

# Data Modeling in Excel

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CEE412/CET522

TRANSPORTATION DATA MANAGEMENT AND VISUALIZATION

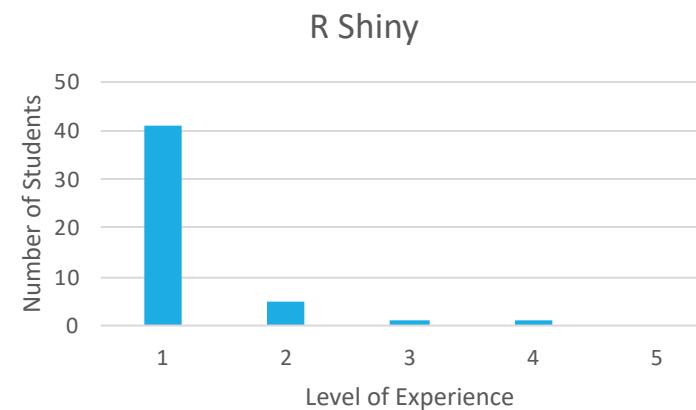
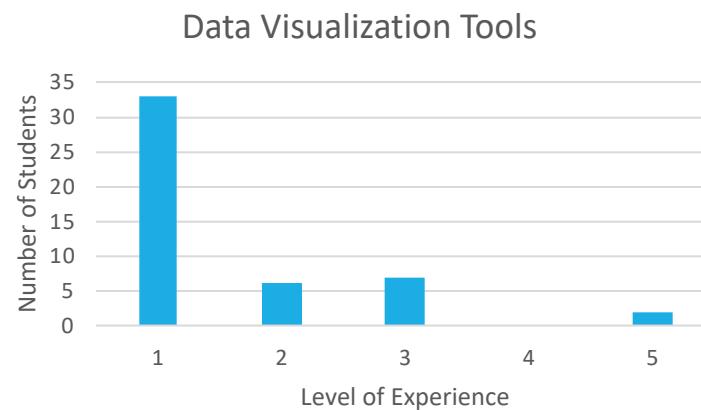
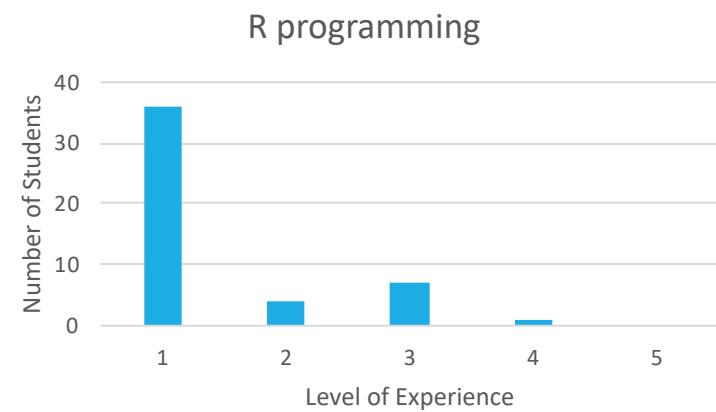
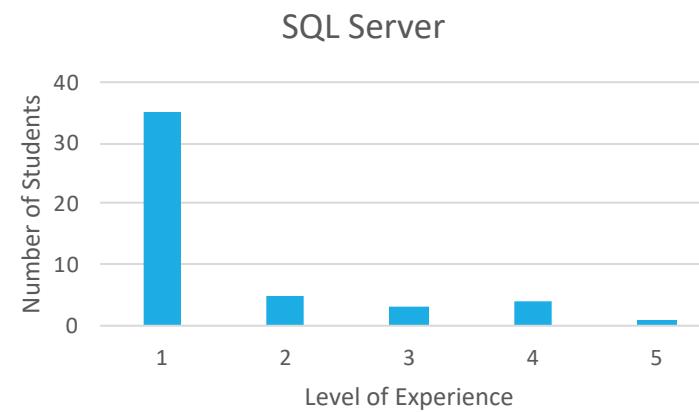
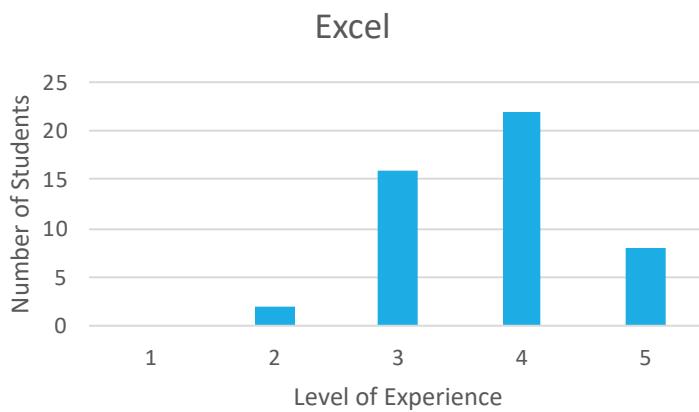
WINTER 2020

# Announcements

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- ❑ Extra credit for online quiz on next Wednesday.
- ❑ Assignment will be published on Canvas by the end of the day.
  - ❑ Due on Jan. 22
- ❑ Project group
  - ❑ Please Wait until the third week
- ❑ Piazza
  - ❑ [piazza.com/washington/winter2020/cee412cet522](https://piazza.com/washington/winter2020/cee412cet522)
  - ❑ Add code: 2020Winter

# Summary of Survey



# Topics

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Data models

Data model Functionality in Excel

- Power Pivot
- Power View

Excel Exercise (Assignment 1)

# Data Models

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## What is a data model?

- A logical structure or design for a collection of data.
- A data model is defined by the format and structure of the data elements, and the relationships between elements.
- Data represents things we want to store information about, so the data model represents some interpretation of reality.

## Three levels of modeling:

### **Conceptual:**

Translating application needs into high-level conceptual data structure

### **Logical:**

Specification of data elements, domains, data types, and relationships

### **Physical:**

Physical design for implementation  
(more detailed than the logical level)

# Data Models

Movie actor example: What kind of information do I want to store?

Maybe personal information, physical description, income, movie roles.

What is specified in the data model?



# Data Models

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Why do we need a data model?

- Design for efficiency in storage, access, management, and growth.
- Facilitate communication between different database users.
- Carefully plan HOW to manage data based partly on WHY you are storing it.

Accident database example (inefficient):

AccidentID	Vehicle1_Type	Vehicle2_Type	Vehicle3_Type	Milepost	Route	Pavement_type
144567	Sedan	SUV		114.2	005	asphalt
144568	Pickup			102.5	005	asphalt
144569	Compact	Pickup	SUV	120.1	005	asphalt
144570	SUV	Pickup		140.1	005	asphalt
...	...	...	...	...	...	...

# Data Models

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At the logical/physical level, we need to specify:

- What specific tables will be contained in the database?
- What specific fields each table will have?
- What data types will be used for each field?
- What values can a field take (domain constraints)?
- How the tables are related to each other?
- Access control and other practical issues – who can access what, etc.

