

Power BI Made Simple

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Microsoft

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About Me

- Business Intelligence Consultant, in IT for 30 years
- Microsoft, Big Data Evangelist
- Worked as desktop/web/database developer, DBA, BI and DW architect and developer, MDM architect, PDW/APS developer
- Been perm, contractor, consultant, business owner
- Presenter at PASS Business Analytics Conference and PASS Summit
- MCSE: Data Platform and Business Intelligence
- MS: Architecting Microsoft Azure Solutions
- Blog at JamesSerra.com
- Former SQL Server MVP
- Author of book "Reporting with Microsoft SQL Server 2012"



Agenda

- Power BI Defined
- Tool Purposes
- People who benefit
- Excel 2016
- Power Query
- Power Pivot
- Power View
- Power Map
- Power BI Desktop
- Power BI Dashboard
- My Workspace
- Power BI Q&A
- Power BI for mobile
- Access on-prem data
- Just Released

The opportunity
is bigger than
you may think

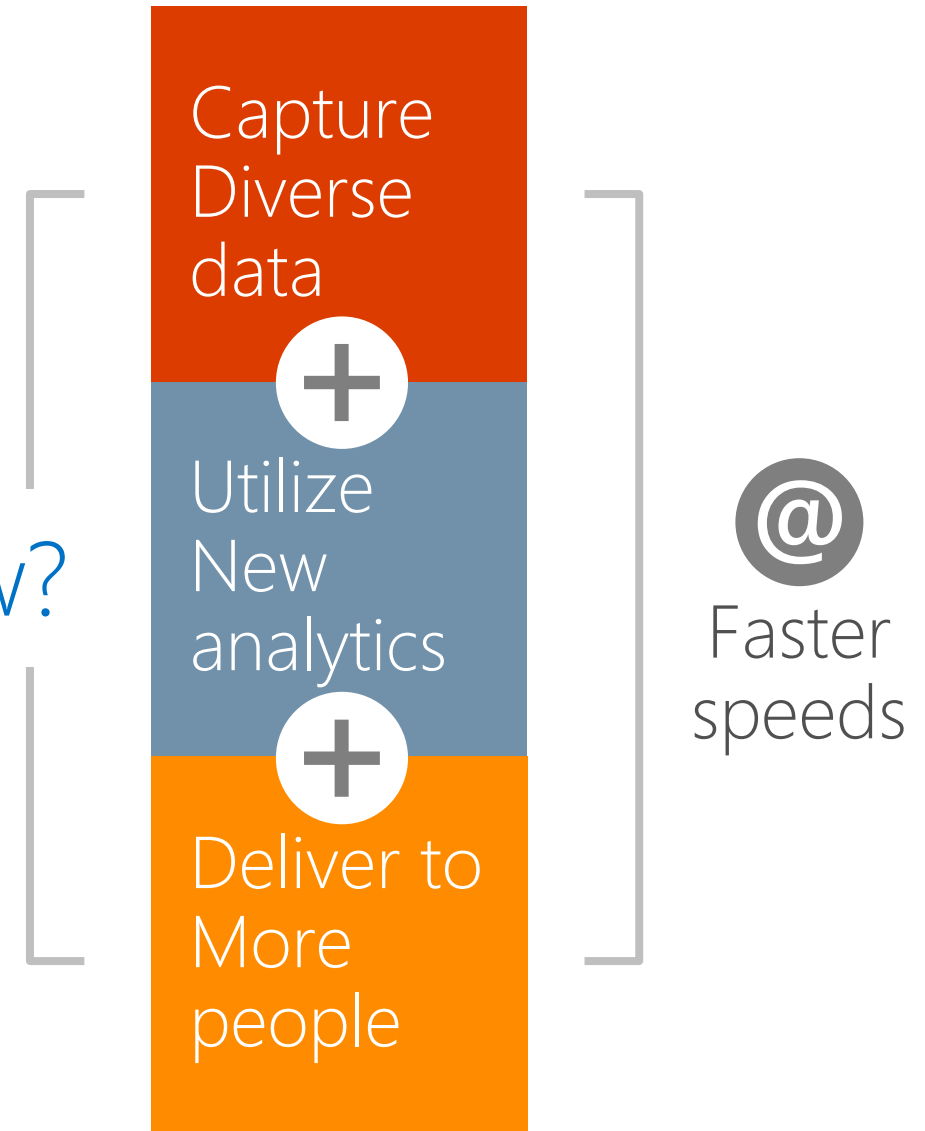
\$1.6T

data dividend available
to businesses that embrace data
over the next four years

Data is the new currency!



How?



Power BI: experience your data

Any data, any way, anywhere

MICROSOFT CLOUD

Microsoft Azure

Office 365

Microsoft Dynamics

Stream
Analytics

NON-MICROSOFT CLOUD

Acumatica

Marketo

salesforce

COMSCORE

intuit
QuickBooks.

twilio

ON-PREMISE DATA

hadoop

SAP

Microsoft
SQL Server

ORACLE

TERADATA

IBM

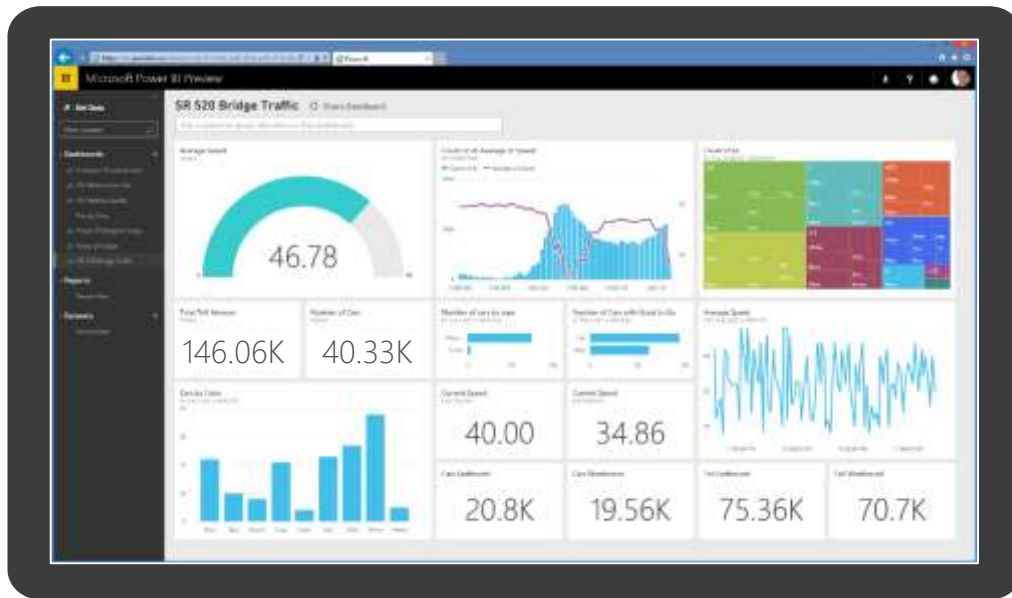
Intelligent
Apps



90,000
organizations

185
countries

Live dashboards & reports

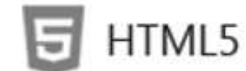
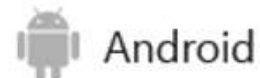


- ➔ Live dashboards provide a 360° view of your business
- ➔ Track your data in real-time with support for streaming data
- ➔ Drill through to underlying reports to explore in more detail
- ➔ Pin new visualizations and KPIs to monitor performance

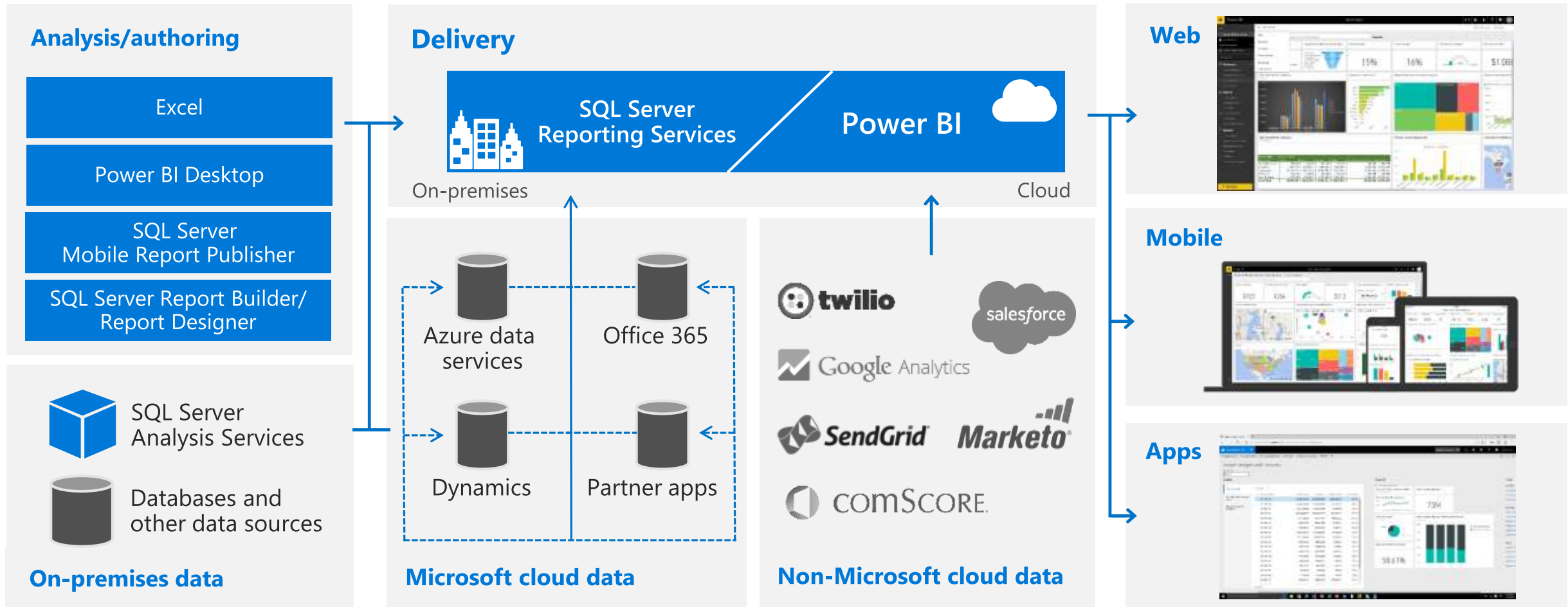
Mobile apps



- ➔ Native apps for iPad, iPhone, Android and Windows devices
- ➔ Receive alerts to important changes in your data
- ➔ Share and collaborate with colleagues and take action

