

A Journey to Power BI

A Guide to use Self-service BI

Leila Etaati



Our Sponsors



About Leila Etaati

- 10 years experience in SQL server
- PhD in Information System
Department, Business School
University of Auckland
- Lecturer and Tutor of BI
and Database design
- System design in University of Auckland

RADACAD



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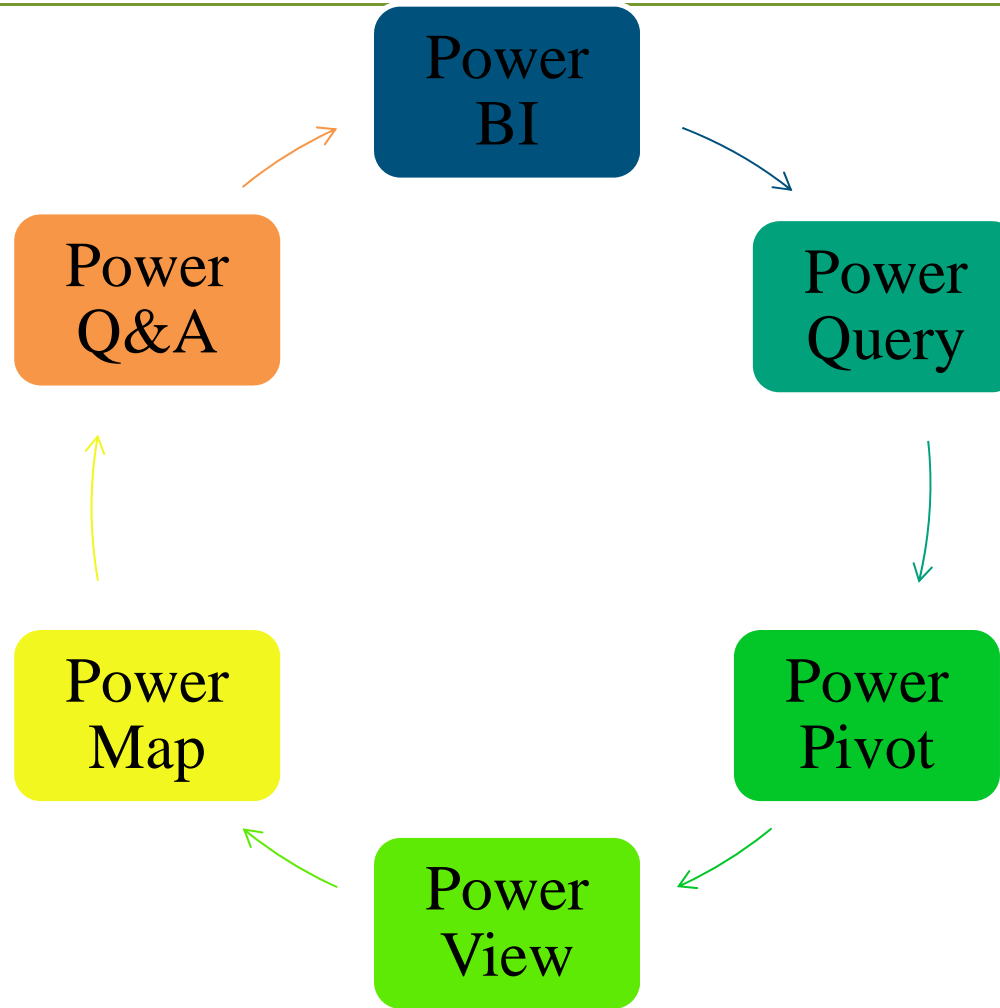


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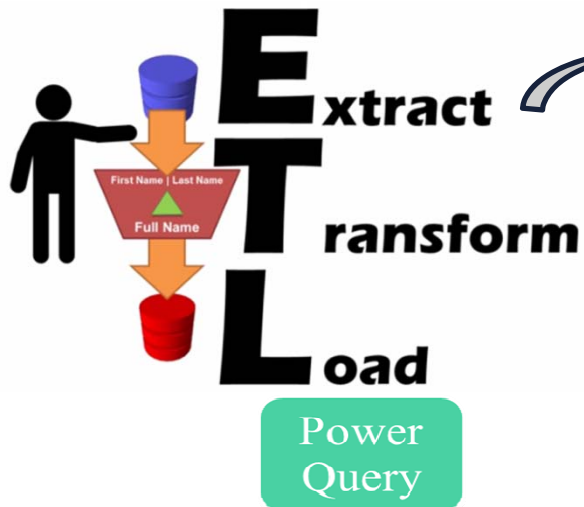


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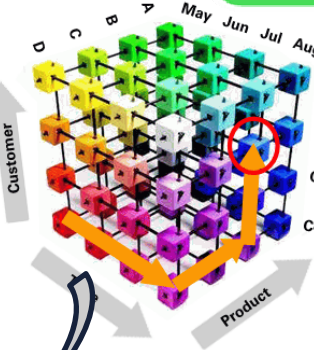
Agenda



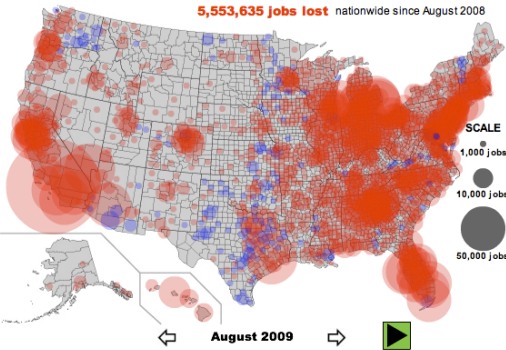
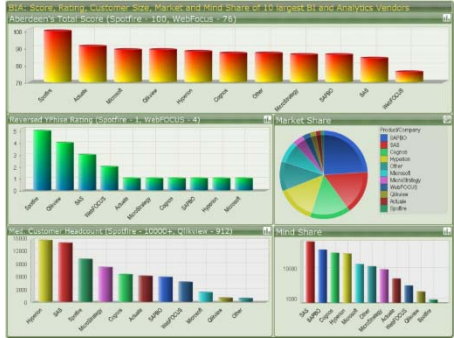
Power BI