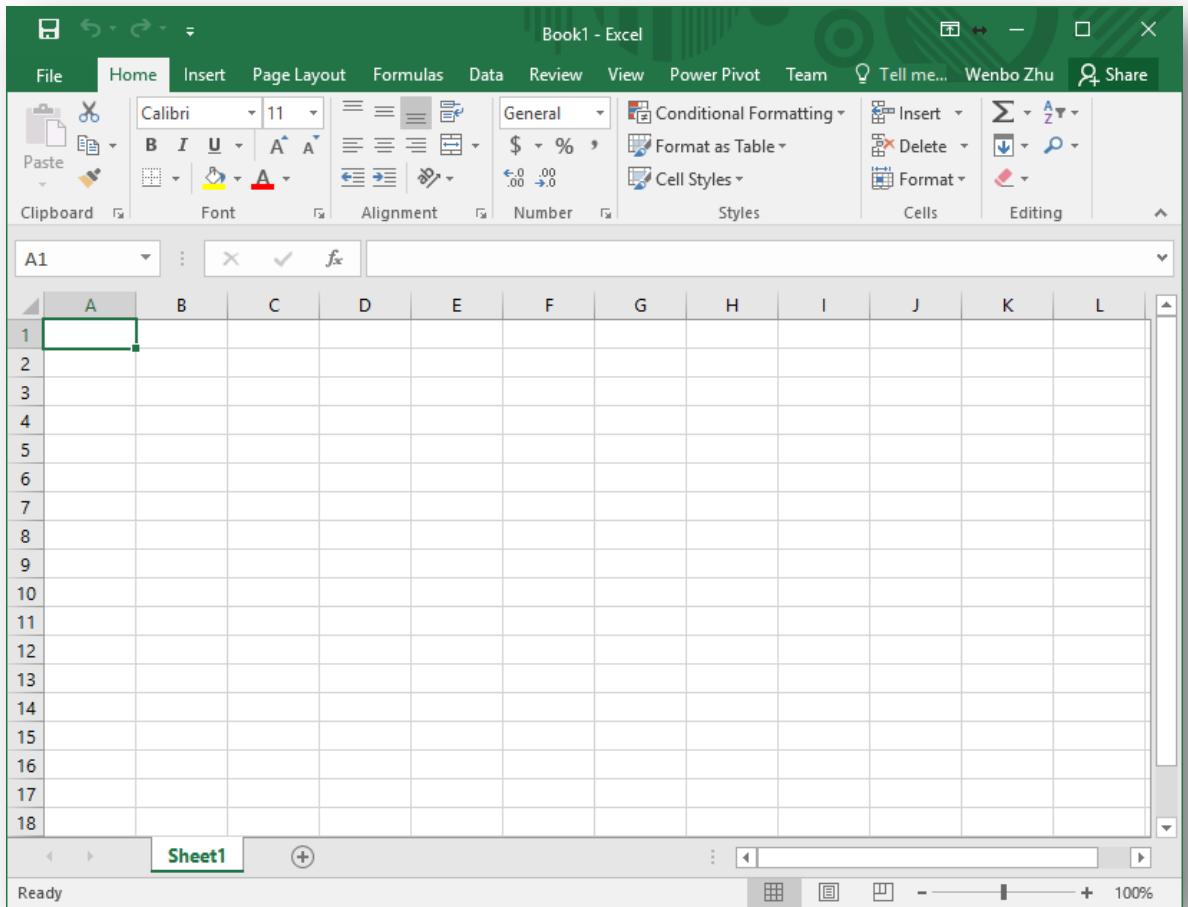
# Microsoft Excel

## What it is:

- A spreadsheet software for data storage and analysis.
- Good for simple analysis and visualization.
- Very widely used.
- Advanced features include VBA, data connection tools, and other nifty things.

## What it isn't:

- Data management system.
- Powerful statistical analysis tool.
- The best solution for large or complex datasets.
- Legitimate software development tool.



# Microsoft Excel

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Why are we talking about Excel?

- Because everyone has some experience with it.
- As a simple introduction to the broader topics in this class.
- To introduce less well known but useful functionality in Excel.

# Data Models in Excel

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Now on to data models in Excel

- Data model can reference Excel tables, as well as external data (e.g. databases, other workbooks).
- A data model is automatically created by adding tables to the workbook data model

Power Pivot (Excel Add-in)

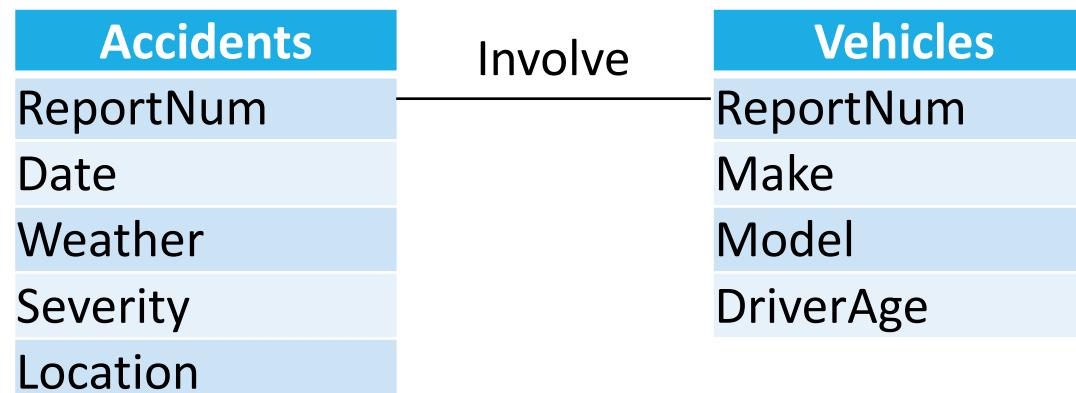
- Based on powerful database technology.
- The only way to handle very large datasets in Excel (multiple millions of rows).
- Data modeling and schema editing in a special interface.
- Low memory usage, even compared to the source of the data.

# Data Models in Excel

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An example:

- Say we have an Excel workbook with two worksheets: Accidents and Vehicles.
- **Accidents**: A set of accident records for a road section and time period.
- **Vehicles**: a description of each vehicle/driver involved in a set of accident records.
- The two tables are related by the ReportNum field



# Data Models in Excel

Start by:

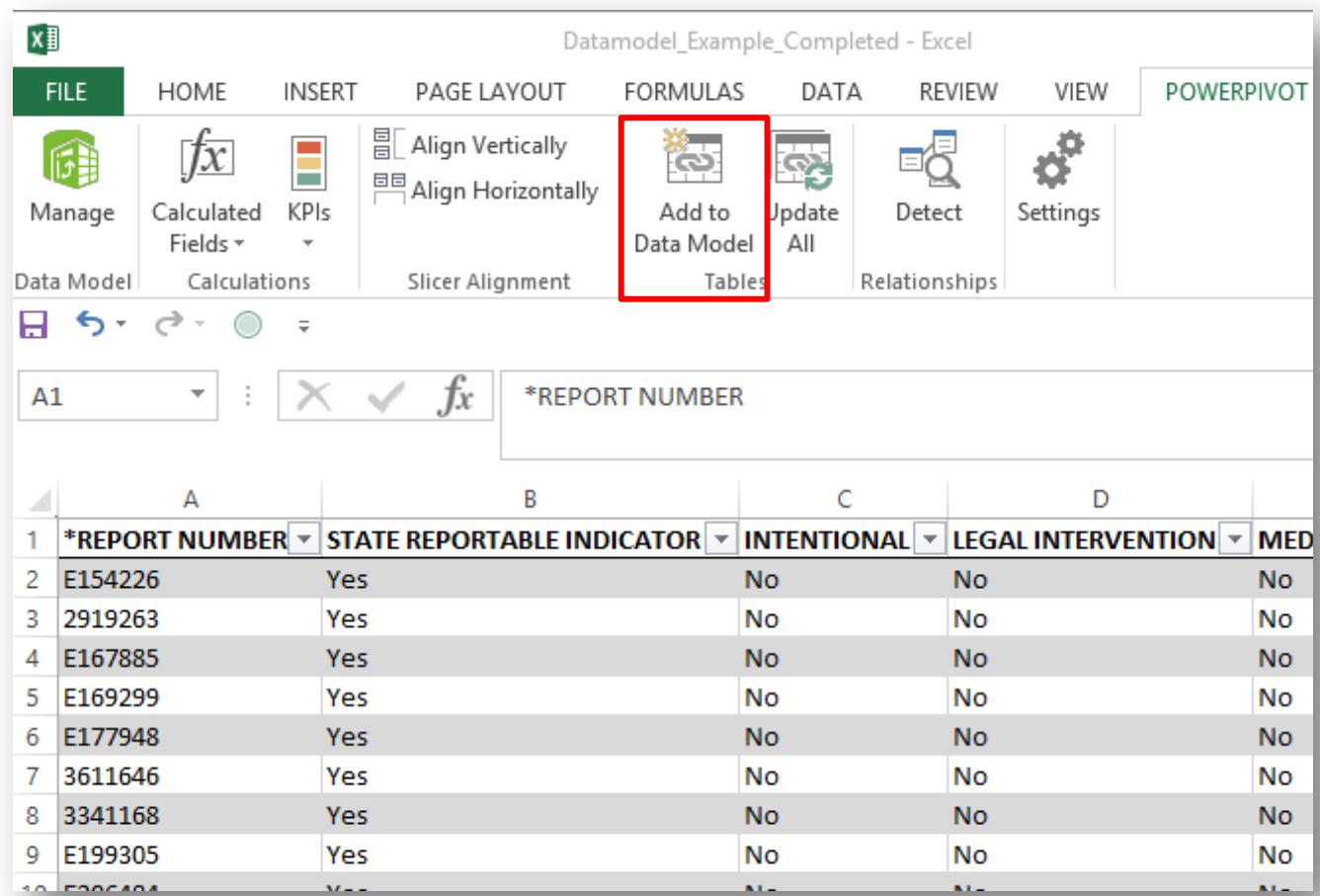
- Highlighting the data in each worksheet.
- Create tables by clicking the **Format as Table** button on the Home tab.