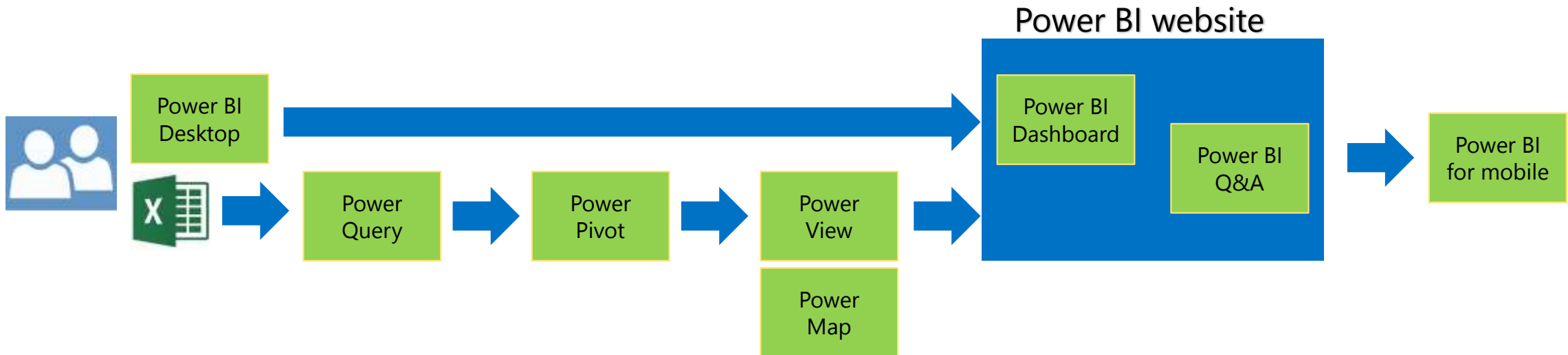


Microsoft business intelligence & analytics



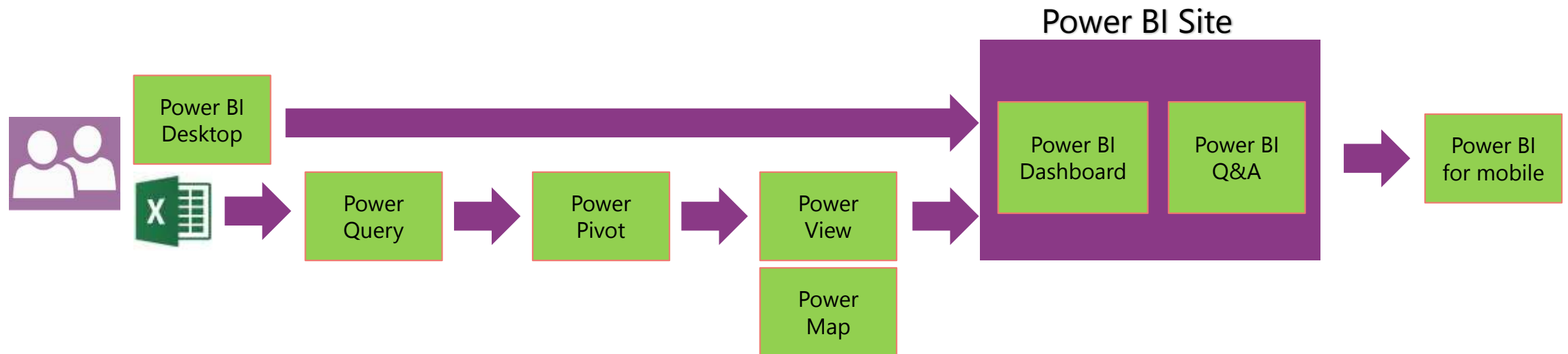
Tools Defined

- Front-end (Excel) or Power BI Desktop
- Data shaping and cleanup, self-service ETL (Power Query)
- Data analysis (Power Pivot)
- Visualization and data discovery (Power View, Power Map)
- Dashboarding (Power BI Dashboard)
- Publishing and sharing (Power BI sites)
- Natural language query (Power BI Q&A)
- Mobile (Power BI for Mobile)
- Access on-premise data (DMG, Analysis Services Connector)
- Updated weekly: <http://blogs.msdn.com/b/powerbi/archive/tags/weekly+update/>



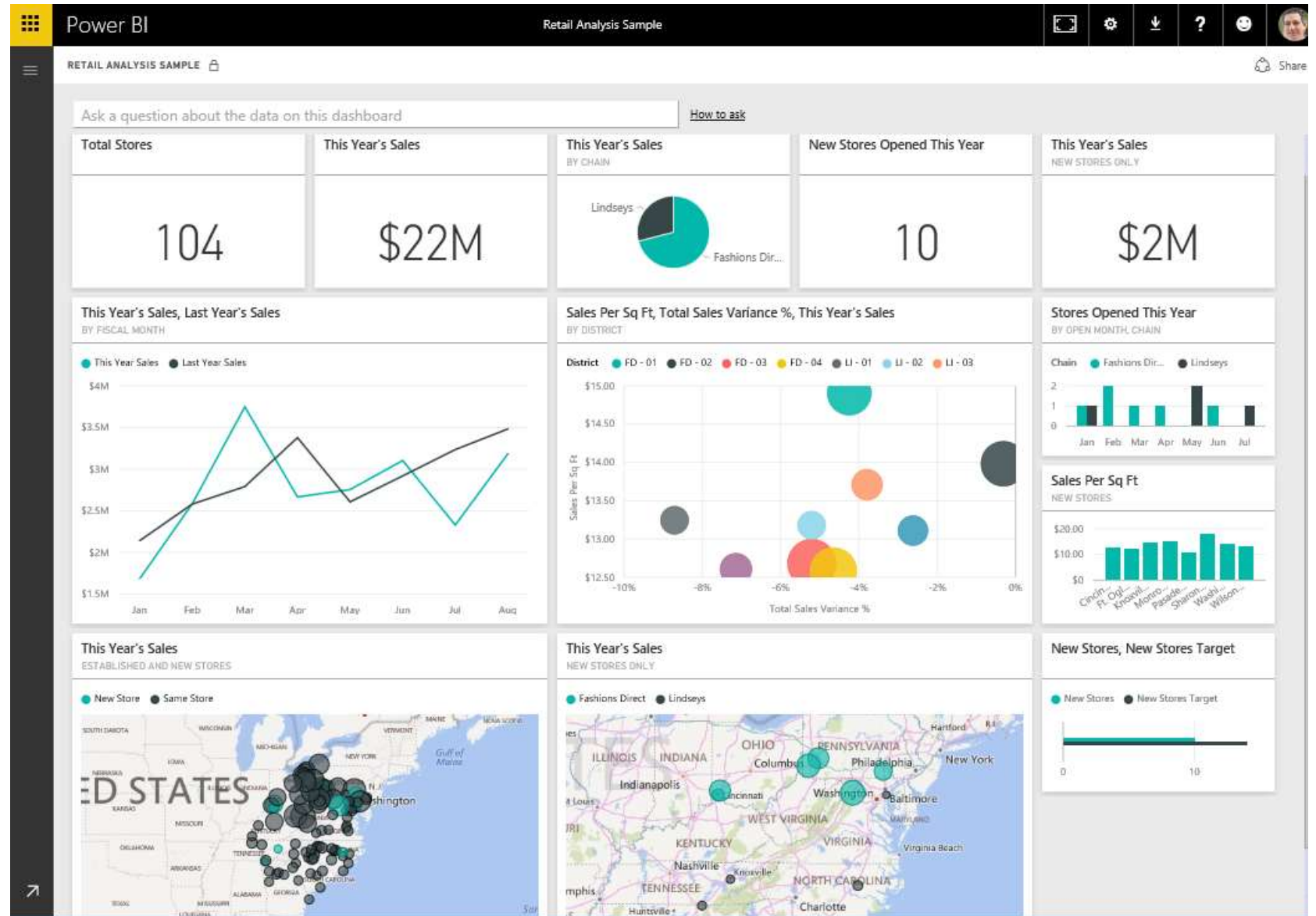
Flow of creating a report

- 1) Within Excel, I'll use Power Query to pull in data, mash it together and clean it
- 2) I'll use Power Pivot to add columns, create calculations and aggregations. And I'm not limited to Excel's million row limit
- 3) Then I'll use Power View to create really cool interactive reports
- 4) I'll publish my Power View report or Excel workbook to a Power BI site for others to see
- 5) I might want to use Power Map to build a 3D interactive tour of data using Bing maps
- 6) I can now use Power BI Q&A to execute English queries on my Power View reports
- 7) And I can use my mobile devices to check out my Power View reports
- 8) Or, I can replace steps 1-4 and use Power BI Desktop instead, and also publish the report to a Power BI site
- 9) Or, skip steps 1-8 and use Power BI dashboard to create a report

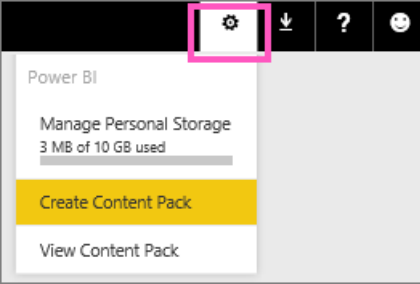


Power BI Dashboard

- Power BI Dashboard: Web-version
- Pin previously created reports
- Create dashboards and reports from organizational contact packs, online services, files, or SQL Database, SQL DW, SSAS, Spark on HDInsight
- Q&A built-in
- Can pin Excel ranges (charts, tables, Pivot tables, Pivot charts) to dashboard, SSRS reports (SQL Server 2016)



Organizational Content Packs



Create Content Pack

Choose who will have access to this content pack:

☒ Specific Groups ☐ My Entire Organization

salesmgrs@contoso.com; sales@contoso.com

Title

Sales Opportunities

Description

Analysis of opportunities by size, sales stage, revenue, and partner involvement.



Upload an image or company logo
Image size: 45 KB or less, 4:3 aspect ratio, JPG or PNG format
[Use Default](#)

Select items to publish

Dashboards	Reports	Datasets
<input type="checkbox"/> PQ_wikipedia_WrldCaps...	<input type="checkbox"/> Salesforce Sales Manager	<input type="checkbox"/> Salesforce Sales Manager
<input checked="" type="checkbox"/> Opportunity Analysis Sa...	<input type="checkbox"/> Supplier Quality Analysis	<input type="checkbox"/> Supplier Quality Analysi...
	<input type="checkbox"/> World Capitals	<input type="checkbox"/> PQ_wikipedia_WrldCaps
	<input checked="" type="checkbox"/> Opportunity Analysis Sa...	<input checked="" type="checkbox"/> Opportunity Analysis Sa...

The content pack will be available in your organization's content gallery. [Learn more](#)

Publish Cancel

Content Pack Library

My organization

Browse content packs that other people in your organization have published.

Get ↗

Services

Choose content packs from online services that you use.

Get ↗

Import or Connect to Data

Files

Bring in your reports, workbooks, or data from Excel, Power BI Desktop or CSV files.

