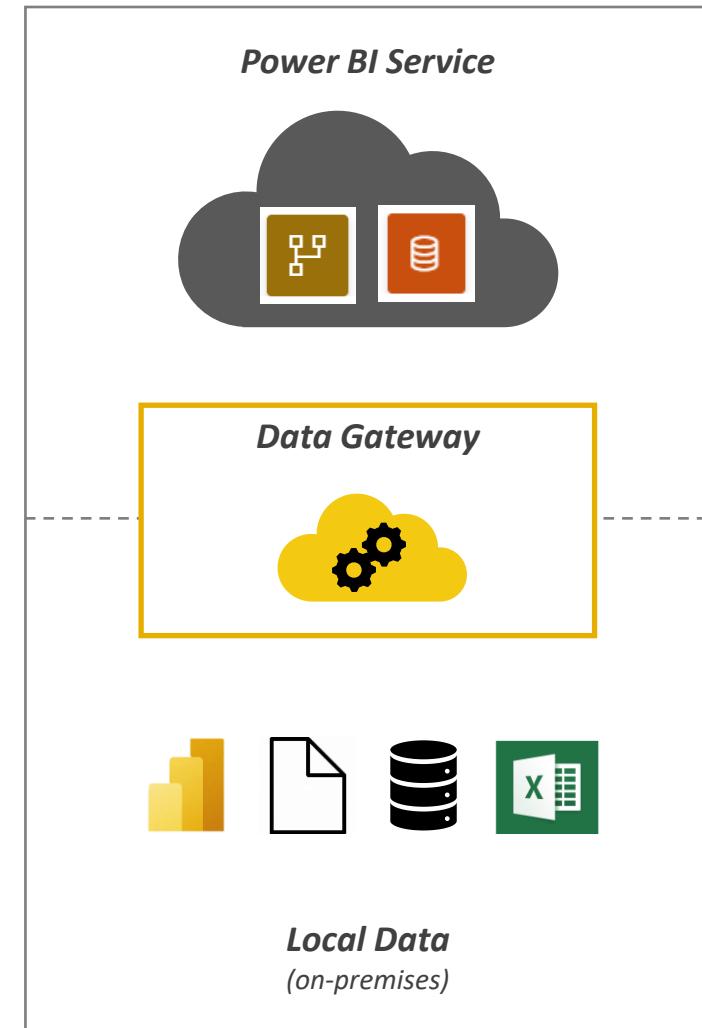
A **data gateway** acts like a *bridge* that connects your local data to Power BI Service in the cloud

- ✓ Allows you to keep data securely on your network
- ✓ Enables options like scheduled refresh



HEY THIS IS IMPORTANT!

Gateways are only supported for **Windows**
To use scheduled refresh with Excel, your file **must contain a data model**



GATEWAY TYPES

Connection Options

Local Files

Data Gateways

Dataflows

Scheduled Refresh

Automation

There are *two types* of gateways in Power BI: **Personal Mode & Standard Mode**

Personal Mode Gateway

- Can only be used by **you**
- Can't be used with other apps or services
- Only supports scheduled refresh in **Power BI**

Standard Mode Gateway

- Can be shared and used by **multiple users**
- Can be used by **Power BI, PowerApps, Flow, etc.**
- Supports **scheduled refresh** for Direct Query, Dataflows, and Analysis Services



PRO TIP: Recommend always using the **Standard Mode Gateway**; it allows for everything the personal mode gateway does, can be used with Power Apps, and lets you share it with others in your organization



SETTING UP A DATA GATEWAY (STANDARD MODE)

Connection Options

Local Files

Data Gateways

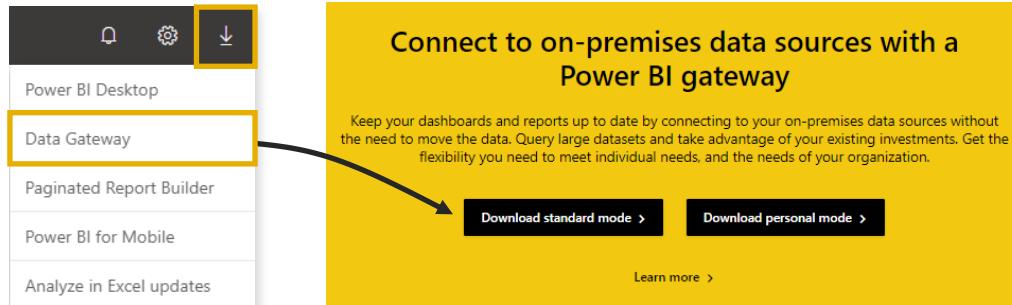
Dataflows

Scheduled Refresh

Automation

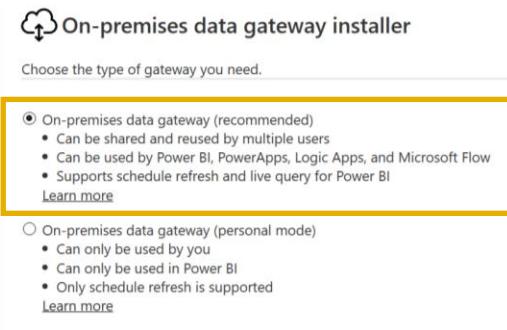
1

Select **Data Gateway** from the Download menu or head directly to powerbi.microsoft.com/gateway and click “Download Standard Mode”



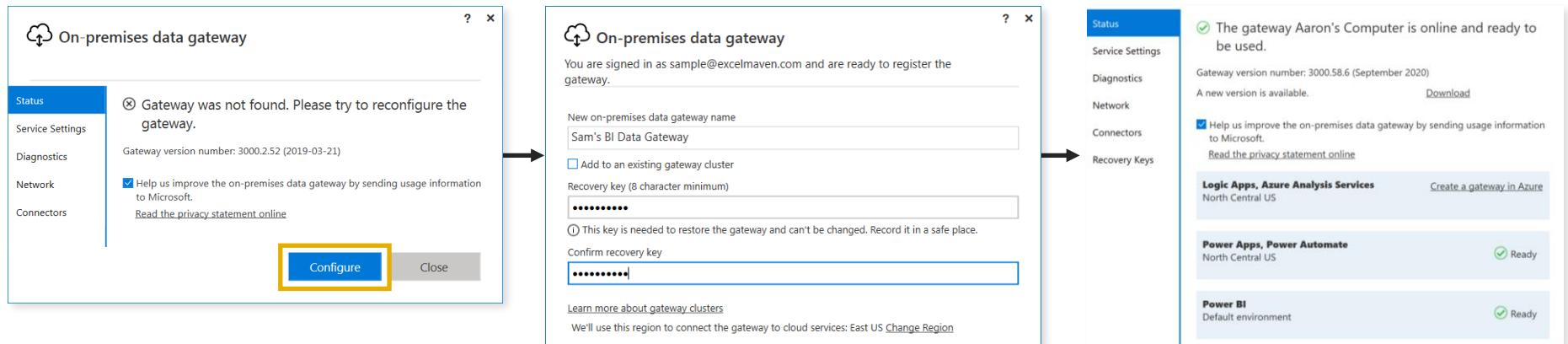
2

Select **On-premises data gateway (recommended)**



3

Sign in using your Power BI Service credentials, then click **Configure** to create a **gateway name** and **recovery key (password)**



CONFIRMING GATEWAY STATUS

Connection Options

Local Files

Data Gateways

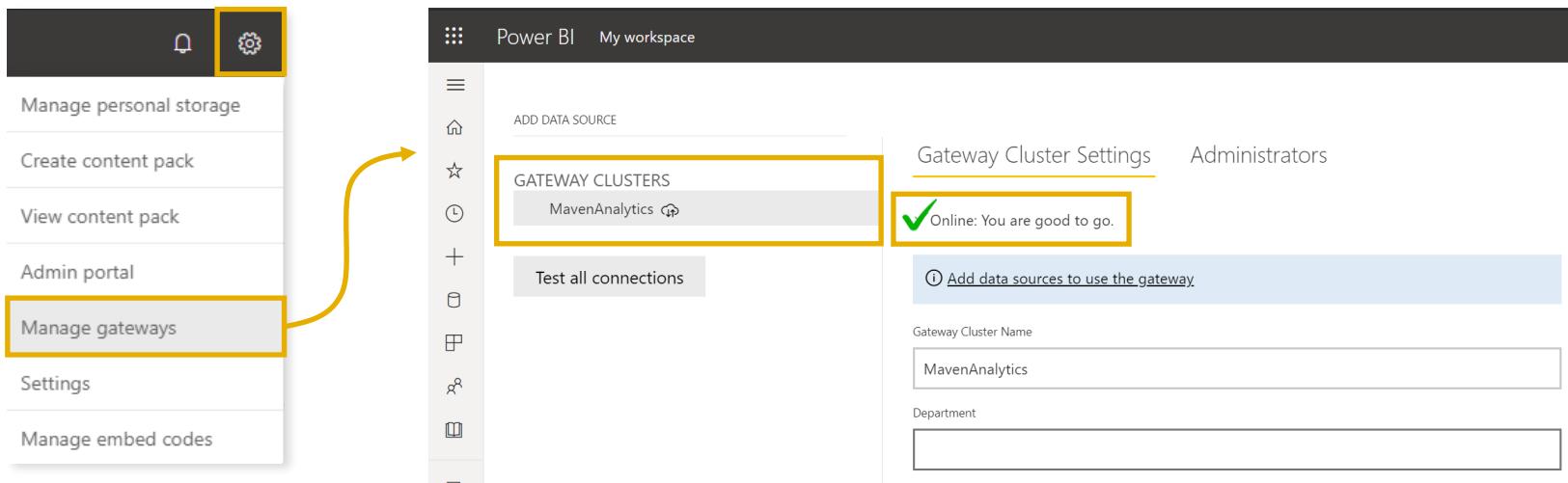
Dataflows

Scheduled Refresh

Automation

To confirm gateway status, click the gear icon and then select “Manage gateways”

- Gateways should be listed under “Gateway Clusters” with status “*Online: You are good to go*”



PRO TIP: If your Gateway Cluster shows this message, click **show details** for troubleshooting

⊗ None of gateway instances within this cluster are connected. Please find more details below about specific errors for each gateway instance. [Show details](#)

UNDERSTANDING DATAFLOWS

Connection Options

Local Files

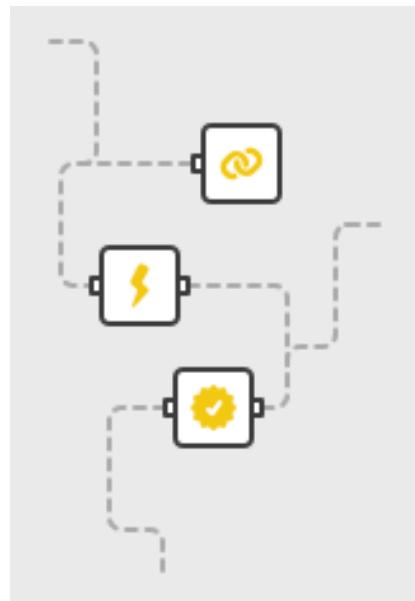
Data Gateways

Dataflows

Scheduled Refresh

Automation

Dataflows are queries that run *independently* within Power BI Service (*Power Query in the cloud!*) and are used to ingest, transform, store, and integrate data



Why Dataflows?

- ✓ Reuse queries across **multiple Power BI Desktop or Service reports**
- ✓ Run ETL (*extract, transform & load*) processes on **specific schedules**
- ✓ Create a centralized data warehouse to serve as a **single source of truth**

How are Dataflows Implemented?

1. **Create** and **build** dataflows in Power BI Service
2. **Refresh dataflow** in Power BI Service
3. **Connect to a dataflow** as the dataset in Power BI Desktop

UNDERSTANDING DATAFLOWS

Connection Options

Local Files

Data Gateways

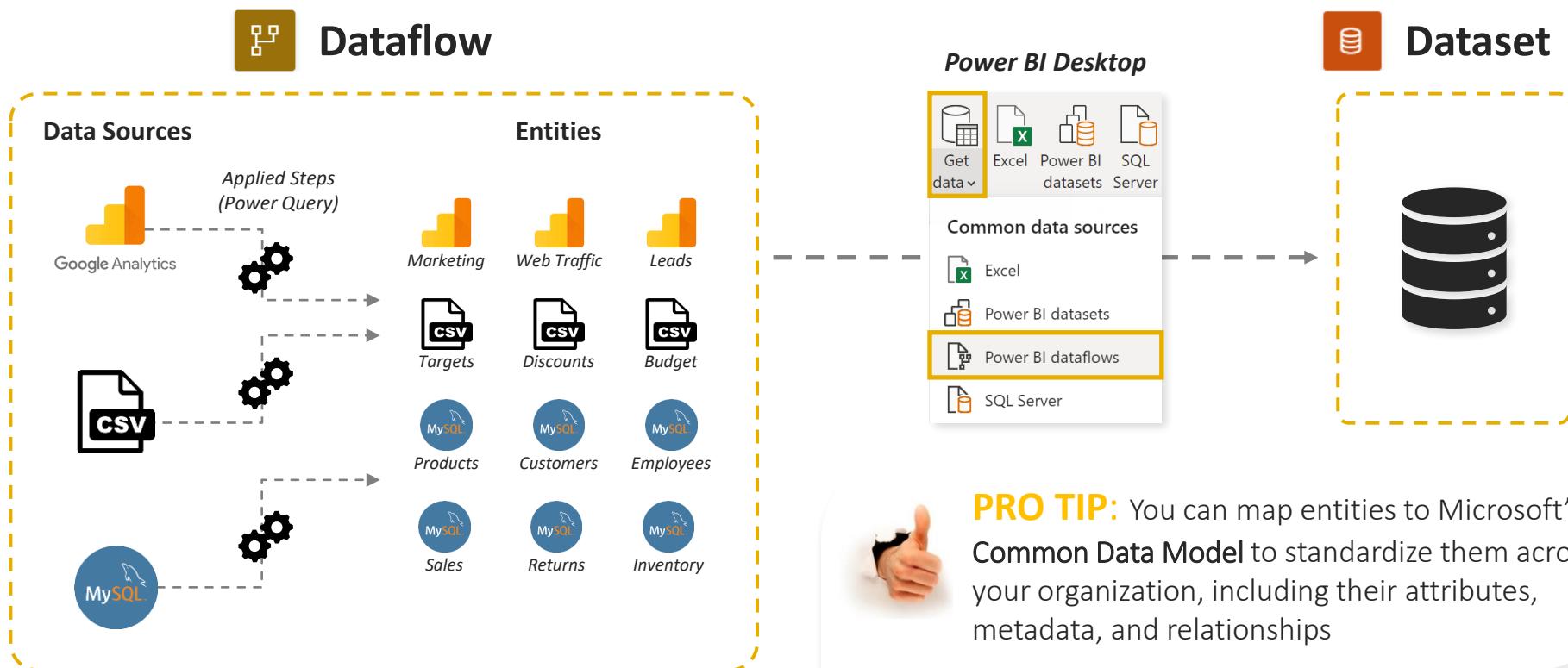
Dataflows

Scheduled Refresh

Automation

Dataflows connect to raw **data sources**, apply a series of steps (Power Query), and store data as tables or **entities**

- You can connect to a dataflow from Desktop and publish to Service as a **dataset**



COMMON DATAFLOW USE CASES

Connection Options

Local Files

Data Gateways

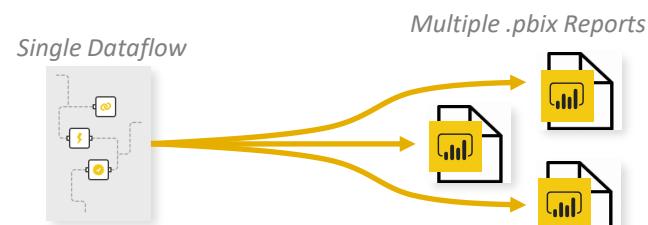
Dataflows

Scheduled Refresh

Automation

USE CASE #1 Create entities to recycle common queries across multiple Power BI reports

- Need to use the same query across multiple reports? Create a **single dataflow** and connect to it as a data source, instead of creating a brand-new connection and replicating your applied steps each time



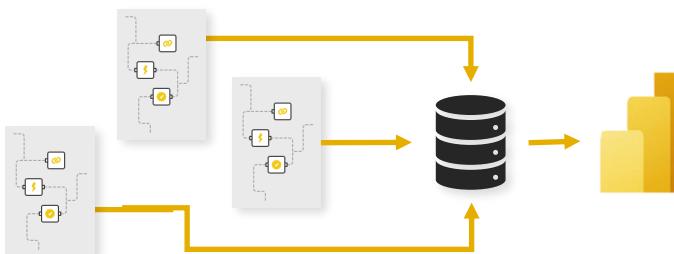
USE CASE #2 Create scheduled refreshes to align with reporting cadence

- For example, schedule one dataflow to refresh at **7 am** for your internal KPI report, and another to refresh **weekly** for your executive client dashboard

All	Content	Datasets + dataflows	
Name	Type	Refreshed	Next refresh
Violations	Dataflow	1/12/21, 10:01:05 PM	1/13/21, 7:00:00 AM

USE CASE #3 Centralize critical ETL processes to ensure data quality

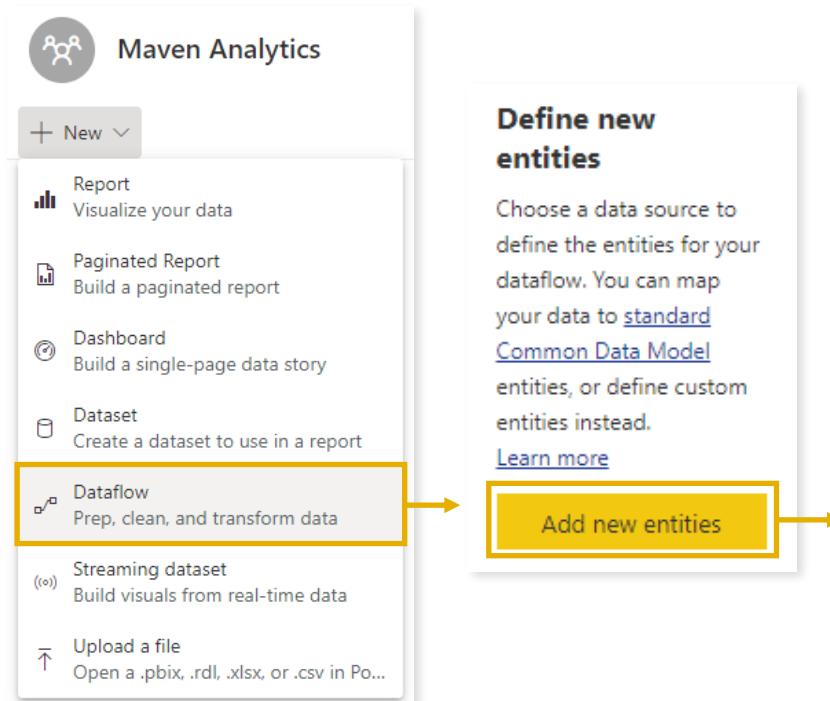
- Maintaining separate ETL processes across reports with the same data is tedious, inefficient, and error-prone
- Dataflows allow you to create, manage, and QA those processes in **one central place**



CREATING A NEW DATAFLOW (LOCAL FILE)

- Connection Options
- Local Files
- Data Gateways
- Dataflows**
- Scheduled Refresh
- Automation

1 Create a **new dataflow** and choose a **data source** to define the entities



The screenshot shows the 'Power BI Maven Analytics' interface with the title 'Power Query - Choose data source'. It displays a grid of data sources categorized under 'All categories'. The 'Text/CSV File' source is highlighted with a yellow box and an arrow points from the 'Add new entities' button in the previous screenshot to this one. Other visible sources include Excel File, Folder File, JSON File, SharePoint folder File, XML File, Google BigQuery Database, IBM Db2 database, and Impala Database.

CREATING A NEW DATAFLOW (LOCAL FILE)

- Connection Options
- Local Files
- Data Gateways
- Dataflows**
- Scheduled Refresh
- Automation

2 Enter your connection settings & credentials

Connection settings

File path or URL
C:\Users\ampar\Dropbox\Maven\Power BI Servi... 

Connection credentials

On-premises data gateway
[Admin] Aaron PC 

Authentication kind
Windows 

Username
domain\alias

Password
.....

CREATING A NEW DATAFLOW (LOCAL FILE)

Connection Options

Local Files

Data Gateways

Dataflows

Scheduled Refresh

Automation

2

Enter your connection settings & credentials

Connection settings

File path or URL

C:\Users\ampar\Dropbox\Maven\Power BI Servi...

Connection credentials

On-premises data gateway

[Admin] Aaron PC

Authentication kind

Windows

Username

domain\alias

Password

.....

Option A: Enter an administrator account username & password that can sign you in to all apps

Email & accounts

Accounts used by other apps

Add the accounts you use for your apps here, and sign in to your favorite apps easier and faster.

[Add a Microsoft account](#)

[Add a work or school account](#)



@gmail.com

Microsoft account

All apps can sign me in

Manage



@mavenanalytics.io

Work or school account

(Windows Settings > Accounts > Email & Accounts)

Enter your username & password



HEY THIS IS IMPORTANT!

You may need to adjust your password settings by heading to **Account > Sign-in options** (Windows 10)

CREATING A NEW DATAFLOW (LOCAL FILE)

- Connection Options
- Local Files
- Data Gateways
- Dataflows**
- Scheduled Refresh
- Automation

2 Enter your connection settings & credentials

Connection settings

File path or URL
C:\Users\ampar\Dropbox\Maven\Power BI Servi...

Connection credentials

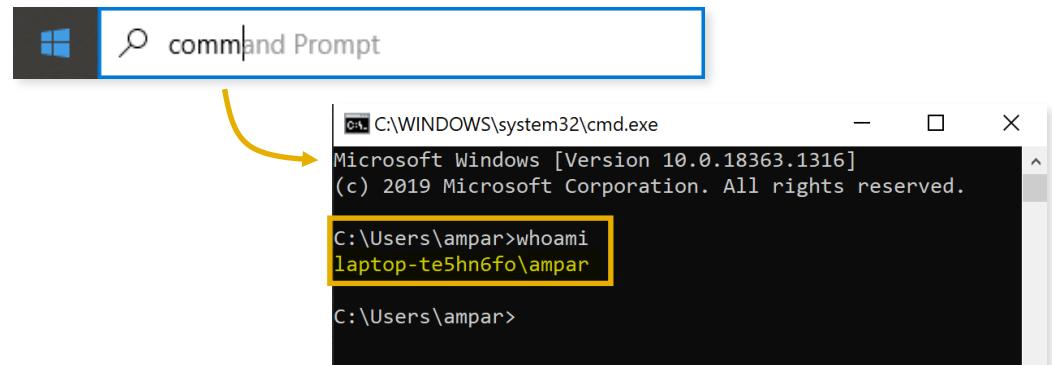
On-premises data gateway
[Admin] Aaron PC

Authentication kind
Windows

Username
domain\alias

Password
.....