Power Pivot



Power View

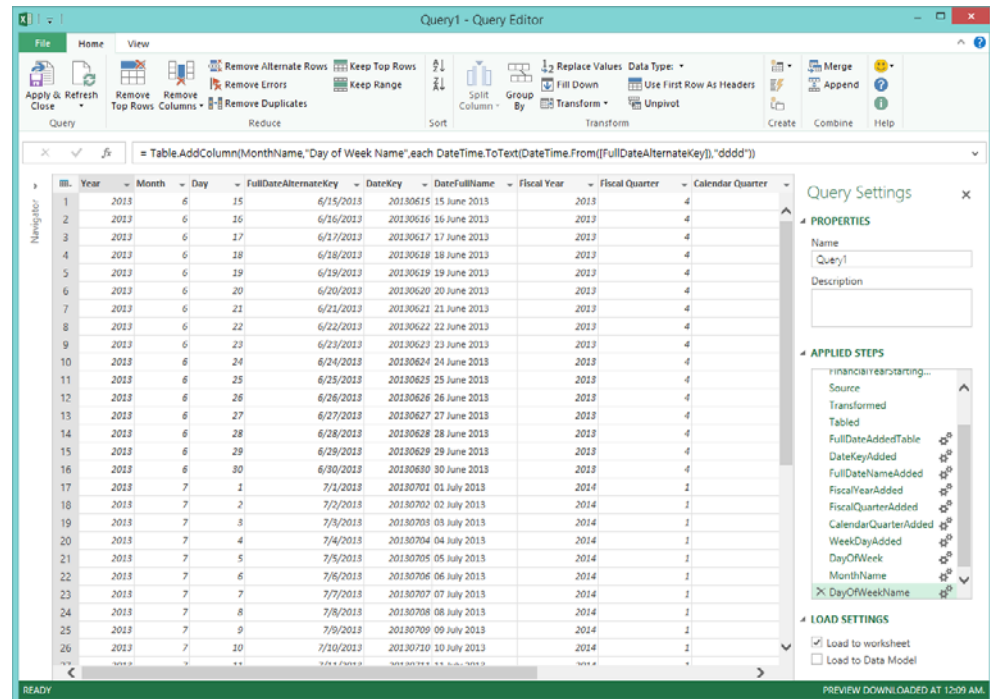


Power Map



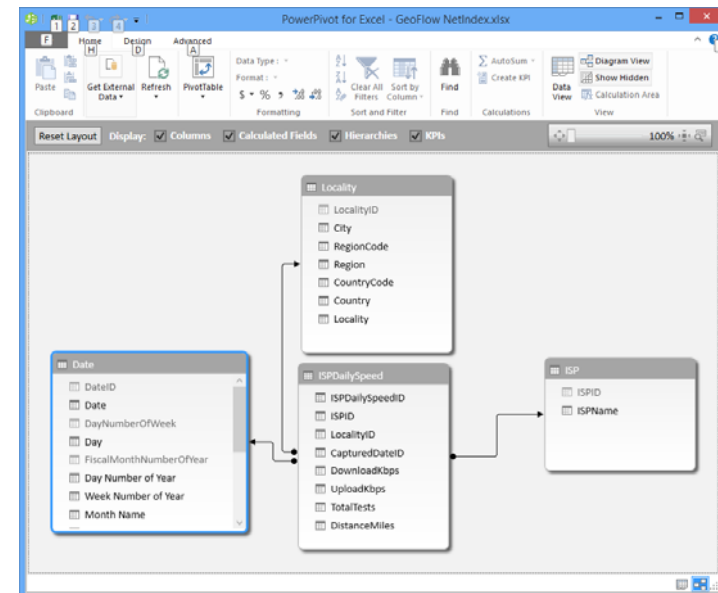
Power Query: ETL

- Self-Service ETL
- Functional Language
- Online Search
- Share Queries



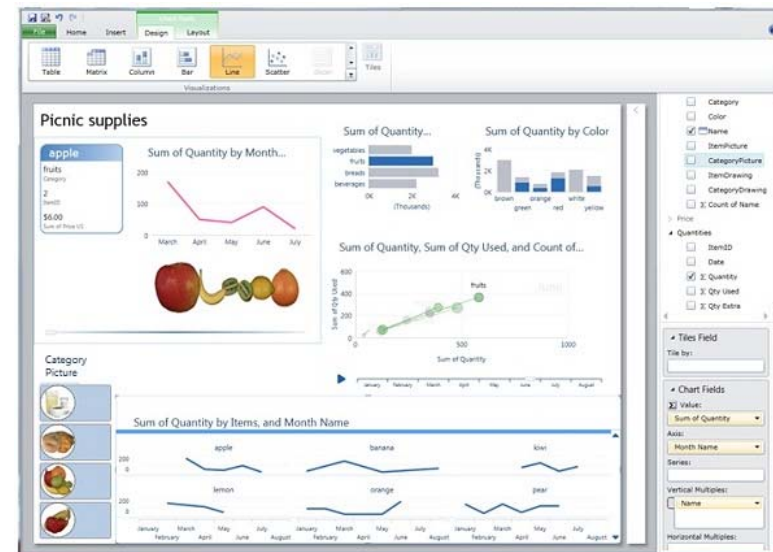
Power Pivot: Tabular Model

- Tabular Model
- Calculated Measures
- Hierarchies
- DAX
- xVelocity In-Memory



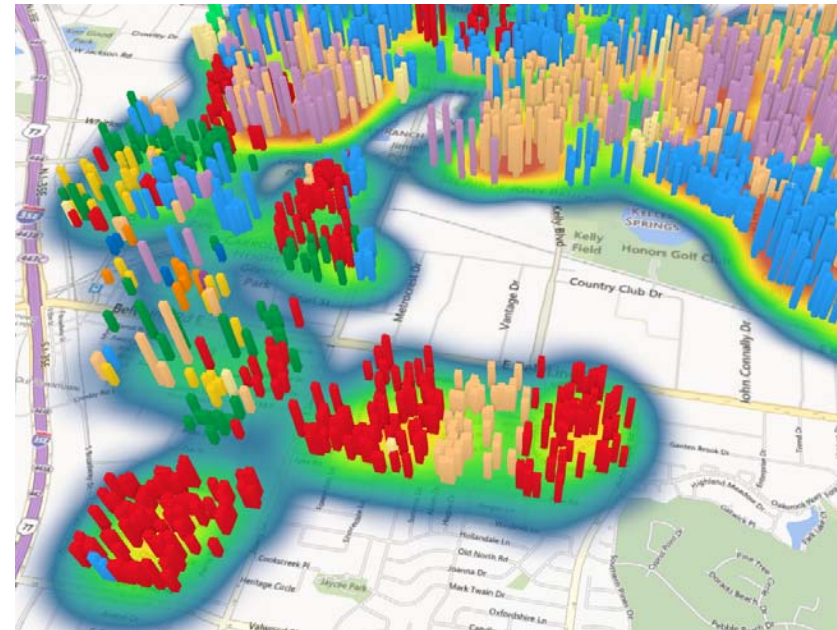
Power View: Visualization

- Dashboards
- Reports
- Interactive UI
- Filters
- Scatter with Play Axis



Power Map: Geographical Visualization

- Geospatial
- Multiple Layers
- 3D Visualization
- Tours



Power Q&A

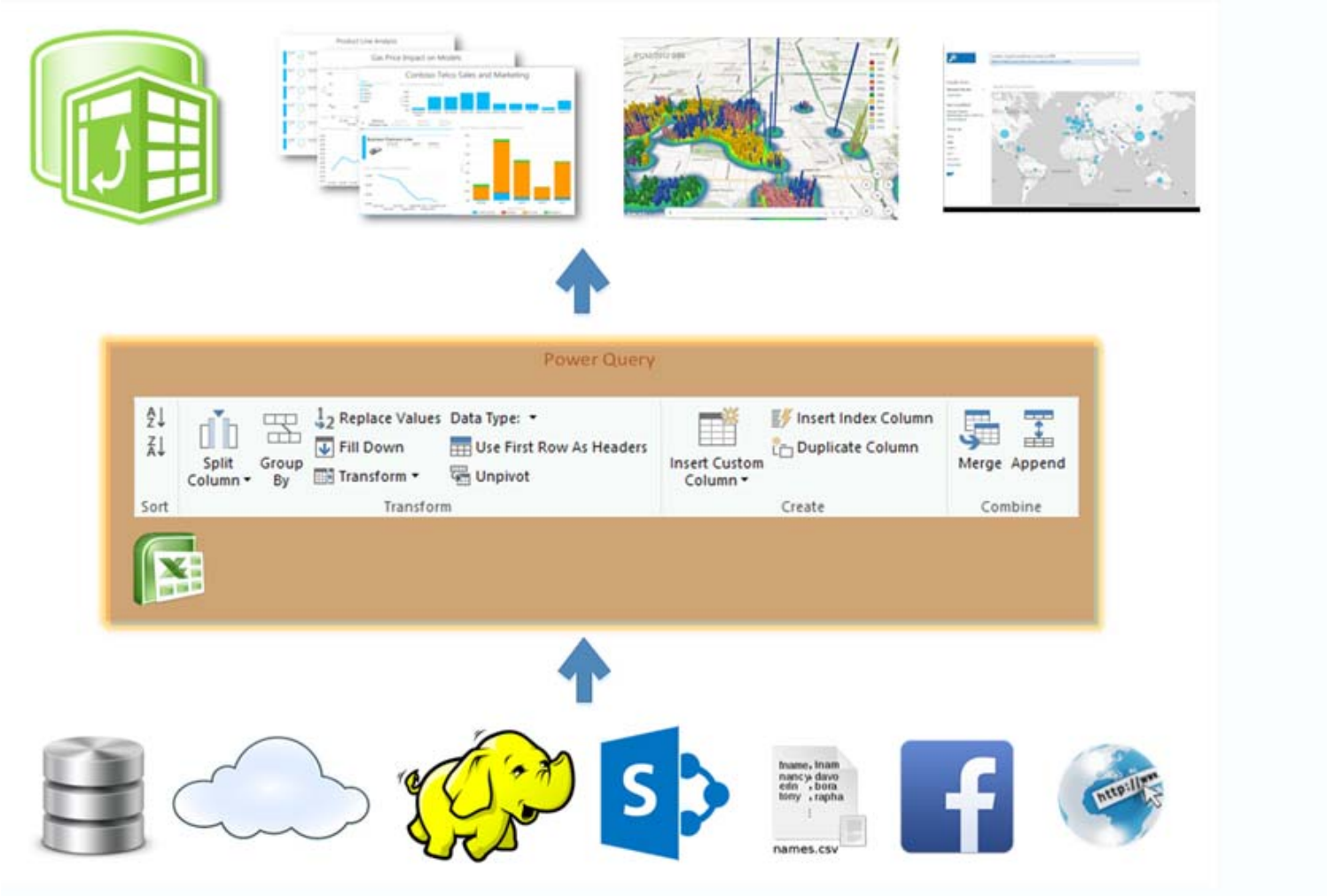
- Ask Questions
- Response on
- Visualization
- Tools



Power Query



Power Query Demo Discover Data



Download & Installation Power Query



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Microsoft Power Query for Excel

Select Language:

English ▾

Download

Microsoft Power Query for Excel is an Excel add-in that enhances the self-service Business Intelligence experience in Excel by simplifying data discovery, access and collaboration.