Get ↗

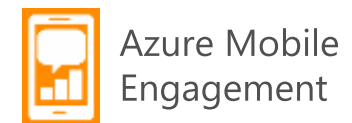
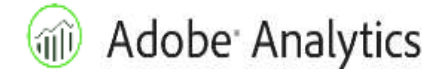
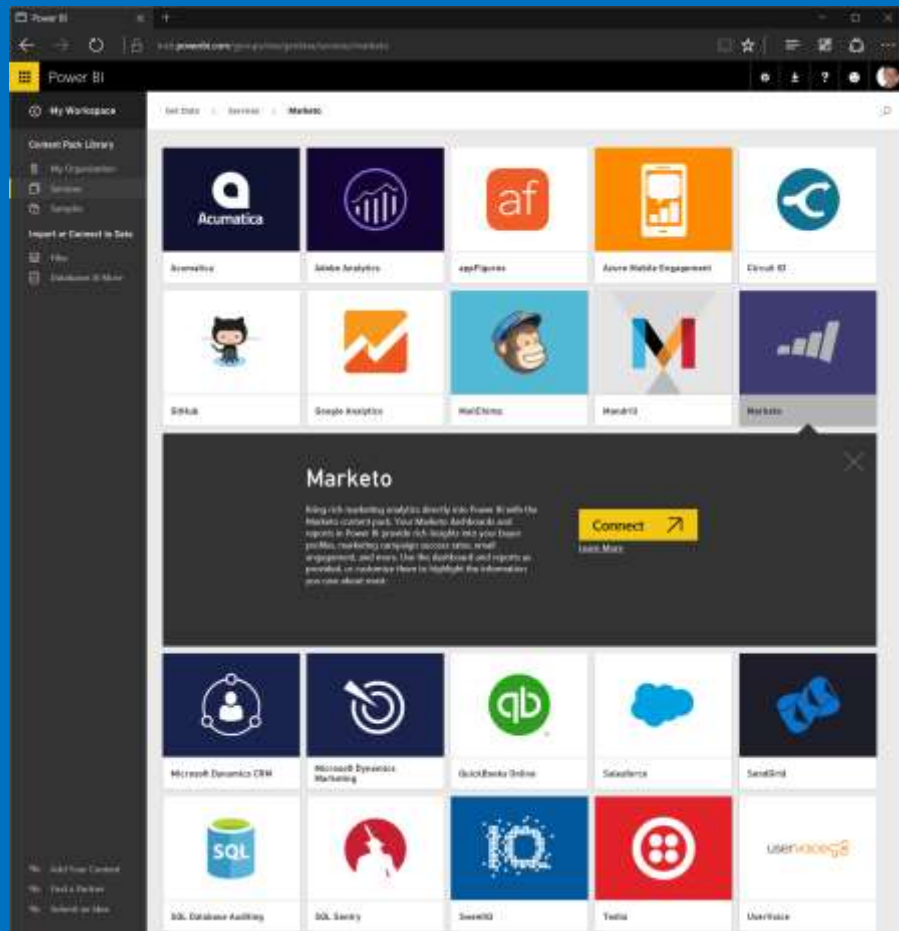
Databases

Connect to live data in Azure SQL Database and more.

Get ↗

Get started quickly

Pre-built solutions include dashboards, reports, and data models available out-of-the-box for SaaS services (54 services supported)



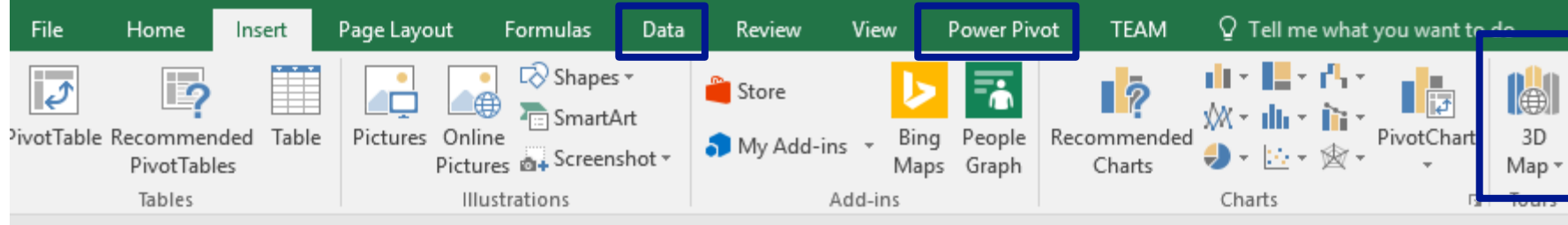
Demo ➞

People who benefit

- Report creator - Such as a data analyst, data or BI consultant, or a mainstream Excel user. Use Power BI's self-service BI features in Excel often. Will use online services to distribute interactive reports and share workbooks
- Data steward – A data administrator or an IT professional. Provide specific and secure access to data resources. Enable the identification, selection, and secure distribution of on-premise and public data feeds
- Report consumer - Anyone from an aspiring students to a CEO. You can collaborate, share securely, and interact with reports using Power BI for smarter, insightful, and more nimble decisions

Excel 2016

- Front-end
- Center of the Universe, but not required if using Power BI Desktop
- *On-prem only*
- *Power Map (now called 3D Maps) and Power Query now integrated*
- *For Power View use Power BI Desktop (but still supported in Excel)*
- New option, **File > Options > Advanced > Enable Data Analysis add-ins: Power Pivot, Power View, and Power Map** activates the COM Add-ins



Power Query 2016

- Data shaping and cleanup
- *Excel 2016 integrated*
- *32-bit or 64-bit*
- *On-prem only*
- Online search
- Public data sources
- External data sources
- Mash with local data
- Filter, shape, clean data
- Load to data model
- Share queries

Excel | United States - List of United States cities by population (2) - Query Editor

File Home Transform Add Column View

Close & Load Refresh Preview Properties Advanced Editor

Choose Columns Remove Columns Keep Rows Remove Rows Remove Duplicates Remove Errors

Sort Split Column Group By Data Type: Text Use First Row As Headers Replace Values

Merge Queries Append Queries Combine Binaries New Source Recent Sources

Combine New Query

Queries

	2012 rank	City	State	2012 estimate	2010 Census	2010 land area
1	1	New York	New York	!B9840638223472 8,336,697	!B9840833924562 8,175,133	302.643 sq mi 783.8
2	2	Los Angeles	California	!B9848343926284 3,857,799	!B9848514321052 3,792,621	468.670 sq mi 1,213
3	3	Chicago	Illinois	!B9851857505287 2,714,856	!B9851928693698 2,695,598	227.635 sq mi 589.5
4	4	Houston	Texas	!B9854140011999 2,160,821	!B9854424268670 2,100,263	599.589 sq mi 1,552
5	5	Philadelphia	Pennsylvania	!B9857477795750 1,547,607	!B9857618355773 1,526,006	134.101 sq mi 347.3
6	6	Phoenix	Arizona	!B9857865526003 1,488,750	!B9858159428458 1,445,632	516.704 sq mi 1,338
7	7	San Antonio	Texas	!B9858602698202 1,382,951	!B9859012620268 1,327,407	460.933 sq mi 1,193
8	8	San Diego	California	!B9858930534244 1,338,348	!B9859164474800 1,307,402	325.188 sq mi 842.2
9	9	Dallas	Texas	!B9859684414044 1,241,162	!B9860039895434 1,197,816	340.519 sq mi 881.9
10	10	San Jose	California	!B9862018746935 982,765	!B9862400634646 945,942	176.526 sq mi 457.2
11	11	Austin	Texas	!B9863557618659 842,592	!B9864197182264 790,390	297.896 sq mi 771.5
12	12	Jacksonville	Florida	!B9863630098324 836,507	!B9863807671342 821,784	747.003 sq mi 1,934
13	13	Indianapolis	Indiana	!B9863649902573 834,852	!B9863823978450 820,445	361.433 sq mi 936.1
14	14	San Francisco	California	!B9863758158208 825,863	!B9864011105607 805,235	46.873 sq mi 121.40
15	15	Columbus	Ohio	!B9863954598871 809,798	!B9864239745420 787,033	217.169 sq mi 562.4
16	16	Fort Worth	Texas	!B9864355284796 777,992	!B9864839661316 741,206	339.819 sq mi 880.1
17	17	Charlotte	North Carolina	!B9864391210804 775,202	!B9864972514020 731,424	297.678 sq mi 770.9
18	18	Detroit	Michigan	!B9865390594600 701,475	!B9865216741323 713,777	138.750 sq mi 359.3
19	19	El Paso	Texas	!B9865811861055 672,538	!B9866166255810 649,121	255.235 sq mi 661.0
20	20	Memphis	Tennessee	!B9866073728721 655,155	!B9866200700022 646,889	315.055 sq mi 815.9
21	21	Boston	Massachusetts	!B9866362932964 636,479	!B9866664134373 617,594	48.277 sq mi 125.03
22	22	Seattle	Washington	!B9866393522738 634,535	!B9866809849014 608,660	83.943 sq mi 217.41
23	23	Denver	Colorado	!B9866387778728 634,265	!B9866850517671 600,158	153.000 sq mi 395.2

10 COLUMNS, 289 ROWS

Query Settings

PROPERTIES

Name

United States - List of United States cities

All Properties

APPLIED STEPS

Source

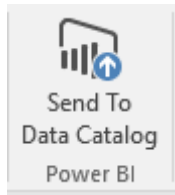
Removed Columns

Cleaned Text

PREVIEW DOWNLOADED AT 12:19 PM

Power Query – Data Catalog

- Share queries
- Appear in search results
- Specify who to share with
- Metadata gets stored in cloud

The image shows the Microsoft Excel interface with the "Data" tab selected. The "New Query" button is highlighted, and its dropdown menu is open, showing options: "From File", "From Database", "From Azure", "From Other Sources", "Combine Queries", "Data Catalog Search", "My Data Catalog Queries", "Data Source Settings...", and "Query Options". On the right side of the screen, the "Data Catalog Search" pane is open, displaying search results for "united states". The search results list 590 results, including "United States - List of United States cities by population - Wikipedia, the free encyclopedia", "Votes by states - Results - U...", "Primary airports - List of air...", and "2011 data-United States citie...".

Book1 - Excel

File Home Insert Page Layout Formulas Data Review View TEAM Search Tools

Search Tell me what you want to do James Serra Share

Get External Data New Query Show Queries From Table Recent Sources Refresh All Connections Properties Edit Links Sort Filter Clear Reapply Advanced Text to Columns What-If Analysis Forecast Sheet Group Ungroup Subtotal

From File From Database From Azure From Other Sources Combine Queries Data Catalog Search My Data Catalog Queries Data Source Settings... Query Options

Data Catalog Search

united states

590 results

- United States - List of United States cities by population - Wikipedia, the free encyclopedia
- Votes by states - Results - U...
- Primary airports - List of air...
- 2011 data-United States citie...