The screenshot shows a Microsoft Excel window titled "Datamodel\_Example\_Completed - Excel". The "HOME" tab is selected in the ribbon. A table is displayed with columns labeled "Z", "AA", and "AB". The data includes rows for various weather conditions and road surface types, such as "Clear or Partly Cloudy" (Dry, Daylight), "Raining" (Wet, Daylight), and "Overcast" (Wet, Daylight). The "AB" column contains the text "Daylight" for most rows. The "AA" column contains "Dry" for some rows and "Wet" for others. The "Z" column contains numerical values like 1130, 1131, etc. The "Format as Table" button in the ribbon is highlighted. The "Conditional Formatting" dropdown menu is open, showing three categories: "Light", "Medium", and "Dark", each displaying a grid of color patterns for styling the table.

Z	AA	AB	
1130	Clear or Partly Cloudy	Dry	Daylight
1131	Clear or Partly Cloudy	Dry	Daylight
1132	Raining	Wet	Daylight
1133	Raining	Wet	Daylight
1134	Raining	Wet	Daylight
1135	Raining	Dry	Dark-Street Lights
1136	Overcast	Wet	Daylight
1137	Raining	Wet	Daylight
1138			
1139			
1140			
1141			
1142			
1143			

# Data Models in Excel

- When both tables are created, click the **Add to Data Model** button on the **Power Pivot** tab.
- A workbook data model is automatically generated when tables are added.
- Note: Power Pivot is a COM Add-in, and will need to be enabled the first time you use it. We will go through the process in the exercise later.
- Next, define relationships...

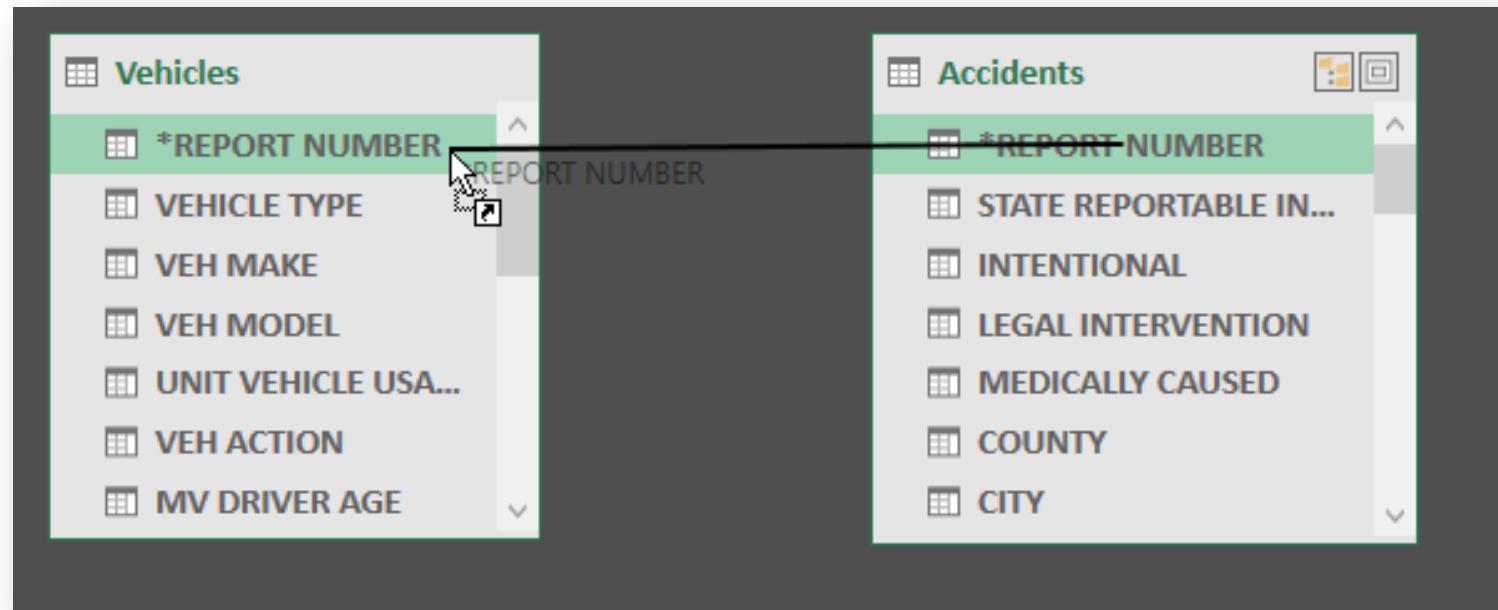


The screenshot shows the Microsoft Excel ribbon with the 'POWERPIVOT' tab selected. Below the ribbon, there are several toolbars and a data table. The 'Data Model' toolbar contains icons for 'Manage', 'Calculated Fields', 'KPIs', 'Align Vertically', 'Align Horizontally', 'Add to Data Model' (which is highlighted with a red box), 'Update All', 'Detect', and 'Settings'. The main area shows a table with columns labeled \*REPORT NUMBER, STATE REPORTABLE INDICATOR, INTENTIONAL, LEGAL INTERVENTION, and MED. The first row is a header, and the subsequent rows contain data points.

	A	B	C	D	E
1	*REPORT NUMBER	STATE REPORTABLE INDICATOR	INTENTIONAL	LEGAL INTERVENTION	MED
2	E154226	Yes	No	No	No
3	2919263	Yes	No	No	No
4	E167885	Yes	No	No	No
5	E169299	Yes	No	No	No
6	E177948	Yes	No	No	No
7	3611646	Yes	No	No	No
8	3341168	Yes	No	No	No
9	E199305	Yes	No	No	No
10	E206484	Yes	No	No	No

# Data Models in Excel

- Relationships can be defined in multiple ways.
- One way is to view the **Diagram View** in the Power Pivot window.
- Simply drag the join field from one table to the other as shown



# Data Models in Excel

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In Power Pivot, relationships are directional. This requires that, in at least one of the two tables, the joining field only contains unique values.

## What does this mean?

If you are trying to filter or aggregate a field in **table A** based on the values in **table B**, **table B** must have only unique values in the joining field. Example:

- If we are matching **A** and **B** by matching the values of a column named **ID\_number**, **B** must have only a single row for each unique value of **ID\_number**.

# Data Models in Excel

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## Why the directionality?

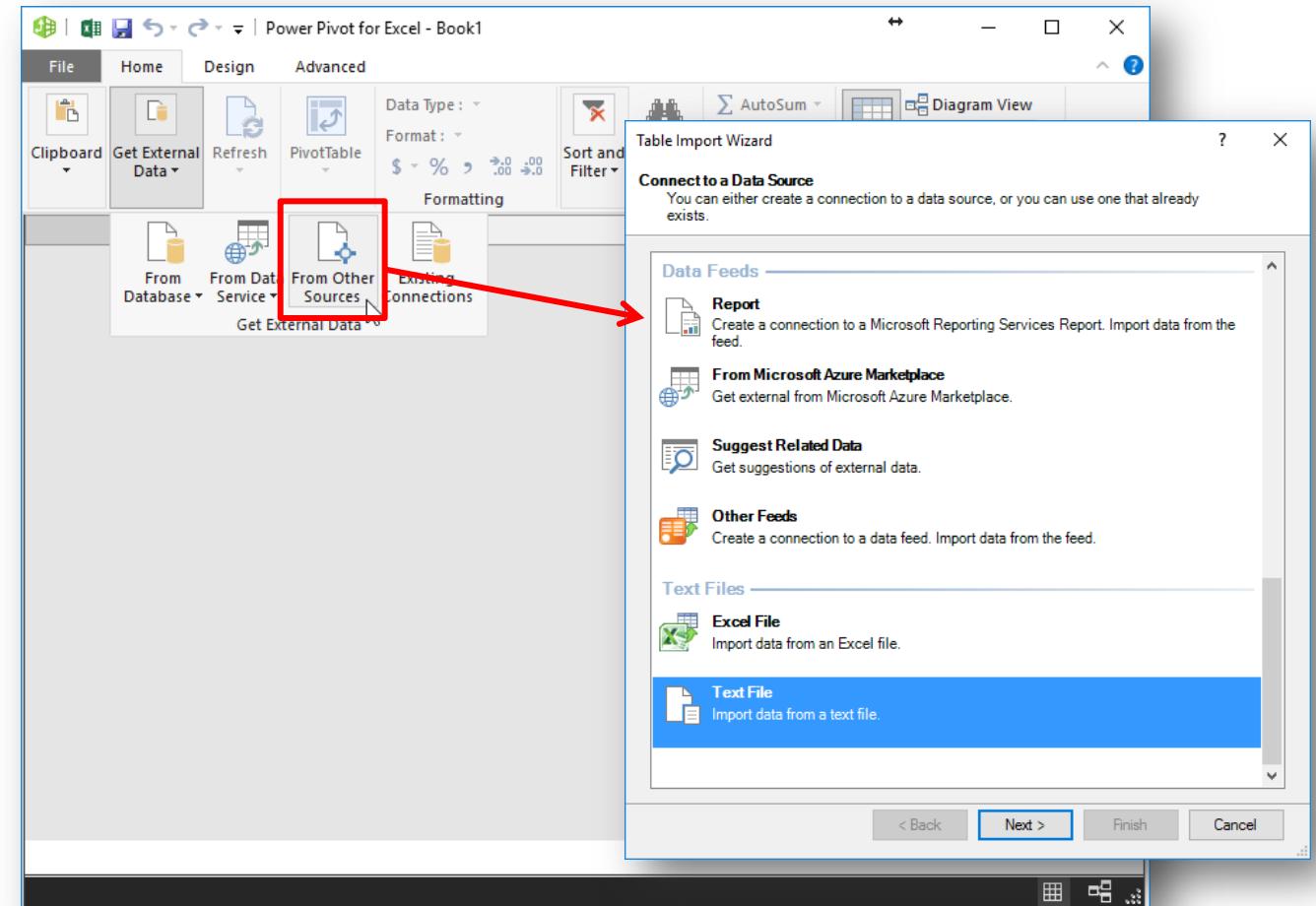
In relational databases, there are three types of relationships:

- **One to one** - Each row in one table may only be matched to a single row in another table, and vice versa
- **One to many** – Each row in table A may correspond to any number of rows in table B BUT: each row in table B can only be matched to a single row in table A
- **Many to many** – Any row in one table may be matched to any number of rows in the other, and vice versa. This is **not** supported in Power Pivot/Power View

Power Pivot and Power View work on relational concepts, but are greatly simplified compared to a true database management system

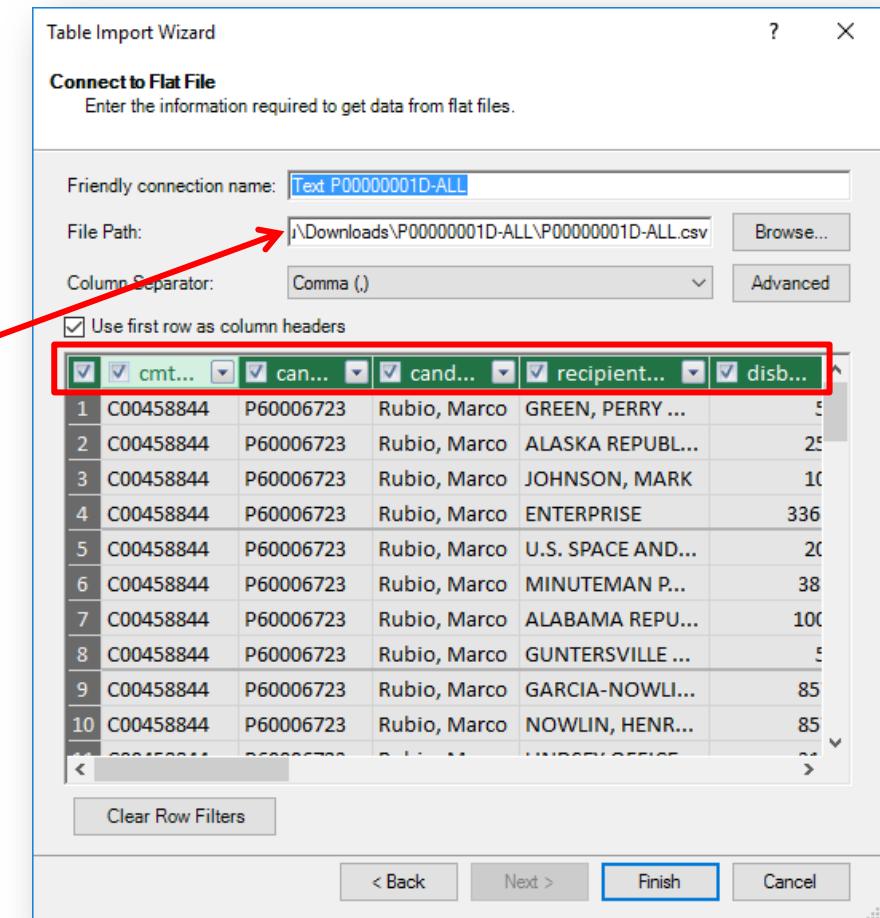
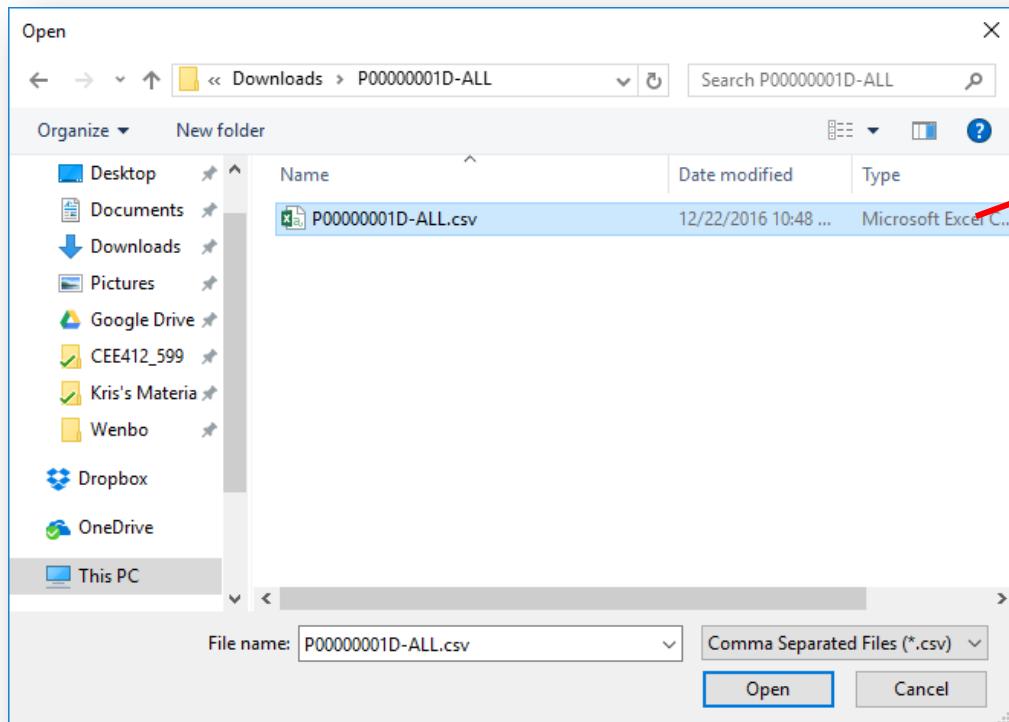
# Power Pivot Examples

- Got a giant text file that will not open in Excel?
- Need to take a look at the data?
- You can get data from external sources in Power Pivot
- For example, we import data from a text file in our local disk