[Details](#)

[System Requirements](#)

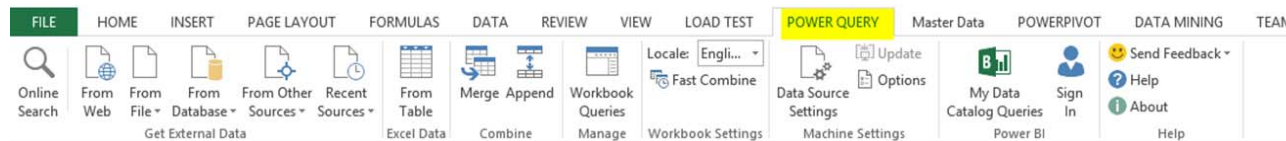
[Install Instructions](#)

Free PC updates

- Security patches
- Software updates
- Service packs
- Hardware drivers

Run Microsoft Update

Microsoft suggests



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Wide Range of Data Sources Supported

(Extract Part)

The screenshot displays the Microsoft Excel interface with the 'Get External Data' menu open. The menu is divided into two columns of options. The left column includes 'From Excel', 'From CSV', 'From XML', 'From Text', and 'From Folder'. The right column includes 'From SQL Server Database', 'From Windows Azure SQL Database', 'From Access Database', 'From Oracle Database', 'From IBM DB2 Database', 'From MySQL Database', 'From PostgreSQL Database', 'From Sybase Database', and 'From Teradata Database'. A separate panel on the right side of the image lists additional data sources, including 'From SharePoint List', 'From OData Feed', 'From Microsoft Azure Marketplace', 'From Hadoop File (HDFS)', 'From Microsoft Azure HDInsight', 'From Microsoft Azure Blob Storage', 'From Microsoft Azure Table Storage', 'From Active Directory', 'From Microsoft Exchange', 'From Facebook', 'From SAP BusinessObjects BI Universe', and 'Blank Query'. The 'From SAP BusinessObjects BI Universe' option is highlighted in green.

- From Excel**
Import data from a Microsoft Excel workbook.
- From CSV**
Import data from a comma-separated value file.
- From XML**
Import data from an XML file.
- From Text**
Import data from a text file.
- From Folder**
Import metadata and links about files in a folder.
- From SQL Server Database**
Import data from a Microsoft SQL Server database.
- From Windows Azure SQL Database**
Import data from a Microsoft Windows Azure SQL database.
- From Access Database**
Import data from a Microsoft Access database.
- From Oracle Database**
Import data from an Oracle database.
- From IBM DB2 Database**
Import data from a DB2 database.
- From MySQL Database**
Import data from a MySQL database.
- From PostgreSQL Database**
Import data from a PostgreSQL database.
- From Sybase Database**
Import data from a Sybase database.
- From Teradata Database**
Import data from a Teradata database.
- From SharePoint List**
Import data from a Microsoft SharePoint site.
- From OData Feed**
Import data from an OData feed.
- From Microsoft Azure Marketplace**
Import data from the Microsoft Azure Marketplace.
- From Hadoop File (HDFS)**
Import data from a Hadoop Distributed File System.
- From Microsoft Azure HDInsight**
Import data from Microsoft Azure HDInsight.
- From Microsoft Azure Blob Storage**
Import data from Microsoft Azure Blob Storage.
- From Microsoft Azure Table Storage**
Import data from Microsoft Azure Table Storage.
- From Active Directory**
Import data from Active Directory.
- From Microsoft Exchange**
Import data from Microsoft Exchange.
- From Facebook**
Import data from Facebook.
- From SAP BusinessObjects BI Universe**
Import data from an SAP BusinessObjects BI Universe.
- Blank Query**
Write a query from scratch.

Online Search (Extract Part)

Highest-grossing films - Highest-grossing films - List of highest-grossing films
From Wikipedia, last modified on Thursday, December 12, 2013.
List of highest-grossing films - Wikipedia, the free encyclopedia

Rank	Title	Worldwide gross	Year	Ref	Key
1	Avatar	\$2,782,275,172	2009		1
2	Titanic	\$2,186,772,302	1997		2
3	Marvel's The Avengers	\$1,511,757,910	2012		3
4	Harry Potter and the Deathly Hallows – Part 2	\$1,341,511,219	2011		4
5	Iron Man 3	\$1,215,439,994	2013		5
6	Transformers: Dark of the Moon	\$1,123,746,996	2011		6
7	The Lord of the Rings: The Return of the King	\$1,119,929,521	2003		7
8	Skyfall	\$1,108,561,013	2012		8
9	The Dark Knight Rises	\$1,084,439,099	2012		9

Columns [6]
Rank, Title, Worldwide gross, Year, Ref, Key

Data Sources [1]
http://en.wikipedia.org/wiki/List_of_highest-grossing_films

ADD TO WORKSHEET EDIT LEGAL TERMS ▾

Online Search

289 results

- Highest-grossing films - H...
From Wikipedia on Thursday, Decem...
List of highest-grossing films -
Wikipedia, the free encyclopedia
- Timeline of the highest-gr...
From Wikipedia on Thursday, Decem...
List of highest-grossing films -
Wikipedia, the free encyclopedia
- High-grossing films by ye...
From Wikipedia on Thursday, Decem...
List of highest-grossing films -
Wikipedia, the free encyclopedia



Data Transformations on GUI (Transform)

Title	Year	IMDb Rating
The Shawshank Redemption		9.2
The Godfather		9.2
The Godfather: Part II		9
The Dark Knight		8.9
Pulp Fiction		8.9
The Good, the Bad and the Ugly		8.9
Schindler's List		8.9
12 Angry Men		8.9
The Lord of the Rings: The Return of the King		8.9
Fight Club		8.8
The Lord of the Rings: The Fellowship of the Ring		8.8
Star Wars: Episode V - The Empire Strikes Back		
Inception		
One Flew Over the Cuckoo's Nest		
Forrest Gump		
Goodfellas		
The Lord of the Rings: The Two Towers		
Star Wars: Episode IV - A New Hope		
The Matrix		8.7
Seven Samurai		8.7
City of God		8.7

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The Dark Knight		8.9
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The Good, the Bad and the Ugly		8.9
Schindler's List		8.9
12 Angry Men		8.9
The Lord of the Rings: The Return of the King		8.9
Fight Club		8.8
The Lord of the Rings: The Fellowship of the Ring		8.8
Star Wars: Episode V - The Empire Strikes Back		
Inception		
One Flew Over the Cuckoo's Nest		
Forrest Gump		
Goodfellas		
The Lord of the Rings: The Two Towers		
Star Wars: Episode IV - A New Hope		
The Matrix		8.7
Seven Samurai		8.7
City of God		8.7

Context Menu:

- Remove
- Remove Other Columns
- Use First Row As Headers
- Duplicate Column
- Split Column
- Remove Duplicates
- Remove Errors
- Replace Values...
- Fill Down
- Change Type
- Transform
 - lowercase
 - UPPERCASE
 - Capitalize Each Word
 - Trim
 - Clean
 - JSON
 - XML
- Insert Custom Column...
- Insert Index Column
- Group By...
- Unpivot
- Move
- Rename...
- Drill Down
- Add as New Query

Demo: Fetch Dog Breads Data with Power Query





Load to Data Model

x

Load To

Select how you want to view this data in your workbook.

-  Table
-  Only Create Connection

Select where the data should be loaded.

- New worksheet
- Existing worksheet:



- Add this data to the Data Model

Load

Cancel



What is M?

- Everything that Happens on GUI works with a Code Behind
- Code Behind is a Functional Language: M



The screenshot shows a data table with a formula bar at the top. The formula bar contains the text: `= Table.NestedJoin("#Table 0",{"Breed"},#"List with classification and standards - List of dog breeds",{"Breed"},"NewColumn")`. Below the formula bar is a table with 10 rows and 7 columns. The columns are: Image.1, Breed, Size, Group, Hypoallergenic, Overview, and NewColumn. The data rows are as follows:

	Image.1	Breed	Size	Group	Hypoallergenic	Overview	NewColumn
1		Labrador Retriever	MediumGroup	Sporting	No	Labrador Retriever is a medium large dogs born with a gentle demeanor, l	Table
2		German Shepherd Dog	LargeGroup	Herding	No	German shepherd dog temperament gentle, obey orders, a keen sense of	Table
3		Beagle	SmallGroup	Hound	No	Beagle, also known as Beagles, one of the world dog is a breed is a hunting	Table
4		Golden Retriever	LargeGroup	Sporting	No	Golden Retriever, both said, a strong, lively dog, solid, various parts of the	Table
5		Yorkshire Terrier	SmallGroup	Toy	Yes	Yorkshire Terrier short stature, body shape after Chihuahua small dog in tl	Table
6		Bulldog	MediumGroup	Non-Sporting	No	Bulldog smooth and friendly temperament, firm and courageous (not brut	Table
7		Boxer	MediumGroup	Working	No	boxer,the origin of Germany, the shape and appearance pretty strong. Lo	Table
8		Poodle	SmallGroup	Toy	Yes	Poodles (Toy) smart character, lively, good temperament, very approach	Table
9		Dachshund	SmallGroup	Hound	No	Dachshund character quite lively, cheerful, brave, careful and confidence.	Table
10		Rottweiler	LargeGroup	Working	No	Rottweiler physically strong, moves rapidly, momentum is powerful, is on	Table