Power Pivot 2016

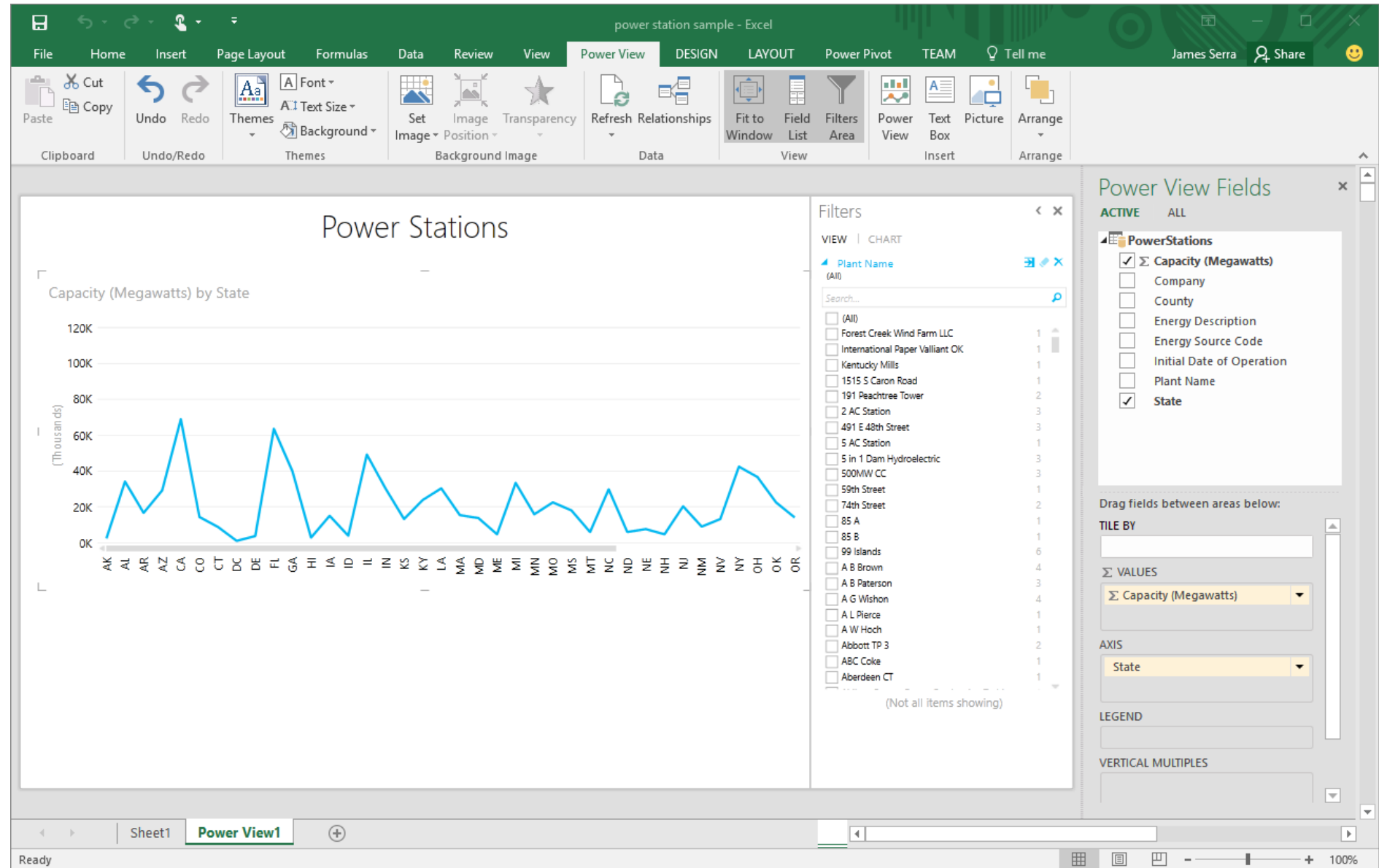
- Data analysis
- *Excel 2016 integrated*
- *32-bit or 64-bit*
- *On-prem only*
- Create calculations
- Aggregate sums
- Create relationships
- Hierarchies
- KPIs
- Hide columns
- Does not have Excel's million row limit
- In-memory, so fast
- Create data model

The screenshot shows the 'Power Pivot for Excel - Book1' window. The 'Table Tools' ribbon is active, with the 'Linked Table' tab selected. The ribbon includes sections for 'Clipboard', 'Get External Data', 'Formatting', 'Sort and Filter', 'Find', 'Calculations', and 'View'. The data table below has columns for 'State', 'Electors', 'Obama', 'Romney', and 'Add Column'. The data is as follows:

	State	Electors	Obama	Romney	Add Column
1	Alabama	9	795696	1255925	
2	Alaska	3	122640	164676	
3	Arizona	11	1025232	1233654	
4	Arkansas	6	394409	647744	
5	Califor...	55	7854285	4839958	
6	Colorado	9	1323101	1185243	
7	Connec...	7	905083	634892	
8	Delaware	3	242584	165484	
9	District ...	3	267070	21381	
10	Florida	29	4237756	4163447	
11	Georgia	16	1773827	2078688	
12	Hawaii	4	306658	121015	
13	Idaho	4	212787	420911	
14	Illinois	20	3019512	2135216	
15	Indiana	11	1152887	1420543	
16	Iowa	6	822544	730617	

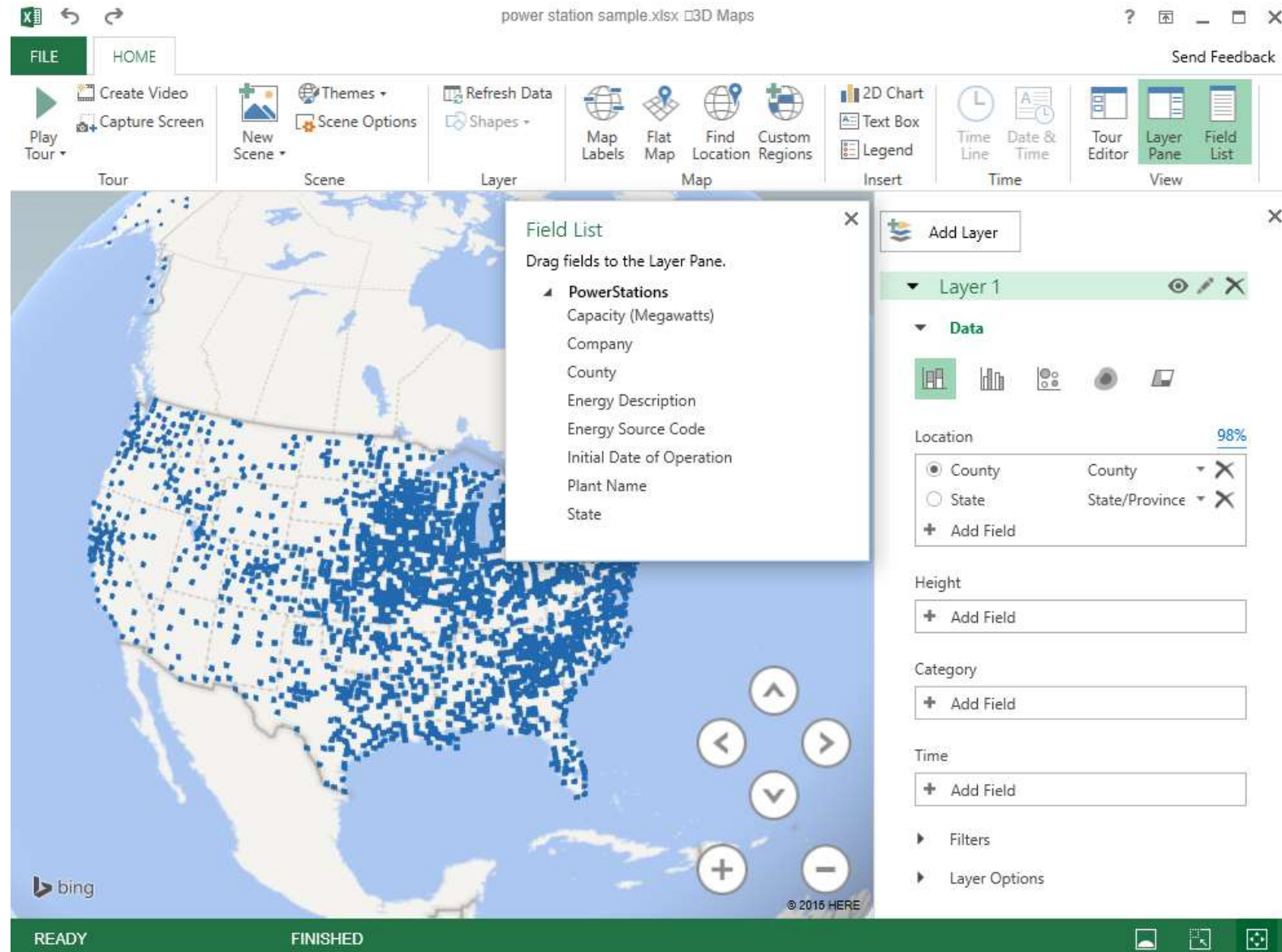
Power View 2016

- Reporting
- *Excel 2016*
- *32-bit or 64-bit (activate)*
- *Recommend to use Power BI Desktop instead*
- *SharePoint version*
- *On-prem (Excel and SharePoint), SharePoint Online (read-only) and Power BI Dashboard (limited functionality)*
- Create report
- Legend
- Slicers
- **Map**
- Play axis, scatter chart
- Interactive
- Presentation-ready
- Easy to use



Power Map/3D Maps 2016

- Reporting
- *Excel 2016 integrated*
- *On-prem only*
- Create interactive tours
- 3D data visualization
- Uses Bing maps