Option B: Type “`whoami`” in the Command Prompt & press Enter to find your username (your password should be what you use to sign-in to your computer)



The screenshot shows a Windows Command Prompt window with the following text:
C:\WINDOWS\system32\cmd.exe
Microsoft Windows [Version 10.0.18363.1316]
(c) 2019 Microsoft Corporation. All rights reserved.
C:\Users\ampar>whoami
laptop-te5hn6fo\ampar
C:\Users\ampar>

Enter your username & password

CREATING A NEW DATAFLOW (LOCAL FILE)

Connection Options

Local Files

Data Gateways

Dataflows

Scheduled Refresh

Automation

3 Use the Power Query editor to **clean or transform** the data prior to loading

Data preview to ensure you're working with the right data

Power Query - Preview file data
C:\Users\ampar\Dropbox\Maven\Power BI Service (Revamp)\Power BI Desktop Files\violations.csv

File origin: 1252: Western European (Windows) Delimiter: Comma Data type detection: Based on first 200 rows

12 points	ab_serial_number	abViolation_code	abViolation_description	abViolation_status
1	DAJSUNMSF	F044	# 44. Floors, walls and ceilings: properly built, maintained in good repair and clean	OUT OF COMPLIANCE
4	DAT2HKIRE	F007	# 07. Proper hot and cold holding temperatures	OUT OF COMPLIANCE
1	DAT2HKIRE	F033	# 33. Nonfood-contact surfaces clean and in good repair	OUT OF COMPLIANCE

Power Query - Edit queries

Home Transform Add column View Get data Enter data Options Manage parameters Refresh Properties Advanced editor Manage Choose columns Remove columns Keep rows Remove rows Sort Transform Combine Map to entity AI insights New query Options Parameters Query Manage columns Reduce rows CDM Insights

Queries [1] < Query

Table.TransformColumnTypes(#"Promoted headers", {{ "points", Int64.Type }}, { "ab_serial_number", "ab violation_code", "ab violation_description" })

12 points	ab_serial_number	abViolation_code	abViolation_description
1	DAJSUNMSF	F044	# 44. Floors, walls and ceilings: properly built, maintained in good repair and clean
2	DAT2HKIRE	F007	# 07. Proper hot and cold holding temperatures
3	DAT2HKIRE	F033	# 33. Nonfood-contact surfaces clean and in good repair
4	DAT2HKIRE	F035	# 35. Equipment/Utensils - approved; installed; clean; good repair
5	DAQNO1BEA	F033	# 33. Nonfood-contact surfaces clean and in good repair
6	DAQNO1BEA	F007	# 07. Proper hot and cold holding temperatures
7	DAQNO1BEA	F035	# 35. Equipment/Utensils - approved; installed; clean; good repair
8	DAQNO1BEA	F014	# 14. Food contact surfaces: clean and sanitized
9	DAQNO1BEA	F036	# 36. Equipment, utensils and linens: storage and use
10	DAQNO1BEA	F044	# 44. Floors, walls and ceilings: properly built, maintained in good repair and clean
11	DAQNO1BEA	F034	# 34. Warewashing facilities: Adequate, maintained, properly built, maintained in good repair and clean
12	DALVZ4JUV	F035	# 35. Equipment/Utensils - approved; installed; clean; good repair

Query settings
Properties
Name: Query
Entity type: Custom
Applied steps: Source, Promoted h..., ABC...
Step Cancel Transform data Save & close

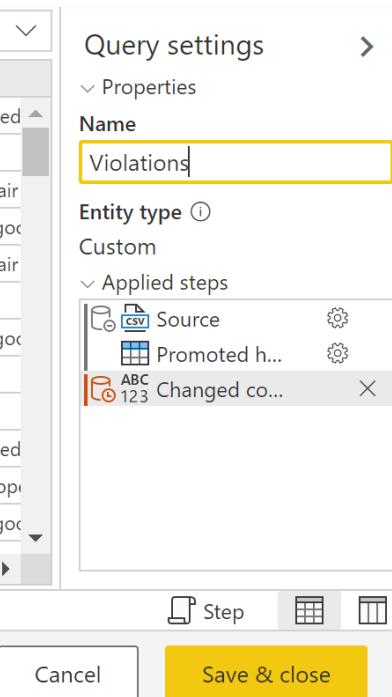
Transform your data by adding applied steps (just like Power BI Desktop!)

CREATING A NEW DATAFLOW (LOCAL FILE)

- Connection Options
- Local Files
- Data Gateways
- Dataflows**
- Scheduled Refresh
- Automation

4

Save, name, and refresh your dataflow



Click **Save & close** to trigger
Power BI and validate the queries

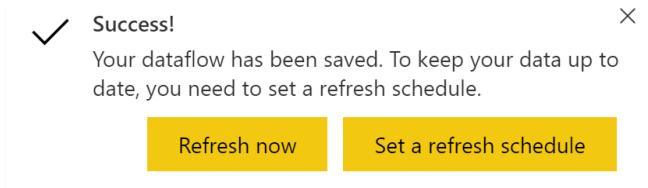
Name *
Violations

Description

Dataset that contains records about restaurant violation codes, status of violation, violation number, and number of points

Save Cancel

Name, describe, and save your dataflow



Click **Refresh now** to "lock in" your dataflow



HEY THIS IS IMPORTANT!

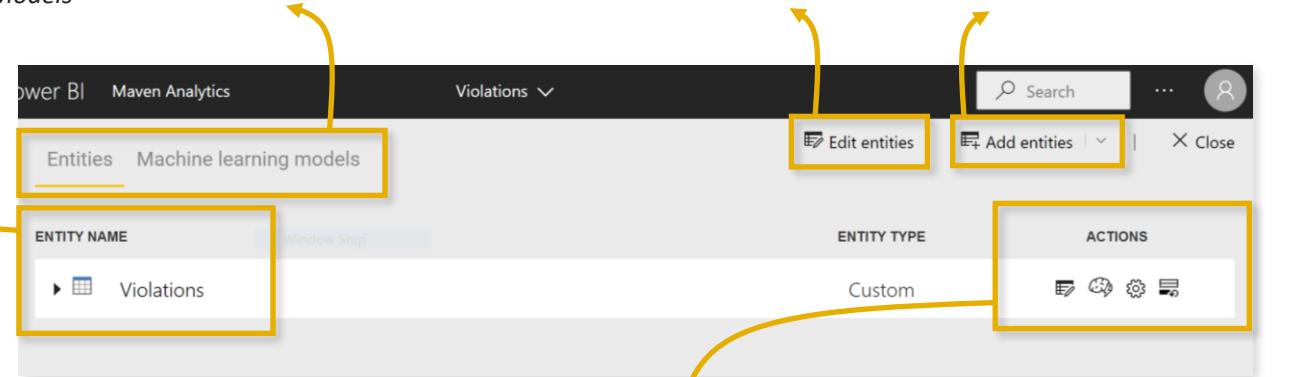
You **must** refresh your dataflow before it's usable as a data source in Power BI; do it first so you don't forget!

QUICK TOUR OF THE DATAFLOW INTERFACE

- Connection Options
- Local Files
- Data Gateways
- Dataflows
- Scheduled Refresh
- Automation

ENTITIES | MACHINE LEARNING MODELS

Switch between views to see your Entities & Machine Learning Models



ENTITY NAME

Expand to see a list of the columns contained within the entity



EDIT ENTITIES

Opens Power Query in the cloud and links to selected entity to enable edits & updates

EDIT ENTITIES

Opens Power Query in the cloud to enable edits & updates

ADD ENTITIES

Add a new or linked entity to your dataflow

APPLY ML MODEL

Apply a defined machine learning model to the selected entity

PROPERTIES

Add a description of your entity to add additional context

INCREMENTAL REFRESH

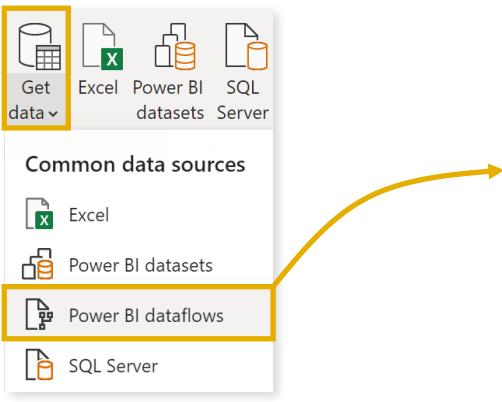
Configure an incremental refresh policy for your entity defining row storage and refresh

Note: Requires Premium Workspace

CONNECTING TO A DATAFLOW IN DESKTOP

- Connection Options
- Local Files
- Data Gateways
- Dataflows**
- Scheduled Refresh
- Automation

Connect to a dataflow and **load it as a dataset** in Power BI Desktop



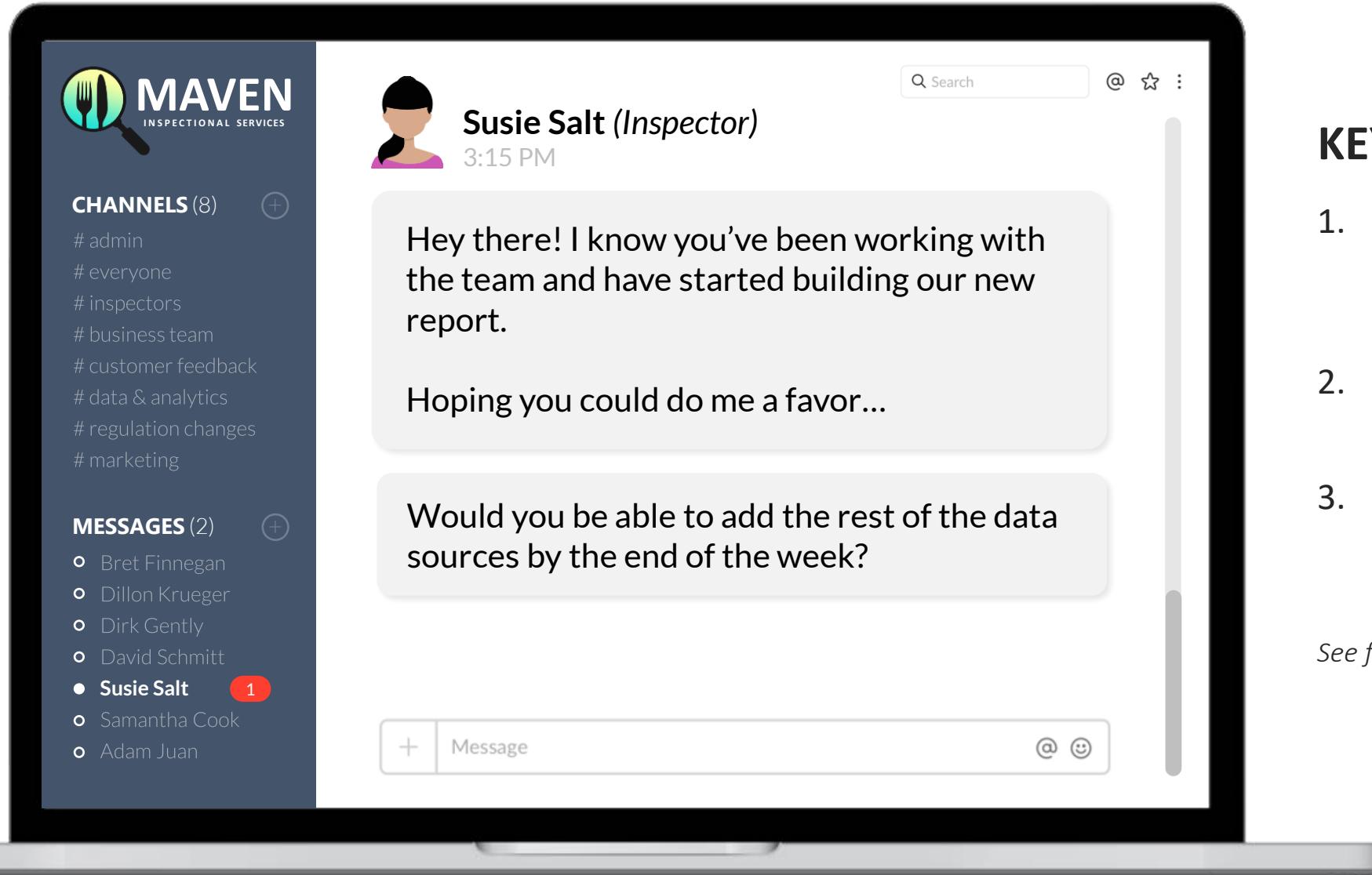
A screenshot of the Power BI Desktop application window. The ribbon shows 'Home' is selected. In the center, there's a table view titled 'Violations' with columns 'points' and 'serial_number'. The table lists numerous rows of data. On the right side, the 'Fields' pane shows the columns 'points', 'serial_number', 'violation_code', 'violation_description', and 'violation_status'. At the bottom of the screen, a modal dialog box is open with buttons 'Load', 'Transform Data', and 'Cancel', with 'Load' being highlighted by a yellow box and arrow.

HEY THIS IS IMPORTANT!

If your dataflow isn't displaying,
make sure you've refreshed it!

The dataflow won't populate if it
hasn't been refreshed in service

ASSIGNMENT: CONNECTING TO A DATAFLOW



KEY OBJECTIVES:

1. Use the *Inspections Data* dataflow to **add** new CSV/Text entities
2. **Add** data transformations with Power Query
3. **Connect** to the dataflow in Power BI Desktop to create a dataset

See following text lesson for instructions

DEMO: CREATING A DATAFLOW (MYSQL)

Connection Options

Local Files

Data Gateways

Dataflows

Scheduled Refresh

Automation

You can create a dataflow from **database sources in the cloud**

- For example, below we're connecting to a MySQL database hosted on Amazon Web Services (AWS)

The screenshot illustrates the process of creating a dataflow from a MySQL database using Power Query. It consists of two main windows: 'Power Query - Choose data source' and 'Power Query - Choose data'.

Power Query - Choose data source: This window shows a list of 'Data sources' under the 'All categories' tab. The 'MySQL database' option is highlighted with a yellow box and a yellow arrow pointing from the previous slide's text. Other visible options include Amazon Redshift, Google BigQuery, IBM Db2 database, Impala, Oracle database, PostgreSQL database, SAP BW Application Server, and SAP BW Message Server.

Power Query - Choose data: This window displays the selected 'UserSummary' table from the MySQL database. The table has columns: user_id, updated_at, 1..2 has_started, 1..2 courses_started, 1..2 courses_completed, and first_. The data shows various user records with their activity and course completion details.

DEMO: CREATING A DATAFLOW (LOCAL MYSQL)

Connection Options

Local Files

Data Gateways

Dataflows

Scheduled Refresh

Automation

You can create a dataflow from locally hosted databases

- For example, below we're connecting to MySQL Community Server

Connection settings

Server
127.0.0.1

Database
mavenfuzzyfactory

Connection credentials

On-premises data gateway
[Admin] Aaron PC

Authentication kind
Basic

Username
root

Password
.....

Use Encrypted Connection

Local host address & database name

Gateway running on my computer

Username & password used to connect to community server

mavenfuzzyfactory.website_sessions

website_session_id	created_at	user_id
1	3/19/2012, 8:04:16 AM	1
2	3/19/2012, 8:16:49 AM	2
3	3/19/2012, 8:26:55 AM	3
4	3/19/2012, 8:37:33 AM	4
5	3/19/2012, 9:00:55 AM	5
6	3/19/2012, 9:05:46 AM	6
7	3/19/2012, 9:06:27 AM	7
8	3/19/2012, 9:17:17 AM	8
9	3/19/2012, 9:27:56 AM	9
10	3/19/2012, 9:35:37 AM	10
11	3/19/2012, 9:37:42 AM	11
12	3/19/2012, 9:39:57 AM	12
13	3/19/2012, 9:45:29 AM	13
14	3/19/2012, 9:45:47 AM	14
15	3/19/2012, 9:57:14 AM	15
16	3/19/2012, 10:01:35 ...	16
17	3/19/2012, 10:14:34 ...	17
18	3/19/2012, 10:16:57 ...	18

Search

Display options

- sys.x\$waits_by_host_by_latency
- sys.x\$waits_by_user_by_latency
- sys.x\$waits_global_by_latency
- mavenfuzzyfactory.order_item_refunds
- mavenfuzzyfactory.order_items
- mavenfuzzyfactory.orders
- mavenfuzzyfactory.products
- mavenfuzzyfactory.website_pageviews
- mavenfuzzyfactory.website_sessions
- mysql.columns_priv
- mysql.component
- mysql.db
- mysql.default_roles
- mysql.engine_cost
- mysql.func

HEY THIS IS IMPORTANT!

We will not be setting up community server as part of this course; the purpose is to show that you can connect to MySQL running on your computer and don't need to pay for an AWS type solution to store data in an RDS

SCHEDULED REFRESH (DATAFLOW)

Connection Options

Local Files

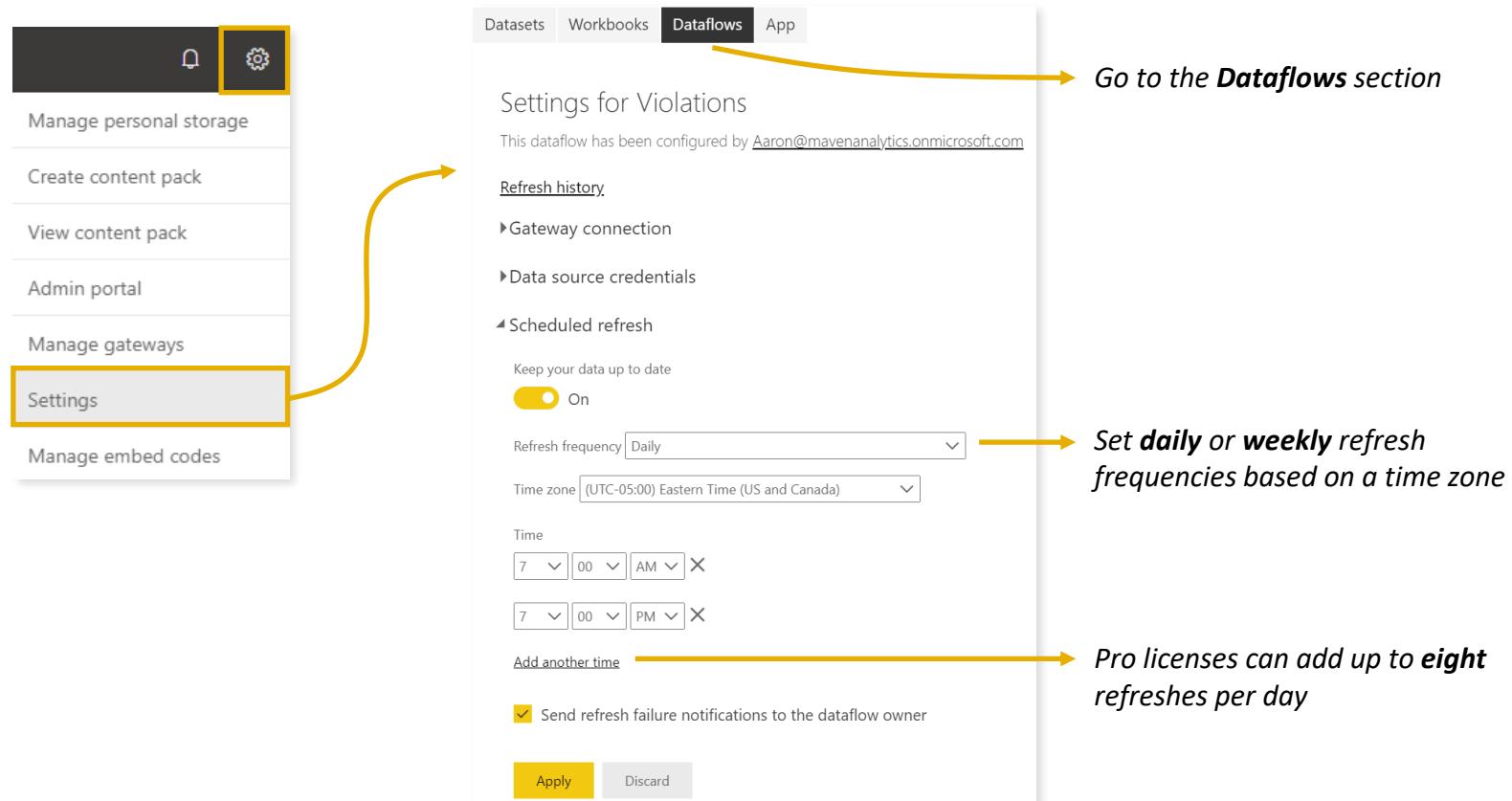
Data Gateways

Dataflows

Scheduled Refresh

Automation

Scheduled refresh allows you to keep your Power BI reports up to date by automatically refreshing dataflows based on a given frequency & time of day



SCHEDULED REFRESH (DATASET)

Connection Options

Local Files

Data Gateways

Dataflows

Scheduled Refresh

Automation

You can also configure **scheduled refresh** for other types of datasets

Datasets Workbooks Dataflows App

Settings for Violations

This dataset has been configured by Aaron@mavenanalytics.onmicrosoft.com.

[Refresh history](#)

▶ Gateway connection

▶ Data source credentials

▶ Parameters

◀ Scheduled refresh

Keep your data up to date

On

Refresh frequency: Daily

Time zone: (UTC-05:00) Eastern Time (US and Canada)

Time: 7 30 AM X
7 30 PM X

Add another time

Send refresh failure notifications to the dataset owner

Email these users when the refresh fails

Aaron Parry X Enter email addresses

Apply Discard

Select the dataset to refresh and click **Scheduled Refresh or Settings** from the ellipsis menu options

Confirm dataset refresh is working properly (schedules align, errors, etc.)

