



*Value Through Professional
Asset Management*

2017 National Education Seminar

YOUR EDUCATIONAL TRACK TO SUCCESS

July 31 - August 3

JW MARRIOTT DESERT RIDGE RESORT & SPA | PHOENIX, AZ



Excel Skills for Fleet Managers

Part 1:
Data Analysis Process, Importing, Filtering, and
Summarizing Data

Presented by:
Scott Conlon, Mercury Associates

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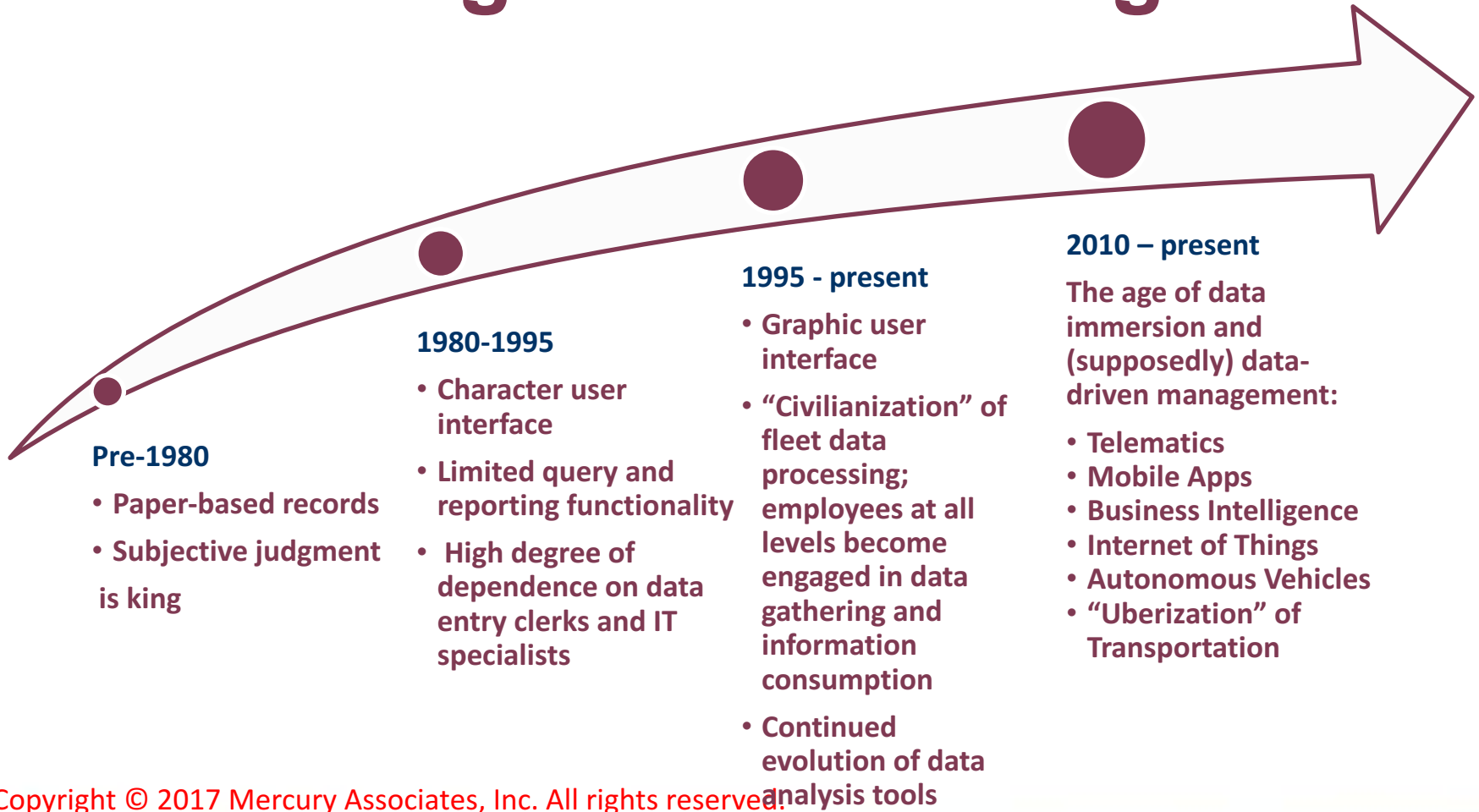
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Value Through Professional
Asset Management

The Evolution of Data Processing in Fleet Management



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The Data Analysis Process

- Ask a question
- Identify data sources
- Conduct exploratory data analysis
- Clean the data
- Select appropriate analytical technique(s)
- Conduct analysis
- Challenge your results
- Document your steps and present your work

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Ask a Question

- Typical questions that fleet managers try to answer through data are:
- Is my fleet the right size?
- Do I have the right types of vehicles?
- Am I replacing vehicles on time?
- Do I have the right size staff, garage, or parts inventory?
- Am I accurately capturing my costs (i.e., am I competitive with the local market)?