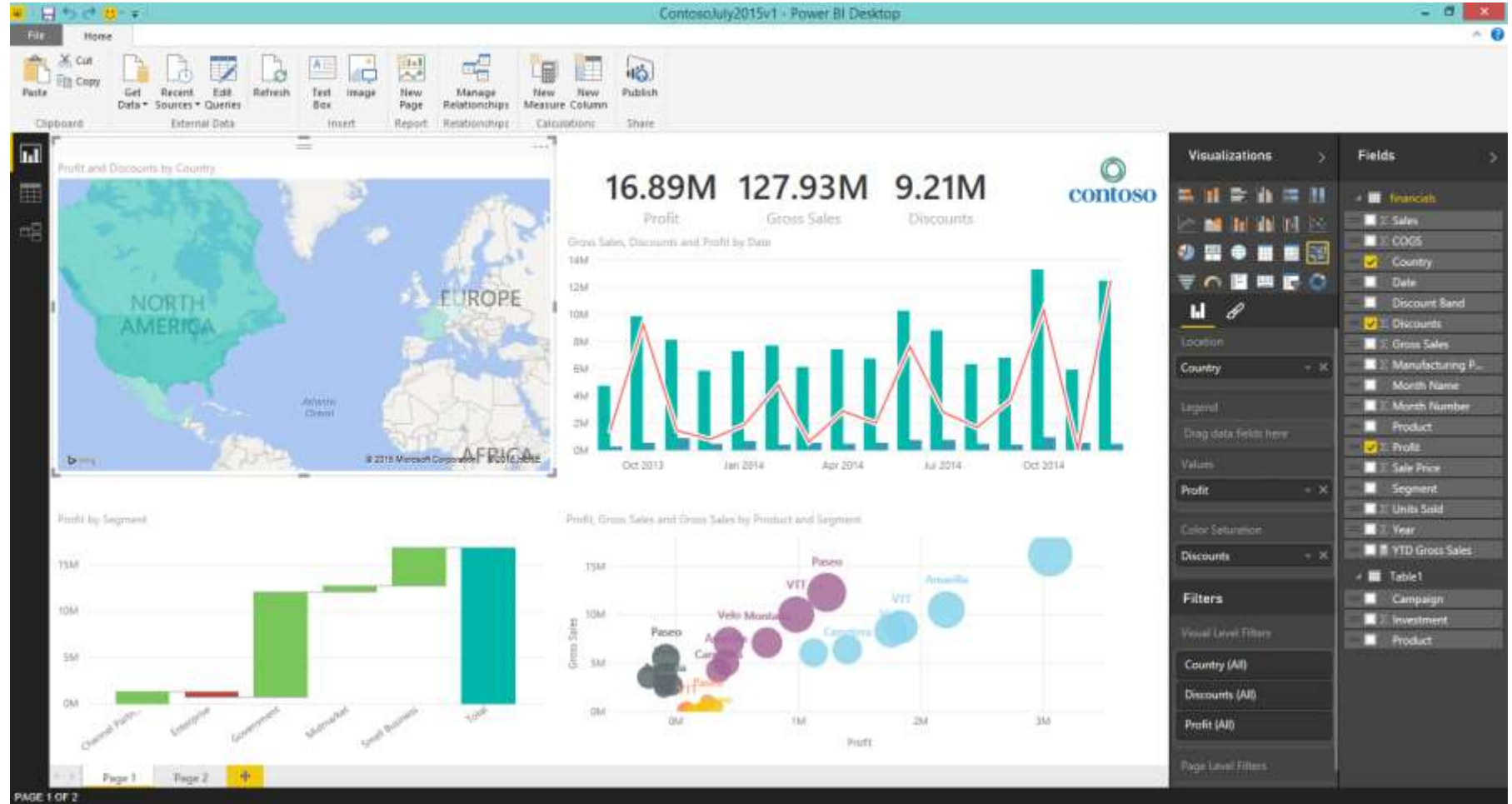




Power BI Desktop

- Power BI Desktop: Standalone on-prem app in off-line state (Excel not needed). Create reports with integrated versions of Power Query, Power View and Power Pivot data model, then upload to Power BI (on-prem SharePoint not supported). *64-bit download*
- Uploaded via Get Data -> Files -> .pbix (Power BI Desktop File)
- Uploaded is Datasets and Power View reports (Q&A built-in)
- Can import Excel workbooks that contain Power Query, Power Pivot, and Power View

Note: Desktop reports can't be refreshed after uploaded– must be refreshed manually in Desktop and uploaded again (may not be true in future) but datasets can be refreshed



Development on-prem vs cloud

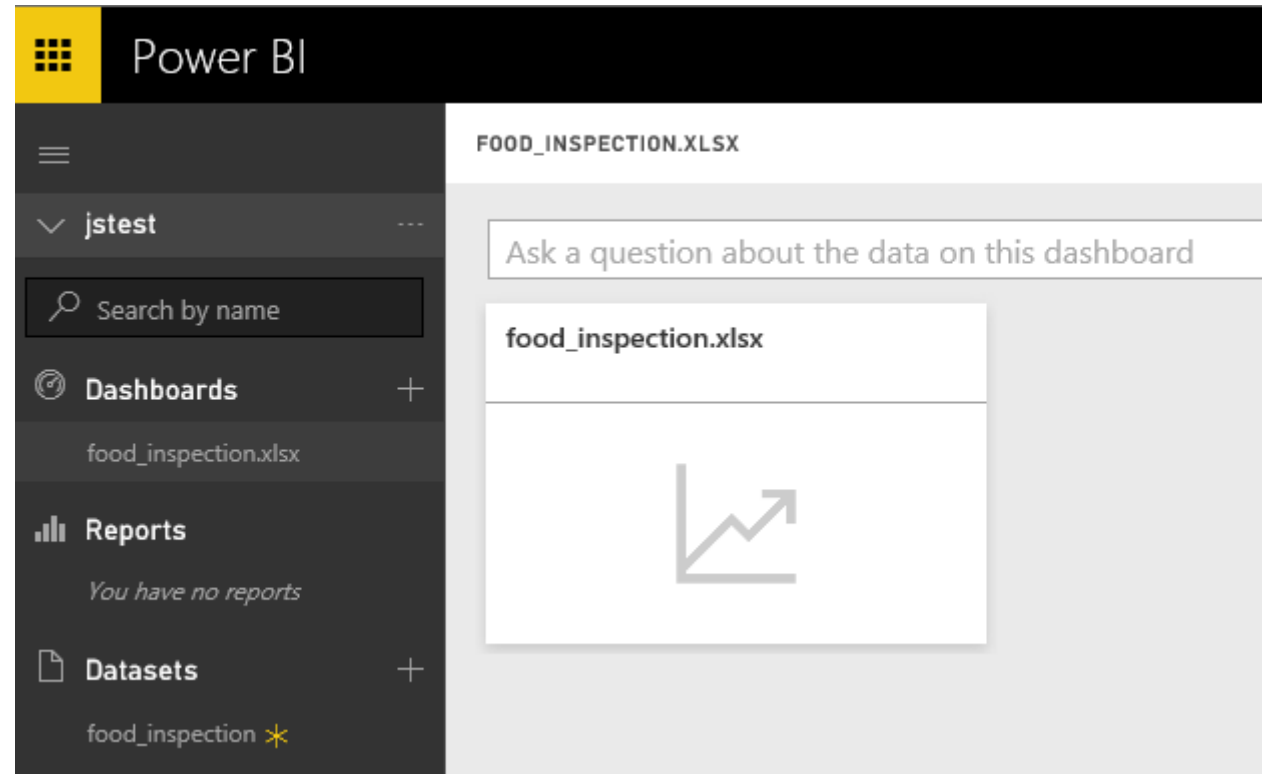
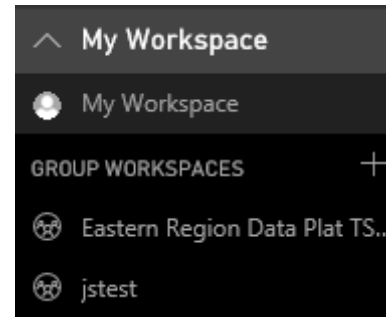
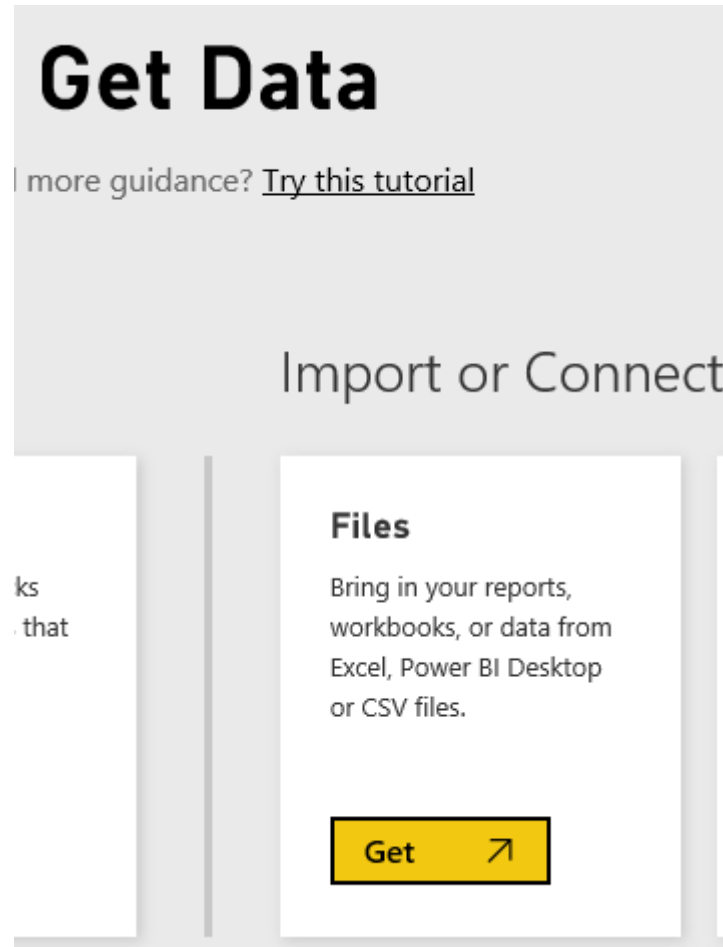
- Power BI Desktop or Excel (on-prem) vs Power BI website (cloud)
- Power BI website, model creation standpoint:
 - No modeling
 - No Power Query Equivalent
 - Basically a single connection to a single source
- Power BI website, visualization/report/dashboard perspective:
 - Full-featured