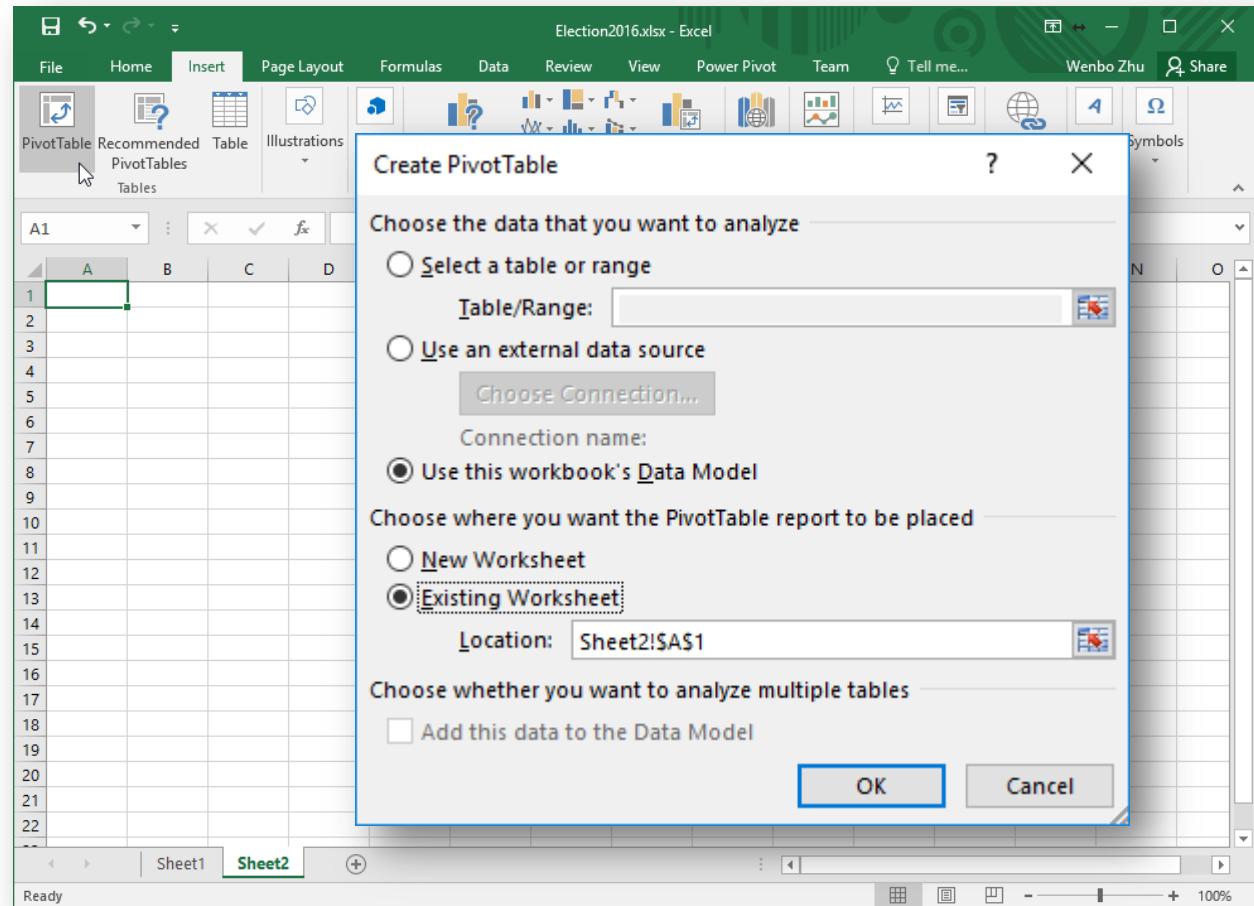
# Power Pivot Examples

- Find your text file, can be .csv, .txt, or .tab
- You can filter rows out before importing



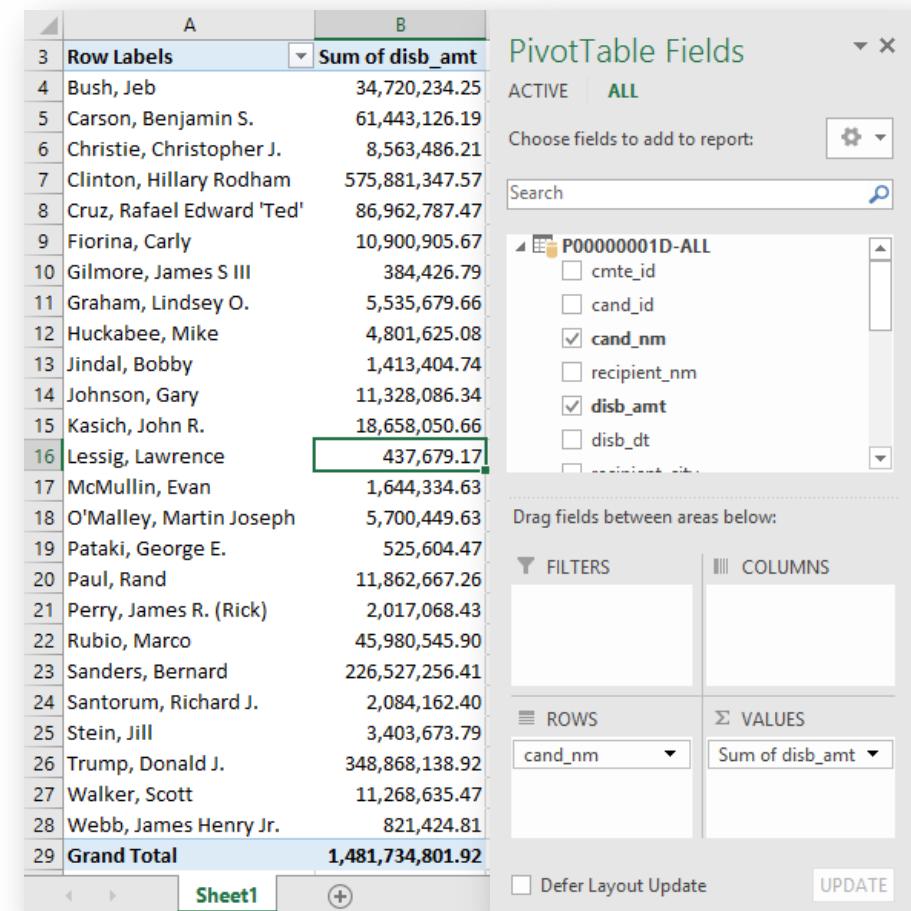
# Power Pivot Examples

- You can preview the data in the Power Pivot window, or create a pivot table to summarize the data.
- In a blank Excel worksheet, click **Pivot Table** under the **Insert** menu.
- Select **Use this workbook's Data Model** as the table has already been imported. Click **OK**.



# Power Pivot Examples

- Edit the pivot table to show the desired summary statistics.
- We will go into pivot tables in the exercise, this is just to show what is possible.
- My dataset contained spending data for all 2016 presidential candidates. The Pivot table summarizes total spending by candidate.
- You can also download the data from this website:  
<http://www.fec.gov/disclosurep/PDownload.do>
- This is a great way to view and summarize a dataset that is too large to open in Excel.



The screenshot shows a Microsoft Excel spreadsheet titled "Sheet1" containing a Power Pivot table. The table has two columns: "Row Labels" (Candidate Name) and "Sum of disb\_amt" (Total Spending). The data includes entries for Jeb Bush, Benjamin S. Carson, Christopher J. Christie, Hillary Rodham Clinton, Rafael Edward 'Ted' Cruz, Carly Fiorina, James S III Gilmore, Lindsey O. Graham, Mike Huckabee, Bobby Jindal, Gary Johnson, John R. Kasich, Lawrence Lessig, Evan McMullin, Martin Joseph O'Malley, George E. Pataki, Rand Paul, Rick Perry, Marco Rubio, Bernard Sanders, Richard J. Santorum, Jill Stein, Donald J. Trump, Scott Walker, James Henry Jr. Webb, and a Grand Total of 1,481,734,801.92. A green box highlights the value 437,679.17 for Lawrence Lessig. To the right of the table is the "PivotTable Fields" pane, which lists fields from the dataset: cmte\_id, cand\_id, cand\_nm (checked), recipient\_nm, disb\_amt (checked), and disb\_dt. The "ROWS" section is set to "cand\_nm" and the "VALUES" section is set to "Sum of disb\_amt".

A	B
3 Row Labels	Sum of disb_amt
4 Bush, Jeb	34,720,234.25
5 Carson, Benjamin S.	61,443,126.19
6 Christie, Christopher J.	8,563,486.21
7 Clinton, Hillary Rodham	575,881,347.57
8 Cruz, Rafael Edward 'Ted'	86,962,787.47
9 Fiorina, Carly	10,900,905.67
10 Gilmore, James S III	384,426.79
11 Graham, Lindsey O.	5,535,679.66
12 Huckabee, Mike	4,801,625.08
13 Jindal, Bobby	1,413,404.74
14 Johnson, Gary	11,328,086.34
15 Kasich, John R.	18,658,050.66
16 Lessig, Lawrence	437,679.17
17 McMullin, Evan	1,644,334.63
18 O'Malley, Martin Joseph	5,700,449.63
19 Pataki, George E.	525,604.47
20 Paul, Rand	11,862,667.26
21 Perry, James R. (Rick)	2,017,068.43
22 Rubio, Marco	45,980,545.90
23 Sanders, Bernard	226,527,256.41
24 Santorum, Richard J.	2,084,162.40
25 Stein, Jill	3,403,673.79
26 Trump, Donald J.	348,868,138.92
27 Walker, Scott	11,268,635.47
28 Webb, James Henry Jr.	821,424.81
29 Grand Total	1,481,734,801.92

# Power Pivot Examples

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Pivot Tables are a great way to summarize and perform simple descriptive analysis.