Top Five M Functionalities

- Robust List of Built-in Functions
- Custom Functions
- Error Handling
- EACH; Singleton Function
- Generator Functions

More about Formula Language

- M is much more powerful than Power Query GUI;
- Not all functionalities of M implemented through GUI.
- If you want to be Professional In Power Query; You should be Expert in M
- M is a functional language



Data Modelling with Power Pivot



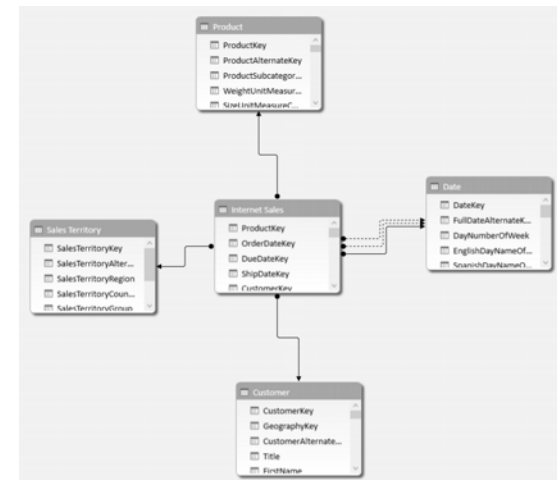
Power Pivot

- Two versions:
 - Power Pivot for Excel
 - Power Pivot for SharePoint
- For Excel 2010 and 2013
- xVelocity In-Memory Engine



Tabular Development

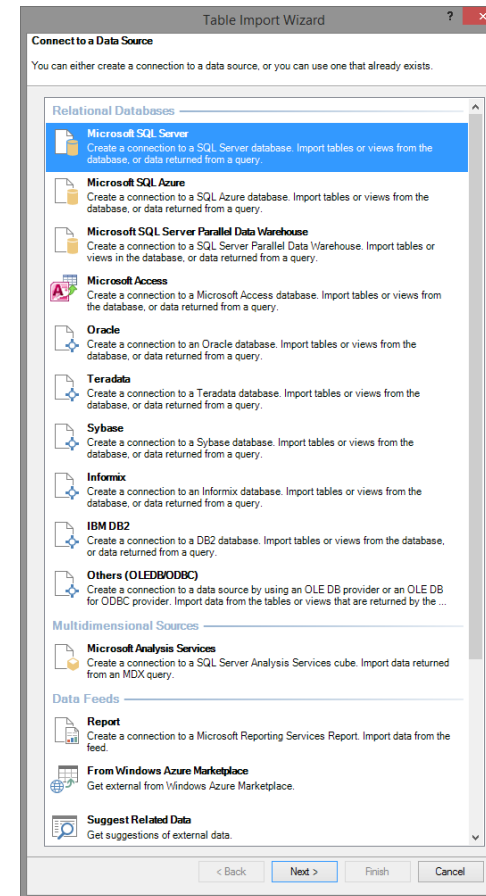
- Tables, Columns, Relationships and Measures as Metadata
- Data as Content



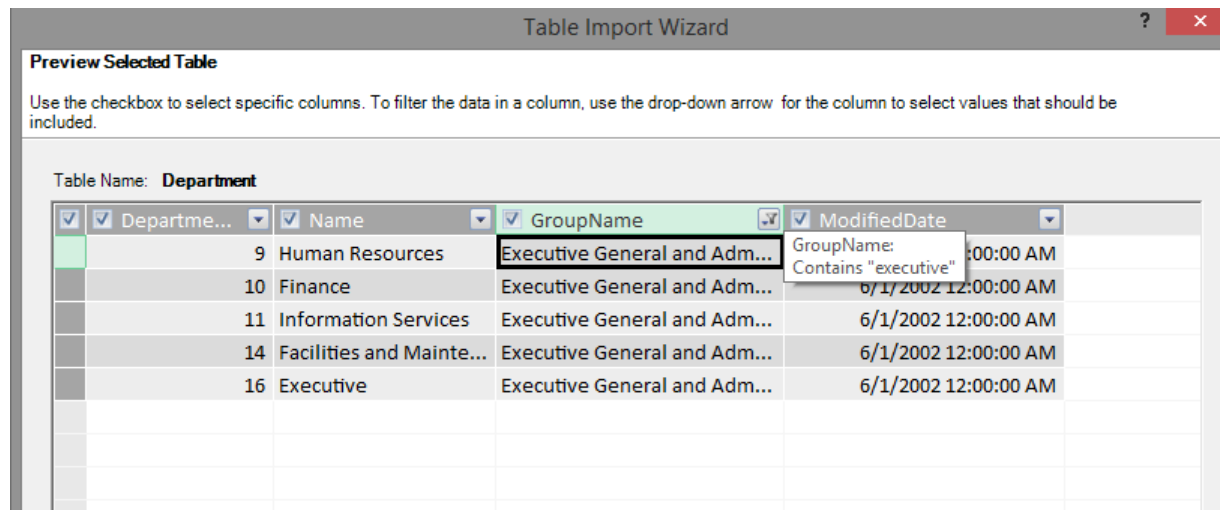
- Here is where Modelling happens
- Where Star Schema located

Data Sources

- Power Query
- SQL Server
- Analysis Services
- Other Databases
- ...

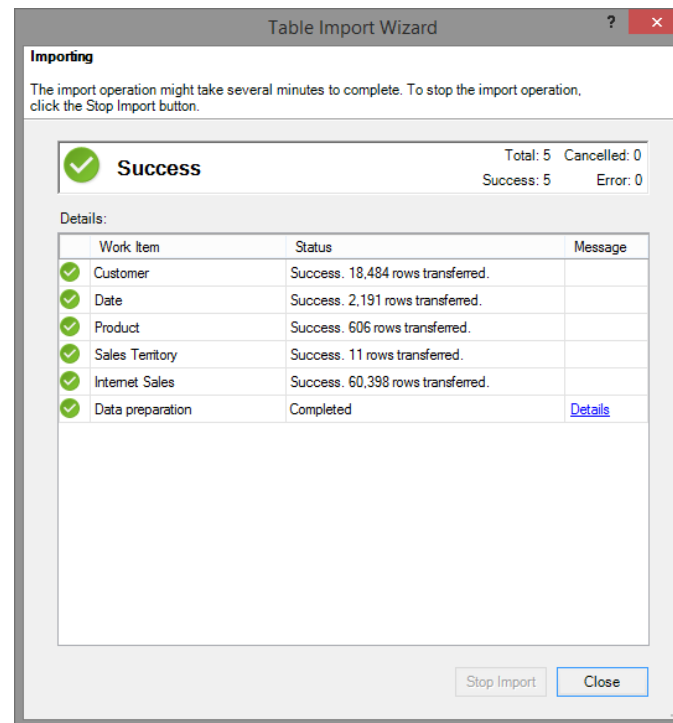


Filtering Before Loading Data



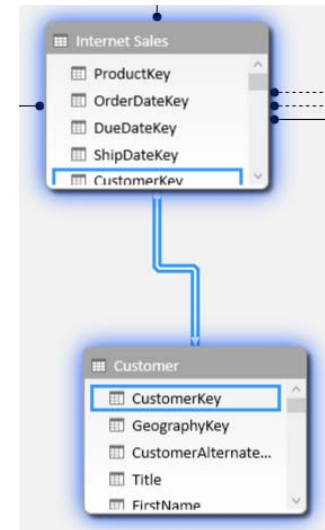
Loads into Memory

- Thirsty for Resources
 - RAM
 - CPU



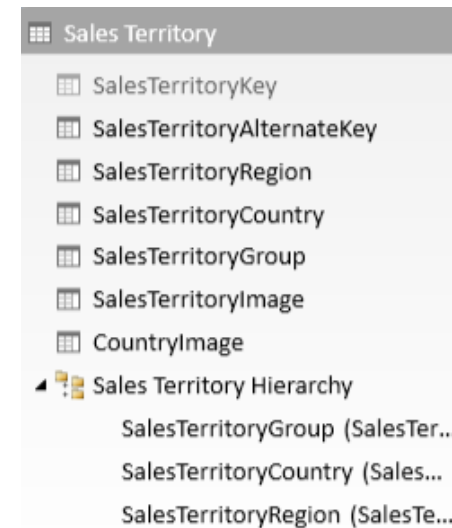
Relationship

- Much easier than Multidimensional Dimension Usage
- One to Many Supported



Hierarchies

- Hierarchies from one table can be created simply with drag and drop
- Parent child Hierarchies can be created with calculated columns and DAX