Think of Power BI website from a report/dashboard creation standpoint

Demo ➞

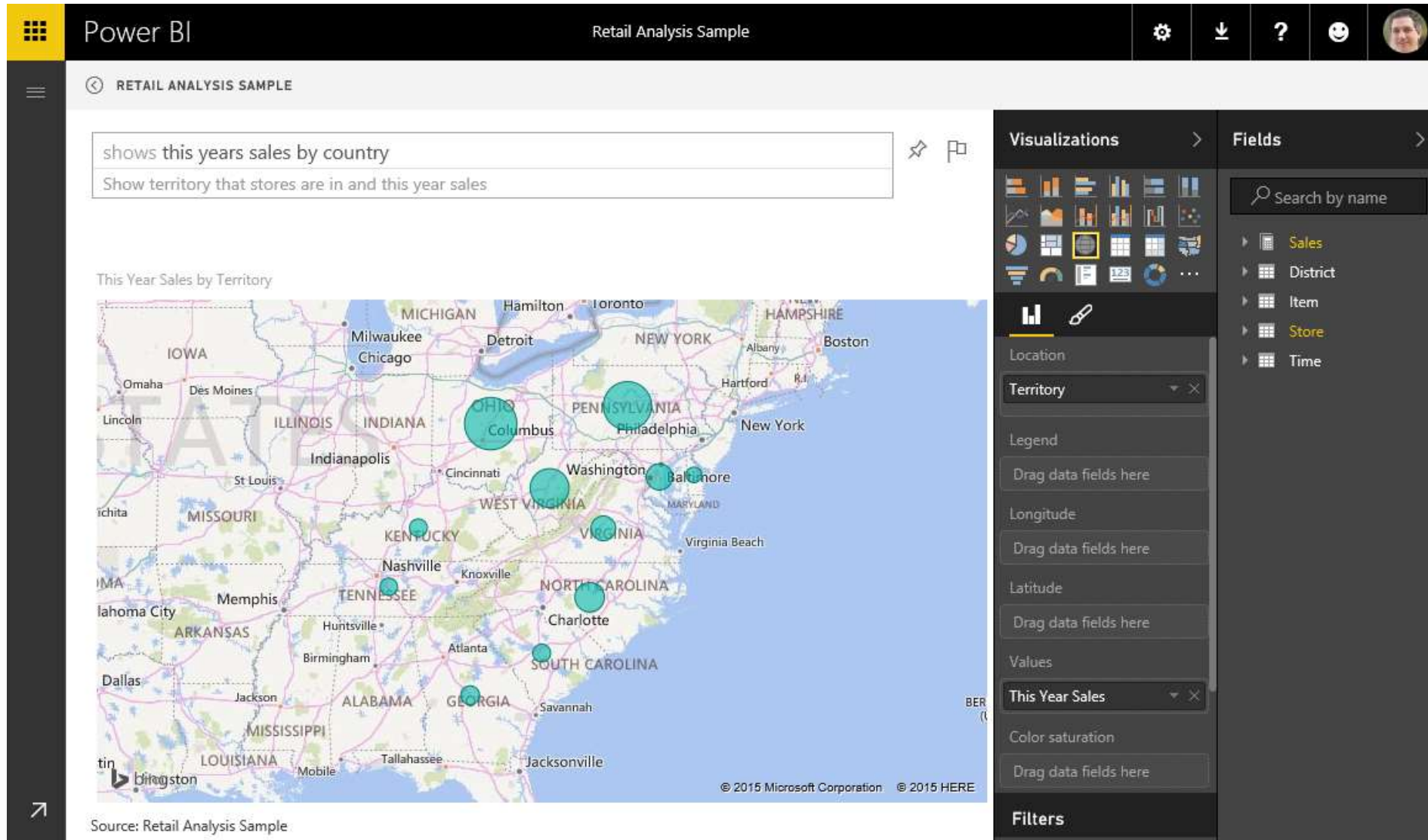
Upload to My Workspace or groups

- Publishing and sharing
- *Cloud only*
- *SharePoint not required*



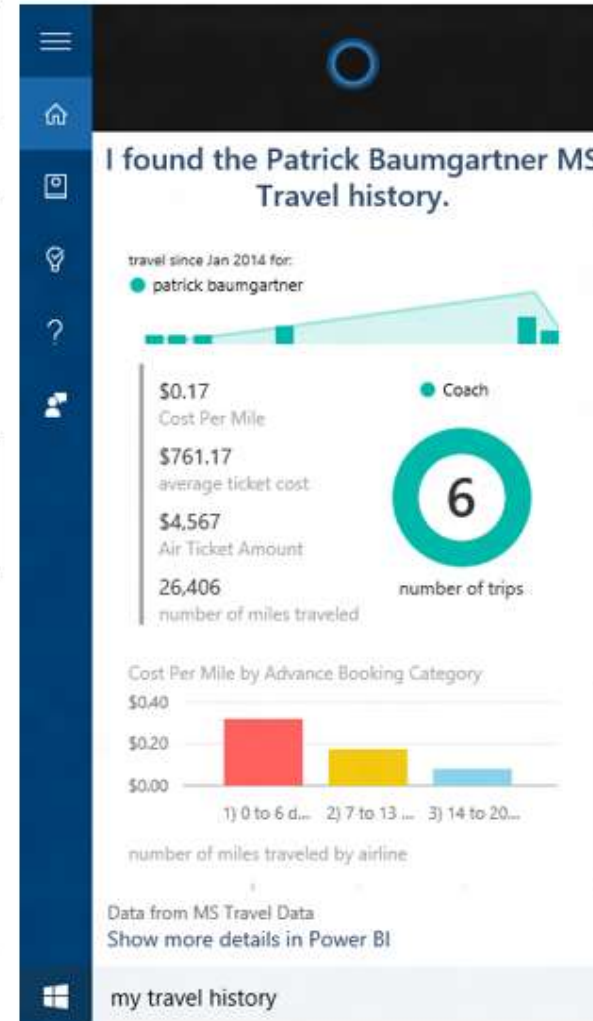
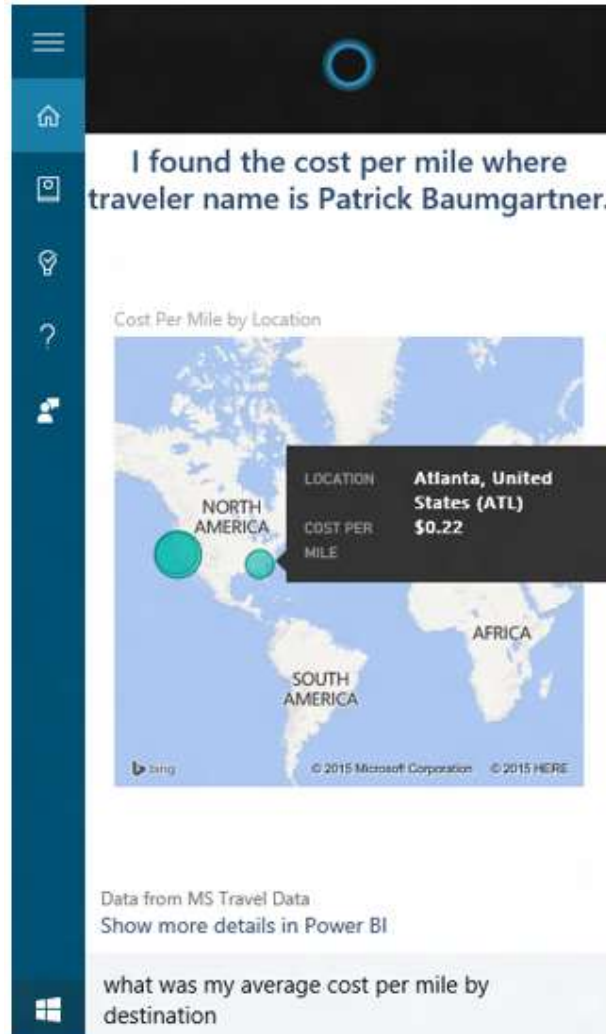
Power BI Q&A

- Natural language query
Cloud only
- *Power BI Site*
- Goes against uploaded Excel workbook that contains Power Pivot model or reports in Power BI Dashboard
- English queries
- Can create synonyms



Cortana Integration

- Public preview
- Requires Windows 10 November update or higher, and add a Power BI account to Windows 10 within account settings
- Pick Power BI data source and enable "Enable Cortana to access this dataset"
- User Power BI Q&A



Power BI for mobile

- Access reports on your mobile device
- Power BI App for iOS, Android, Windows 10 (explore Power BI dashboards and reports, data alerts, invite colleagues to view data, share insights over email)





Monterey Water

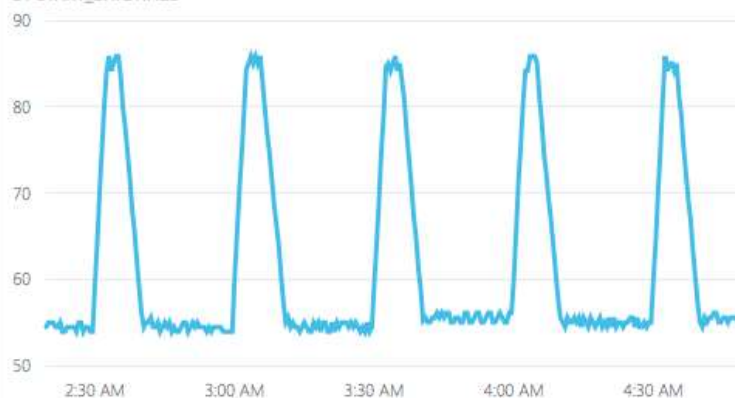
[Share Dashboard](#)

Plant Power (kW) - Submeters @ 30 sec.
BY START_DATETIME2, METER_NAME2

Backwash_1 Backwash_2 Plant Mains RPS_Pump_1 RPS_Pump_2 RPS_Pump_4



Influent Pond %
BY START_DATETIME2



Mains Power (kW) - @ 30 sec.

start_datet_	start_time2	value_kw_
5/1/2015	11:49:30	605.51
5/1/2015	11:48:30	504.06
5/1/2015	11:47:30	385.42
5/1/2015	11:46:30	294.17
5/1/2015	11:45:30	544.65

Monterey Regional Water Pollution Control Agency
Marina, California



California

Data-driven irrigation with Azure Stream Analytics and Power BI eases water distribution in California.

Analytics Log
full_message

11:33:30->INTERVENTION: New Pump turned ON to handle Pond Overload
11:32:30->Notice: Starting new Pump to handle load
11:32:30->Notice: Detected Overloading Influent Pond
11:32:30->INTERVENTION: Turning OFF discretionary loads to accomodate new pump
11:32:30->IMPO...
11:11:30->INTERVENTION: Discretionary loads coming back online
11:10:00->Notice: Restoring normal activity
11:10:00->Notice: Pond load at normal level
11:10:00->Notice: Extra pump coming online
11:03:30->INTERVENTION: New Pump turned ON to handle Pond Overload
11:02:30->Notice: Starting new Pump to handle load
11:02:30->Notice: Detected Overloading Influent Pond
11:02:30->INTERVENTION: Turning OFF discretionary loads to accomodate new pump

Connect live to your on-premises data

Live Query & Scheduled Data Refresh

Live Power BI reports
& dashboards



Live/
DirectQuery

Scheduled
Refresh

Cloud

On-premises



SSAS, SQL Server, HANA,
Oracle, Teradata



Others



- ➔ Deploy quickly with a hybrid BI solution
- ➔ Manage and secure data on-premises
- ➔ Optimized query performance for interactive data exploration
- ➔ DirectQuery or scheduled refresh from on-premises data sources

Latest features

- Developer Center: Use the Power BI RESTful API's to push data directly from your application into a dataset in Power BI. Your dashboards will be updated in real-time when the data changes. No more waiting or having to press the refresh button
- Power BI Groups to enable collaboration on a jointly owned set of datasets, reports and dashboards
- Open source Power BI visualization stack to enable Developers to starting building custom visuals/graphs
- Cortana Integration
- Quick Insights
- Publish to Web
- Pin SSRS reports to dashboard
- Power BI Embedded