All	Content	Datasets + dataflows
 Violations	Dataset	1/13/21, 11:23:23 AM
 Violations	Dataflow	1/13/21, 7:02:32 AM
		1/13/21, 7:30:00 PM
		1/13/21, 7:00:00 PM

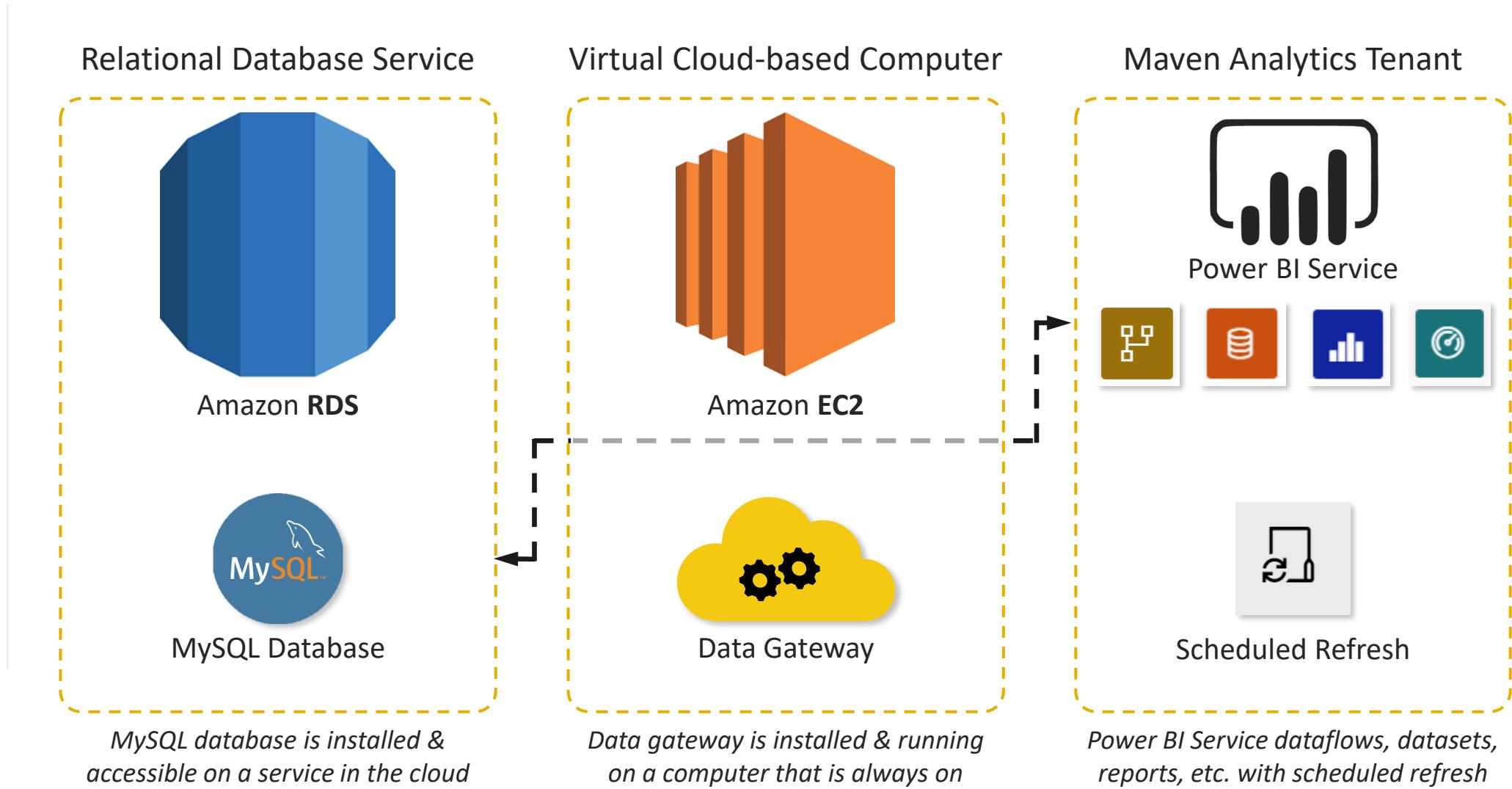
Set a **Frequency** (daily or weekly), **Time Zone**, and **Time** (half-hour increments AM/PM)



PRO TIP: Offset the dataflow and dataset scheduled refresh times, if they run concurrently the dataset won't reflect recent updates

DEMO: REAL WORLD AUTOMATION SETUP

- Connection Options
- Local Files
- Data Gateways
- Dataflows
- Scheduled Refresh
- Automation



BEST PRACTICES: CONNECTING TO DATA



Use SharePoint to host local flat files (xlsx, csv, etc.)

- *SharePoint Lists have added functionality like Excel Online and allow for query folding when using incremental refresh (more on this later!)*



Configure the standard gateway by default

- *The standard gateway can be shared, installed on a server, and supports services like Power BI, Power Apps, Power Automate, Dataflows, Azure Analysis Services, etc.*



Set up dataflows for an enterprise-focused data prep solution

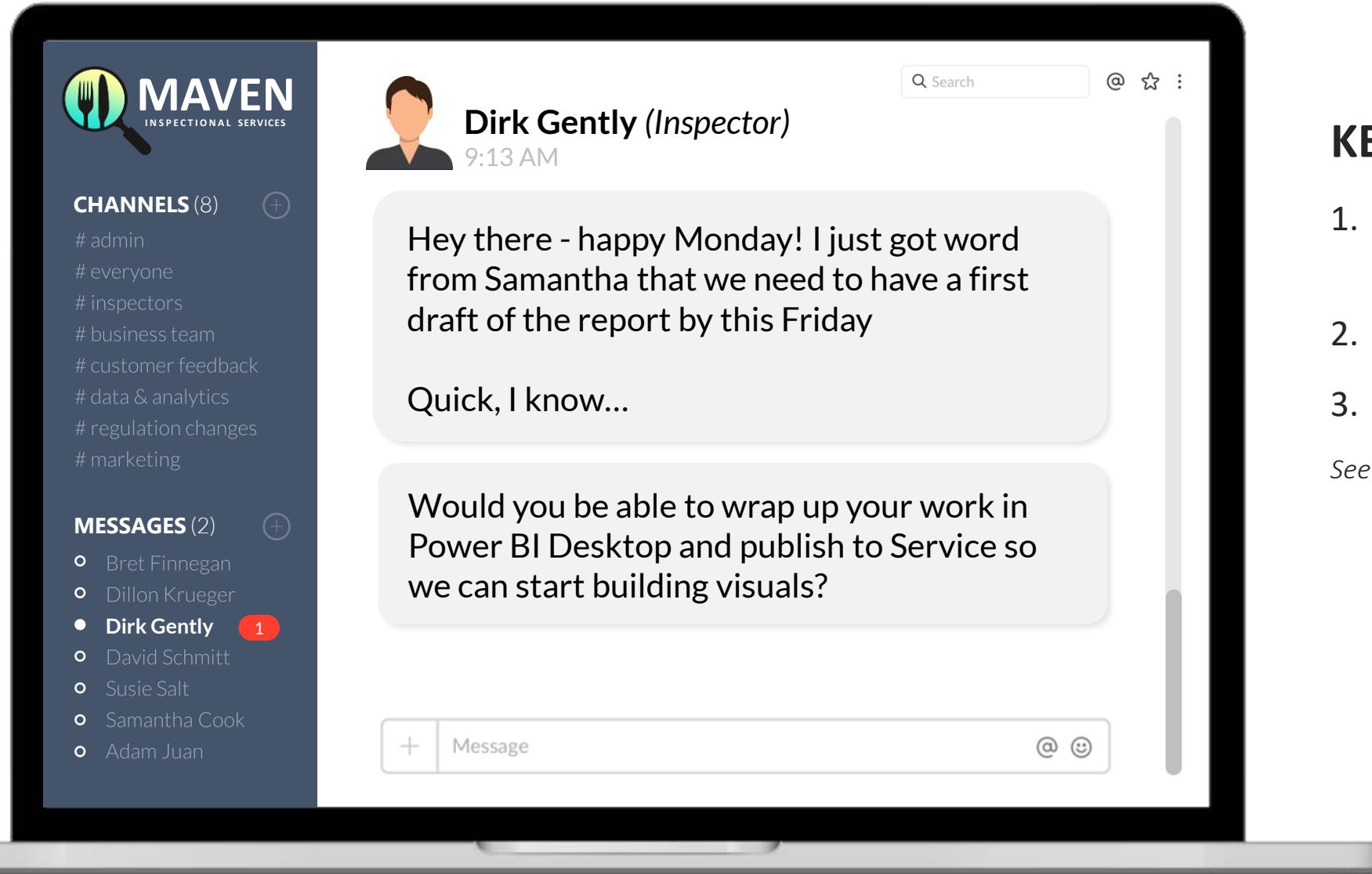
- *Dataflows can be used across many Power Platform apps integrating data prep outside of Power BI*



Leverage automation when possible

- *Scheduled refreshes are a quick and easy way to keep the reports in Service up to date*

ASSIGNMENT: FINISHING THE POWER BI FILE



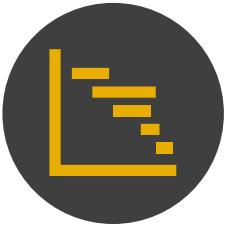
KEY OBJECTIVES:

1. Build the **data model** in Power BI Desktop
2. Create DAX measures
3. Publish to Power BI Service

See following text lesson for instructions

REPORTS & DASHBOARDS

REPORTS & DASHBOARDS



In this section we're going to cover creating **visuals, reports, and dashboards** along with tools like data driven alerts, natural language queries, and quick insights

TOPICS WE'LL COVER:

Data Lineage

Reports &
Dashboards

Data Driven Alerts

Natural Language
Queries

Quick Insights

Mobile Design

COMMON USE CASES:

- *Building visuals from a Power BI workbook*
- *Configuring data-driven alerts to automate KPI updates*
- *Leveraging natural language queries and quick insights to create new visuals and understand your data*
- *Designing a mobile version of your report*

DATA LINEAGE

Data Lineage

Reports

Dashboards

Data Driven Alerts

Natural Language
Queries

Quick Insights

Mobile Design

Data lineage refers to the flow of data from a data source to a report and dashboard



Datasets

Data sources you've connected to

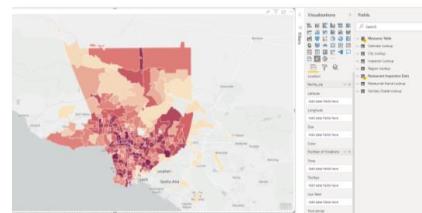


Google Analytics



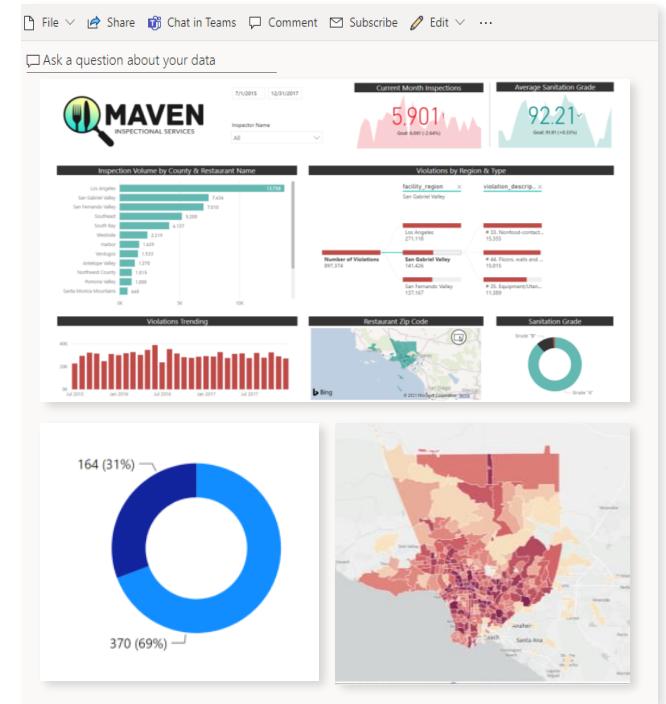
Reports

Visuals built from a single dataset



Dashboards

Reports & tiles built from multiple datasets



DATA LINEAGE VIEW

Data Lineage

Reports

Dashboards

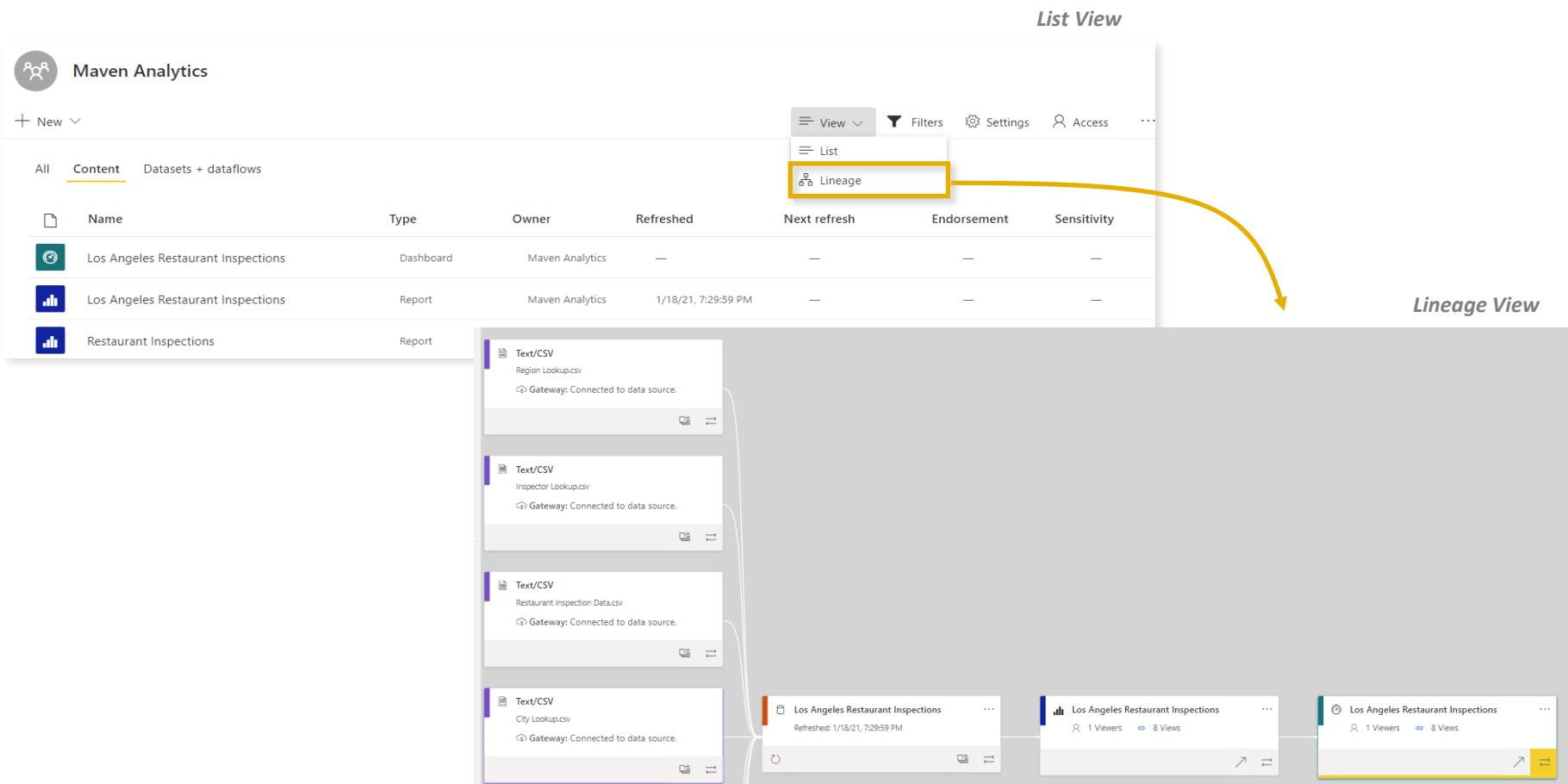
Data Driven Alerts

Natural Language
Queries

Quick Insights

Mobile Design

Lineage view shows how data is linked across multiple data sources & dependencies



DATA LINEAGE TOOLS

Data Lineage

Reports

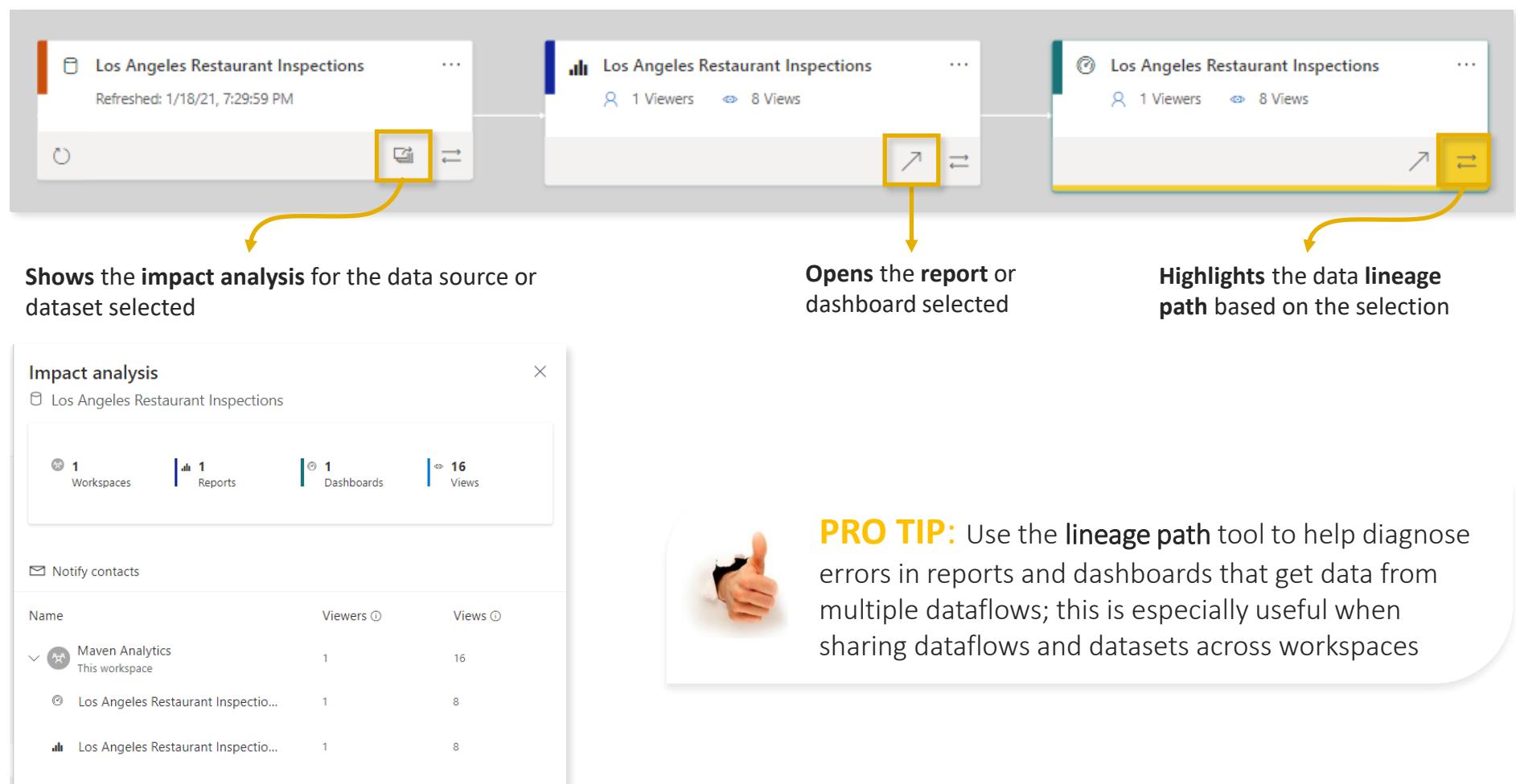
Dashboards

Data Driven Alerts

Natural Language
Queries

Quick Insights

Mobile Design



THE REPORT INTERFACE

Data Lineage

Reports

Dashboards

Data Driven Alerts

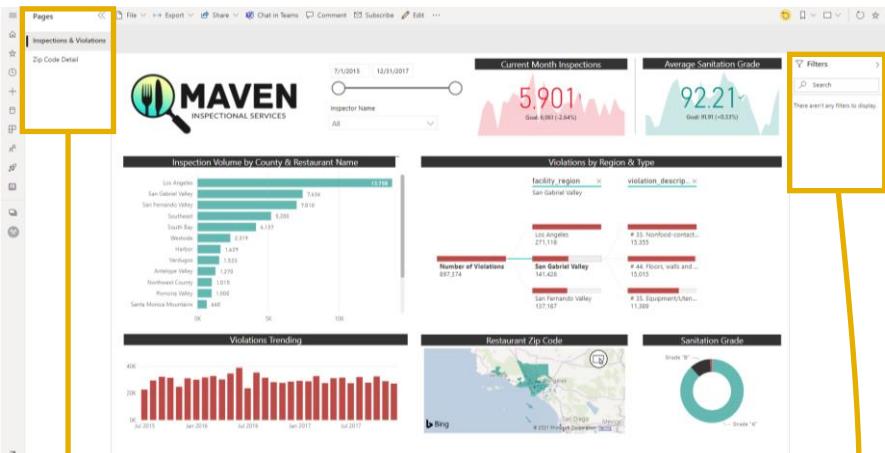
Natural Language Queries

Quick Insights

Mobile Design

Report **Reading** View

Tools & options for **interacting, exploring, filtering, and pinning tiles and pages to dashboards**

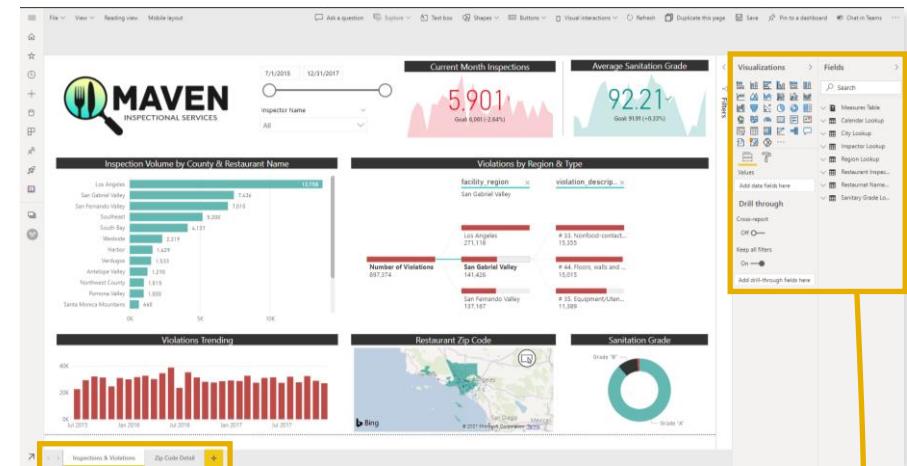


Pages (Navigate between different pages in your report)

Filters Pane (Visual-Level, Page-Level, Report-Level, and Drill through Filters)

Report **Editing** View

Tools & options for **editing, modifying, and creating individual or multiple report visuals**