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Data Sources

- Fleet and fuel card transactional data
- Fuel management systems
- Telematics devices
- Motor pool management and key control systems
- Asset records
- Work orders
- Fleet management information systems

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Key Issues with Data Sources

- Each data source can present its own types of inaccuracies:
 - Manual meter entries at the pump
 - Improperly calculated operating rates
 - Lack of segregation between dissimilar costs
- Any time humans are involved in data collection, there is more opportunity for error
- Poor data integrity can skew your results and undercut the story that you are trying to tell about your fleet

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Exploratory Data Analysis

- Import the data into a spreadsheet and start calculating basic metrics
 - Cost per mile
 - Annual miles per vehicle
- Normalize Data
 - Identify outliers

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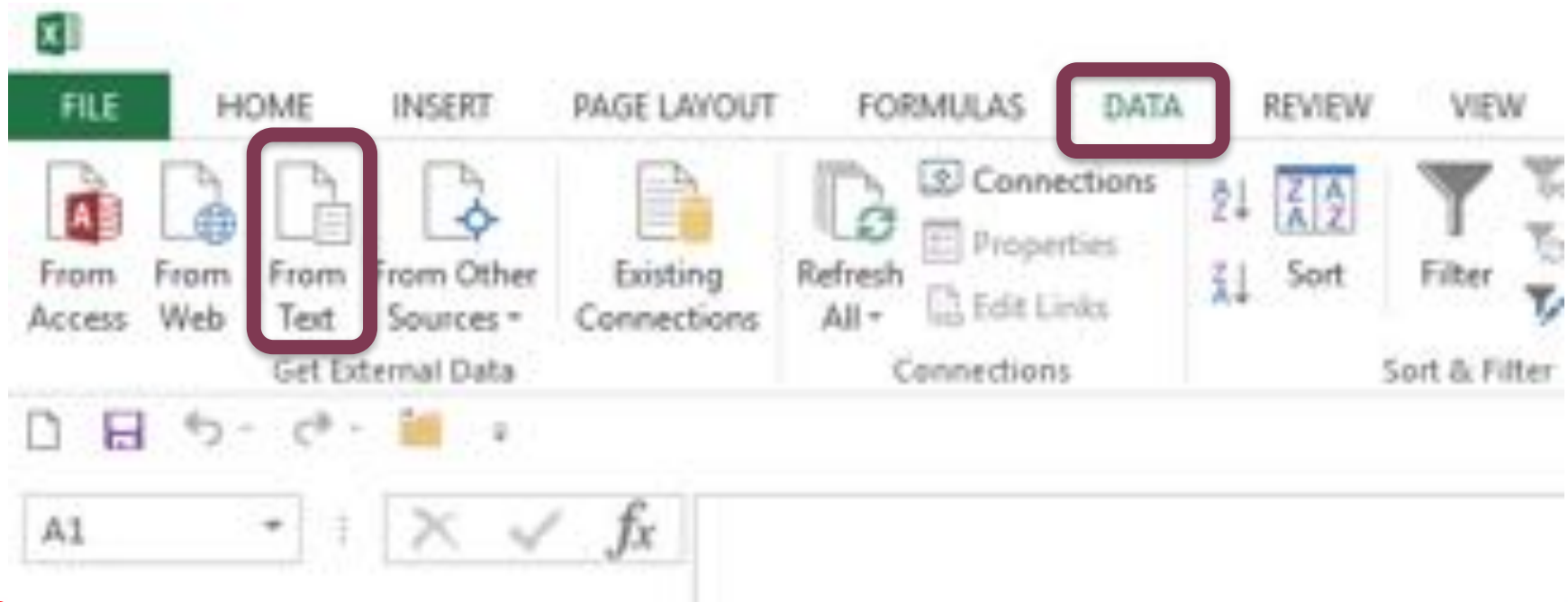
Text Import Wizard

- Fleet card or FMIS data is often exported in comma separated value (*.csv) format.
- This data can be imported and formatted using the Text Import Wizard

```
Stock Number,Account Name,Transaction Date,Vehicle Description,Make,Model,Year,Product,Product Descrip
X375562,Wisconsin,42258, ,CHEVROLET,SILVERADO,2015,ETH,Unleaded Ethanol (10% blend),27.49,GA,2.47,67.1
X375562,Wisconsin,42276, ,CHEVROLET,SILVERADO,2015,UML,Unleaded 1,22.86,GA,2.39,54.62,,,,,54.62,-7.52,1
X375561,Wisconsin,42256, ,FORD,EXPLORER,2016,E85,E-85,10.9,GA,2.1,22.87,,,,,22.87,-3.59,0,19.28,-1.99,1
X375561,Wisconsin,42256, ,FORD,EXPLORER,2016,WASH,Car Wash,1,EA,8,,8,,8,8,,0,8,0,54720,0,Service,588,
X375561,Wisconsin,42234, ,FORD,EXPLORER,2016,ETH,Unleaded Ethanol (10% blend),14.52,GA,2.85,41.37,,,,,
X375561,Wisconsin,42247, ,FORD,EXPLORER,2016,UML,Unleaded 1,16.22,GA,2.6,42.15,,,,,42.15,-5.33,0,36.82
X375560,Wisconsin,42248, ,FORD,EXPLORER,2016,ETH,Unleaded Ethanol (10% blend),14.89,GA,2.48,36.91,,,,,
X375560,Wisconsin,42265, ,FORD,EXPLORER,2016,ETH,Unleaded Ethanol (10% blend),13.34,GA,2.4,32.01,,,,,3.
X375559,Wisconsin,42258, ,CHEVROLET,SILVERADO,2015,ETH,Unleaded Ethanol (10% blend),26.63,GA,2.47,65.
X374875,Mississippi,42261, ,FORD,F150,2011,UN+,Unleaded 2,27.42,GA,2.08,57.01,,,,,57.01,,0,57.01,-6.5,
X374875,Mississippi,42236, ,FORD,F150,2011,UN+,Unleaded 2,28.5,GA,2.44,69.5,,,,,69.5,,0,69.5,-6.75,394.
X374874,Mississippi,42230, ,FORD,ESCAPE HYBRID,2009,UML,Unleaded 1,12.72,GA,2.24,28.5,,,,,28.5,-0.69,0
X374874,Mississippi,42269, ,FORD,ESCAPE HYBRID,2009,UML,Unleaded 1,10.26,GA,1.95,20,,,,,20,-0.55,0,19.
X374874,Mississippi,42249, ,FORD,ESCAPE HYBRID,2009,UML,Unleaded 1,12.14,GA,2.06,25,,,,,25,-0.66,0,24.
```