Each column in a dataset can be used in the following way, depending on the type and format of the data:

- **Filter – set a value or range of values to include in the summary table**
  - Example: date/month can often serve as a filter, to show only data corresponding to a given time range
- **Column/Row – Each unique field will correspond to a single column/row in the summary table**
  - Example: candidate names
  - This is similar to Column, depending on how you like the layout of the Pivot Table.
- **Value – The values to summarize, take the mean, variance, count, or other aggregation**
  - Example: sum of sales or average customer spending if we are looking at the sales data of a store.

# Power Pivot Examples

Going Straight Ahead	57 Male
Going Straight Ahead	Unknown
Changing Lanes	60 Male
Going Straight Ahead	60 Female
Slowing	18 Male
Going Straight Ahead	23 Male
Changing Lanes	69 Female
Other*	Unknown
Going Straight Ahead	33 Female
Other*	44 Male
Going Straight Ahead	32 Female
Making Left Turn	22 Female
Changing Lanes	Unknown
Going Straight Ahead	Unknown
Going Straight Ahead	30 Male
Going Straight Ahead	37 Male
Going Straight Ahead	53 Male
Making Left Turn	22 Male
Going Straight Ahead	58 Male
Going Straight Ahead	29 Female
Going Straight Ahead	21 Male
Backing	35 Female
Going Straight Ahead	51 Male
Making Left Turn	28 Female
Going Straight Ahead	24 Male
Going Straight Ahead	30 Male
Going Straight Ahead	20 Female
Going Straight Ahead	28 Male
Making U-Turn	46 Male
Going Straight Ahead	24 Male
Going Straight Ahead	29 Male
Going Straight Ahead	20 Male
Going Straight Ahead	27 Male
Slowing	34 Female
Going Straight Ahead	43 Male
Making Right Turn	84 Female
Making Left Turn	20 Male
Going Straight Ahead	39 Male
Going Straight Ahead	27 Male
Making Left Turn	37 Male
Going Straight Ahead	90 Male
Going Straight Ahead	25 Male
Going Straight Ahead	20 Male
Overtaking and Passing	46 Female
Going Straight Ahead	20 Male
Going Straight Ahead	48 Male
Going Straight Ahead	70 Female
Changing Lanes	22 Male
Going Straight Ahead	Male
Making Right Turn	24 Male
Backing	51 Male
Going Straight Ahead	19 Female
Going Straight Ahead	25 Male
Going Straight Ahead	47 Female
Making Left Turn	46 Female
Making Left Turn	21 Male
Changing Lanes	33 Female
Making Left Turn	36 Male
Making Right Turn	20 Male
Making Left Turn	19 Male

Filter

Use only  
the rows of  
interest

Going Straight Ahead	58 Male
Going Straight Ahead	29 Female
Going Straight Ahead	21 Male
Backing	35 Female
Going Straight Ahead	51 Male
Making Left Turn	28 Female
Going Straight Ahead	24 Male
Going Straight Ahead	30 Male
Going Straight Ahead	20 Female
Going Straight Ahead	28 Male
Making U-Turn	46 Male
Going Straight Ahead	24 Male
Going Straight Ahead	29 Male
Going Straight Ahead	20 Male
Going Straight Ahead	27 Male
Slowing	34 Female
Going Straight Ahead	43 Male
Making Right Turn	84 Female
Making Left Turn	20 Male
Going Straight Ahead	39 Male
Going Straight Ahead	27 Male
Making Left Turn	37 Male
Going Straight Ahead	90 Male
Going Straight Ahead	25 Male
Going Straight Ahead	20 Male
Going Straight Ahead	46 Female
Going Straight Ahead	20 Male
Going Straight Ahead	48 Male
Going Straight Ahead	70 Female
Changing Lanes	22 Male
Going Straight Ahead	Male
Making Right Turn	24 Male
Backing	51 Male
Going Straight Ahead	19 Female
Going Straight Ahead	25 Male
Going Straight Ahead	47 Female
Making Left Turn	46 Female
Making Left Turn	21 Male
Changing Lanes	33 Female
Making Left Turn	36 Male
Making Right Turn	20 Male
Making Left Turn	19 Male

Rows/Columns

Grouping  
operation

Making Left Turn	46 Female
Making Left Turn	21 Male
Changing Lanes	33 Female
Making Left Turn	36 Male
Making Right Turn	20 Male
Making Left Turn	19 Male

Going Straight Ahead	20 Male
Going Straight Ahead	48 Male
Going Straight Ahead	70 Female
Changing Lanes	22 Male
Going Straight Ahead	Male
Making Right Turn	24 Male
... ...	...

Going Straight Ahead	25 Male
Going Straight Ahead	20 Male
Overtaking and Passing	46 Female
Going Straight Ahead	20 Male
Going Straight Ahead	48 Male
Going Straight Ahead	70 Female

Going Straight Ahead	24 Male
Going Straight Ahead	29 Male
Going Straight Ahead	20 Male
Going Straight Ahead	27 Male
Slowing	34 Female
Going Straight Ahead	43 Male

Going Straight Ahead	27 Male
Slowing	34 Female
Going Straight Ahead	43 Male
Making Right Turn	84 Female
Making Left Turn	20 Male
Going Straight Ahead	39 Male

Going Straight Ahead	29 Male
Going Straight Ahead	20 Male
Going Straight Ahead	27 Male
Slowing	34 Female
Going Straight Ahead	43 Male
Making Right Turn	84 Female
... ...	...

Values

Within group  
aggregation

# Power Pivot Examples

- Still on the candidate expenditure data, here I have added the state field into the **COLUMNS** area.
- The result table is a summary of candidate expenditures in different states, with candidate names on rows and states on columns (shown on next slide).
- Note that you can add multiple fields into COLUMNS or ROWS area to aggregate your results at different levels. But this may also produce a Pivot Table that is not readily interpretable.

The screenshot shows the Power Pivot ribbon interface. At the top, there is a list of fields: **disb\_amt** (checked), **disb\_dt**, **recipient\_city**, **recipient\_st** (checked), **recipient\_zip**, **disb\_desc**, and **memo\_cd**. Below this is a section labeled "Drag fields between areas below:" with four main sections: **FILTERS**, **COLUMNS**, **ROWS**, and **VALUES**. In the **COLUMNS** section, the field **recipient\_st** is selected. In the **ROWS** section, the field **cand\_nm** is selected. In the **VALUES** section, the expression **Sum of disb\_amt** is selected. At the bottom right of the ribbon are two buttons: **Defer Layout Update** and **UPDATE**.