Power BI

Products

Solutions

Support

Sign In

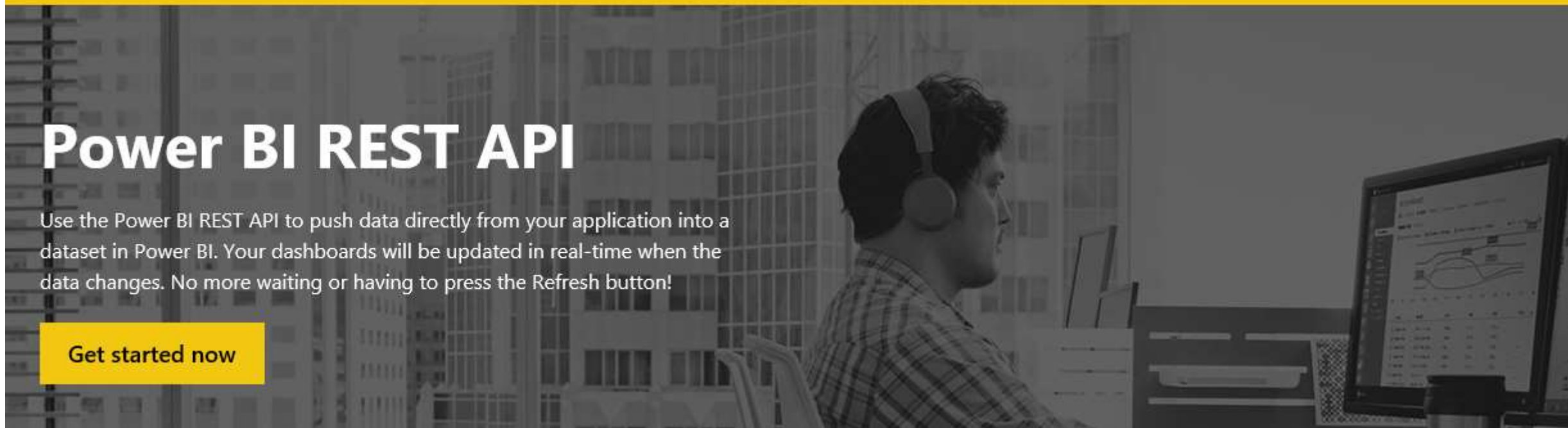
Power BI Developer Center



Power BI REST API

Use the Power BI REST API to push data directly from your application into a dataset in Power BI. Your dashboards will be updated in real-time when the data changes. No more waiting or having to press the Refresh button!

Get started now





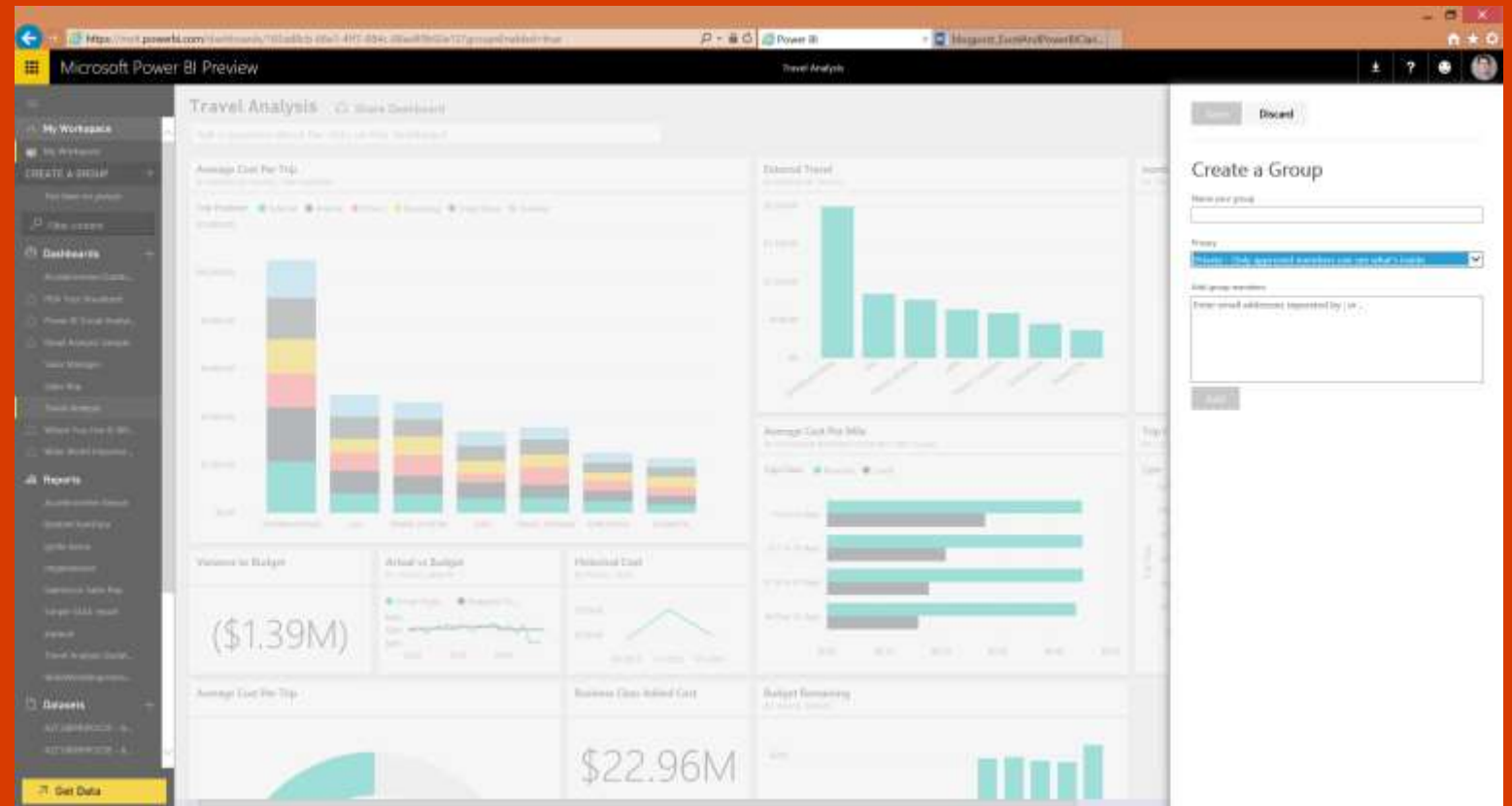
Team Collaboration

Integrated into the O365 Groups experience

Create groups in Power BI service

Share dashboards and reports by work group

Navigate from Power BI to other Office 365 workloads



Visualize any data any way with Power BI custom visuals



WELCOME TO THE DATA STORIES GALLERY

A showcase of data storytelling brought to life.

Featured

Top Kudos

Recently posted

All messages

Options

Submit your data story



Online Sentiment Analysis

Mykhael

Featured

30



Portfolio Slicer for Power BI
- investment tracking

VidasM

Featured

9



Business Driver Chart

MattAlington

Featured

5



Vehicle Showroom
Dynamics Based on IoT
Device

jxjia

Featured

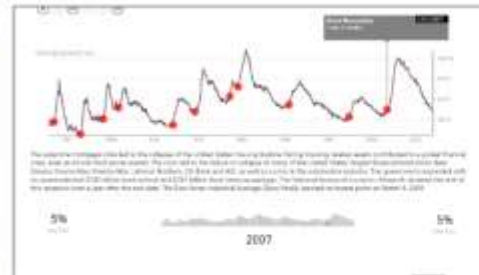
3



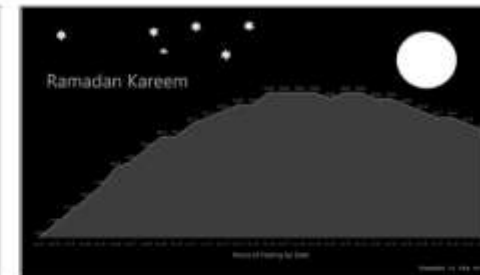
Public Transportation



Teach History with Power BI
- Report Contest



How recessions impact
unemployment rate



Ramadan with Power BI

Quick Insights

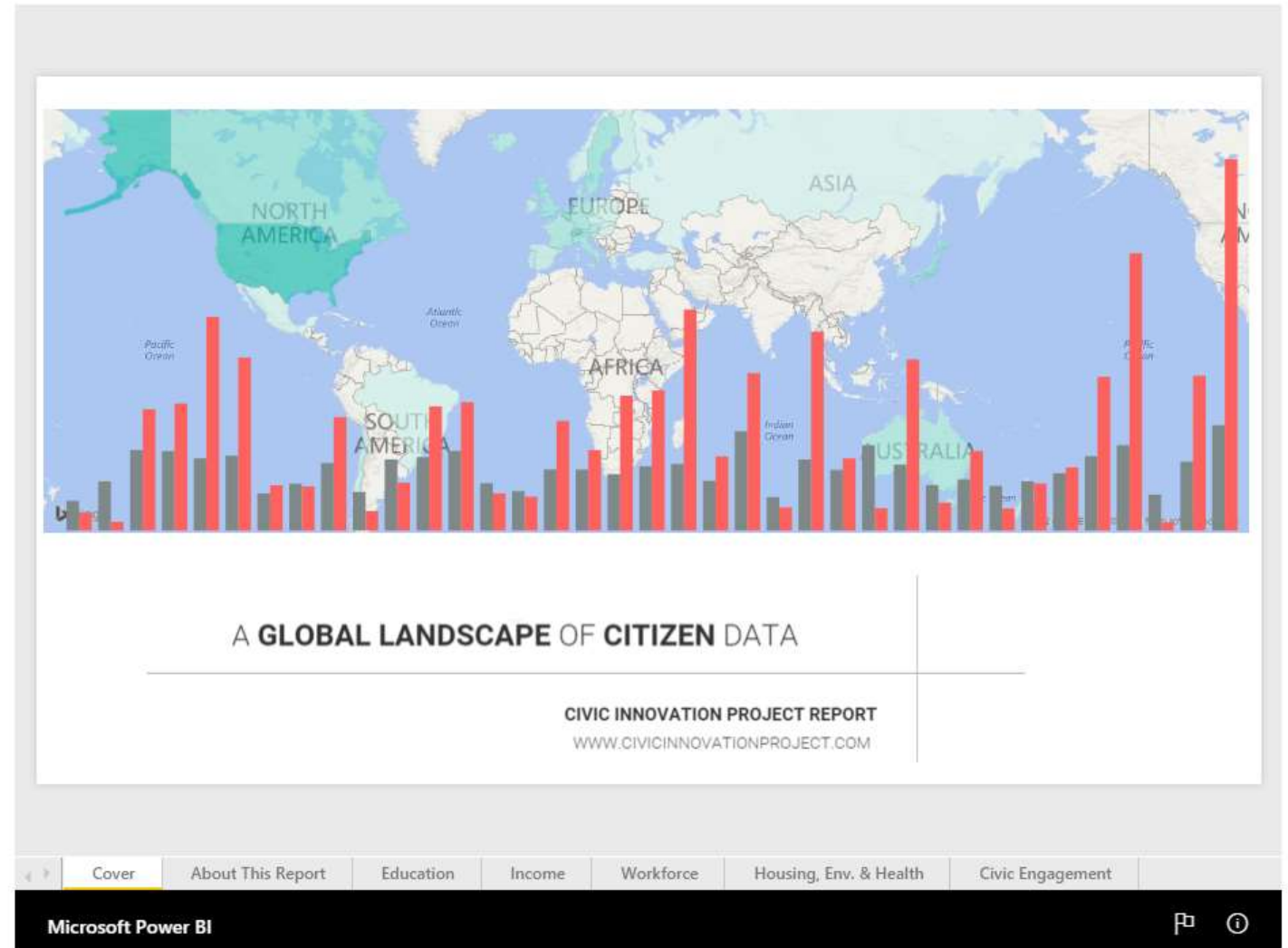
- Have a new dataset and not quite sure where to start? Need to build a dashboard fast? Want to quickly look for insights you may have missed?
- Run Quick Insights to generate interesting interactive visualizations based on your data
- Power BI uses [various algorithms](#) to search for trends in your dataset
- In the left navigation pane, under **Datasets** select the ellipses (...) and choose **Quick Insights**, then in a view seconds choose **View Insights**
- The visualizations display in a special **Quick Insights** canvas with up to 32 separate Insight Cards. Each card has a chart or graph plus a short description.