Text Import Wizard

- To open, from a blank Excel document, click on **Data > From Text**

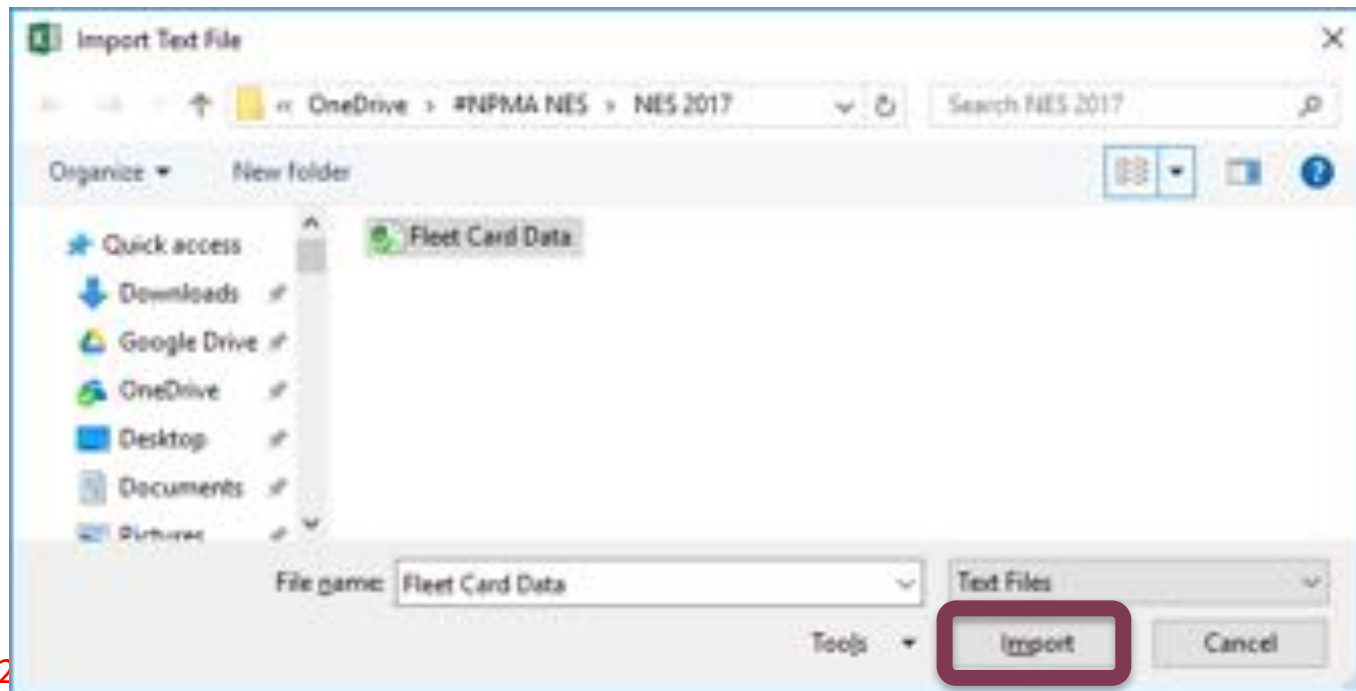


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Text Import Wizard

- Navigate to your file, select it, then click **Import**



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Text Import Wizard - Step 1 of 3

The Text Wizard has determined that your data is Fixed Width.
If this is correct, choose Next, or choose the data type that best describes your data.

Original data type

Choose the file type that best describes your data:

Delimited - Characters such as commas or tabs separate each field.

Fixed width - Fields are aligned in columns with spaces between each field.

Start import at row: 1 File origin: 437: OEM United States

My data has headers.

Preview of file C:\Users\MERCURY\OneDrive\#NPMA NES\NES 2017\Fleet Card Data.csv

1	Stock Number	Account Name	Transaction Date	Vehicle Description	Make	Model
2	E375542	Wisconsin	4/25/16	CHEVROLET, SILVERADO, 2016, ETH, Unleaded Ethanol		
3	E375542	Wisconsin	4/27/16	CHEVROLET, SILVERADO, 2016, UHL, Unleaded 1, 22.86, G		
4	E375541	Wisconsin	4/25/16	FORD, EXPLORER, 2016, E05, E-95, 10.9, GA, 2.1, 22.87, .		
5	E375541	Wisconsin	4/25/16	FORD, EXPLORER, 2016, WASH, Car Wash, 1, EA, 0, . 0, . 0, 0		

Cancel Next > Finish

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Text Import Wizard - Step 2 of 3

This screen lets you set the delimiters your data contains. You can see how your text is affected in the preview below.