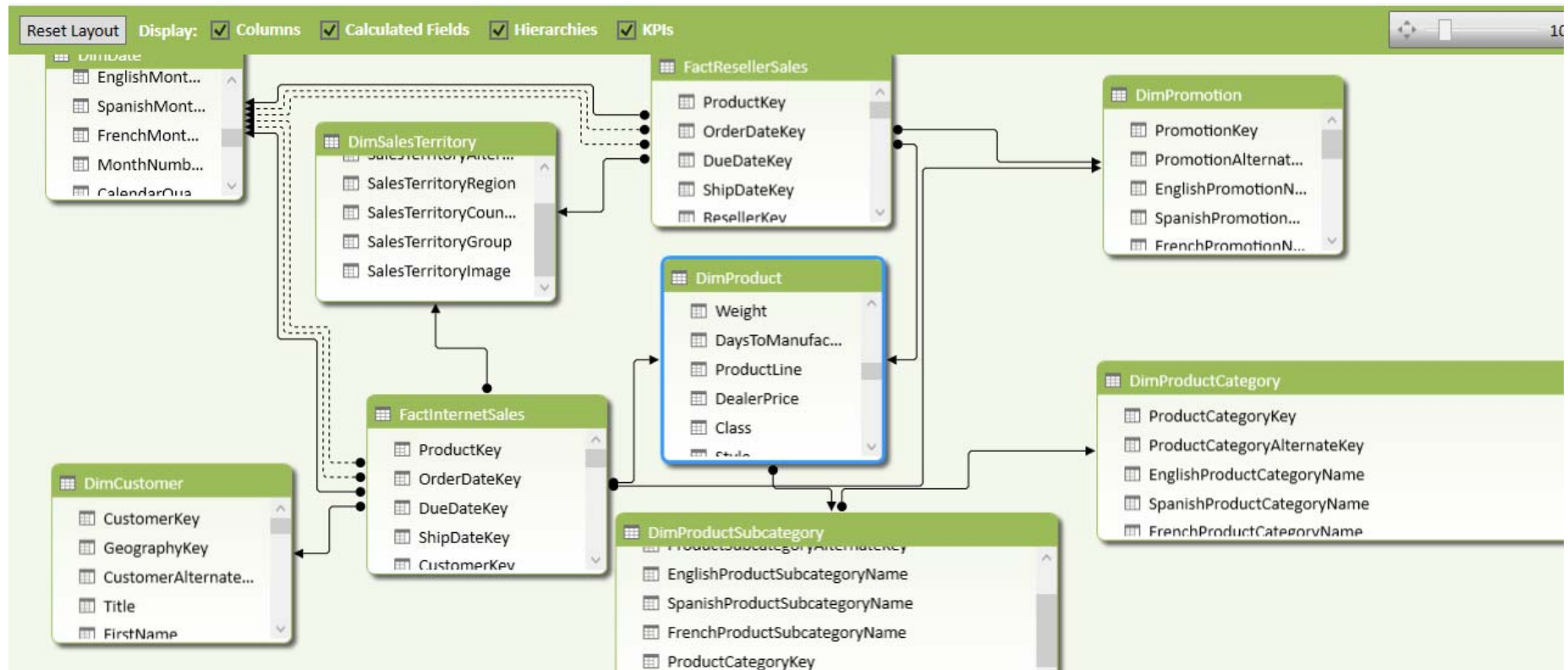


Calculated Columns

- Just like any other column
- Calculated in Processing time and stores in database
- Ideal for expression that is strictly bound to the current row
- Can be used for discretising (e.g. age band...)

```
fx =RELATED('Product Subcategory'[EnglishProductSubcategoryName])
```



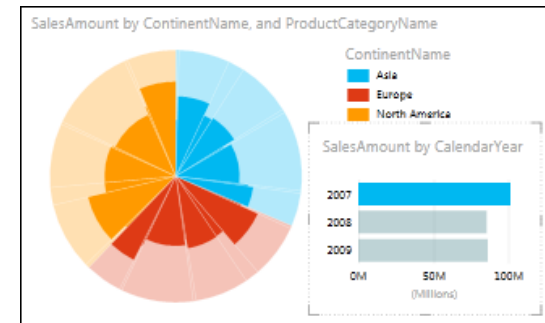
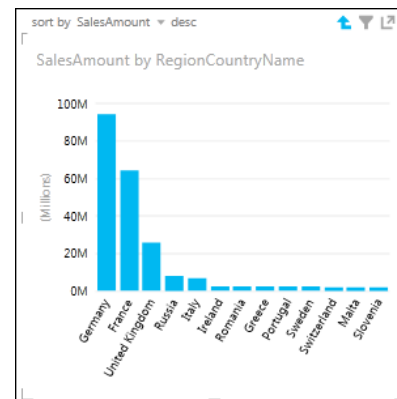
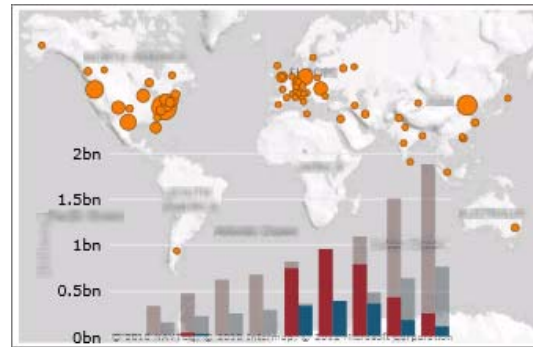