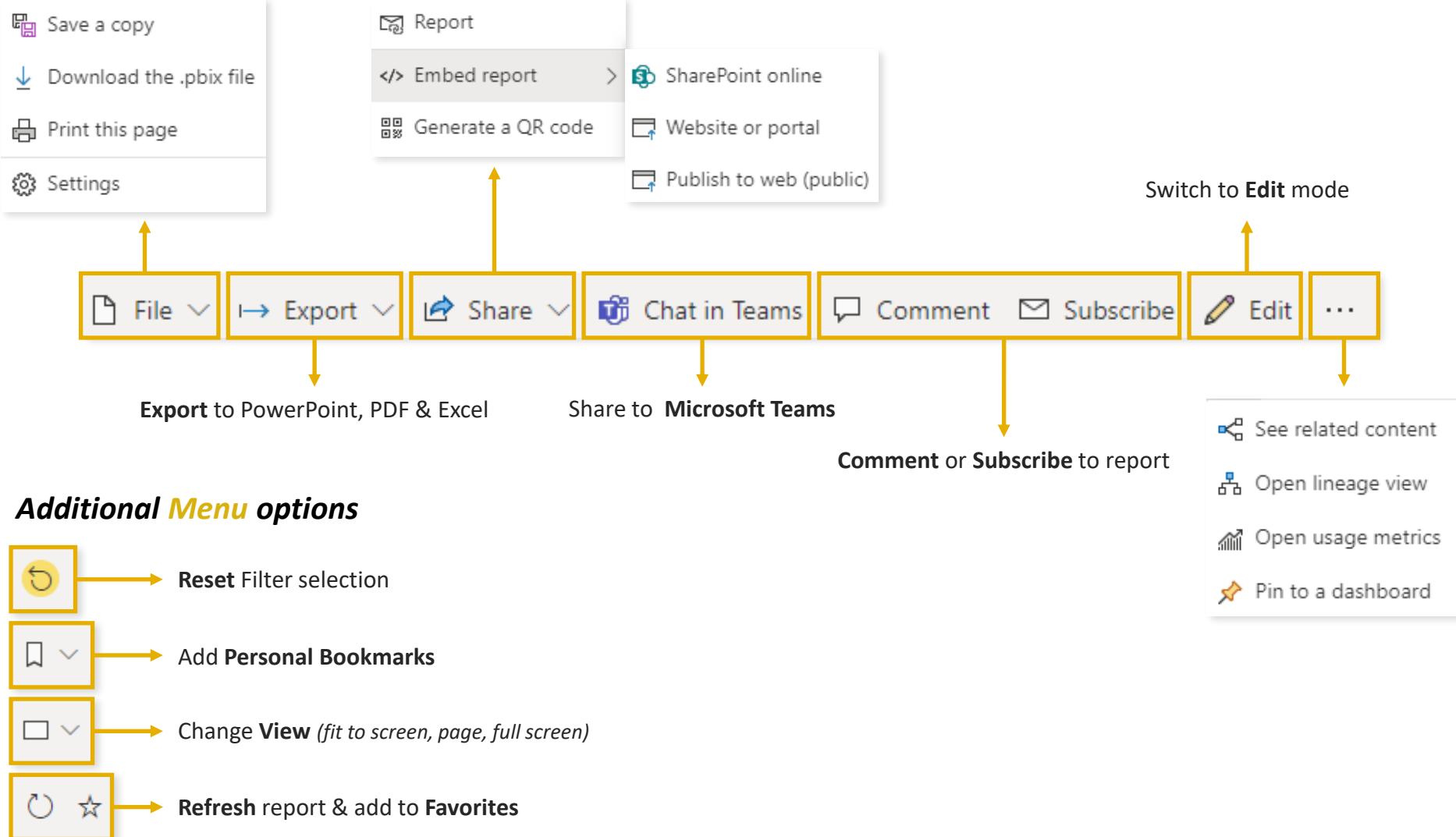


Report Pages (Similar to Excel tabs, each serves a blank reporting canvas)

Visualization & Formatting Options (Charts, Slicers, Maps, Matrices, etc.)
Filters Pane (Drill through Filters)

REPORT READING TOOLS

- Data Lineage
- Reports
- Dashboards
- Data Driven Alerts
- Natural Language Queries
- Quick Insights
- Mobile Design



REPORT EDITING TOOLS

The screenshot displays the Microsoft Power BI Report Editor interface. On the left, a vertical sidebar lists several features: Data Lineage, Reports, Dashboards, Data Driven Alerts, Natural Language Queries, Quick Insights, and Mobile Design. The main area shows the report navigation ribbon with 'Mobile layout' highlighted. Below the ribbon are several dropdown menus and toolbars:

- File** dropdown: Save, Save this report, Save as, Print, Embed, Embed in SharePoint Online, Publish to web, Export to PowerPoint, Export to PDF, Download report (Preview).
- View** dropdown: Reading view (selected), Mobile layout, Fit to page, Fit to width, Actual size, High-contrast colors, Show smart guides (On), Show gridlines (Off), Snap to grid (Off), Lock objects (Off), Selection pane (Off), Bookmarks pane (Off), Sync slicers pane (Off).
- Edit interactions** toolbar: Edit interactions (Off), Drilling filters other visuals (On).
- Page Actions**: Ask a question, Explore, Text box, Shapes, Buttons, Visual interactions, Refresh, Duplicate this page, Save, Pin to a dashboard, Chat in Teams, ...

Annotations below the interface explain specific features:

- Data Lineage**: Points to the 'Ask a question' button.
- Reports**: Points to the 'Explore' button.
- Dashboards**: Points to the 'Text box' button.
- Data Driven Alerts**: Points to the 'Shapes' button.
- Natural Language Queries**: Points to the 'Buttons' button.
- Quick Insights**: Points to the 'Visual interactions' button.
- Mobile Design**: Points to the 'Duplicate this page' button.
- Use natural language to ask questions**: Points to the 'Ask a question' button.
- Insert text, shapes, or buttons**: Points to the 'Text box', 'Shapes', and 'Buttons' buttons.
- Add a duplicate page into the same report**: Points to the 'Duplicate this page' button.
- Pin entire report to a dashboard**: Points to the 'Pin to a dashboard' button.

A preview of a mobile device on the right shows a dashboard with inspection data for various counties and restaurants.

INSERTING BASIC VISUALS

Data Lineage

Reports

Dashboards

Data Driven Alerts

Natural Language
Queries

Quick Insights

Mobile Design

The screenshot shows the 'Visualizations' pane in Power BI. At the top left is a grid of icons representing different chart types. Below it is a search bar labeled 'Search'. Underneath the search bar is a tree view of fields under 'Measures Table'. One specific field, 'Total Violations', is highlighted with a yellow box and has a yellow arrow pointing to a bar chart on the right. The bar chart has four bars of increasing height. Below the tree view are sections for 'Values', 'Drill through', 'Cross-report', and 'Keep all filters'. At the bottom are sections for 'Add data fields here' and 'Add drill-through fields here'.

Select a **visualization type** to create a blank chart template on the canvas

(or)

Drag **fields** into the report canvas to automatically generate a new visual
(typically a column chart, by default)

CHART FORMATTING OPTIONS

Data Lineage

Reports

Dashboards

Data Driven Alerts

Natural Language Queries

Quick Insights

Mobile Design

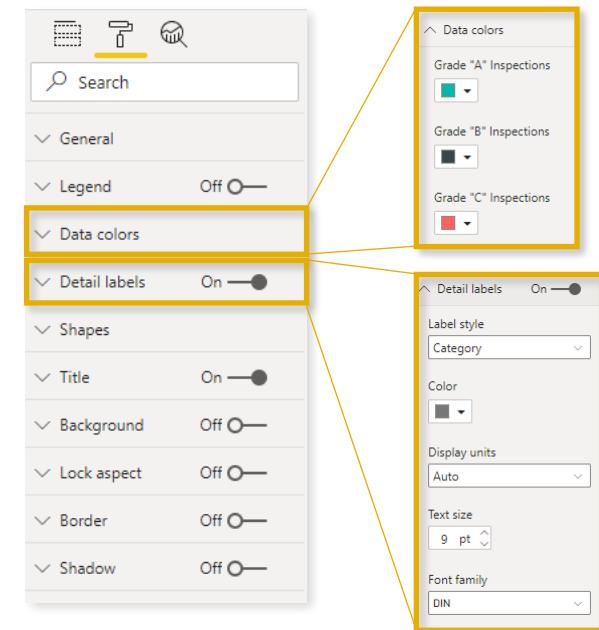
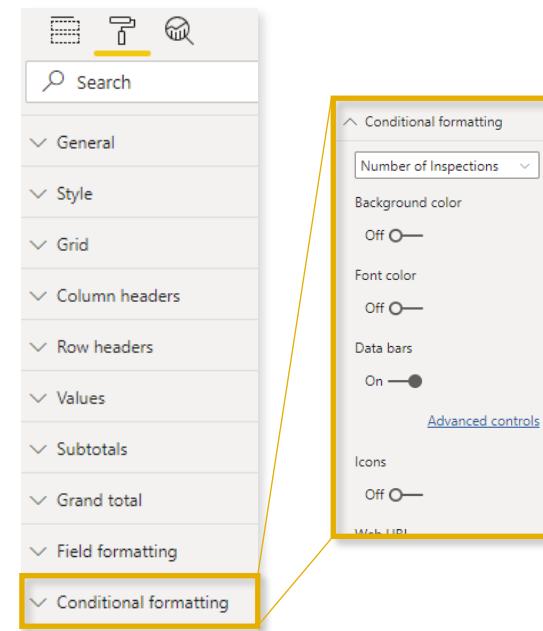
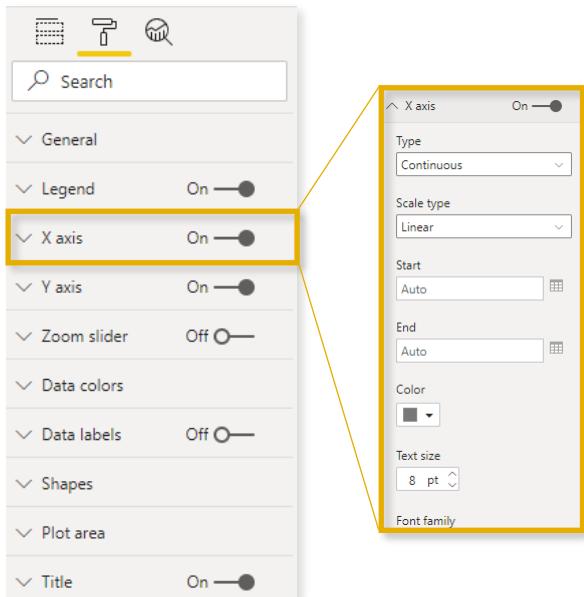
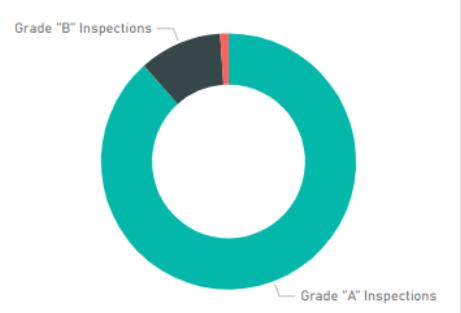
Example: Line & Column Chart



Example: Matrix

facility_region	Number of Inspections	Number of Violations
Los Angeles	13,753	271,118
San Gabriel Valley	7,436	141,426
San Fernando Valley	7,010	137,167
Southeast	5,200	92,571
South Bay	4,137	81,763
Westside	2,319	38,339
Harbor	1,629	32,688
Verdugos	1,533	34,471
Antelope Valley	1,270	20,017
Northwest County	1,015	11,401
Pomona Valley	1,000	17,090

Example: Donut Chart



PRO TIP: ADDING PERSONAL BOOKMARKS

Data Lineage

Reports

Dashboards

Data Driven Alerts

Natural Language
Queries

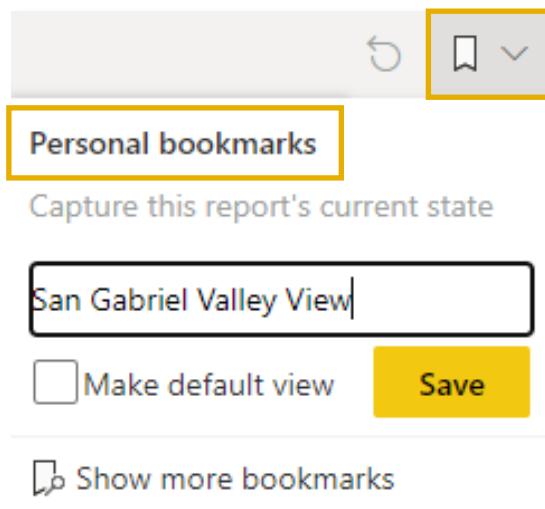
Quick Insights

Mobile Design

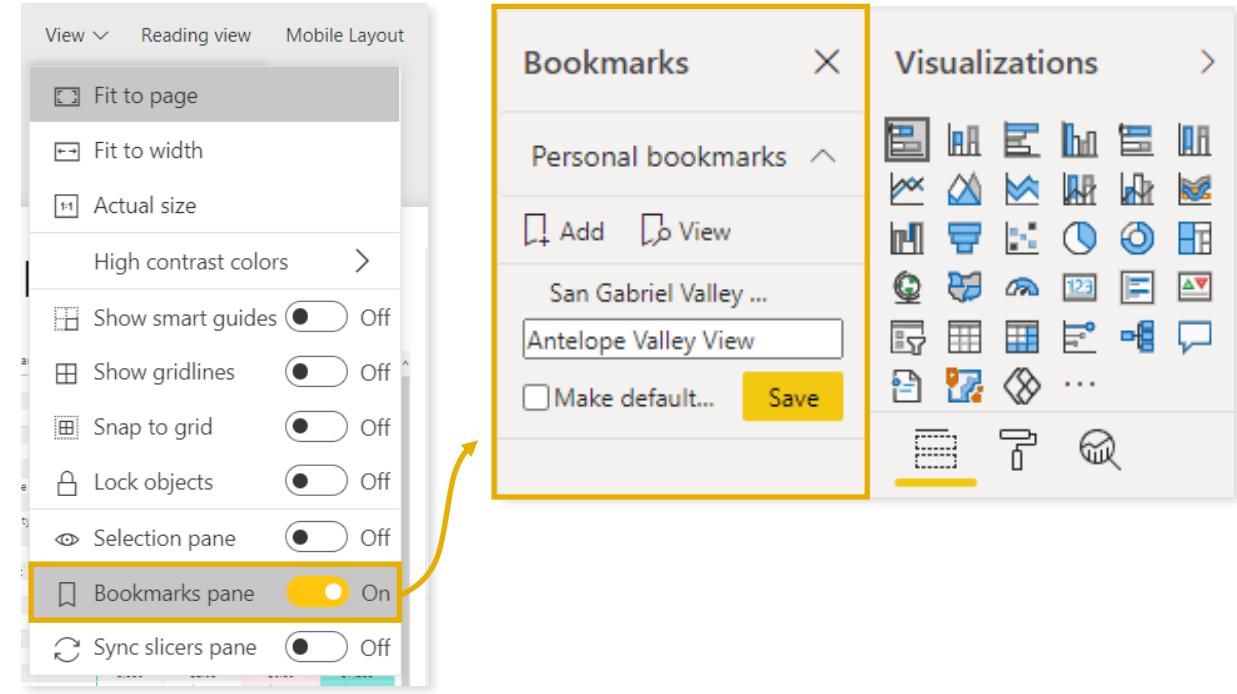
Personal Bookmarks capture static states of a visual or report page

- They work exactly like bookmarks in Power BI Desktop, except that they're accessible **only by you**

Report Reading View



Report Editing View



PRO TIP: ADDING AN IMAGE

Data Lineage

Reports

Dashboards

Data Driven Alerts

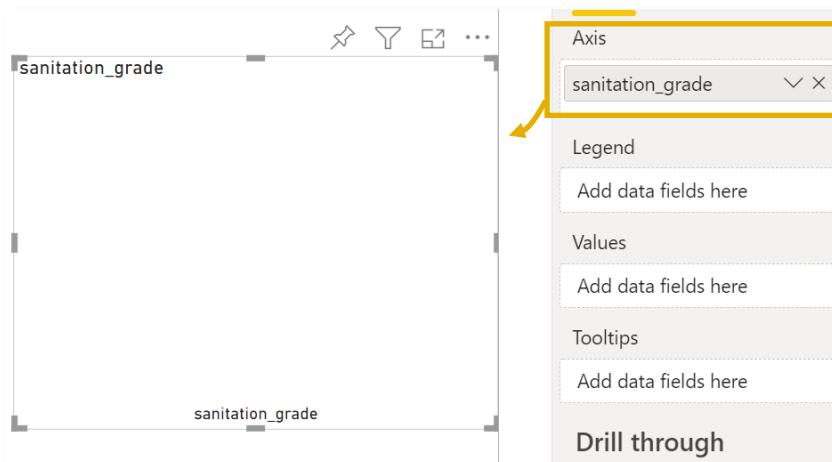
Natural Language
Queries

Quick Insights

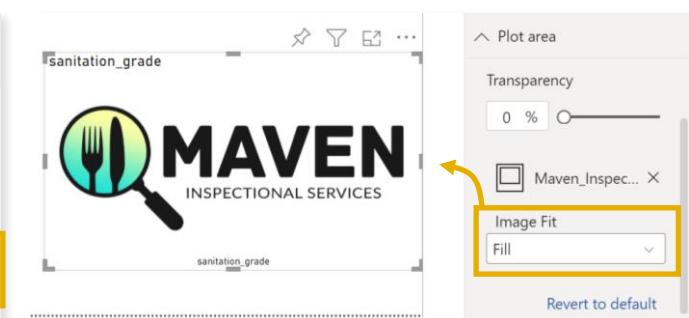
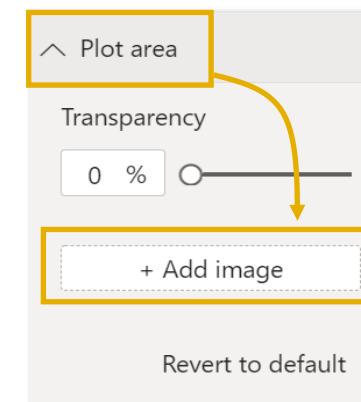
Mobile Design

While adding **images** to reports in Power BI Desktop is simple, the process isn't as straightforward in Power BI Service

- 1 Select any visual with plot area (*bar, line, area, etc.*) add a dimension to the axis but leave all other fields blank



- 2 Add an image from file to the plot area (*format pane*) and change Image Fit to "Fill"

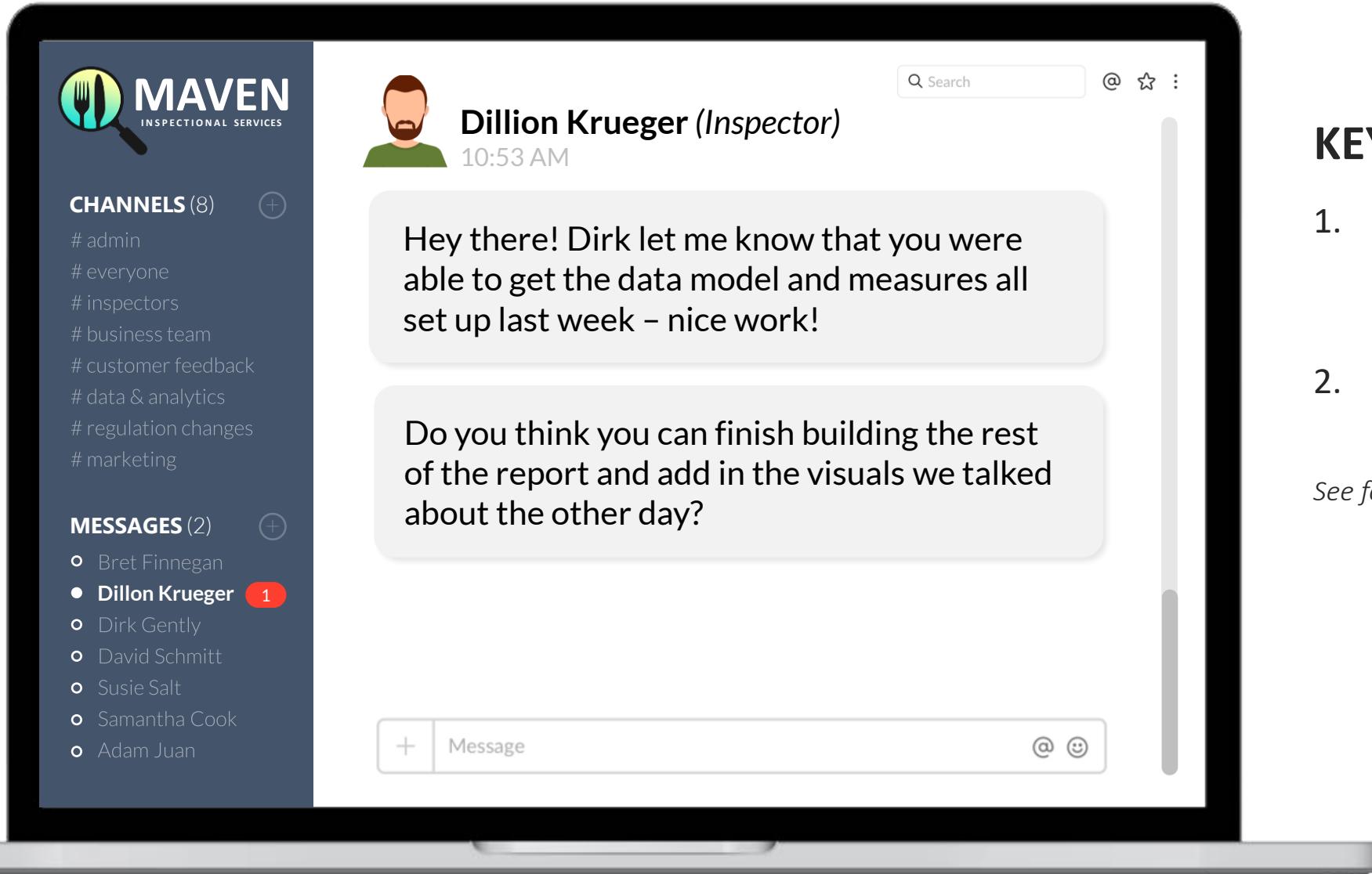


- 3 Remove the Title & X axis label, remove or format the background, and resize as needed

PRO TIP: Plan ahead! If you know you'll need an image in the report, add in Power BI Desktop first



ASSIGNMENT: BUILDING A REPORT



KEY OBJECTIVES:

1. Use Power BI Service to **create** and **add** visuals to “*MIS Restaurant Inspections*”
2. **Format & clearly arrange** visuals on the report canvas

See following text lesson for instructions

PINNING TILES TO A DASHBOARD

Data Lineage

Reports

Dashboards

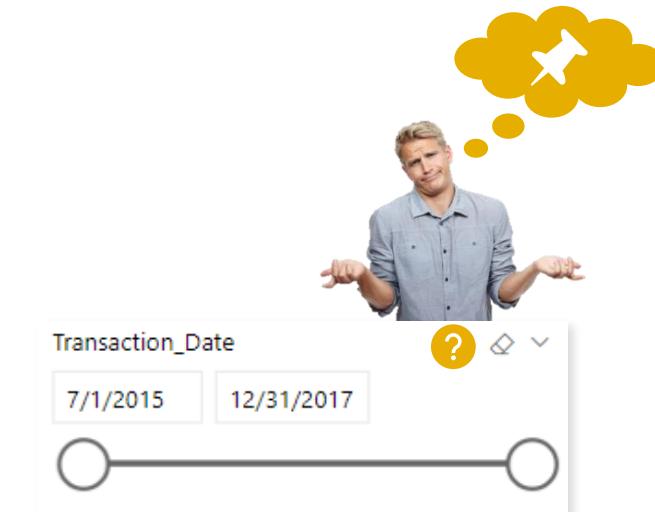
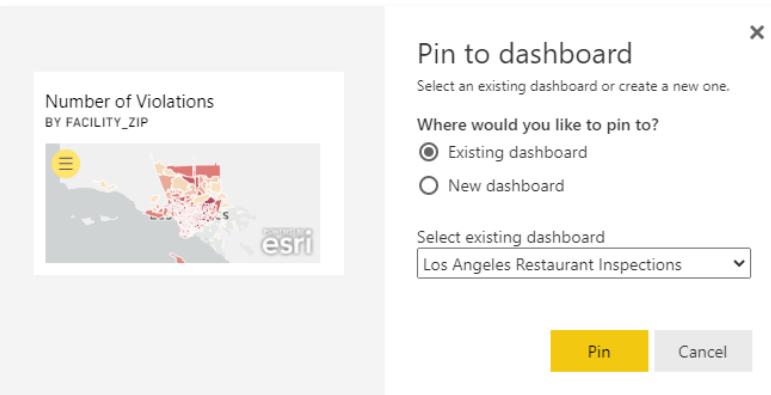
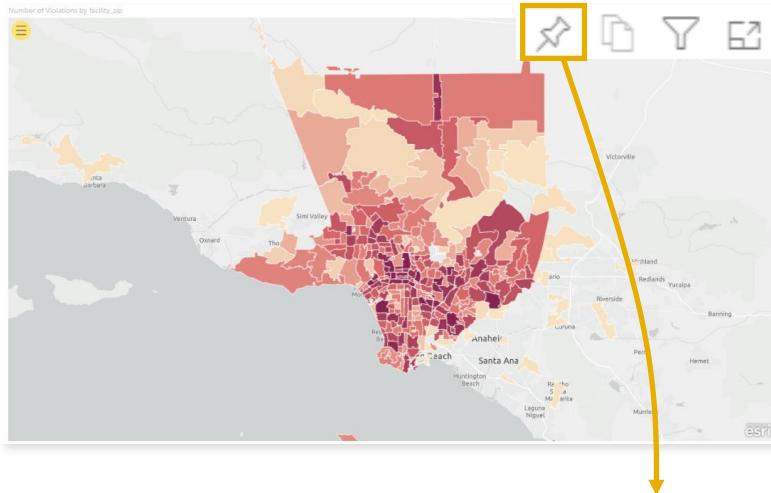
Data Driven Alerts

Natural Language
Queries

Quick Insights

Mobile Design

Use the pushpin icon to pin an individual visual to a dashboard



HEADS UP!