Delimiters

- Tab
- Semicolon
- Comma
- Space
- Other:

Treat consecutive spaces as one space

Text qualifier:

Data preview

Stock Number	Account Name	Transaction Date	Vehicle Description	Make	Mo	A
E376642	Misconsin	42268		CHEVROLET	91	
E376642	Misconsin	42276		CHEVROLET	91	
E376641	Misconsin	42266		FORD	91	
E376641	Misconsin	42266		FORD	91	

Buttons: Cancel, < Back, Next >, Finish

A quick note on dates:
Excel stores dates as serial numbers, but displays them in MDY format. **Date Values** start at 0 for 1/1/1900, and increase sequentially. The numbers below are **Date Values**

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Text Import Wizard - Step 3 of 3

This screen lets you select each column and set the Data Format.

Column data format:

General

Text

Date: MDY

Do not import column (skip)

'General' converts numeric values to numbers, date values to dates, and all remaining values to text.

Advanced...

Make sure **Date Values** are left as **General**; only select **Date** format if you see the actual date in the **Data preview**. Otherwise, "42276" turns into 4/22/76 instead of September 29, 2015

Data preview

General	General	General	General	General	De
Book Number	Account Name	Transaction Date	Vehicle Description	Make	Mo
E376642	Wisconsin	42276		CHEVROLET	91
E376642	Wisconsin	42276		CHEVROLET	91
E376641	Wisconsin	42256		FORD	91
E376641	Wisconsin	42256		FORD	91

Cancel < Back Finish

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Text Import Wizard - Step 3 of 3

This screen lets you select each column and set the Data Format.

Column data format:

- General
- Text
- Date: MDY
- Do not import column (skip)

'General' converts numeric values to numbers, date values to dates, and all remaining values to text.

Advanced...

Data preview

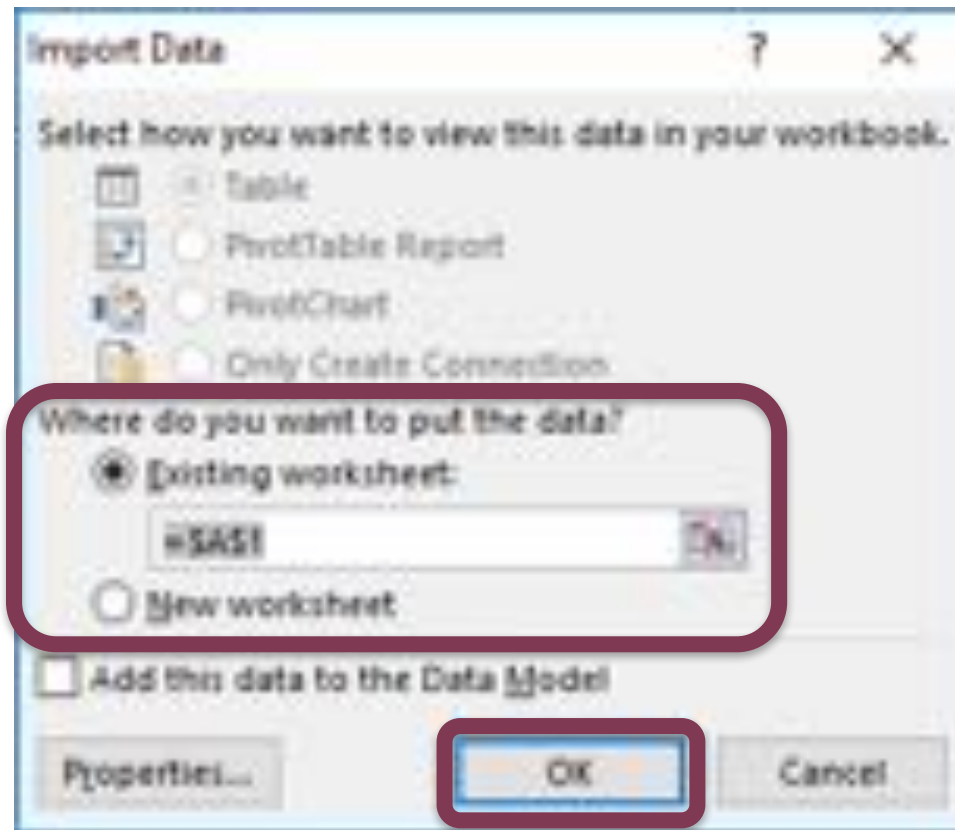
General	General	General	General	General	Text
Gross Cost	Exempt Tax	Discount	Net Cost	Reported Tax	Vehicle Usage Exp
67.87	-9.04	0	58.83	-5.03	13717
64.42	-7.52	0	47.1	-4.18	13717
22.87	-3.55	0	19.29	-1.55	14720
0		0	0	0	14720

Buttons: Cancel, < Back, Finish

Make sure ZIP codes are formatted as text to avoid losing leading zeroes



One last step...