Power View



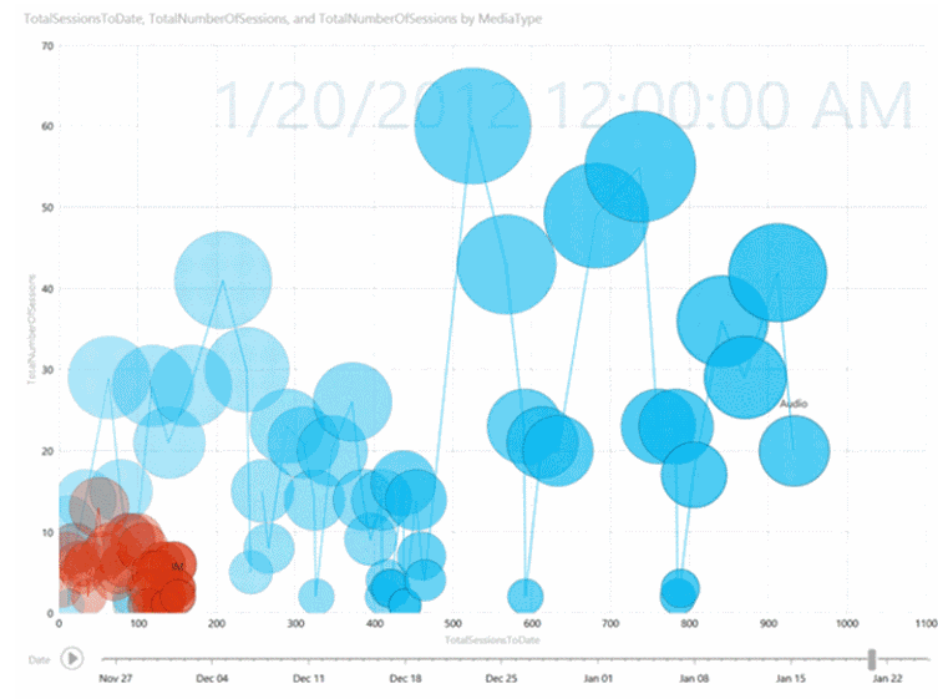
Power View: Charts

- Column Chart
- Bar Chart
- Pie Chart
- Map
- Line Chart



Power View: Scatter Chart

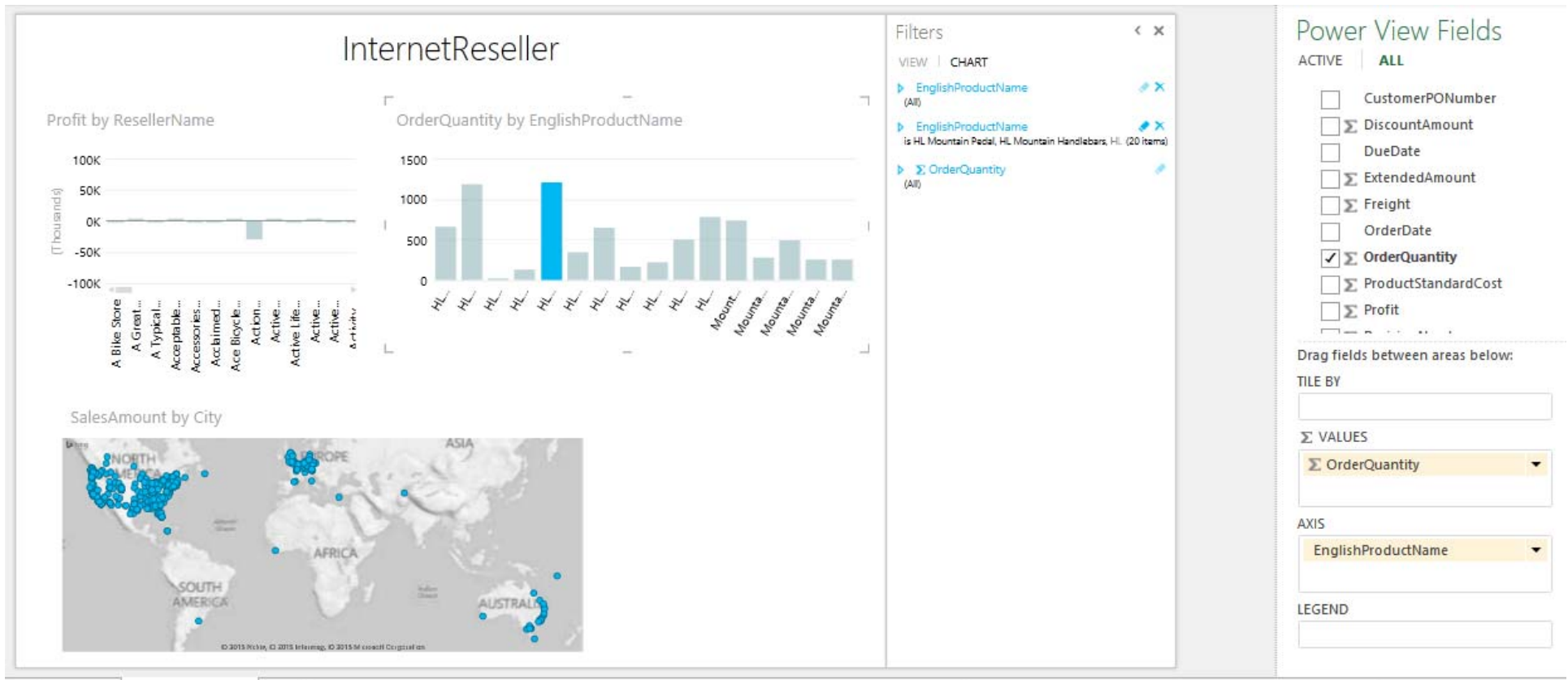
- 3 Measures:
 - X Axis
 - Y Axis
 - Size Axis
- By Time Changes:
 - Play Axis
- Categorization:
 - Color



Demo: Power View



Reseller Product

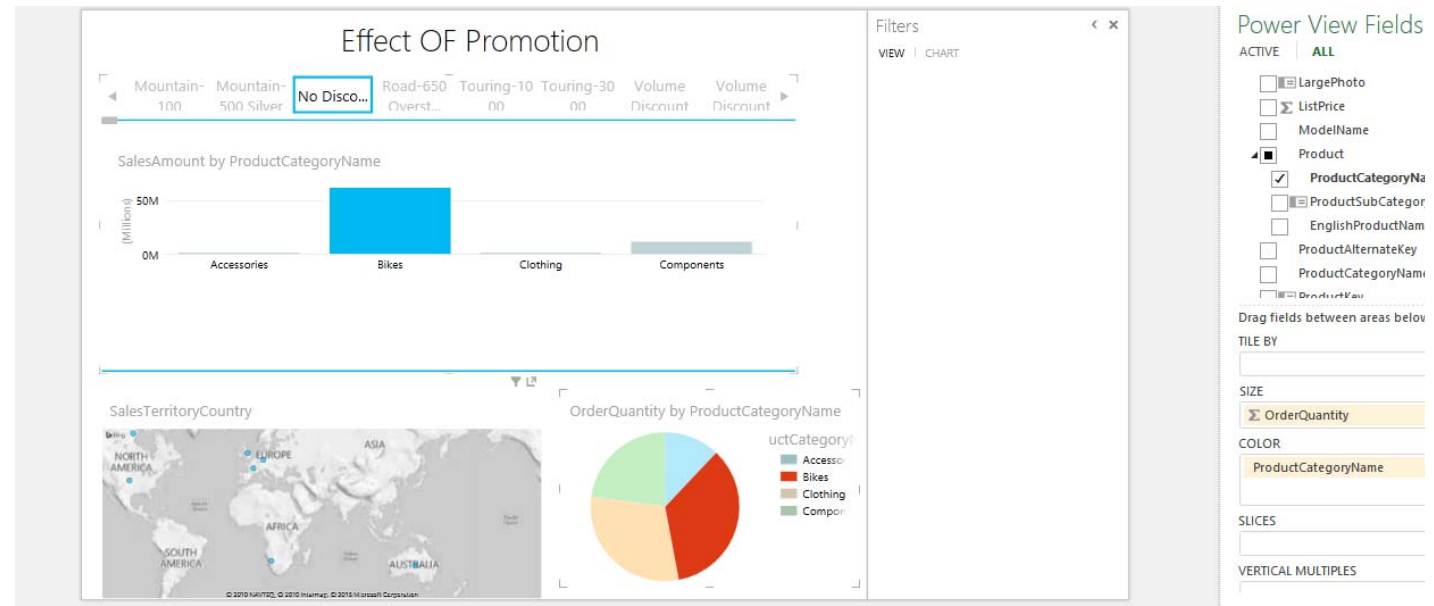


Promotion Analysis

1-Promotion relation to Internet Sales amount

2- Analysis the affect of Promotion on selling different Product Name.

3-Product category affect on Promotion (tile)