Slicers have some limitations in Power BI, and cannot:

- Drill down non-hierarchical fields
- Support visual level filters
- Be pinned to a dashboard individually
(they can be pinned as part of a **live page**)

PINNING ENTIRE REPORTS TO A DASHBOARD

Data Lineage

Reports

Dashboards

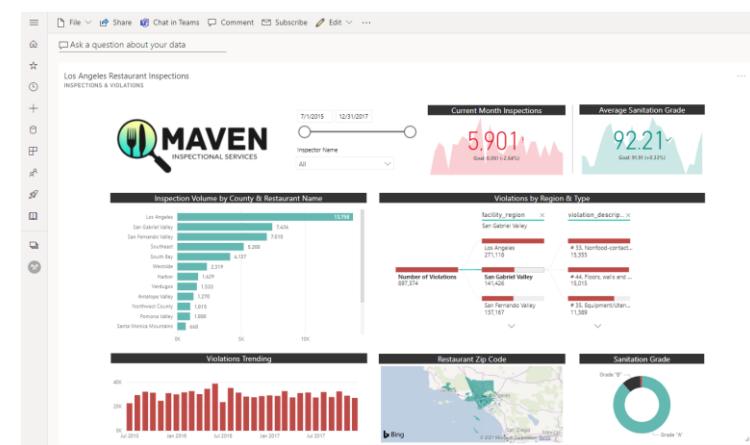
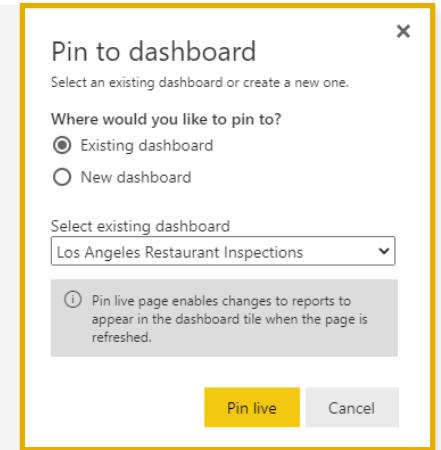
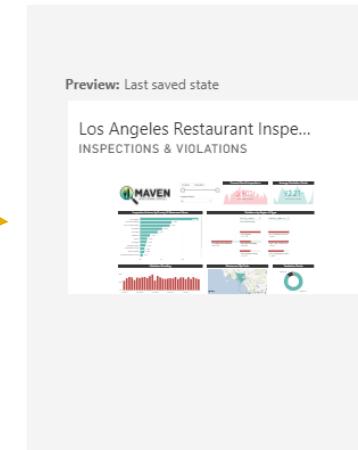
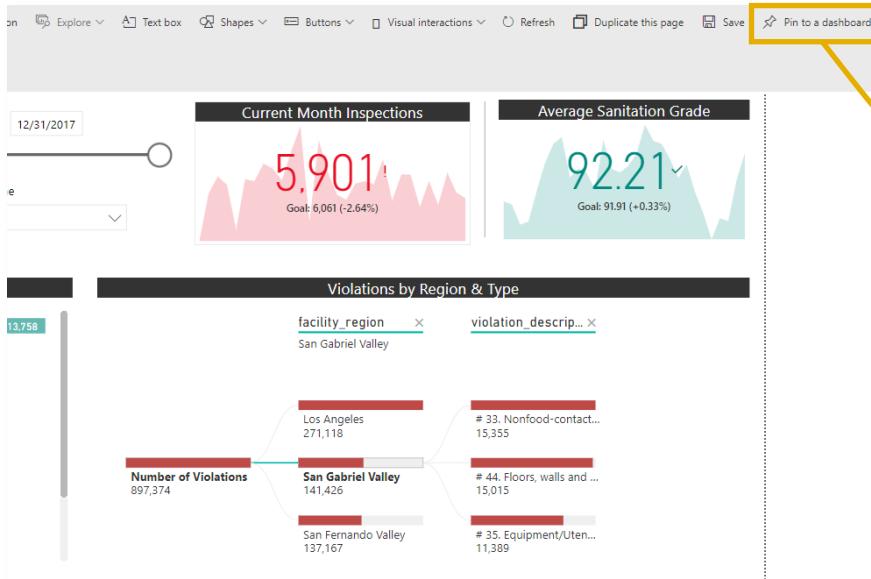
Data Driven Alerts

Natural Language Queries

Quick Insights

Mobile Design

Use the **Pin Live Page** option to pin an entire report to a dashboard



PRO TIP: Pinning a live page will import slicers, preserve functionality, and reflect any updates to the report

THE DASHBOARD INTERFACE

- Data Lineage**
- Reports**
- Dashboards**
- Data Driven Alerts**
- Natural Language Queries**
- Quick Insights**
- Mobile Design**

The dashboard interface displays several data tiles:

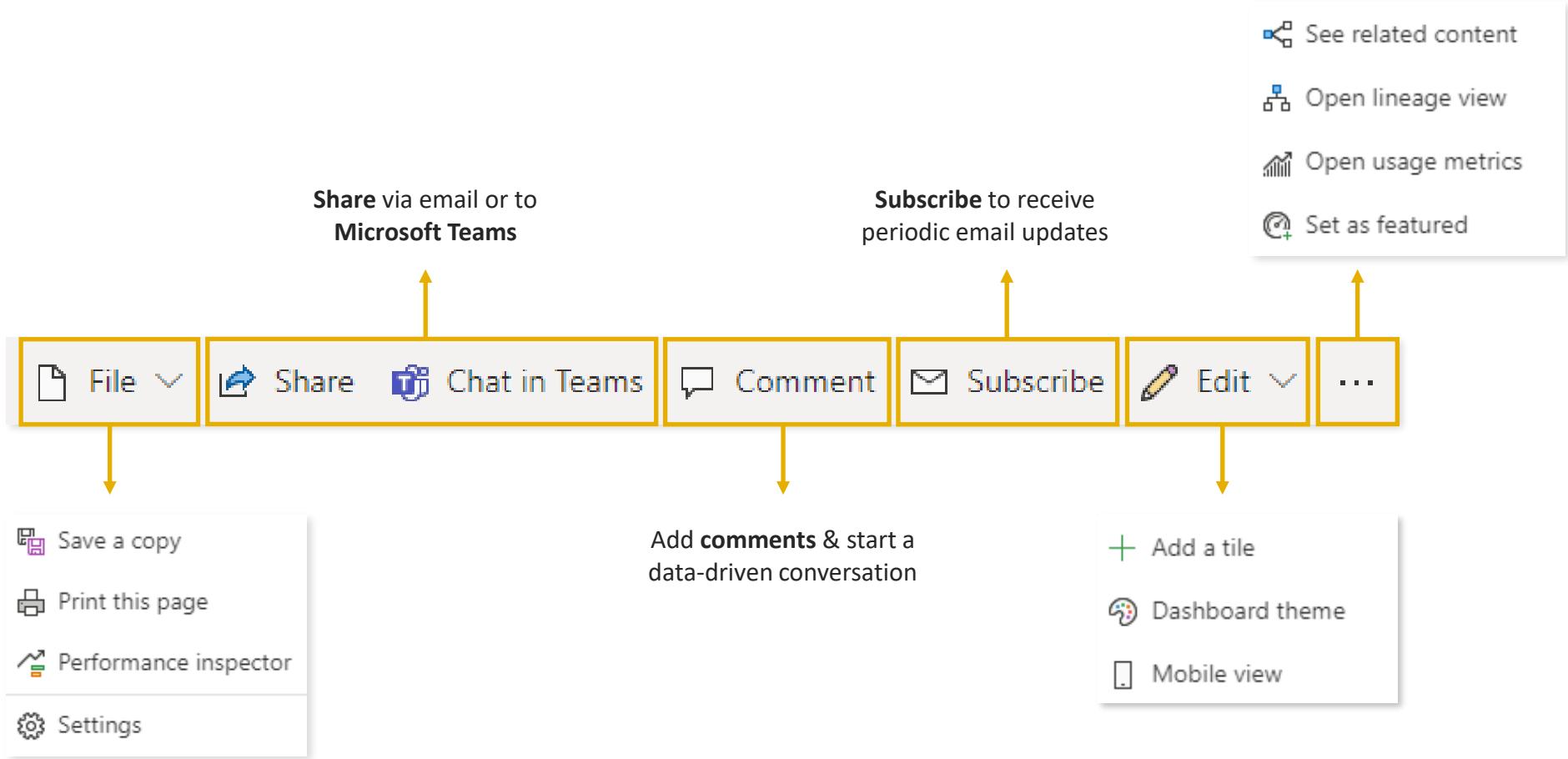
- Current Month Inspections:** A chart showing 5,901 inspections, with a goal of 6,061 (-2.64%).
- Average Sanitation Grade:** A chart showing a grade of 92.21, with a goal of 91.91 (+0.33%).
- Inspection Volume by County & Restaurant Name:** A bar chart showing inspection volumes for various locations.
- Sanitation Grade:** A donut chart showing the distribution of sanitation grades.
- Number of Violations BY FACILITY_ZIP:** A choropleth map showing violation counts across zip codes.

ASK A QUESTION
Allows you to use natural language queries to generate new tiles from within your dashboard!

TOOLBAR
Tools to add new tiles, add/view comments, subscribe, share, set as featured dashboard, etc.

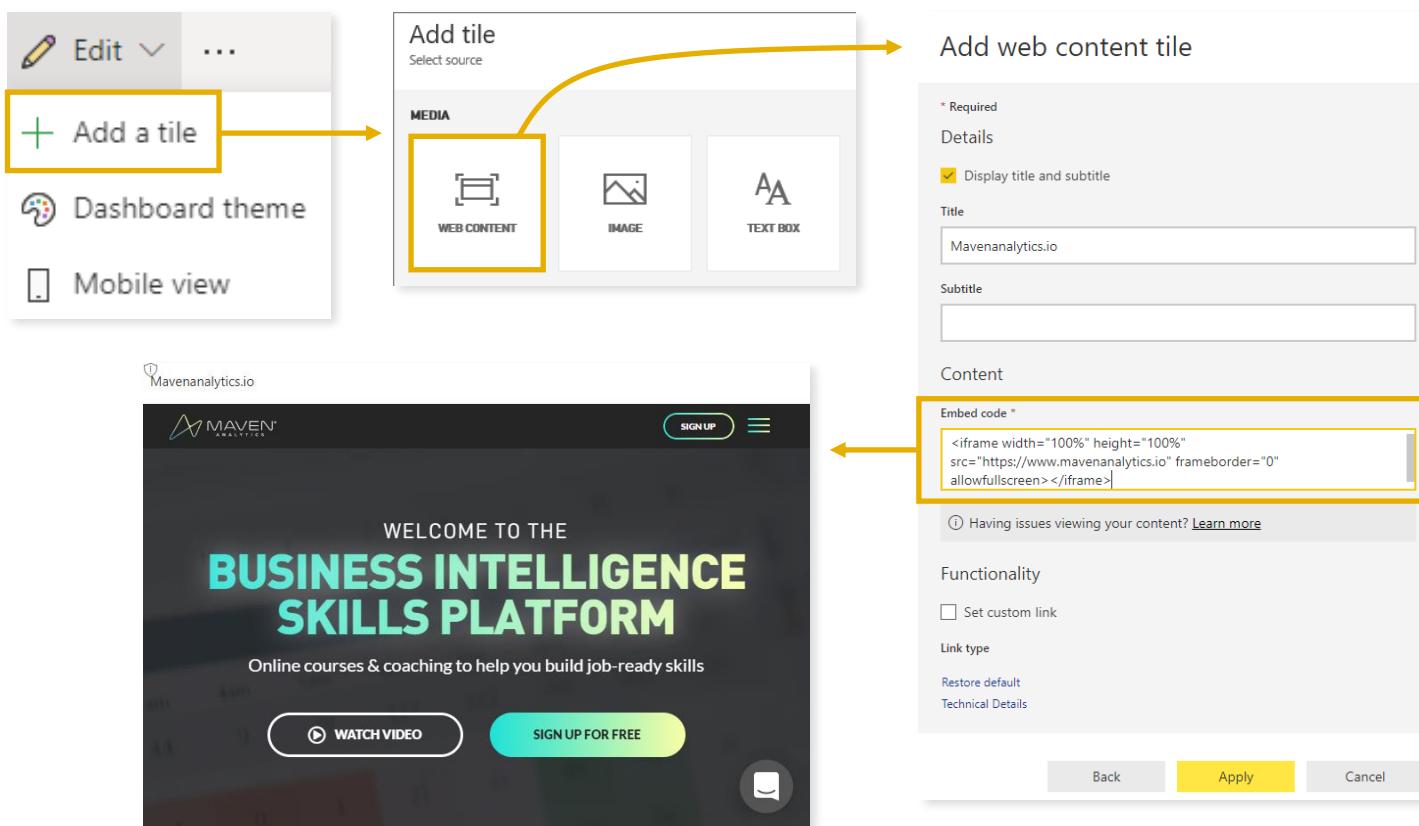
DASHBOARD TOOLS

- Data Lineage
- Reports
- Dashboards
- Data Driven Alerts
- Natural Language Queries
- Quick Insights
- Mobile Design



PRO TIP: ADDING A LIVE PAGE

- Data Lineage
- Reports
- Dashboards
- Data Driven Alerts
- Natural Language Queries
- Quick Insights
- Mobile Design

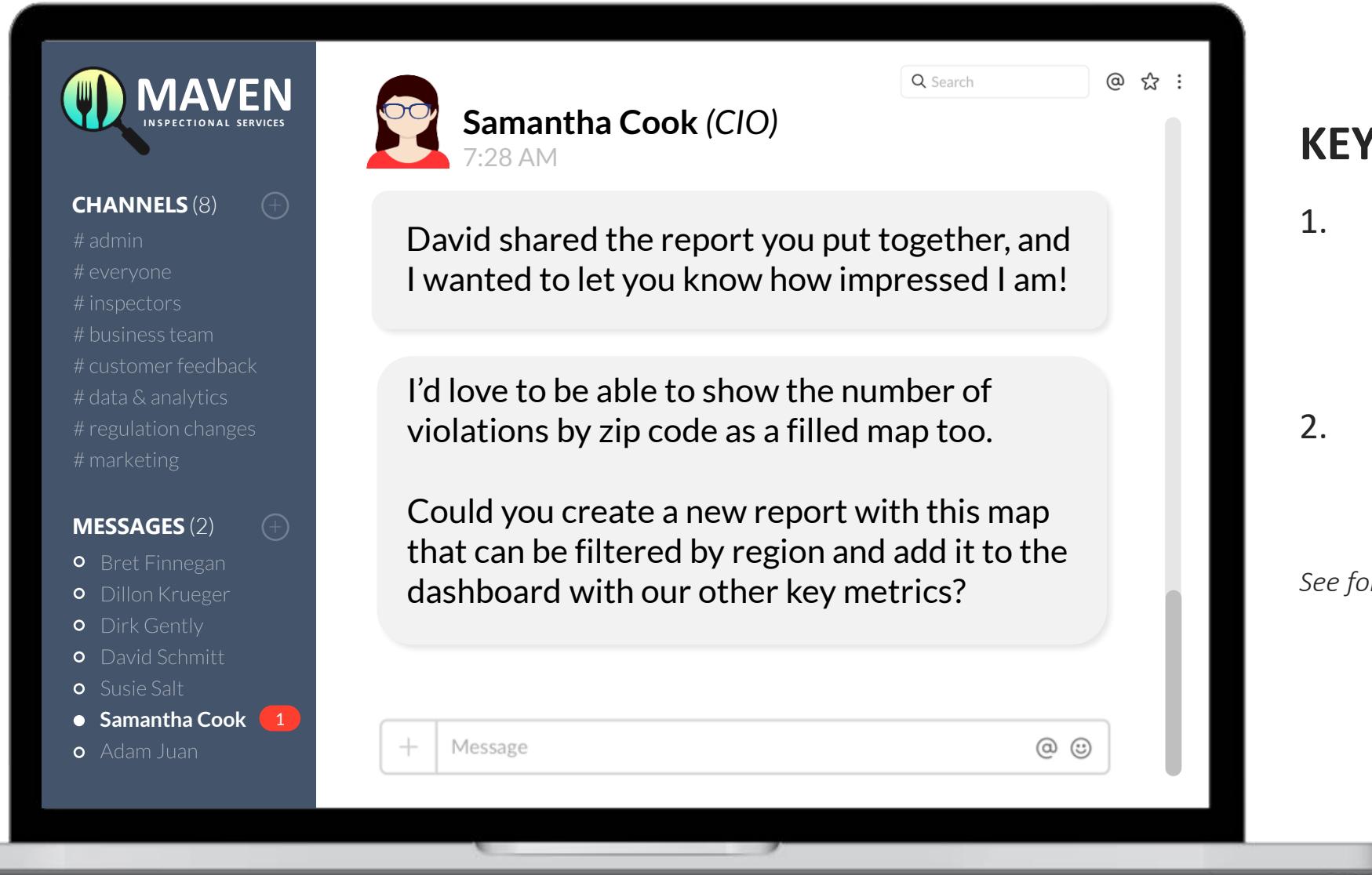


PRO TIP: You can tweak the HTML code to produce different styles and features (see link for options)
<https://docs.microsoft.com/en-us/power-bi/create-reports/service-dashboard-add-widget#tips-for-embedding-web-content>

Update the URL in the code below to customize your web content

```
<iframe width="100%" height="100%"  
src="https://www.mavenanalytics.io"  
frameborder="0"  
allowfullscreen></iframe>
```

ASSIGNMENT: ASSEMBLING A DASHBOARD



KEY OBJECTIVES:

1. **Add a new report page** with a slicer for region, a map to show the number of violations by zip code, and trending violations
2. **Update “Inspection Dashboard”** with the new report page and additional core KPIs

See following text lesson for instructions

ADDING DATA DRIVEN ALERTS

Data Lineage

Reports

Dashboards

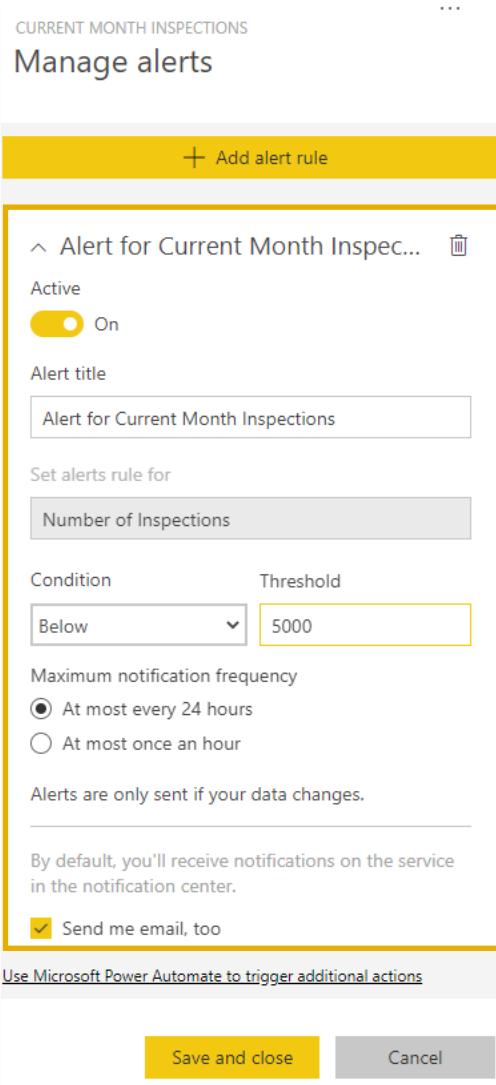
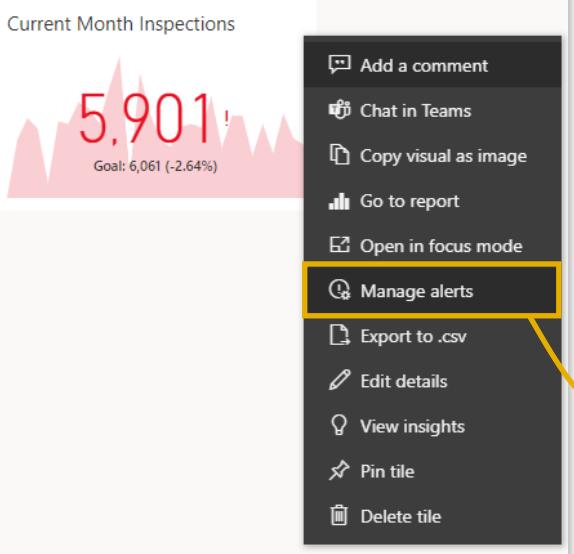
Data Driven Alerts

Natural Language
Queries

Quick Insights

Mobile Design

- 1 To add a new alert, click the ellipsis next to a dashboard tile and select **Manage alerts**



- 2 Configure your alert with a name, condition threshold, and notification cadence, then click **Save and close**



HEY THIS IS IMPORTANT!