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The Results

	A	B	C	D	E	F
1	Stock Number	Account Name	Transaction Date	Vehicle Description	Make	Model
2	X375562	Wisconsin	9/11/2015		CHEVROLET	SILVERADO
3	X375562	Wisconsin	9/29/2015		CHEVROLET	SILVERADO
4	X375561	Wisconsin	9/9/2015		FORD	EXPLORER
5	X375561	Wisconsin	9/9/2015		FORD	EXPLORER
6	X375561	Wisconsin	8/18/2015		FORD	EXPLORER
7	X375561	Wisconsin	8/31/2015		FORD	EXPLORER
8	X375560	Wisconsin	9/1/2015		FORD	EXPLORER
9	X375560	Wisconsin	9/18/2015		FORD	EXPLORER
10	X375559	Wisconsin	9/11/2015		CHEVROLET	SILVERADO
11	X374875	Mississippi	9/14/2015		FORD	F150
12	X374875	Mississippi	8/20/2015		FORD	F150
13	X374874	Mississippi	8/14/2015		FORD	ESCAPE HYBRID
14	X374874	Mississippi	9/22/2015		FORD	ESCAPE HYBRID
15	X374874	Mississippi	9/2/2015		FORD	ESCAPE HYBRID
16	X374873	Mississippi	9/17/2015	Pickup	Ford	f150
17	X374873	Mississippi	9/22/2015	Pickup	Ford	f150
18	X374873	Mississippi	9/2/2015	Pickup	Ford	f150

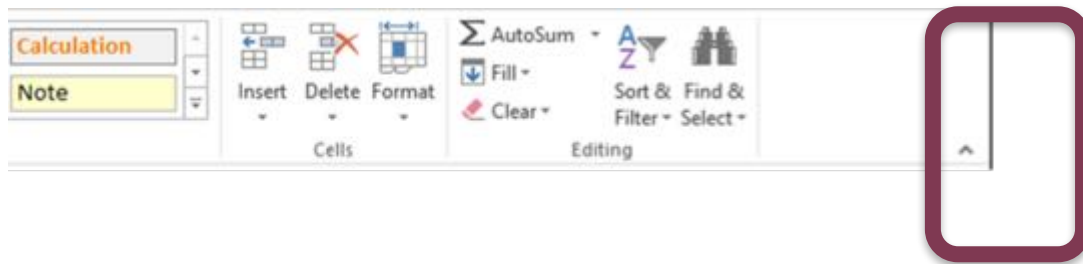
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Filtering Data

Used to narrow your focus based on the contents of a column (e.g. to show only E85 fuel costs, etc.)

- Click on **Home > Sort & Filter > Filter**



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A	B	C	D	E	
Stock Num	Account Name	Transaction Date	Vehicle Description	Make	
		9/11/2015		CHEVROLET	
		9/29/2015		CHEVROLET	
		9/9/2015		FORD	
		9/9/2015		FORD	
		8/18/2015		FORD	
		8/31/2015		FORD	
		9/1/2015		FORD	
		9/18/2015		FORD	
		9/11/2015		CHEVROLET	
		9/14/2015		FORD	
		8/20/2015		FORD	
		8/14/2015		FORD	
		9/22/2015		FORD	
		9/2/2015		FORD	
		9/17/2015	Pickup	Ford	
		9/22/2015	Pickup	Ford	
		9/2/2015	Pickup	Ford	
		9/22/2015	Pickup	Ford	
		9/23/2015	Pickup	Ford	
		9/29/2015	Pickup	Ford	
22	X374872	Mississippi	8/14/2015	Pickup	Ford
23	X374872	Mississippi	9/16/2015	Pickup	Ford

- (Select All)
- Alabama
- Alaska
- Arizona
- Arkansas
- California
- Colorado
- Connecticut
- Delaware
- Florida

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A	B	C	D	E
1	Stock Num	Account Name	Transaction Date	Vehicle Description
2	X37556	Sort Oldest to Newest		CHEVROLET
3	X37556	Sort Newest to Oldest		CHEVROLET
4	X37556	Sort by Color		
5	X37556	Clear Filter From T		
6	X37556	Filter by Color		
8	X37556	Date Filters		
9	X37556			FORD
10	X37555			FORD
11	X37487			CHEVROLET
12	X37487			FORD
13	X37487			FORD
14	X37487			FORD
15	X37487			FORD
16	X37487			FORD
17	X37487			Ford
18	X37487			Ford
19	X37487			Ford
20	X37487			Ford
21	X37487			Ford
22	X374872	Mississippi	8/14/2015	Ford
23	X374872	Mississippi	9/16/2015	Ford

Filtering options change depending on the data being filtered, be it numbers, text, dates, etc.