Publish to Web

- In beta
- Embed Power BI dashboards on the web
- Live-updating format
- Generate a hyperlink for email or social media with one click

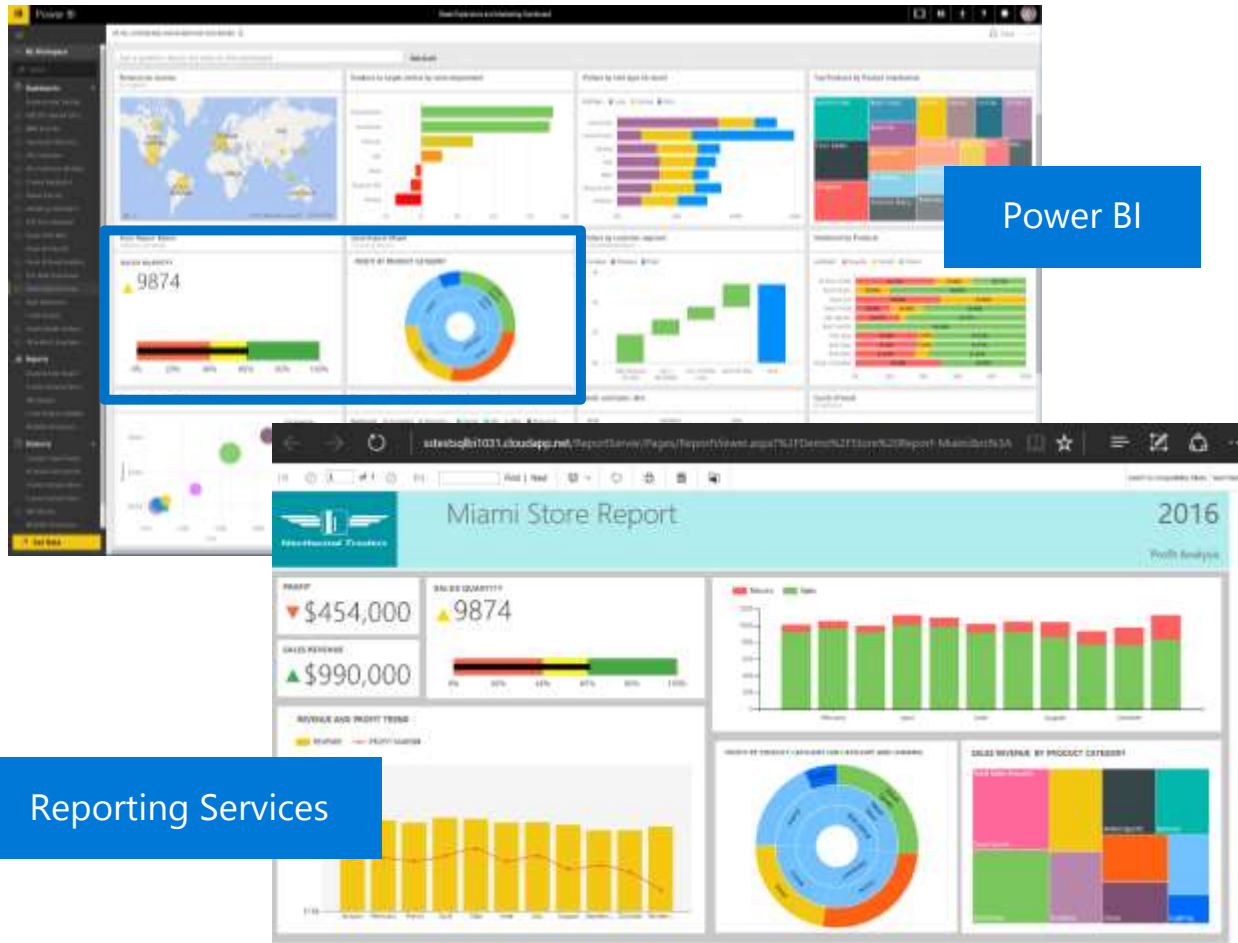
By creating a PowerBI® report with this data, we were able to render our own visualizations and compare emerging trends within several thematic areas to understand what is most important to citizens in the realms of education, housing, public participation, income, the environment, and others. **We invite you to explore the dynamic report by clicking on its various tabs below:**



Dynamic reports like this harness the power of citizen data to provide a shared understanding of a community's strengths and needs, and can create a

Pin report items to Power BI dashboards

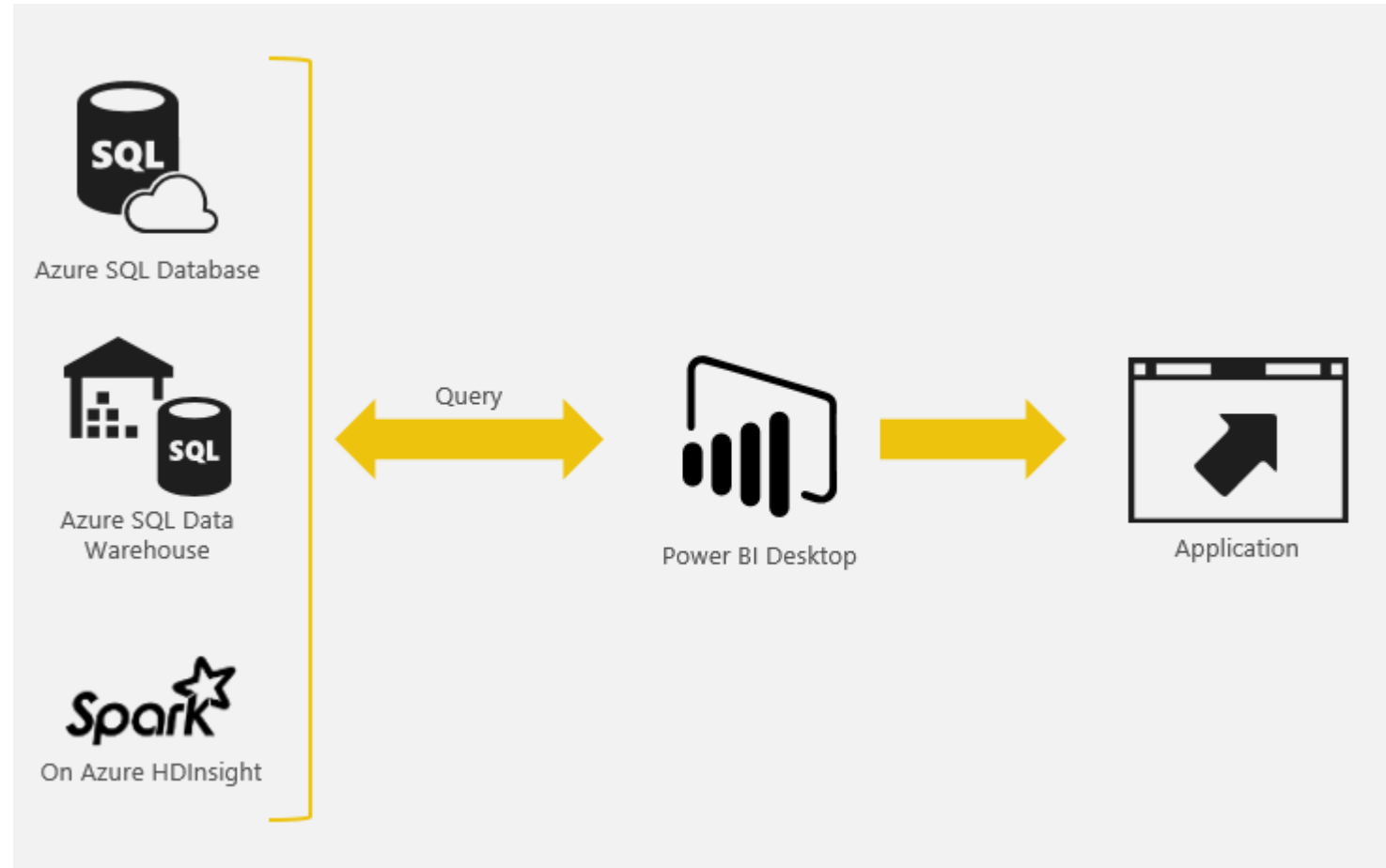
Get more from existing Reporting Services investments



- ➔ Monitor the most important metrics and trends in one place
- ➔ Pin charts, gauges, maps, and images as tiles to Power BI dashboards
- ➔ Drill through to source reports
- ➔ Refresh tiles on a schedule

Power BI Embedded (public preview)

Integrate Power BI reports into your web or mobile applications so you don't need to build custom solutions to visualize data for your users



Resources

- Power BI Desktop: <http://bit.ly/1Bl8aNd>
- Using Power BI to access on-premise data: <http://bit.ly/1Bl8mMl>
- Power BI for Office 365 video: <http://bit.ly/1gGT02c>
- Power Query load settings: <http://bit.ly/1gGTgOD>
- Power BI for Office 365 FAQ: <http://bit.ly/1gGTllo>
- Power BI for Office 365 requirements: <http://bit.ly/1gGTt4q>
- Power BI first impressions: <http://bit.ly/1gGTyF3>

Q & A



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