# 2016 Presidential Candidate Expenditure by State

Sum of disb_amt	Column Labels														
	Row Labels	AB	AK	AL	AM	AR	AS	AU	AZ	BC	CA	CO	CT	D.	DC
Bush, Jeb			3,000.00	270,775.60		44,284.14			169,144.14		1,808,473.52	18,470.91	100,279.29		1,927,765.14
Carson, Benjamin S.		760.00	3,000.00	2,365,407.36	2,886.75	35,094.21			90,377.28	14,491.57	1,009,471.71	31,484.98	7,265.49		1,383,116.62
Christie, Christopher J.			2,840.70	10,000.00		25,000.00			17,739.26		909,750.68	25,507.29	12,145.97		174,978.30
Clinton, Hillary Rodham			25,974.93	2,592,226.80		16,162,879.58			222,938.23	4,432.96	16,373,746.63	5,040,136.07	10,966,897.52	2,500.00	352,970,213.18
Cruz, Rafael Edward 'Ted'			3,454.93	21,953.12	2,506.35	121,309.24		97.00	66,982.77	568.10	7,440,767.64	127,907.08	11,687.79		1,053,306.58
Fiorina, Carly			3,044.00	60,299.84		25,000.00			1,101,630.67		495,236.84	151,433.68	26,333.55		2,189,378.68
Gilmore, James S III														52,749.04	
Graham, Lindsey O.				10,000.00		27,079.13			69,136.99		290,745.71	4,258.73	17,970.62		365,306.93
Huckabee, Mike			2,500.00	20,923.56		1,364,877.18			10,356.52		242,470.22	6,897.73	978.67		16,136.85
Jindal, Bobby				10,000.00		26,009.88			3,292.00		4,531.33	3,468.15			37,882.13
Johnson, Gary		8,521.30	8,417.98						273,025.53		1,688,357.82	50,508.91	8,137.82		127,061.06
Kasich, John R.		3,000.00	21,450.95		50,560.05			101,001.06		1,423,971.26	13,621.77	23,471.68		682,326.74	
Lessig, Lawrence				7,500.00						146,552.10				101,001.06	
McMullin, Evan									12,324.00		268,346.37	48,520.00	806.02		117,835.84
O'Malley, Martin Joseph		1,000.00	3,985.53		3,064.71			18,780.62		138,107.33	1,238.76	33,818.55		1,302,277.62	
Pataki, George E.										7,456.64				5,822.50	
Paul, Rand		3,960.00	25,364.98		32,206.26			47,274.83		528,226.67	17,560.00	7,791.57		514,982.23	
Perry, James R. (Rick)									4,689.06		150,114.10	7,105.04	61,602.92		6,696.48
Rubio, Marco		4,000.00	20,696.09		158,905.54			330,097.89		1,415,077.92	141,988.93	23,711.79		6,783,446.97	
Sanders, Bernard		77,705.20	218,911.92		193,350.55	2,500.00		735,197.23		10,634,309.55	1,003,969.27	195,343.61		51,816,796.03	
Santorum, Richard J.		2,500.00	26,113.87		30,750.00			7,293.39		154,568.67	7,373.49	26,811.18		55,883.53	
Stein, Jill		11,710.00	2,415.03					66,639.30		760,665.41	20,488.10	3,805.09		17,450.00	
Trump, Donald J.		19,563.51	424,299.72		157,865.77			3,347,969.35		8,902,950.10	2,752,175.08	1,071,862.37		6,884,637.09	
Walker, Scott			810.60		568.04			44,248.02		262,649.90	18,315.48	14,368.17		489,923.94	
Webb, James Henry Jr.								5,072.02		118,356.93				174,822.26	
<b>Grand Total</b>		<b>760.00</b>	<b>175,774.57</b>	<b>6,121,552.95</b>	<b>5,393.10</b>	<b>18,458,804.28</b>	<b>2,500.00</b>	<b>97.00</b>	<b>6,745,210.16</b>	<b>19,492.63</b>	<b>55,174,905.05</b>	<b>9,492,429.45</b>	<b>12,615,089.67</b>	<b>2,500.00</b>	<b>429,251,796.80</b>

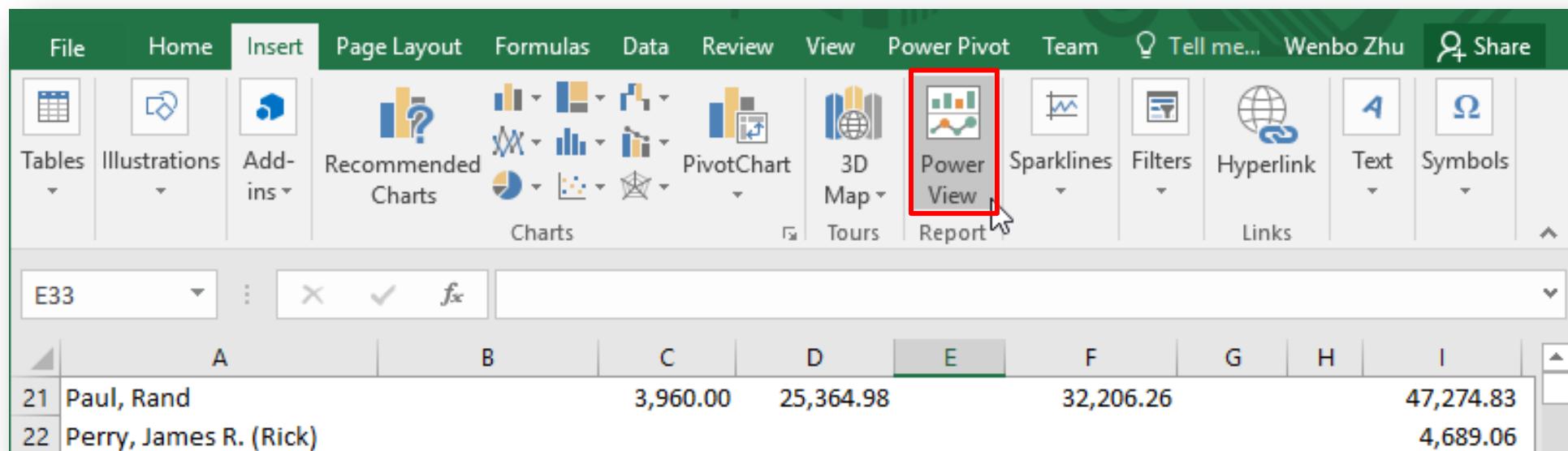
# What is Power View?

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- Microsoft’s interactive “data exploration, visualization, and presentation experience” –Microsoft.
- Tools for investigating and visualizing data.
- Can automate many of the data aggregation tasks, and has visualization capabilities beyond that of Power Pivot.
- Not the same as Power Pivot, but the two tools are closely related in Excel (Power View is based on data models).
- Browser-based, a Power View report is not an excel worksheet.
- **Important note: save your work frequently in Power View.**

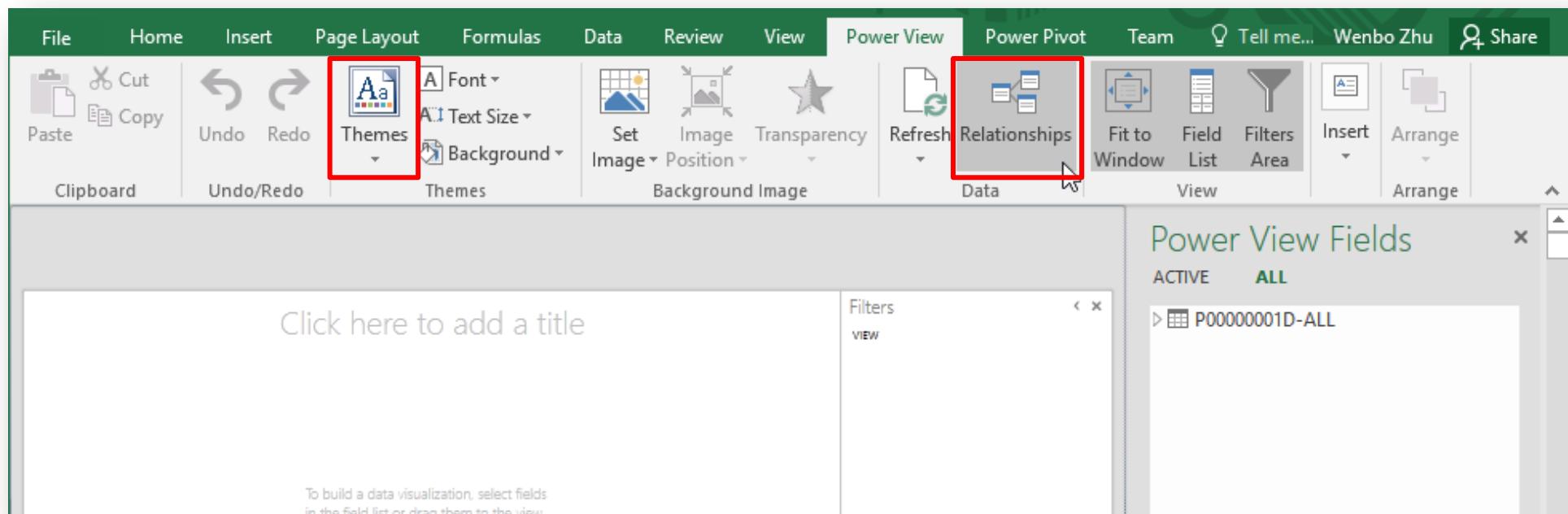
# Getting Started With Power View

- Once I have created a data model, I can click **Insert → Power View Report** to get started with Power View
- Note: if you have not used Power View before, you will be prompted to enable it as an add on, and possibly install Silverlight if you have not already done so.



# Getting Started With Power View

- I can manage relationships within Power View, and choose visual themes for my Power View Report



# Getting Started With Power View

- You will note that, as with Pivot Tables, you can add fields from multiple tables in your data model
- Power View tried to guess what type of data is in each column (numeric, categorical, geospatial, etc.).
- You can customize the aggregation that is applied to each field after it is added.
- Once data has been added, you can insert various type of plots which will replace the data table.