Search (All)

- (Select All)
- 2015
 - January
 - 02
 - 03
 - 04
 - 05
 - 06
 - 07
 - 08
 - 09
 - 10
 - 11
 - 12

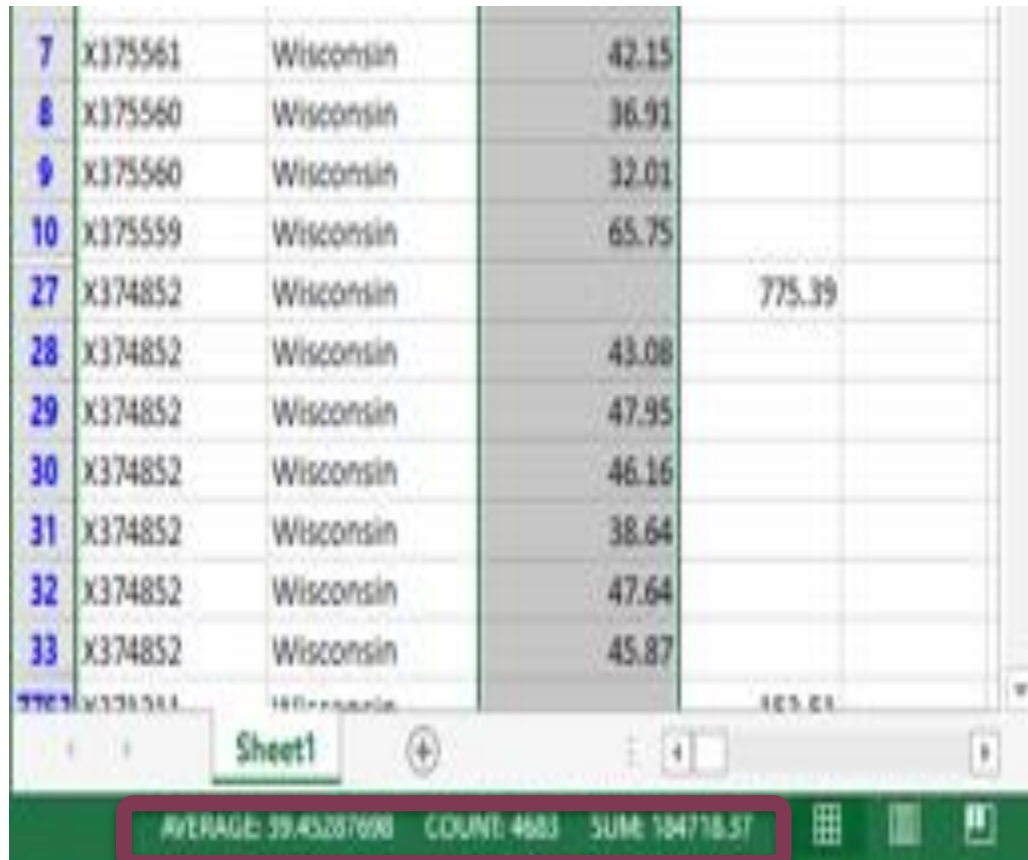
OK Cancel

- Equals...
- Before...
- After...
- Between...
- Tomorrow
- Today
- Yesterday
- Next Week
- This Week
- Last Week
- Next Month
- This Month
- Last Month

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Find Average, Count, & Sums



The image shows a screenshot of an Excel spreadsheet. The spreadsheet contains a list of scores for Wisconsin. The first column shows row numbers (7-33), the second column shows IDs (X375561, X375560, X375560, X375559, X374852, X374852, X374852, X374852, X374852, X374852, X374852, X374852), the third column shows the state name 'Wisconsin', and the fourth column shows scores (42.15, 36.91, 32.01, 65.75, 775.39, 43.08, 47.95, 46.16, 38.64, 47.64, 45.87). A summary bar at the bottom of the spreadsheet is highlighted with a red box and contains the following information: AVERAGE: 39.43287691, COUNT: 4683, SUM: 184716.37.

Row	ID	State	Score
7	X375561	Wisconsin	42.15
8	X375560	Wisconsin	36.91
9	X375560	Wisconsin	32.01
10	X375559	Wisconsin	65.75
27	X374852	Wisconsin	775.39
28	X374852	Wisconsin	43.08
29	X374852	Wisconsin	47.95
30	X374852	Wisconsin	46.16
31	X374852	Wisconsin	38.64
32	X374852	Wisconsin	47.64
33	X374852	Wisconsin	45.87

AVERAGE: 39.43287691 COUNT: 4683 SUM: 184716.37

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How do I make a summary table?

Avoid having to repeatedly calculate averages, counts, or sums by using:

- SUMIFS,
AVERAGEIFS,
COUNTIFS
- Pivot Tables (covered
in Part 2)