Alerts can ONLY be set on **gauge charts**, **KPI cards**, and **cards**; they DO NOT work with live pinned report pages

EXPLORING DATA WITH Q&A

Data Lineage

Reports

Dashboards

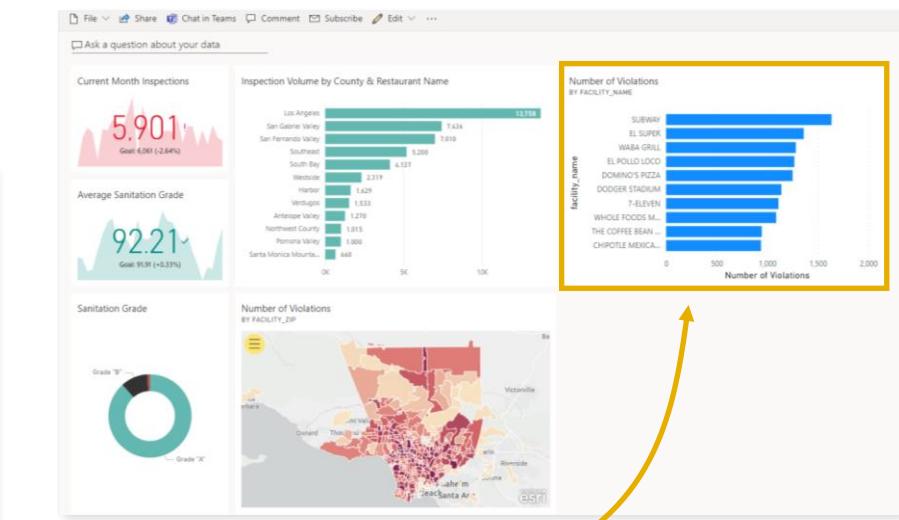
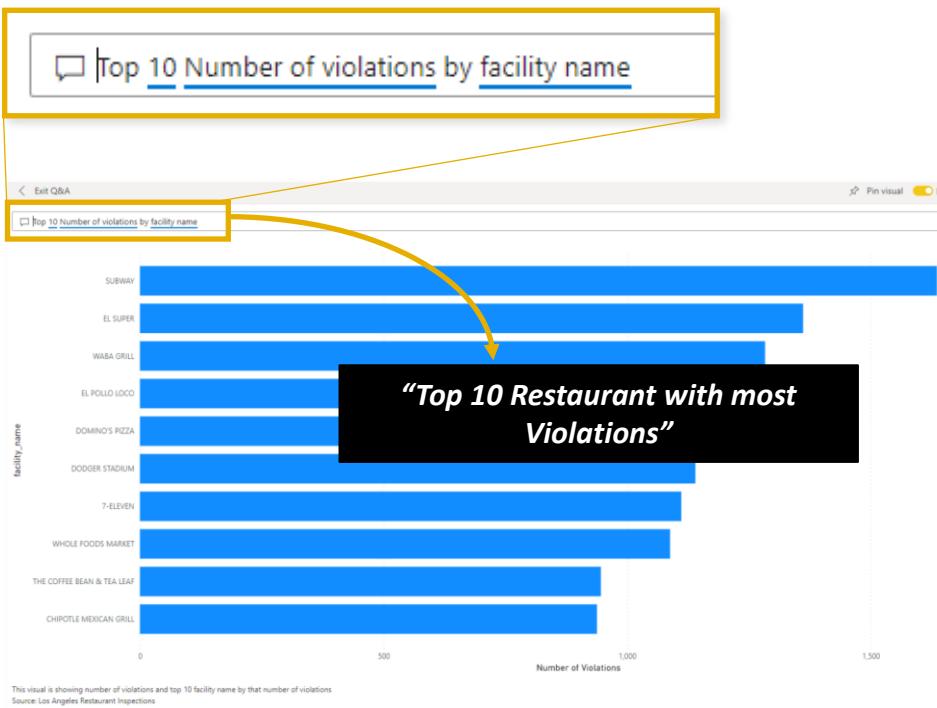
Data Driven Alerts

Natural Language
Queries

Quick Insights

Mobile Design

Q&A allows you to visualize and explore your data using **natural language queries**
(currently English only; Spanish is in Preview)



You can even pin the visual to a dashboard!

GENERATING QUICK INSIGHTS

Data Lineage

Reports

Dashboards

Data Driven Alerts

Natural Language
Queries

Quick Insights

Mobile Design

The **Quick Insights** tool searches for trends and patterns in your dataset and displays up to 32 individual insight cards with visuals and descriptions

The screenshot shows a user interface for managing datasets. On the left, a list of datasets is displayed:

- Los Angeles Restaurant Inspections (Dashboard)
- Los Angeles Restaurant Inspections (Report) [highlighted]
- New Dash
- Restaurant Inspections
- Violations

A context menu is open over the second item, showing options: Quick insights (highlighted), Save a copy, Settings, View usage metrics report, and View lineage.

To the right, a modal window titled "Insights are ready" is shown, stating "You have insights for Los Angeles Restaurant Inspections." A "View insights" button is highlighted with a yellow box and arrow.

The main area displays "Quick Insights for Los Angeles Restaurant Inspections" with two visible cards:

- Count of City Lookup and Average of score BY TRANSACTION_DATE**: A scatter plot showing a positive correlation between the count of city lookups and average scores. A note indicates clusters for Transaction_Date except for specific dates.
- Count of Region Lookup BY INSPECTOR_ROLE**: A donut chart showing that 'Inspector' accounts for the majority of Region Lookups. A note specifies the legend: Inspector role (blue) and Lead Inspector (green).

HEY THIS IS IMPORTANT!

Roles (RLS) and Direct Query are not supported, so Quick Insights will be grayed out in either case

WEB VS. MOBILE LAYOUT

Data Lineage

Reports

Dashboards

Data Driven Alerts

Natural Language Queries

Quick Insights

Mobile Design

Mobile Layout allows you to design reports optimized for mobile viewing (vs. web)

- *NOTE: You can't build content within the Mobile Layout view; you need to build in Web Layout and assemble select visuals to share via the Power BI mobile app*

The image shows two side-by-side screenshots of a Power BI report. On the left, under 'Mobile Layout', the interface is simplified with a single navigation bar at the top and a large central area for visualizations. It features a smartphone icon showing 'Current Month Inspections' (5,901) and 'Average Sanitation Grade' (92.21). Below this are several charts: a bar chart for 'Inspection Volume by County & Restaurant Name', a donut chart for 'Sanitation Grade', and a bar chart for 'Violations Trending'. On the right, under 'Web Layout', the interface is more complex with multiple toolbars at the top and a detailed sidebar on the left containing various data models and settings. The main area displays the same visualizations as the mobile version, including the smartphone summary, county volume chart, sanitation grade donut, and violations trending bar chart.

THE POWER BI MOBILE APP

Data Lineage

Reports

Dashboards

Data Driven Alerts

Natural Language Queries

Quick Insights

Mobile Design

Power BI's mobile app lets you view your reports and dashboards on the go



CORE MOBILE APP FUNCTIONALITY

Data Lineage

Reports

Dashboards

Data Driven Alerts

Natural Language
Queries

Quick Insights

Mobile Design

1

View & interact with dashboard and reports

- *Interact with report visuals and filters, or use Q&A features to discover new insights*

2

Share dashboards or reports straight from your phone

- *Share links to workspace reports and dashboards to anyone else with a Pro account*

3

Draw & comment anywhere on your screen

- *Add annotations that you can share with your team using text, drawings, icons and more*

4

Notify users & set alerts to stay up-to-date on key changes

- *Get notifications based on any alerts you've configured, or when you've been @mentioned*

CORE MOBILE APP FUNCTIONALITY

Data Lineage

Reports

Dashboards

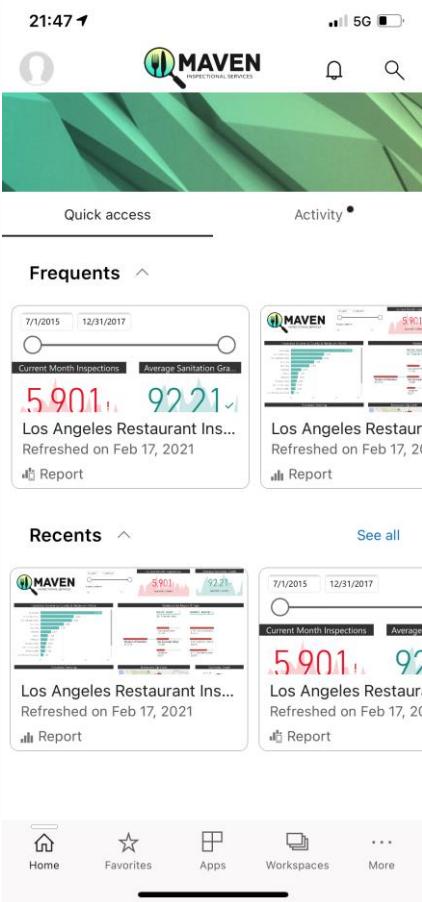
Data Driven Alerts

Natural Language
Queries

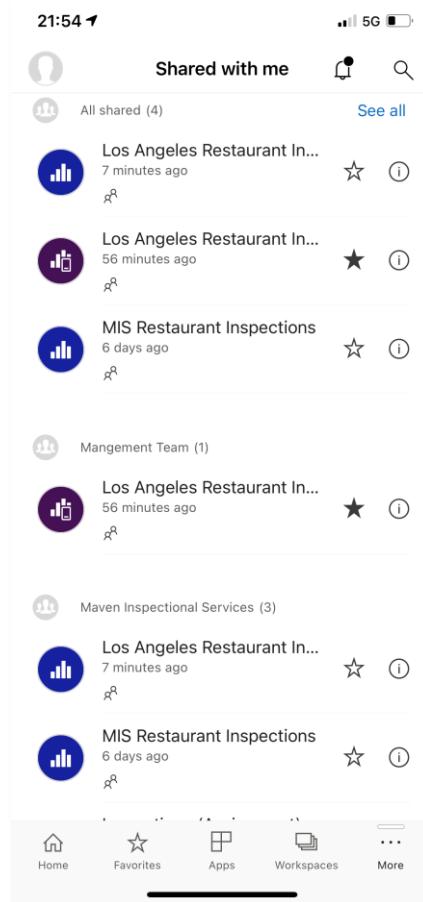
Quick Insights

Mobile Design

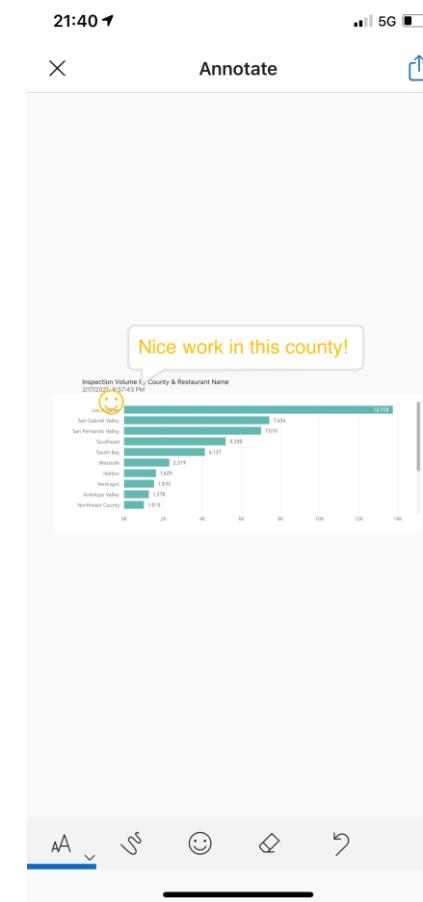
INTERACT



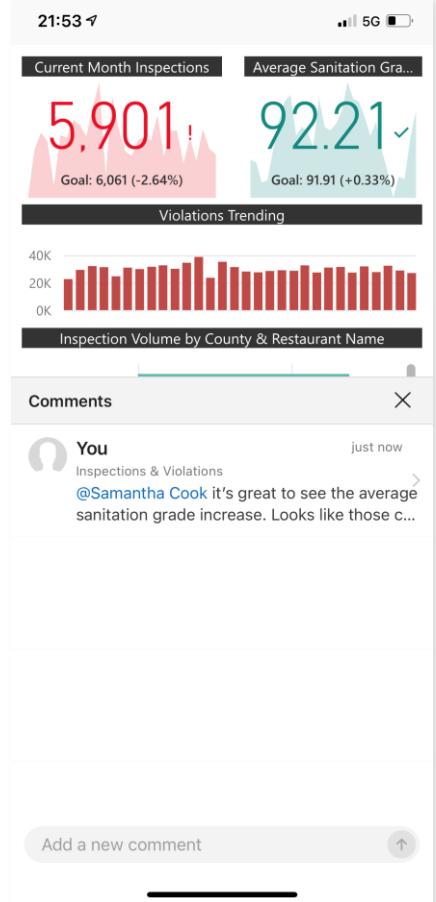
SHARE



DRAW



NOTIFY



BEST PRACTICES: REPORTS & DASHBOARDS



When building reports, start in **Power BI Desktop**

- *Power BI Desktop contains more robust tools for building data models, calculations, and reports*



Use **dashboards** to assemble data from different reports/datasets

- *Use dashboards to combine visuals from multiple sources to create centralized reporting views*



Create **data-driven alerts** when important thresholds are met

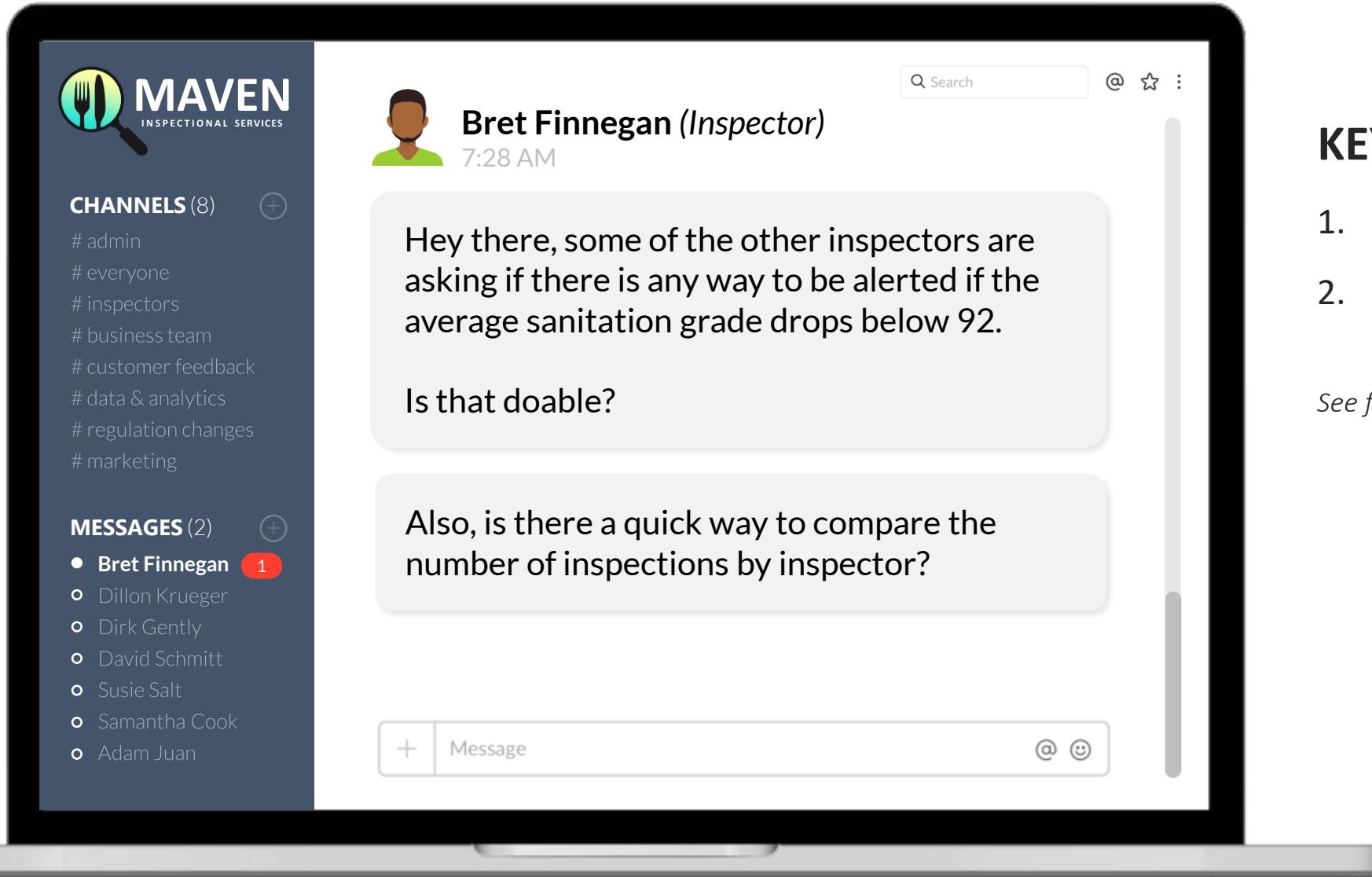
- *Allow users to automatically receive alerts when there are meaningful changes in your data*



Be deliberate about **mobile** vs. **desktop** design

- *Eliminate noise and feature only the most important visuals and KPIs for mobile users*

ASSIGNMENT: ALERTS AND Q&A



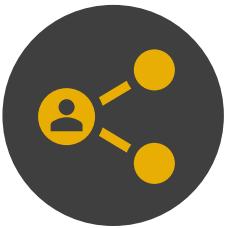
KEY OBJECTIVES:

1. Configure **data-driven alerts**
2. Use the **Q&A feature** to add a new visual to the dashboard

See following text lesson for instructions

SHARING & COLLABORATION

SHARING & COLLABORATION



In this section we'll cover the **sharing** and **collaboration** options in Power BI Service, including publishing apps, publishing to web and monitoring usage reports

TOPICS WE'LL COVER:

Sharing & Viewing

Sharing Workspaces

Publishing Apps

Publishing to Web

Usage Reports

COMMON USE CASES:

- *Sharing reports and dashboards with individuals*
- *Collaborating with a team or group*
- *Distributing published apps across your organization*
- *Learning how reports are being used and by whom*

SHARING OPTIONS

Sharing & Viewing

Sharing Workspaces

Publishing Apps

Publishing to Web

Usage Reports

1 Print or Export a Report

*Ideal for quickly exporting reports or dashboards as **static PDFs** or **PowerPoint** documents (great for handouts!)*

2 Share Reports or Dashboards

*Best for **sharing individual pieces of content**, especially when recipients only need to view and interact with content (not edit)*

3 Share a Workspace

*Easiest way to **collaborate with a team** by sharing ownership and management of all content (datasets, reports, dashboards, etc.)*

4 Publish an App

*Great for **distributing content to large groups** or teams, and for publishing specific sets of datasets, reports or dashboards*

5 Embed Securely Online

*Used for **securely embedding content to a website you own** through SharePoint Online, via URL, or iframe*

6 Publish to Web

*Only use the Publish to Web option if you want your content to be **publicly visible to anyone online** (use with caution!)*

SHARING OPTIONS

Sharing & Viewing

Sharing Workspaces

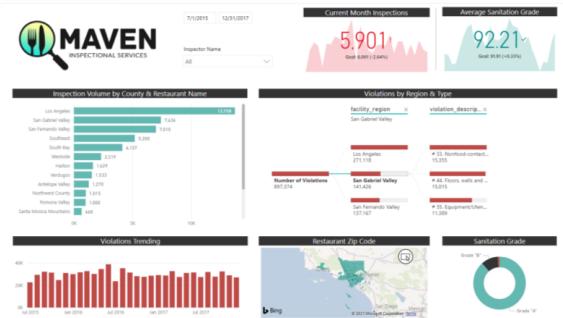
Publishing Apps

Publishing to Web

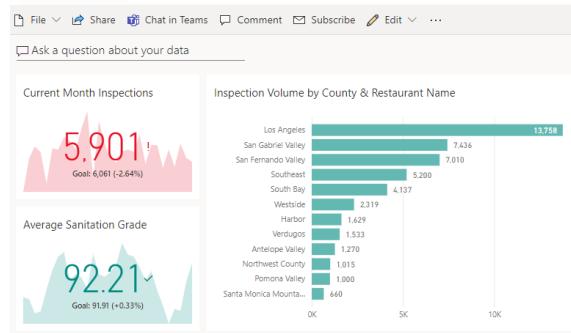
Usage Reports



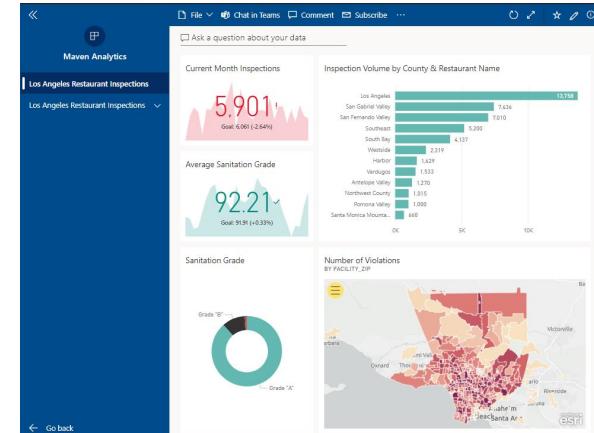
Reports



Dashboards



Apps



INDIVIDUALS



TEAMS



ORGANIZATIONS



PRO TIP: When sharing reports & dashboards, the maximum number of recipients is 100 at a time (or 500 total); if you need to share with more than 100 recipients, split into multiple sends or use groups