The screenshot shows a Microsoft Excel interface with the 'Power View' ribbon tab selected. A red box highlights the 'Data' tab in the ribbon. Another red box highlights the 'Tiles' icon under the 'Table' section of the Data tab. A red arrow points from the text 'Choose which fields to include in the report' to the 'Power View Fields' pane. The 'Power View Fields' pane is divided into sections: 'ACTIVE' (checkboxes for \*REPORT NUMBER, Σ MV DRIVER AGE, MV DRIVER CONT CIRC 1, MV DRIVER EJECTION, MV DRIVER GENDER, MV DRIVER INJURY TYPE, MV DRIVER MISC ACTION 1, MV DRIVER RESTRAINT, UNIT MV DRIVER SEQ 1), 'Drag fields between areas below:', 'FIELD BY' (dropdown for \*REPORT NUMBER), and 'FIELDS' (dropdowns for VEHICLE TYPE, VEH MAKE, VEH MODEL, UNIT VEHICLE USAGE, VEH ACTION). A red box highlights the 'FIELDS' dropdown for \*REPORT NUMBER. The main area shows a 'Power View Report' with a table titled 'Click here to add a title'. The table has columns: REPORT NUMBER, VEHICLE TYPE, VEH MAKE, VEH MODEL, UNIT VEHICLE USAGE, VEH ACTION, and VIEW. The 'VIEW' column shows 'TABLE' and 'FILTERS'. A red box highlights the table area. To the right of the table is a 'Filter area' with a 'Filters' button and a 'VIEW | TABLE' switch. The status bar at the bottom shows 'Ready'.

Choose which fields to include in the report

Power View Fields

ACTIVE ALL

Vehicles

- \*REPORT NUMBER
- Σ MV DRIVER AGE
- MV DRIVER CONT CIRC 1
- MV DRIVER EJECTION
- MV DRIVER GENDER
- MV DRIVER INJURY TYPE
- MV DRIVER MISC ACTION 1
- MV DRIVER RESTRAINT
- UNIT MV DRIVER SEQ 1

Drag fields between areas below:

FIELD BY

FIELDS

- \*REPORT NUMBER
- VEHICLE TYPE
- VEH MAKE
- VEH MODEL
- UNIT VEHICLE USAGE
- VEH ACTION

Power View Report

Filter area

Click here to add a title

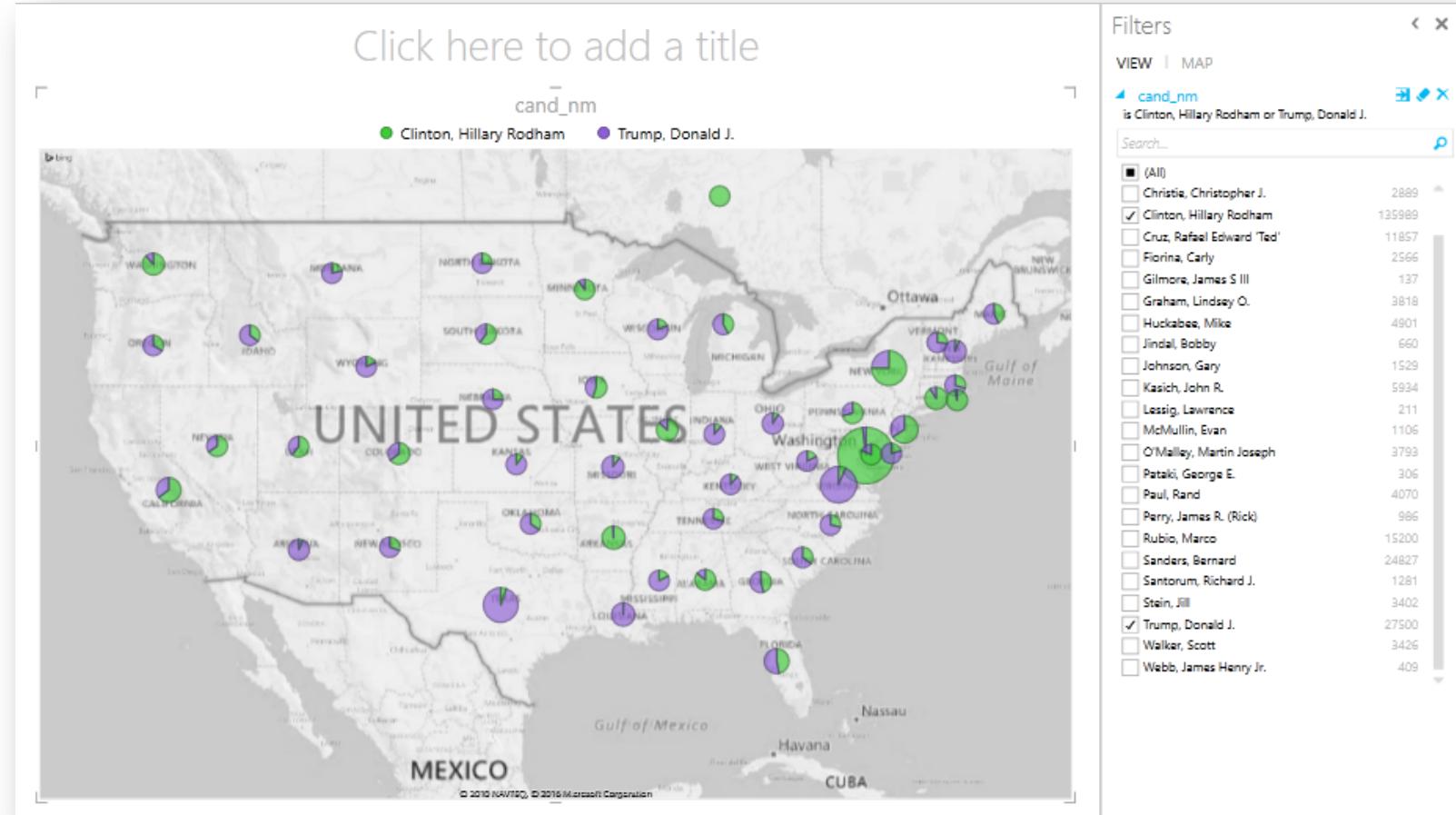
REPORT NUMBER	VEHICLE TYPE	VEH MAKE	VEH MODEL	UNIT VEHICLE USAGE	VEH ACTION
E146514	Passenger Car	FORD	TAURUS SE	unknown	SIn
E146514	Passenger Car	SUZUKI	FORENZA	unknown	Gt
E146776	Passenger Car	TOYOTA	COROLLA CE/LE/S	unknown	Gt
E146776	Pickup/Panel Truck or Vanette under 10,000 lb	TOYOTA	4RUNNER SR5/SPORT EDITION	Van/Box Under 10,000 lb	SIn
E146995	Passenger Car	CHEVROLET	IMALA LS	unknown	SIn
E146995	Truck Tractor & Semi-Trailer	FREIGHTLINER SEMI	unknown	unknown	Gt
E147009	Passenger Car	HONDA	CIVIC LX	unknown	Gt
E147009	Passenger Car	MAZDA	626 DX/LX	unknown	SIn
E147105	Passenger Car	TOYOTA	COROLLA CE/LE/S	unknown	SIn
E147105	Pickup/Panel Truck or Vanette under 10,000 lb	unknown	unknown	unknown	Gt
E147131	Passenger Car	HYUNDAI	ELAN L	unknown	M
E147131	Pickup/Panel Truck or Vanette under 10,000 lb	GMC	SIERRA K2500 HD	Trailer - Utility	Gt
E147161	Not Stated	unknown	unknown	Trailer - Utility	CH
E147161	Passenger Car	MERCEDES-BENZ	C280	unknown	Gt
E147221	Passenger Car	HONDA	CIVIC EX	unknown	Gt

Accidents Vehicles Power View1

Ready

# Getting Started With Power View

- As an example graph, here I created a map showing the candidate spending as bar chart in each state.
- I also filtered candidates names to only show the data with Clinton and Trump.



# Getting Started With Power View

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- When completing the exercises, do some exploring and see what you can create.
- The interface is pretty intuitive for Excel users
- Note: if you have difficulty working with the data modeling tools beyond the exercises, don't sweat it. We have not yet covered the details of how/why/when data models work.

# Excel Summary

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Excel is not a great solution for data management or complex analysis

It is a great tool for basic analysis, and Excel 2016 has expanded data management functionality

The real point(s):

- Introduced topics of data models, Power Pivot, and Power View.
- We showed how to do some things in Excel that are relatively new.
- There are much more powerful tools available to do these things and many more, which we will start talking about next lecture.