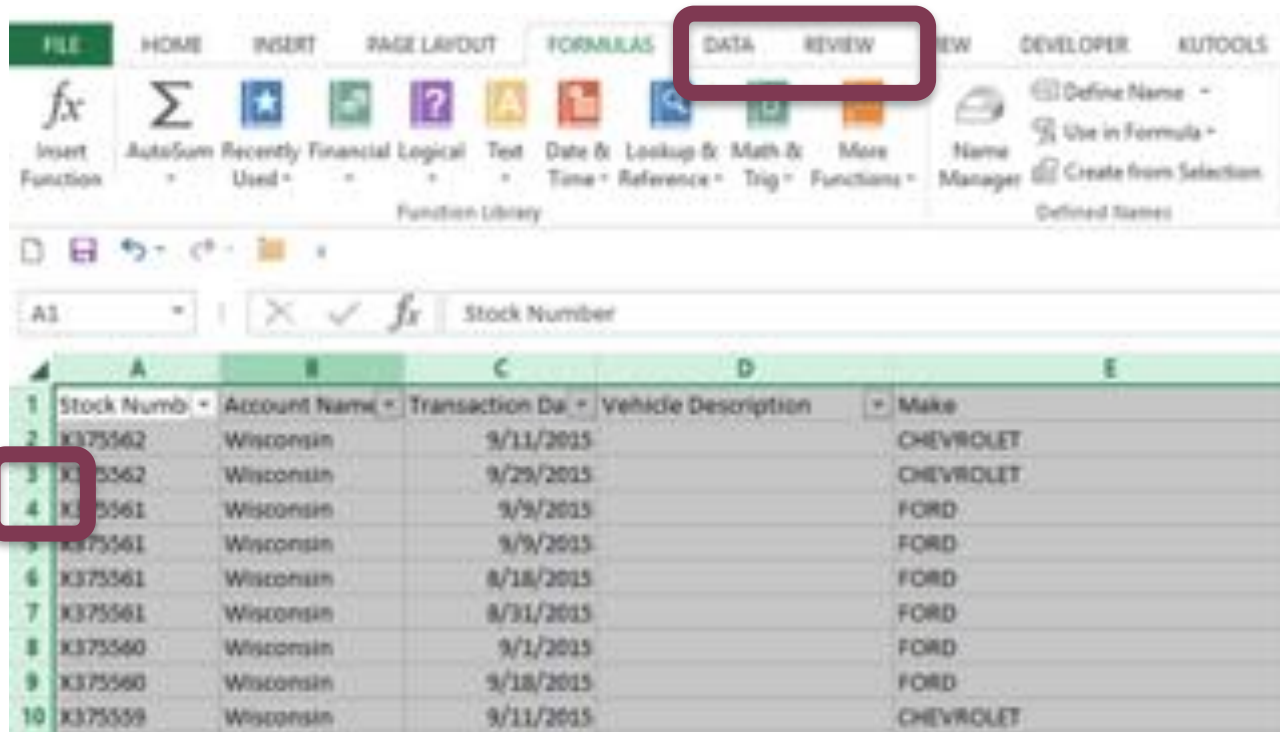
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Create a Table Using Formulas

- Create **Defined Names** for your columns
- Add a sheet, copy criteria, remove duplicates
- Sort
- Enter the **SUMIFS** function
 - Use **Defined Names**

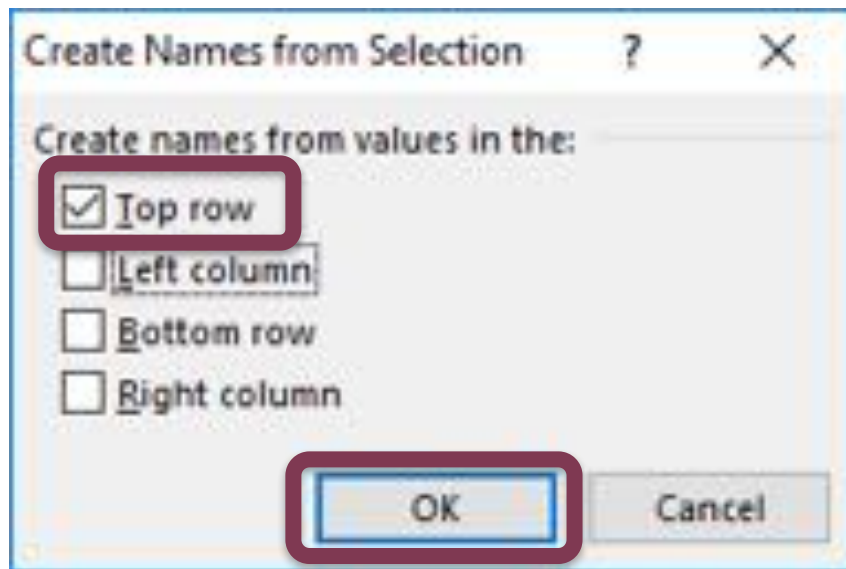
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To create **Defined Names** for your columns:
Select your data, then click Formulas > Create from Selection

Create Names



Why am I doing this?

- Your column headings contain plain-language names that are easier to work with than typical cell references
- For example, I can now use “make” instead of “E2:E196655” when referring to vehicle makes
- This will make formulas more intuitive

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Add a sheet, copy criteria, and remove duplicates

The screenshot shows the Microsoft Excel interface. The 'DATA' tab is selected in the ribbon. The 'Remove Duplicates' button is highlighted. The 'Remove Duplicates' dialog box is open, showing the following options:

- My data has headers
- Columns:
 - Account Name

The 'OK' button is highlighted.

Account Name
Wisconsin
Wisconsin
Wisconsin
Wisconsin
Wisconsin
Wisconsin
Wisconsin
Wisconsin
Wisconsin
Wisconsin
Mississippi

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FILE HOME INSERT PAGE LAYOUT FORMULAS DATA REVIEW VIEW DEVELOPER KUTOOLS EN

From Access From Web From Text From Other Sources Get External Data

Existing Connections Refresh All Connections

Sort

Filter Clear Reapply Advanced

Text to Columns Flash Fill Remove Duplicates

A2 Wisconsin

	A	B	C	D	E	F	G	H	I	J	K
1	Account Name										
2	Wisconsin										
3	Mississippi										
4	Kentucky										
5	Nebraska										
6	Connecticut										
7	New York										
8	Maine										
9	California										
10	Tennessee										
11	Nevada										
12	South Dakota										
13	Delaware										
14	Montana										
15	Florida										
16	Oregon										

Sort

Add Level Delete Level Copy Level Options...