VIEWING RIGHTS

Sharing & Viewing

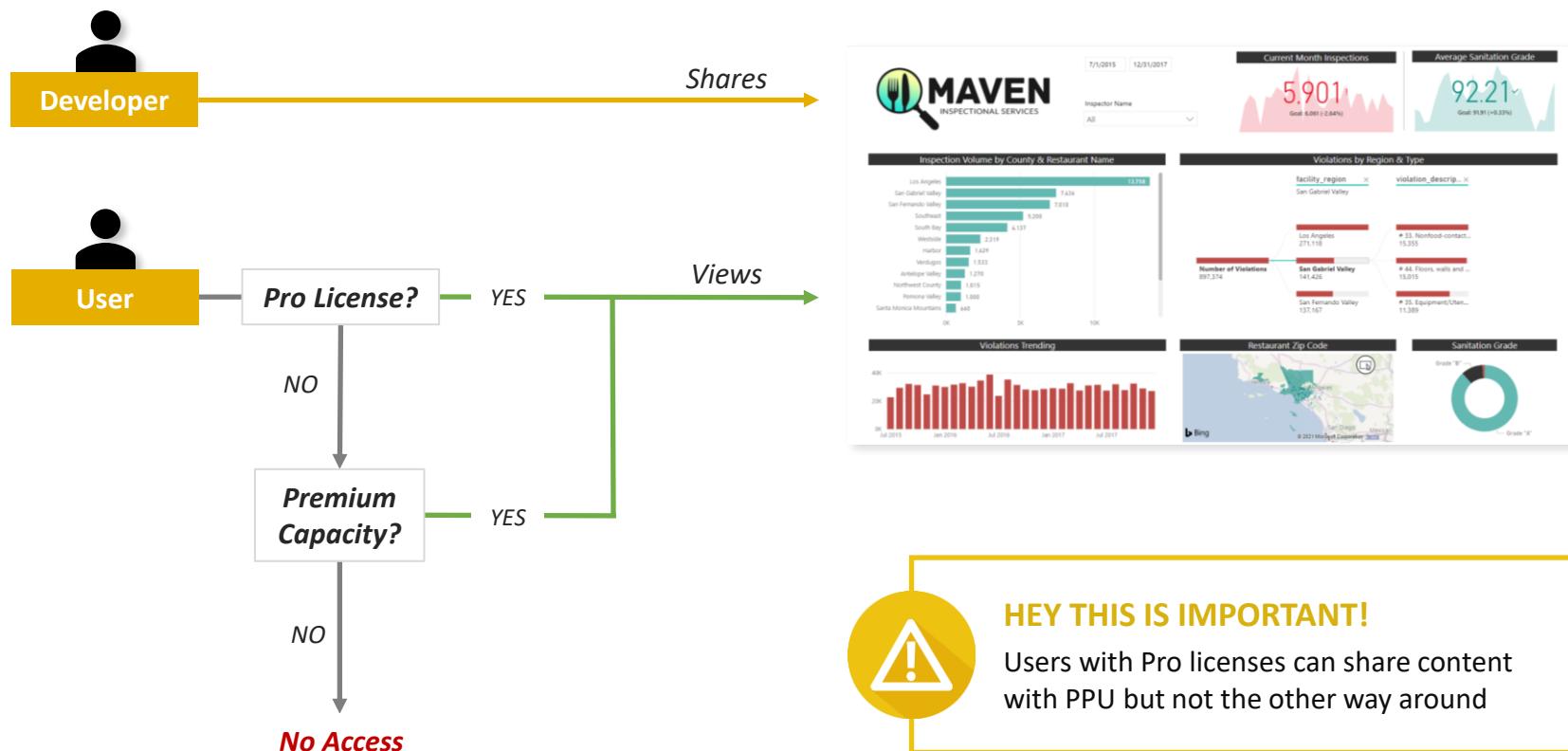
Sharing Workspaces

Publishing Apps

Publishing to Web

Usage Reports

When a developer shares a report or dashboard or publishes an app, users must have either a **pro license** or **access to premium capacity** in order to view



USER PERMISSIONS

Sharing & Viewing

Sharing Workspaces

Publishing Apps

Publishing to Web

Usage Reports

When sharing workspaces, you can assign roles based on these **levels of permissions**:

VIEWER

- View workbooks, reports, and dashboards
- Can't access datasets, dataflows, or edit content

CONTRIBUTOR

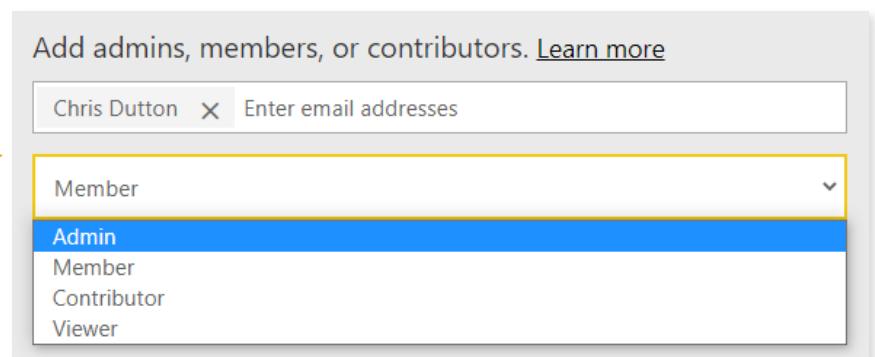
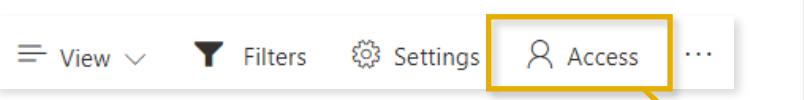
- Lifts Viewer restrictions, plus:*
- Publish, create, edit, and delete content
 - Can't add people to new roles or modify members
 - Can share if the content has been previously shared but can't share new content

MEMBER

- All Contributor rights, plus:*
- Add members or users with lower permission levels
 - Publish and update apps
 - Share an item or app
 - Allow others to reshare

ADMIN

- All Member rights, plus:*
- Update/delete workspaces
 - Add or remove other users (including admins)



PUBLISHING APPS

Sharing & Viewing

Sharing Workspaces

Publishing Apps

Publishing to Web

Usage Reports

You can select reports and dashboards to **publish as an app** so large groups of people, both internal and external to your organization, can view them

2 Select **Create app** to publish the app

Name	Type	Owner	Refreshed	Next refresh	Endorsement	Sensitivity	Include in app
Los Angeles Restaurant Inspections	Dashboard	Maven Analytics	—	—	—	—	<input checked="" type="checkbox"/>
Los Angeles Restaurant Inspections	Report	Maven Analytics	1/18/21, 7:29:59 PM	—	—	—	<input checked="" type="checkbox"/>
Restaurant Inspections	Report	Maven Analytics	1/19/21, 1:38:29 PM	—	—	—	<input type="checkbox"/>
Violations	Report	Maven Analytics	1/19/21, 7:39:13 PM	—	—	—	<input type="checkbox"/>

1 From within a workspace, select any **reports** and **dashboards** you want to include

PUBLISHING APPS

Sharing & Viewing

Sharing Workspaces

Publishing Apps

Publishing to Web

Usage Reports

After selecting Create app, configure the **setup**, **navigation**, and **permissions**

3

In the **Setup** tab, name the app, add a description, logo, and color theme

Maven Analytics

Setup Navigation Permissions

Build your app

App name *

Maven Analytics

Description *

Enter a summary

Support site

Share where your users can find help

App logo

Upload Delete

App theme color

Contact Information

Show app publisher (radio button selected)

Show items contacts from the workspace

Show specific individuals or groups

Enter email addresses

4

In the **Navigation** tab, use the navigation builder to customize the order, name, and navigation width

Maven Analytics

Setup Navigation Permissions

New navigation builder

On

Add reports and dashboards to this app. Then organize the custom navigation pane so it's easy for people to find what they're looking for.

Navigation *

+ New

Los Angeles Restaurant Insp...

Los Angeles Restaurant Insp...

Dashboard details

Name *

Los Angeles Restaurant Inspections

Dashboard link

https://app.powerbi.com/groups/67c16e4f-1958-40ff-a652-44d0852df94c/dashboards/f4

Section

No section

Hide from navigation

Advanced

5

In the **Permissions** tab, add individuals, groups, or entire organizations to the App

Maven Analytics

Setup Navigation Permissions

Access

Entire organization (radio button selected)

Specific individuals or group

Enter email addresses

Users and groups with access to this workspace can access this app.

Allow everyone who has app access to

Allow all users to connect to the app's underlying datasets using the Build permission.

Allow users to make a copy of the reports in this app.

Allow users to share the app and the app's underlying datasets using the share permission.

Learn more about how to publish and update Power BI apps

Installation

Install this app automatically.

Publish app Cancel

6

Published the app!

PUBLISHING APPS

Sharing & Viewing

Sharing Workspaces

Publishing Apps

Publishing to Web

Usage Reports

After publishing the app, you'll be provided a link for direct access

Maven Analytics

When you publish an app that has large distribution, it might take a little while to process. Typically, the content will be available within 5-10 minutes, but it can take up to one day.

Publish

Cancel

Successfully published

Maven Analytics

Give people the link below, or direct them to Apps > Get apps in the Power BI service.

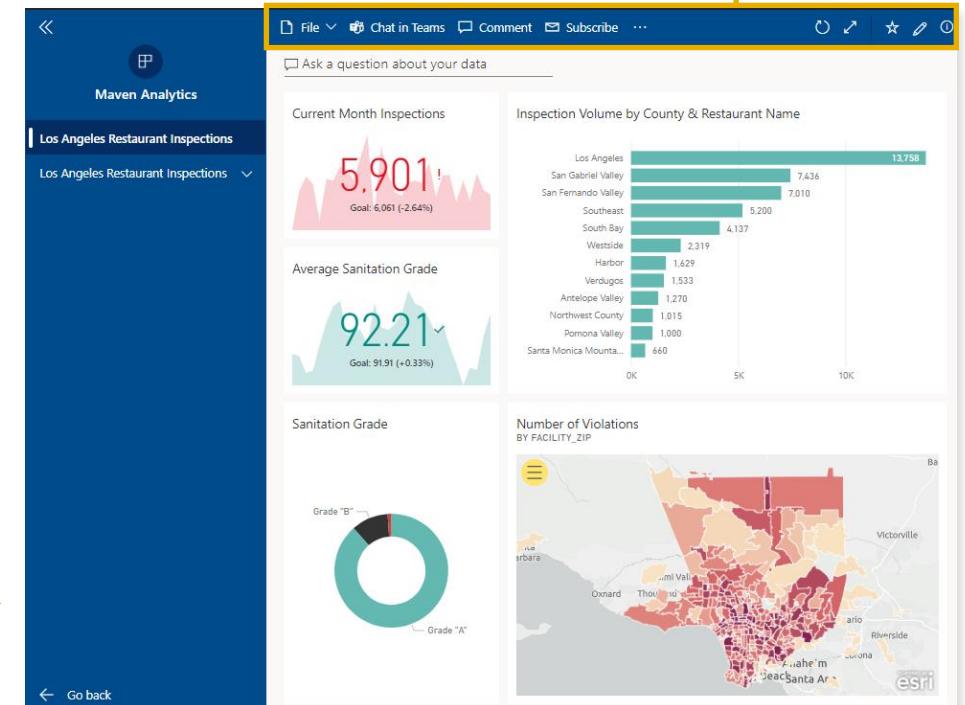
<https://app.powerbi.com/Redirect?action=OpenApp&appId=9112b4>

Copy

Go to app

Close

Menu options allow users to do things like **print**, **chat in Teams**, **add comments**, **subscribe**, **favorite**, **edit** (*permissions depending*), etc.



PUBLISHING TO WEB

Sharing & Viewing

Sharing Workspaces

Publishing Apps

Publishing to Web

Usage Reports

Use Publish to Web to host reports online publicly

Embed in a public website

Get a link or embed code that you can include on a public website.

You may use the publish to web functionality to share content on a publicly available website. You may not use this functionality to share content internally, including through email, your internal network, or intranet site.

Publish a live version that will remain synchronized with the source report in Power BI. Any changes you make to the report will immediately be reflected in the published public version.

Create embed code

x

Embed in a public website

⚠️ You are about to create an embed code for this report. Once published, anyone on the internet will be able to access the report and the data it contains, and Microsoft may display the report on a public website or a public gallery.

Before publishing this report, ensure you have the right to share the data and visualizations publicly. Do not publish confidential or proprietary information, or an individual's personal data. If in doubt, check your organization's policies before publishing.

Publish

Close

Pay Attention to this Warning!

You're about to make the report **100% accessible** to anyone on the internet

Success! Your report is ready to share

Link you can send in email

<https://app.powerbi.com/view?r=eyJrjoIMGEwNjA>

Copy

HTML you can paste into a website

<iframe width="600" height="373.5" src="https://>

Copy

Size

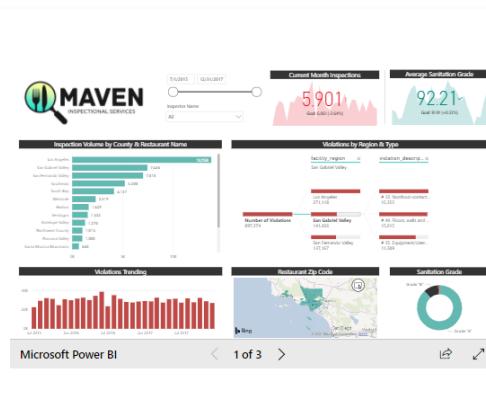
600 x 373.5 px

Placeholder image



Default Page

Inspections & Violations



PRO TIP: Go to Settings > manage embed codes to delete the Publish to Web report

Maven Analytics

Associated Report

Los Angeles Restaurant Inspections

Status

Active

Date Created

1/19/2021, 11:33:04 PM

Get code
Delete

PRO TIP: GENERATING USAGE REPORTS

Sharing & Viewing

Sharing Workspaces

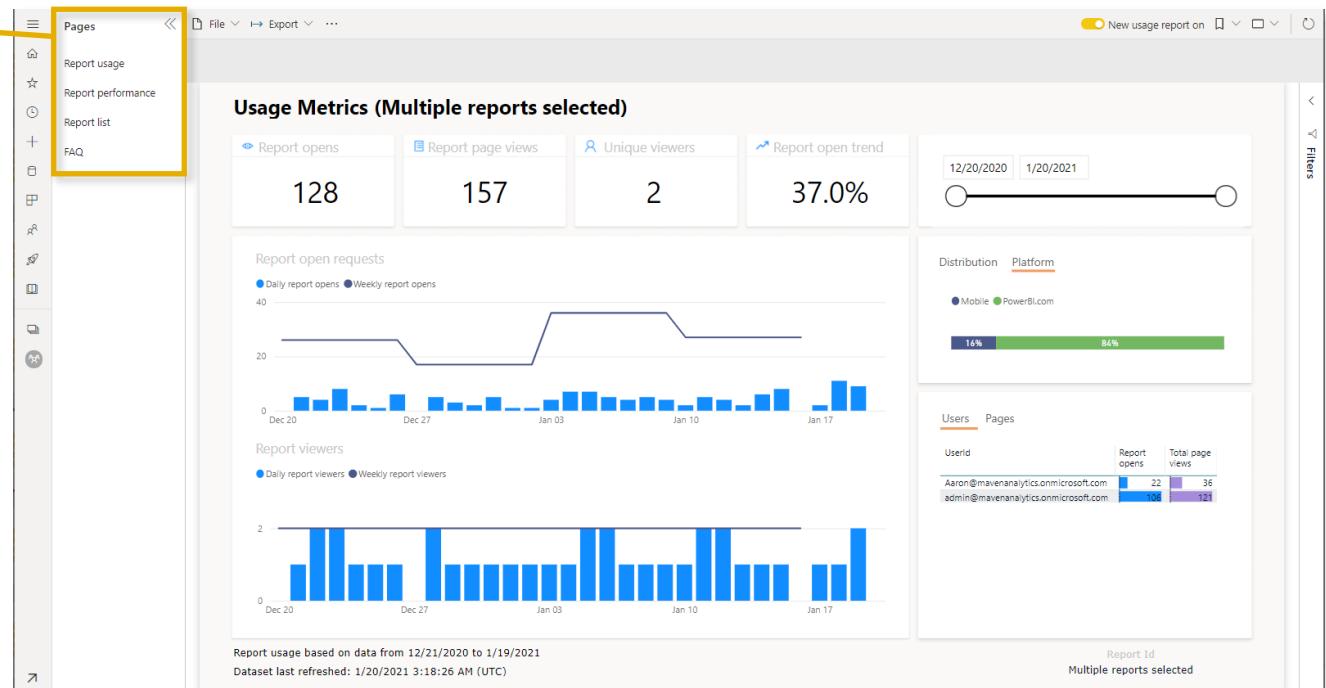
Publishing Apps

Publishing to Web

Usage Reports

The **usage metrics** tool monitors how your dashboards and reports are being used

- **REPORT USAGE**
Displays metrics like opens, views, viewers, users, etc.
- **REPORT PERFORMANCE**
Displays typical open time, browser, device, etc.
- **REPORT LIST**
Shows key metrics by report across entire workspace
- **FAQ**
Like term & calculation definitions, plus links to additional info



PRO TIP: Choose “Save report as” from the file menu to access the underlying data to build and customize your own usage metrics report

BEST PRACTICES: SHARING & COLLABORATION



Share workspaces to **collaborate with team members**

- *Sharing options allow you to assign different roles to your team members for collaboration*



Publish apps to distribute content to a **large audience**

- *Reports and dashboards included in an app are accessible to people in and out of your organization*



Publish to **web** to make your reports and dashboards public

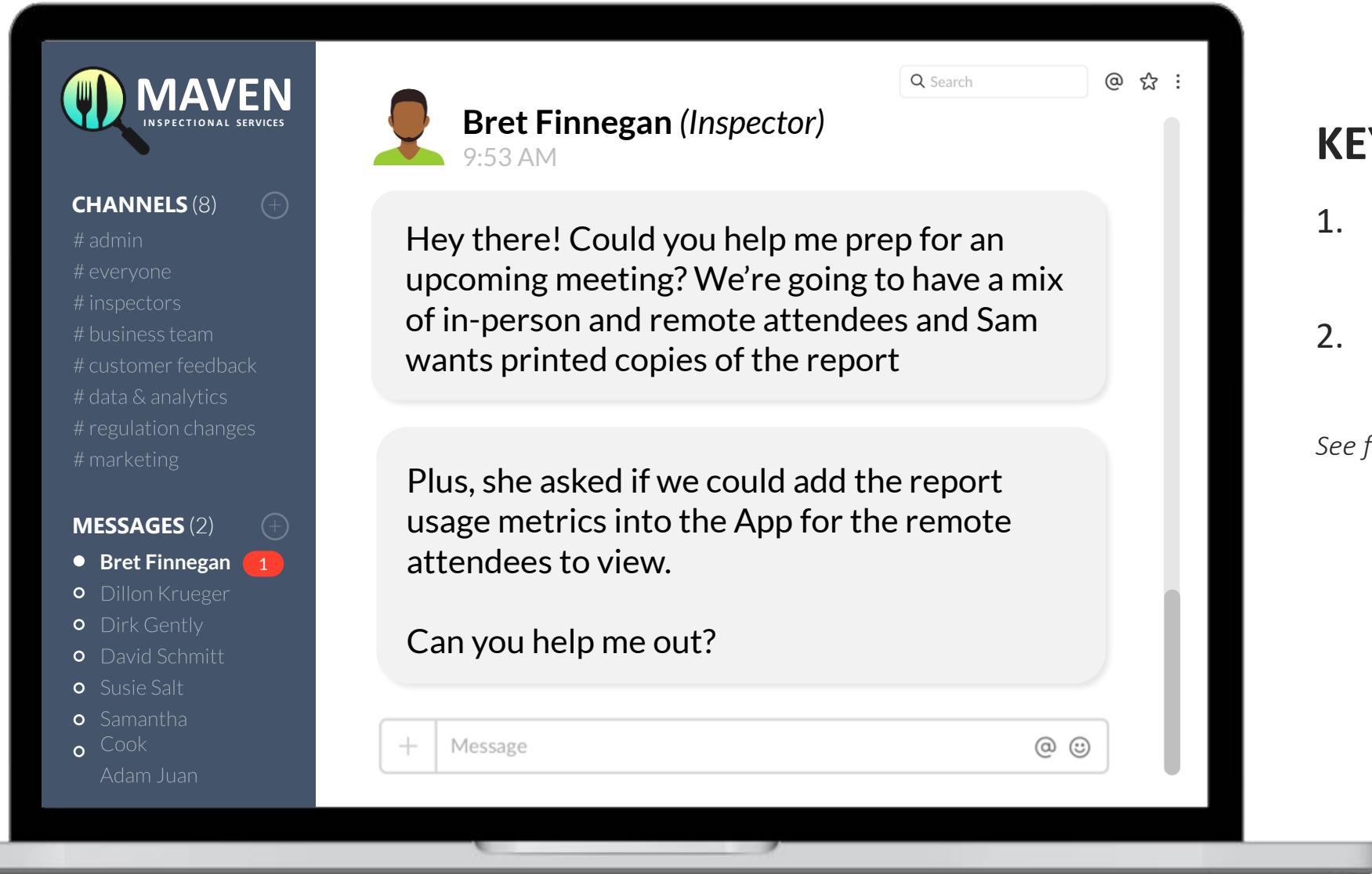
- *Publish to web is a great way to showcase non-sensitive data or share a portfolio of your work*



Analyze **usage reports** to see how your reports are being used

- *Monitor top consumed reports to help prioritize development needs*

ASSIGNMENT: SHARING & COLLABORATION



KEY OBJECTIVES:

1. **Export** the “MIS Inspections Report” to **PowerPoint**
2. Add **usage metrics report** visual to app & update

See following text lesson for instructions

ROW-LEVEL SECURITY

ROLES (ROW-LEVEL SECURITY)



In this section we'll cover **roles**, also known as **row-level security (RLS)**, which are used to restrict data access to users at the row level and limit what they're able to view

TOPICS WE'LL COVER:

Static RLS

Dynamic RLS

RLS in Service

COMMON USE CASES:

- *Creating static roles to filter data based on an individual's role or responsibilities*
- *Dynamically creating roles for your organization with the USERPRINCIPALNAME function*
- *Managing what users can and cannot view*