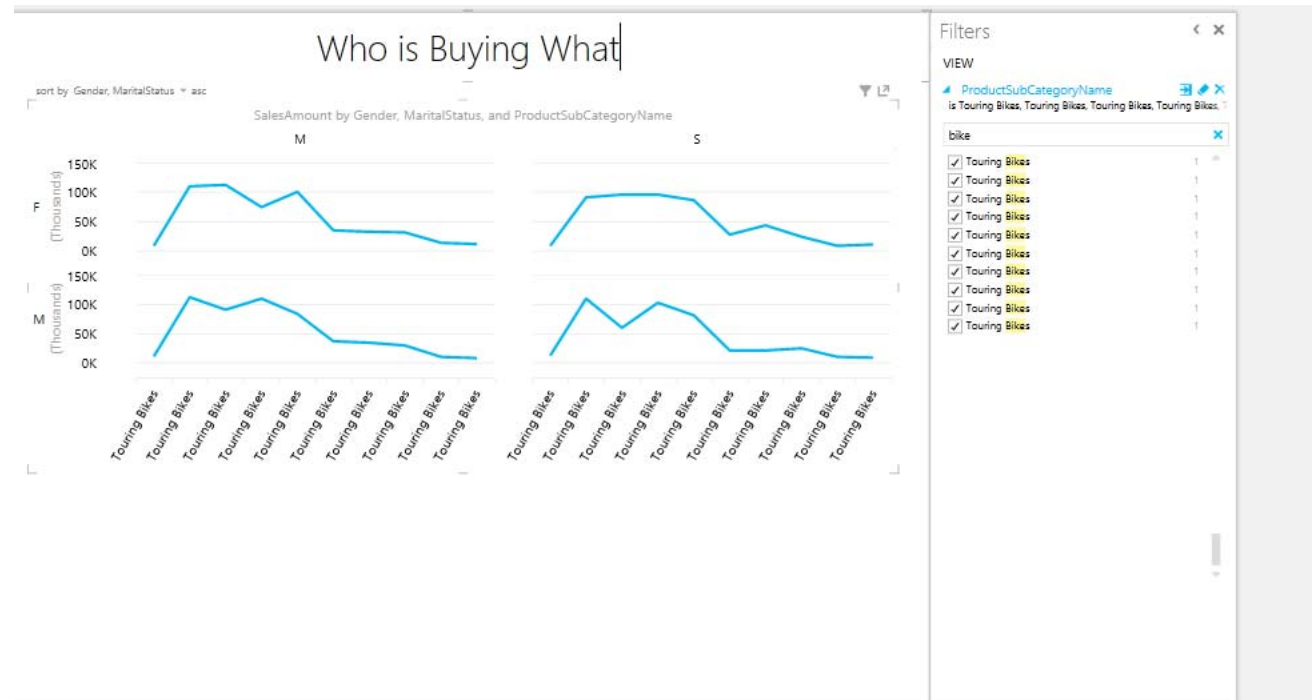


Who is Buying

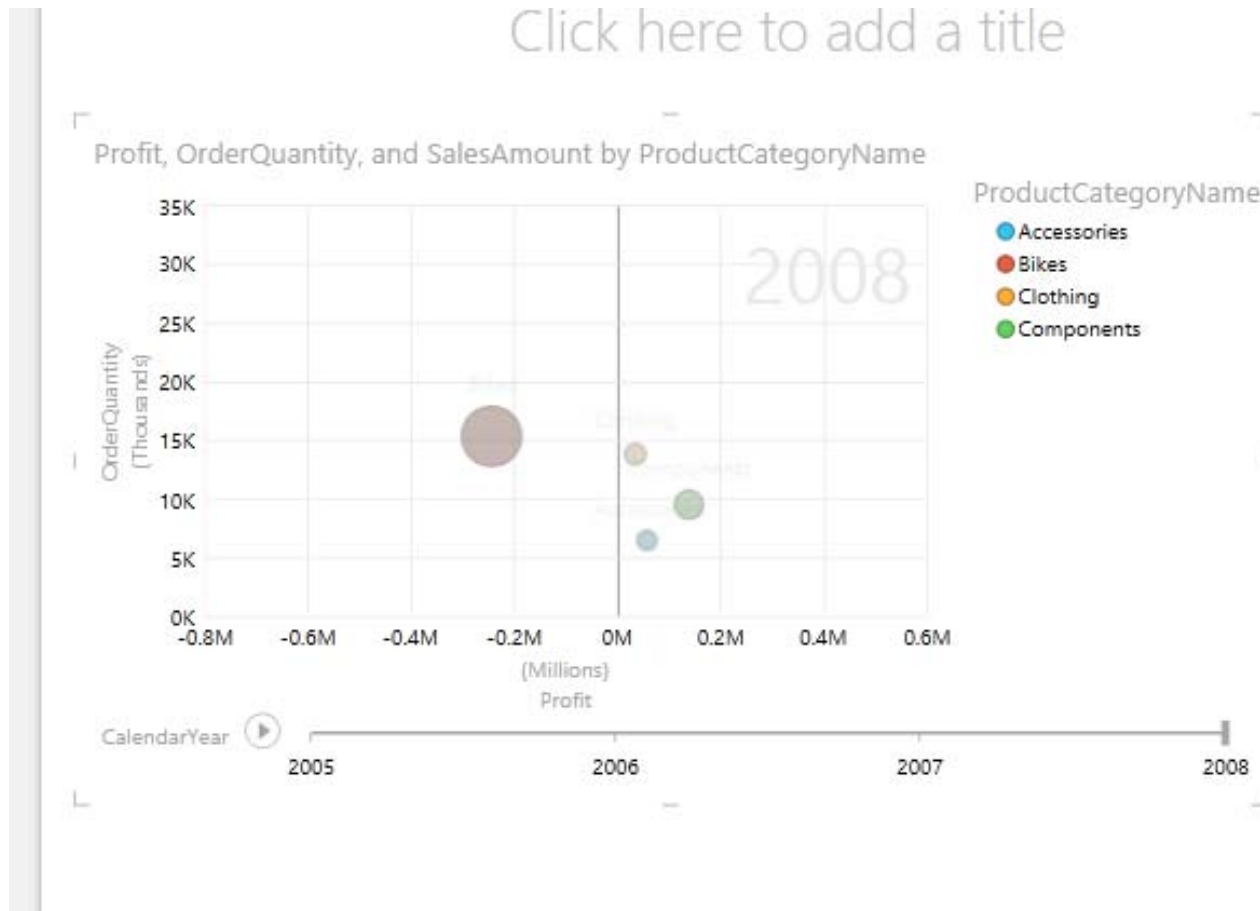
1- Sales by date (line chart)

2- analysis Customer demographic Information by Sales amount (horizontal multiples, Vertical Multiples)

3- Analysis demographic Information plus their Country (map)



Multi Measure Analysis



Power Map



Geographical Data

- Latitude/Longitude
- Region/Country/State/City/Zip Code
- Bing Maps



Chart Layers

- Column
- Heat Map
- Bubbles
- Region

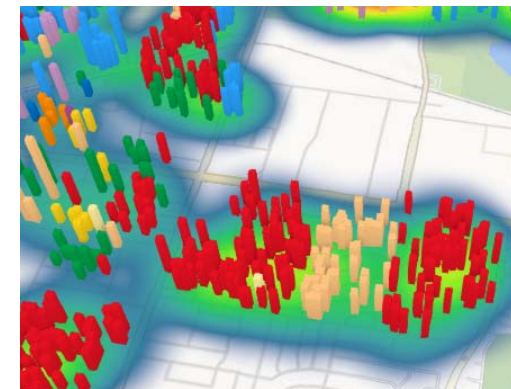
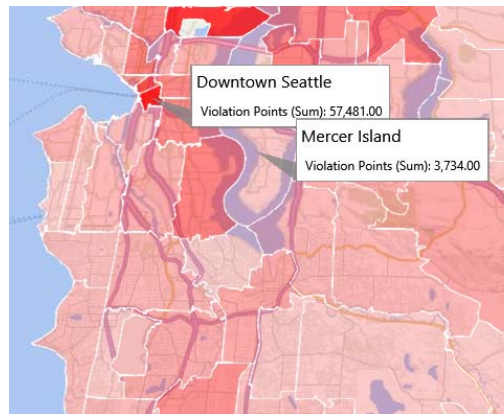
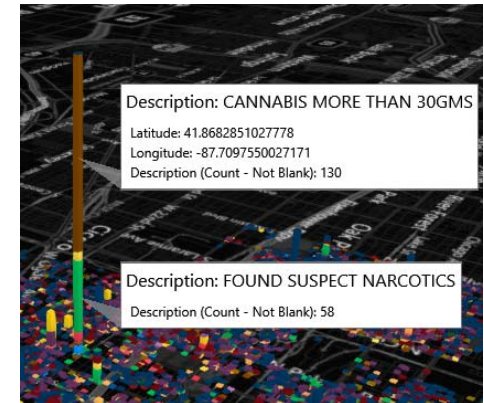
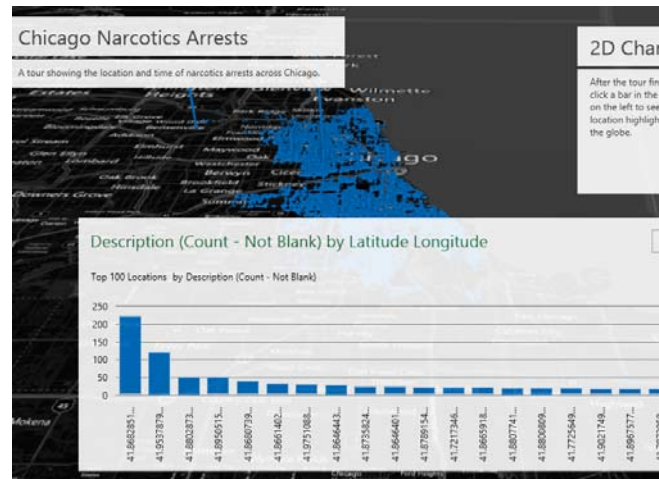


Chart and Notes

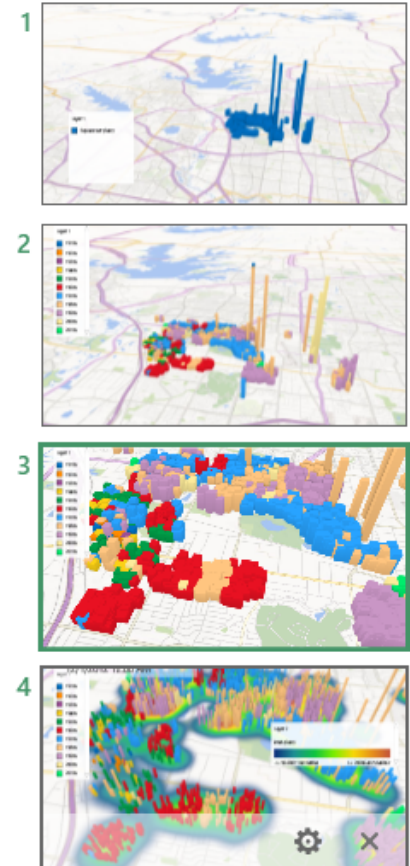
- Chart
- Note
- Map Labels
- Themes



Tours

- Creating Story
- Sharing Story
- Video

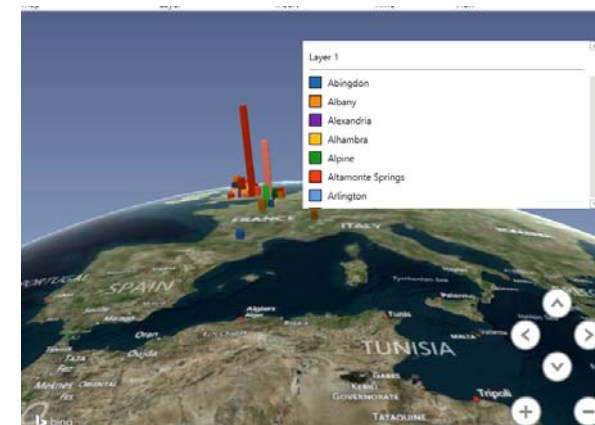
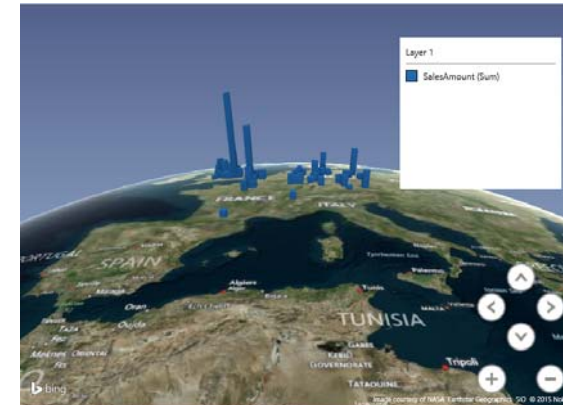
Dallas Utilities Tour