My data has headers

Column	Sort On	Order
Sort by Column A	Values	A to Z

OK Cancel

Col, C



Type a column heading into cell B1
Start typing the SUMIFS formula into cell B2

A box will appear to assist you with the SUMIFS formula

The first thing you must add is the **sum_range**, i.e. **Total Fuel Costs**
When you start typing **Total Fuel Costs**, an autocomplete box appears
Double-click on **Total_Fuel_Cost**

The screenshot shows the Excel interface with the following elements:

- Formula Bar:** Contains the text `=sumifs(tot`.
- Autocomplete Dropdown:** Lists two options: `Total_Fuel_Cost` (highlighted in blue) and `Total_Non_Fuel_Cost`.
- Worksheet:** Column A contains state names: "Account Name", "Alabama", "Alaska", "Arizona", "Arkansas". Column B contains the heading "Total Fuel Cost" in cell B1 and the formula `umifs(tot` in cell B2.

Continue typing the next argument in the formula

The SUMIFS formula helper box indicates that you need a comma, then the **criteria_range1**, i.e. **Account Name**

When you start typing **Account Name**, an autocomplete box appears
Click on **Account_Name**

The screenshot shows the Excel interface with the following elements:

- Formula Bar:** Contains the text `=sumifs(Total_Fuel_Cost,ac`.
- Autocomplete Dropdown:** A list of suggestions is shown, with **Account_Name** selected at the top. Other options include ACCRINT, ACCRINTM, ACOS, ACOSH, ACOT, and ACOTH.
- Worksheet Data:**

Account Name	Total Fuel Cost
Alabama	Fuel_Cost,ac
Alaska	
Arizona	
Arkansas	
California	
Colorado	

Col

Type another comma

The box then instructs you to insert **criteria1**

In this case, **criteria1** is the Account Name that you want to sum

Click on the cell that contains **Alabama**

Insert a **Closing Parenthesis** and hit **Enter**

The screenshot shows an Excel spreadsheet with the following data:

	A	B	C	D	E	F	G
1	Account Name	Total Fuel Cost					
2	Alabama	=sumifs(Total_Fuel_Cost,Account_Name,A2)					
3	Alaska						
4	Arizona						
5	Arkansas						
6	California						

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In plain English, you have found the sum of total fuel costs for rows where the account name is “Alabama”

Mouse over the bottom right corner of the cell, click, and hold
Drag the mouse to the last row, then release to autofill your formula
You now have a table with total fuel costs for each account name

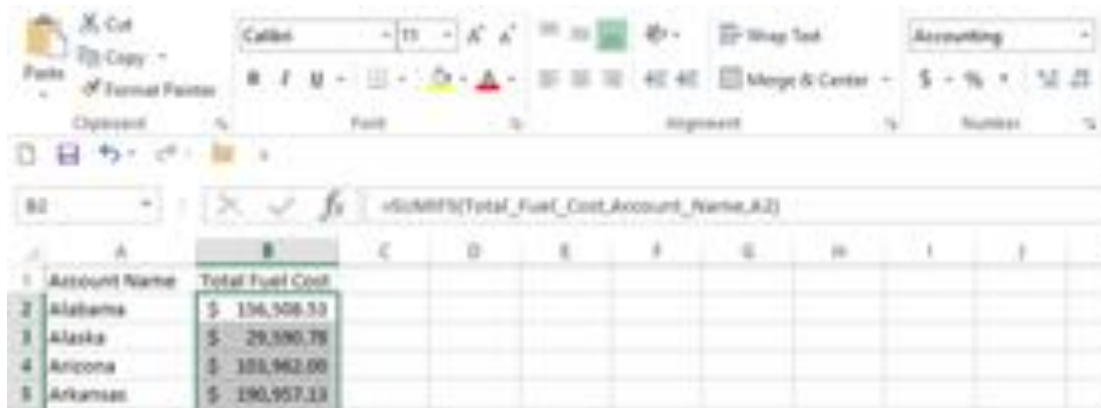
The screenshot shows the Microsoft Excel interface. The formula bar at the top displays the formula `=SUMIFS(Total_Fuel_Cost,Account_Name,A2)`. Below the formula bar, a table is visible with the following data:

	A	B	C	D	E	F	G
1	Account Name	Total Fuel Cost					
2	Alabama	156500.53					
3	Alaska						
4	Arizona						
5	Arkansas						

A red box highlights the bottom-right corner of the cell in row 2, column B, indicating the autofill handle.

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The Results



Account Name	Total Fuel Cost
Alabama	\$ 106,508.33
Alaska	\$ 29,390.78
Arizona	\$ 103,962.00
Arkansas	\$ 190,957.13



Note: additional criteria can be added
For example, you can restrict your table to just E85
By adding **criteria_range2 (Product)** and **criteria2 (ETH)**

=SUMIFS(Total_Fuel_Cost,Account_Name,A2,Product,“ETH”)



Stay Tuned for Part 2

- 11:30 a.m. today in this room
- Part 2 will go easy on the formulas
- Pivot Tables
- Outliers
- Data Filtering and Substitution

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For More Information

Scott Conlon

Mercury Associates, Inc.

sconlon@mercury-assoc.com

301 519 0535,1027

www.mercury-assoc.com

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