STATIC ROW-LEVEL SECURITY

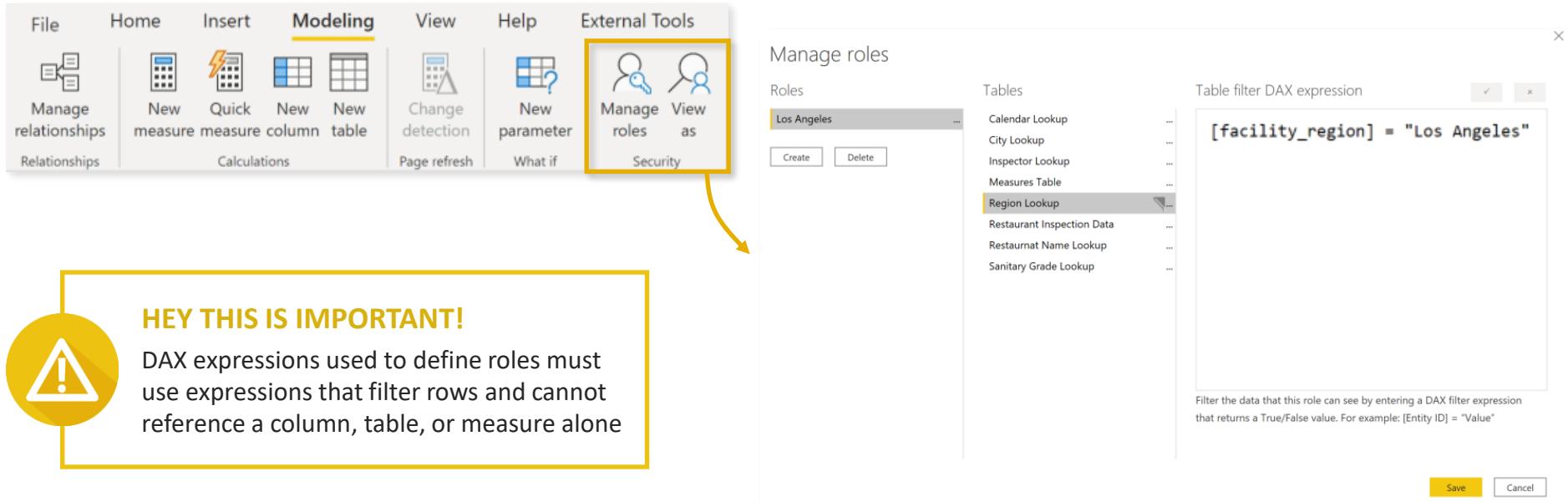
Static RLS

Dynamic RLS

RLS in Service

Static roles allow you to define filtered views for specific audiences (*territory managers, department leads, execs, etc.*) using simple DAX statements

- This is not the same as bookmarks or pre-filtered views; roles filter data out of your model and limit what audiences can access
- Static roles must first be configured in Power BI Desktop and then applied in Power BI Service



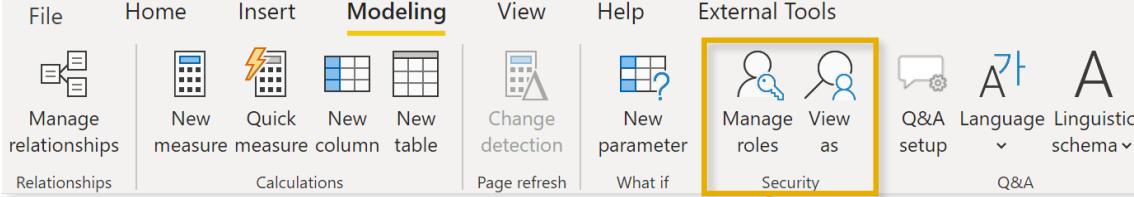
TESTING ROW-LEVEL SECURITY

As a best practice, use the **View as** option to confirm that the security role properly limits the data prior to publishing to Power BI Service

Static RLS

Dynamic RLS

RLS in Service



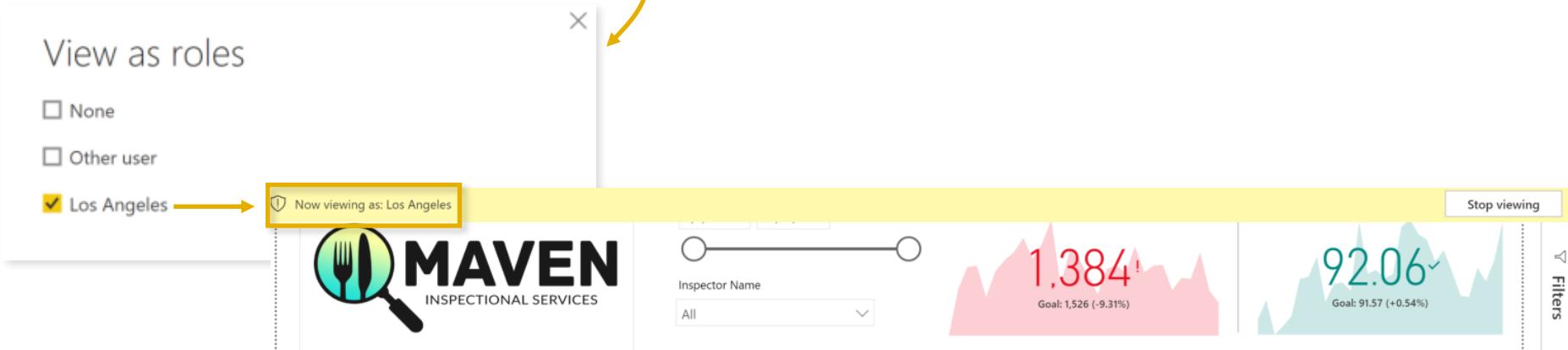
The screenshot shows the Power BI desktop ribbon. The 'Modeling' tab is selected. In the 'External Tools' section, the 'View as' button is highlighted with a yellow box and an arrow pointing from the 'View as roles' dialog.

View as roles

None

Other user

Los Angeles → Now viewing as: Los Angeles



The screenshot shows a Power BI report with a yellow banner at the top stating "Now viewing as: Los Angeles". The report includes a logo for "MAVEN INSPECTATIONAL SERVICES" and several data visualizations like a bar chart and a line chart.

DYNAMIC ROW-LEVEL SECURITY

Dynamic roles allow you to define filtered views for a specific list of users with the DAX function **USERPRINCIPALNAME**

Static RLS

Dynamic RLS

RLS in Service

The screenshot shows the 'Manage roles' dialog in Power BI Desktop. On the left, under 'Roles', there is a table with one row: 'Inspectors' under 'Los Angeles'. On the right, under 'Tables', there is a list of lookup tables: 'Calendar Lookup', 'City Lookup', 'Inspector Lookup' (which is highlighted), 'Measures Table', 'Region Lookup', 'Restaurant Inspection Data', 'Restaurat Name Lookup', and 'Sanitary Grade Lookup'. A yellow box highlights the 'Manage roles' icon in the 'External Tools' ribbon tab. A callout arrow points from this icon to a table on the right. Another callout arrow points from the text 'This dynamic role will filter by the users in this table' to the same table.

This dynamic role will filter by the users in this table

email_address	inspector_role
bfinnegan@maveninspectionalservices.onmicrosoft.com	Inspector
dkrueger@maveninspectionalservices.onmicrosoft.com	Inspector
kmeza@maveninspectionalservices.onmicrosoft.com	Inspector
jkay@maveninspectionalservices.onmicrosoft.com	Inspector
bblanco@maveninspectionalservices.onmicrosoft.com	Inspector
dschmitt@maveninspectionalservices.onmicrosoft.com	Lead Inspector
jstubbs@maveninspectionalservices.onmicrosoft.com	Inspector
rriggs@maveninspectionalservices.onmicrosoft.com	Inspector
dgently@maveninspectionalservices.onmicrosoft.com	Inspector
ssalt@maveninspectionalservices.onmicrosoft.com	Inspector
smurphy@maveninspectionalservices.onmicrosoft.com	Inspector
ajuan@maveninspectionalservices.onmicrosoft.com	Inspector
mtyson@maveninspectionalservices.onmicrosoft.com	Inspector
aholt@maveninspectionalservices.onmicrosoft.com	Inspector
lburns@maveninspectionalservices.onmicrosoft.com	Inspector
jlebean@maveninspectionalservices.onmicrosoft.com	Inspector
scook@maveninspectionalservices.onmicrosoft.com	Chief Inspector

USERPRINCIPALNAME

USERPRINCIPALNAME()

Returns the user's name as their email address (i.e., aaron@mavendemo.com)

Static RLS

Dynamic RLS

RLS in Service

=USERPRINCIPALNAME()

USERPRINCIPALNAME doesn't have any parameters

Examples:

- [Email] = USERPRINCIPALNAME()

HEY THIS IS IMPORTANT!

User Principal Name (UPN) looks like an email address, but technically it's a combination of three items:

1. Person's **username** (i.e., aaronp)
2. "@" symbol
3. Company **domain** (i.e., maven inspectional services)



Table filter DAX expression

```
[email_address] = USERPRINCIPALNAME()
```

Filter the data that this role can see by entering a DAX filter expression that returns a True/False value. For example: [Entity ID] = "Value"

Save Cancel

APPLYING RLS IN SERVICE

Once RLS rules have been defined in Power BI Desktop, they can be applied to users who you've shared reports with or have **Viewer** permissions in Power BI Service

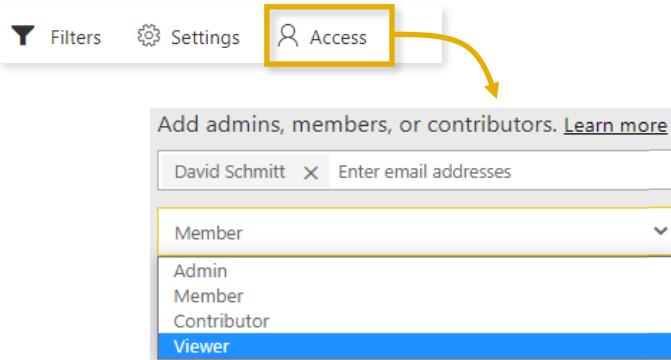
Static RLS

Dynamic RLS

RLS in Service

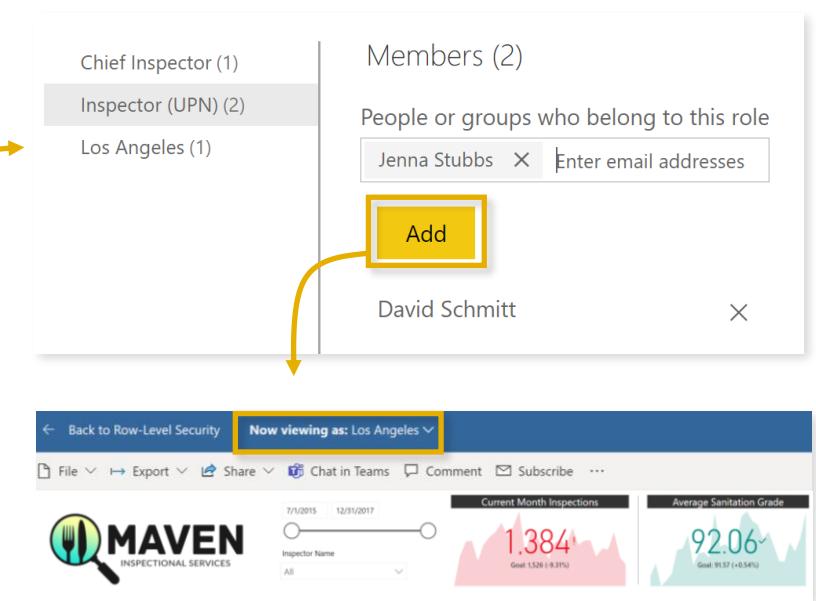
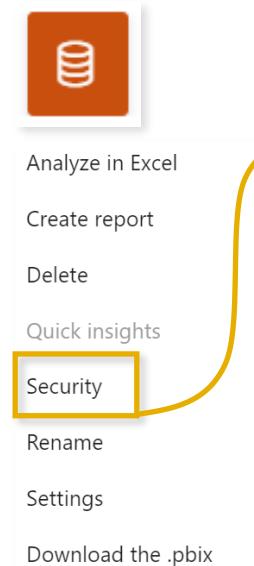
1

Confirm that users impacted by RLS are assigned to the **Viewer** role



2

Add people or groups to the RLS rule



HEY THIS IS IMPORTANT!

If a user is assigned as an Admin, Member, or Contributor, RLS will be overridden



BEST PRACTICES: ROW-LEVEL SECURITY



Set up static roles for small teams or simple cases

- *This can be an easy way to filter data without needing to add additional tables into your data model*



Use dynamic roles for larger teams or where team members change

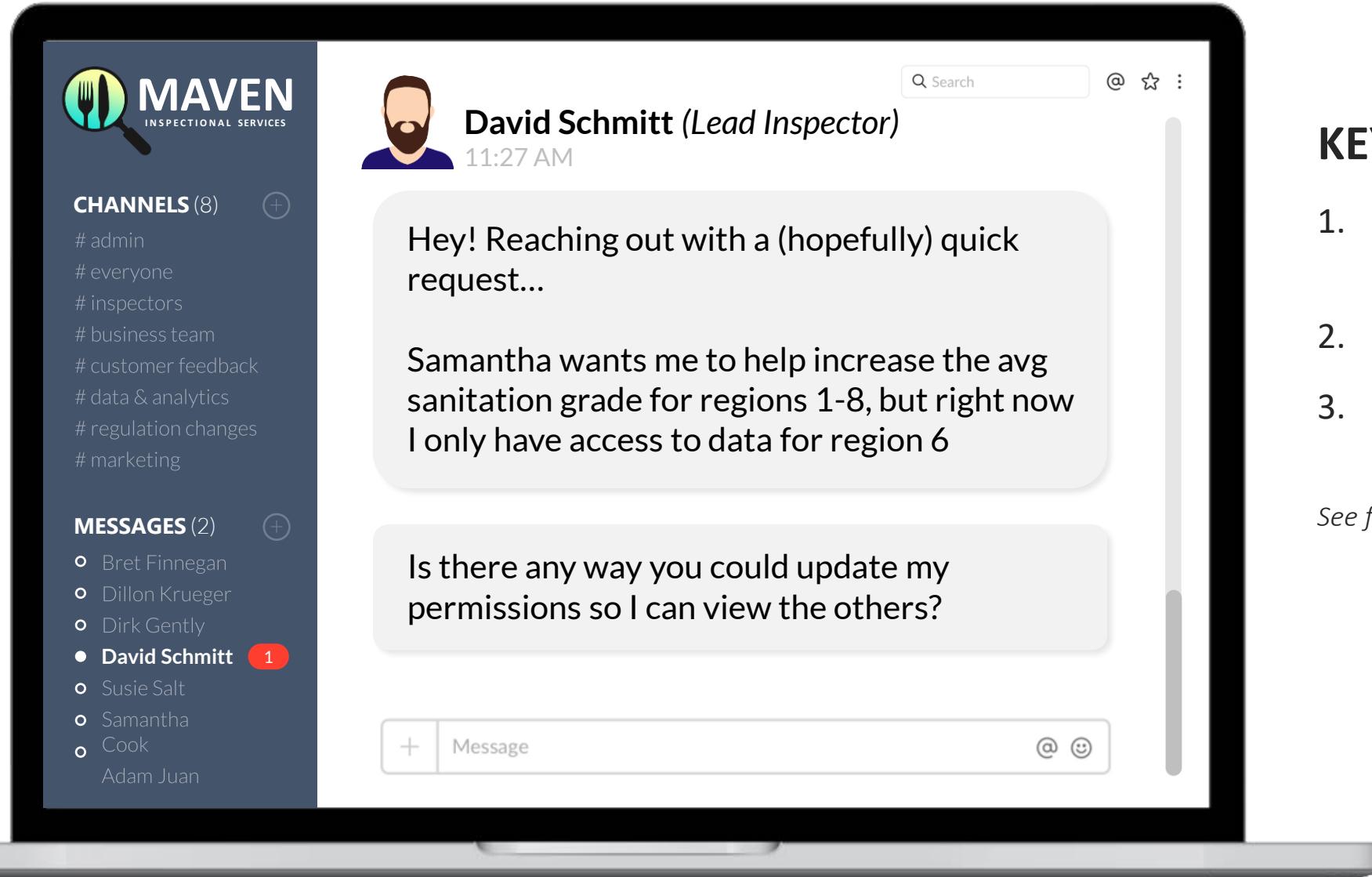
- *Creating a person-specific lookup table and using the USERPRINCIPALNAME function allows you to manage permissions from a single table*



Always test your roles in Desktop & Service before applying

- *Testing your roles ensures they are filtering data as expected in Desktop and in Service*
- *Remember that the workspace access type must be set to Viewer for RLS to work*

ASSIGNMENT: ROW-LEVEL SECURITY



KEY OBJECTIVES:

1. Create a new RLS role to give David the access he needs
2. Test the role in Desktop
3. Publish to Service and use “view as role” to confirm it’s working

See following text lesson for instructions

PREMIUM PER USER (PREVIEW)

PREMIUM PER USER



Power BI Premium Per User (PPU) allows organizations to license Premium features on a per-user basis instead of purchasing a Premium Capacity

TOPICS WE'LL COVER:

PPU Workspaces

PPU Features

BENEFITS:

- *Fills the gap between Power BI Pro and Power BI Premium capacity*
- *Useful for business that have demanding analytical requirements but don't have enterprise size*
- *Made for people who are **both** consumers and builders*
- *Allows you to access premium features at a more affordable price point*

PREMIUM PER USER WORKSPACE

Create a new workspace and assign it to a **premium capacity** in the advanced options

PPU Workspaces

PPU Features

Create a workspace

Workspace image



Upload

Delete

Workspace name

Premium Per User

Available

Premium capacity ⓘ

On

Choose an available Premium capacity for this workspace

Premium Per User - Reserved - East US 2

Default storage format

Small dataset storage format

[Learn more about dataset storage formats](#)

New icon indicates a **Premium Per User workspace**



Workspaces

Management Team



Pro license workspace

Maven Inspectional Services



Premium Per User

Premium Per User workspace



HEY THIS IS IMPORTANT!

Datasets, reports, or dashboards that are created within Power BI Premium Per User workspaces can only be consumed by users that also have Premium Per User licenses

PREMIUM PER USER FEATURES

PPU Workspaces

PPU Features

Premium Per User includes many of the same features as Premium capacity, and offers several benefits unavailable in Pro (*Paginated reports, AI, Deployment pipelines, etc.*)

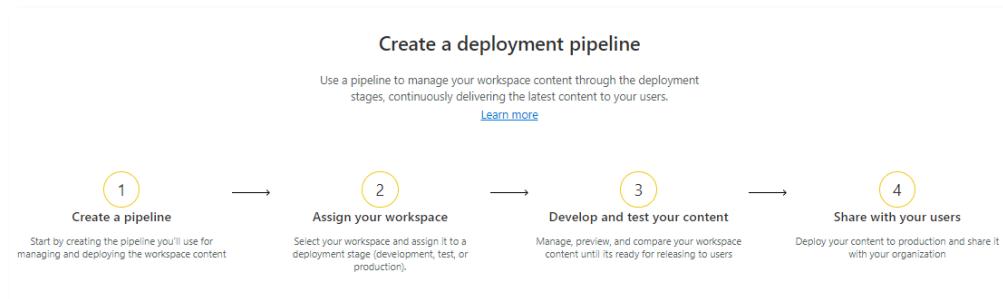
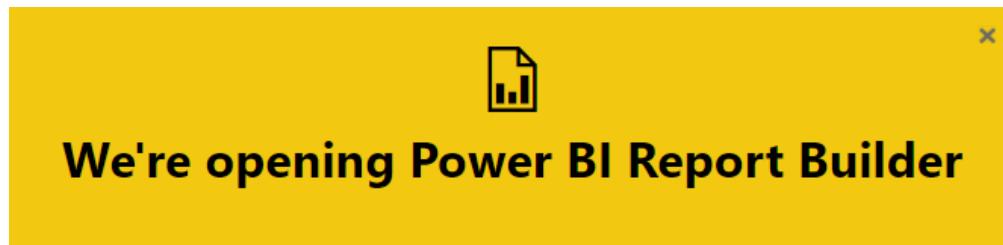
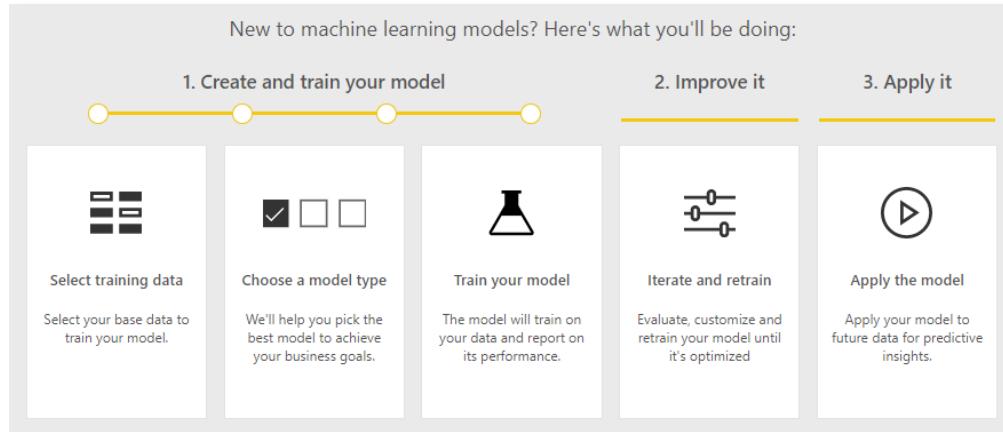
- If you have Premium Per User access you do not need a Pro license as well
- Organizations with Premium capacity already in place can supplement with PPU licenses but not required to publish content

Premium	
Per User	Per Capacity
Tenant Storage (total)	100 TB
Model Size Limit	10 GB
Refresh Rate	48/day
Paginated Reports	✓
AI Capabilities	✓
Advanced Dataflows	✓
Usage-based Optimization	✓
Deployment Pipelines	✓
XMLA Endpoint Connectivity	✓
Enhanced Automatic Page Refresh	✓
Multi-Geo Support	-
Unlimited Distribution	-
Power BI Reports (On-premises)	-
Bring Your Own Key	-
60-day Free Trial	✓
Incremental Refresh	✓

PREMIUM PER USER FEATURES

PPU Workspaces

PPU Features



Machine Learning Models

- Automated machine learning for dataflows to train, validate, and use ML models in Service
- Power BI extracts the most relevant features from the dataset and selects an appropriate algorithm

Power BI Report Builder

- Ideal for developing paginated reports (designed to be printed or shared) that are optimized for publishing to Power BI Service

Deployment Pipelines

- Manage the lifecycle of your organizations content by developing and testing it in Power BI before it's consumed by the end-user

PREMIUM PER USER FEATURES

PPU Workspaces

PPU Features

Incremental refresh settings

Incremental refresh updates only data that's changed, to speed refresh, reduce capacity usage, and store historic data. [Learn more](#)

On

Choose a DateTime field to filter by *

created_at

Store rows from the past *

5 Years

Refresh rows from the past *

14 Days

Detect data changes [Learn more](#)

Only refresh data if the maximum value in this field changes

Choose a field

Only refresh complete days [Learn more](#)

When you save these settings, data from the past 5 years will be loaded to your dataflow storage the next time this dataflow is refreshed. Subsequent refreshes will update only data that's changed in the past 14 days.

Incremental Refresh (Dataflows)

- Create a refresh procedure on large dataflows to decrease their run time based on a date field
- Define the **rows** you want **to store** (“*load only once and never load again*”) and the rows you want to **refresh** (“*data I want to re-load each time*”)

Common Use Cases

Example 1: Macro Data (*i.e. population*)

- 20+ years of data
- Daily-level data
- 1 Billion records

Example 2: Micro Data (*i.e. sensor data*)

- 3 years of data
- Daily-level (hours, minutes, seconds)
- 100 Million records



LEARN ON!