Power Map

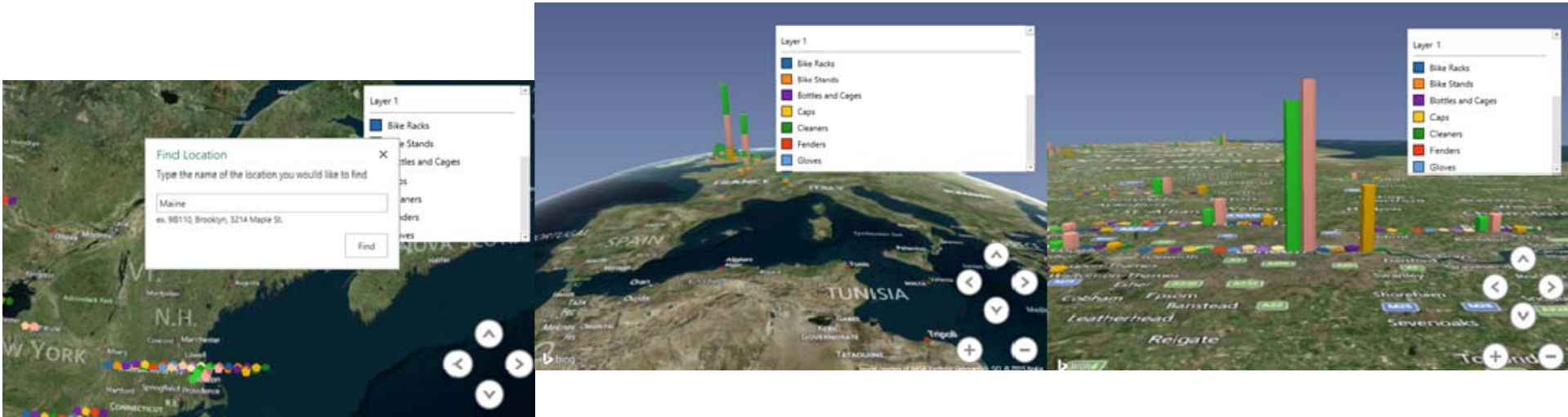
1- Take a report on Sales amount for each city

2-Take a report on Sales amount for each city categorised by product name



Find Location on Map

Find Location on map



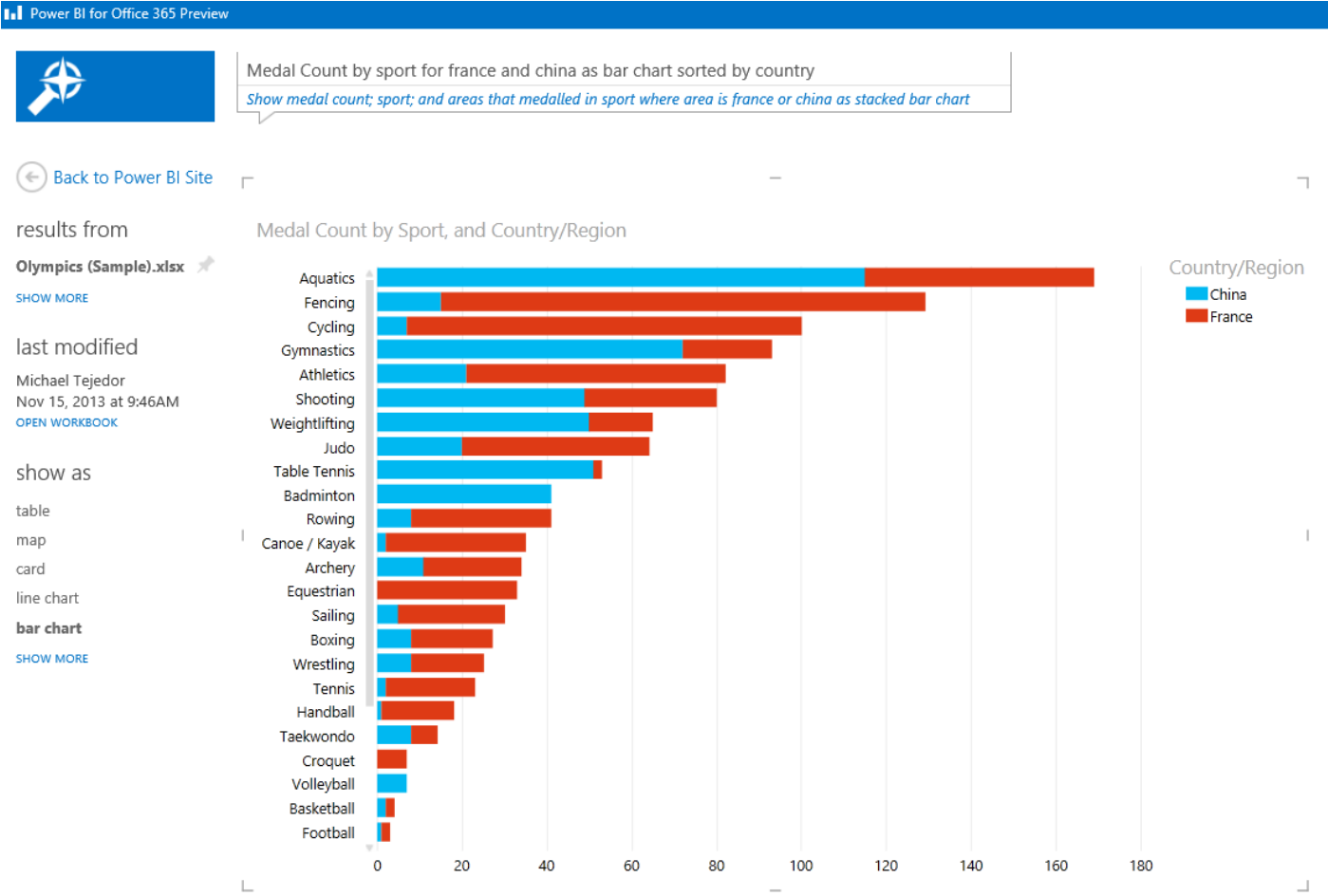
Demo: Power Map 3D Geospatial



Power Q&A



Natural Language Q&A Engine



Columns and Tables Search

customers

show customers

CompanyName

Alfreds Futterkiste

Ana Trujillo Emparedados y helados

Antonio Moreno Taquería

Around the Horn



Data Values

london filo mix orders

Show london orders where product name is filo mix

OrderID	OrderDate	ShippedDate	CustomerID
10388	12/19/1996	12/20/1996	SEVES
10517	4/24/1997	4/29/1997	NORTS



Data Values; Date

1997 orders

Show orders and their date on which they were ordered where date is in 1997

OrderID	OrderDate	ShippedDate	CustomerID
10400	1/1/1997	1/16/1997	EASTC
10401	1/1/1997	1/10/1997	RATTC
10402	1/2/1997	1/10/1997	ERNSH
10403	1/3/1997	1/9/1997	ERNSH



Relationships

List products and their categories

Show products and categories

ProductName	CategoryName
Alice Mutton	Meat/Poultry
Aniseed Syrup	Condiments
Boston Crab Meat	Seafood
Camembert Pierrot	Dairy Products

Sort Command

sort products by unit price

Show products sorted by unit price descending

ProductName	UnitPrice ▼
Côte de Blaye	263.50
Thüringer Rostbratwurst	123.79
Mishi Kobe Niku	97.00
Sir Rodney's Marmalade	81.00
Carnarvon Tigers	62.50

Equality Filters

products with a unit price of \$10

*Show products **where** unit price is 10*

ProductName

Aniseed Syrup

Longlife Tofu

Sir Rodney's Scones





28/02/2015 David Postlethwaite



References to Study More

Power View Videos on YouTube:

<http://www.youtube.com/playlist?list=PL0CB09E9526E50B80>

Power Map Samples

<http://office.microsoft.com/en-us/excel/redirect/XT104048050.aspx>

<http://office.microsoft.com/en-us/excel/redirect/XT104048052.aspx>

<http://office.microsoft.com/en-us/excel/redirect/XT104048053.aspx>

<http://office.microsoft.com/en-us/excel/redirect/XT104048055.aspx>

Power Map Tutorials on MSDN:

<http://office.microsoft.com/en-001/excel-help/get-started-with-power-map-HA104091224.aspx?CTT=1>



Any Questions

- Conclusion
 - Hopefully you now have a better understanding of Power BI

- Q & A
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 - Twitter : Leila_etaati



Thank you



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