

CEE 3804: Computer Applications



Excel Database Functions and Pivot Tables

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1. Topics to be Covered



- Database functions
- Pivot tables:
 - | Basics
 - | Pivot table reports

Database Functions

a. Overview

- Functions that provide pivot table functionality
- Dfunction(*database, field, criteria*):
 - | database:
 - range of cells that make up the data
 - | field:
 - name of field to perform operation
 - | criteria:
 - range of cells that hold the criteria you want to hold with

Database Functions

b. List of Functions

- The list functions include the following:
 - | DAVERAGE(), DCOUNT(), DCOUNTA(), DGET(), DMAX(), DMIN(), DPRODUCT(), DSTDEV(), DSTDEVP(), DSUM(), DVAR(), and DVARP().
 - | Where:
 - DCOUNTA(): Returns the count of nonblank records
 - DGET(): Returns the value of a specified field for a single matching record
- Example:
 - | Use the Cardata file on the course notes

Database Example (Cardata.xls)

The syllabus has a file with car data. Name the file Cardata.xls

	B	C	D	E	F	G	H
1	Country	Type	Weight	Turning Circle	Displacement	Horsepower	Gas Tank Size
2	Japan	Small	2700	37	112	130	13.2
3	Japan	Medium	3265	42	163	160	18
4	Other	Medium	2935	39	141	130	21.1
5	Other	Compact	2670	35	121	108	15.9
6	Other	Compact	2790	35	141	130	15.9
7	Other	Compact	2895	35	152	168	16.4
8	Other	Medium	3640	39	209	208	21.1
9	USA	Medium	2880	41	151	110	15.7
10	USA	Large	3350	43	231	165	18
11	USA	Large	3325	42	231	165	18
12	USA	Medium	3465	41	231	165	18.8
13	USA	Compact	2640	39	151	110	13.6
14	USA	Large	4285	44	307	140	25
15	USA	Large	3545	43	273	180	18
16	USA	Medium	3480	42	273	180	18.8
17	USA	Large	4025	42	262	150	27
18	USA	Compact	2655	38	133	95	15.6

Database Example (Cardata.xls)

- Create a separate section in the worksheet where the query will be done
- Copy the sequence of titles to help you guide the query (see below)

J	K	L	M	N	O	P	Q
Task 1	Count the number of cars whose weight > 3000 lbs						
Count	50						
Model	Country	Type	Weight >3000	Turning Circle	Displacemen	Horsepower	Gas Tank Size

Database Example (Cardata.xls)

- Suppose we want to count the number of cars whose weight > 3000 lbs
- `Dcount(A1:H117,"Weight",J6:Q7)`

Database range

Database field

Criteria

Task 1	Count the number of cars whose weight > 3000 lbs						
Count	<code>=DCOUNT(A1:H117,"Weight",J6:Q7)</code>						
Model	Country	Type	Weight >3000	Turning Circle	Displacemen	Horsepower	Gas Tank Size

Database Example (Cardata.xls)

- Read the solution from the cell containing the database query
- Note that 50 cars weigh more than 3,000 lbs

J	K	L	M	N	O	P	Q
Task 1	Count the number of cars whose weight > 3000 lbs						
Count	50						
Model	Country	Type	Weight >3000	Turning Circle	Displacemen	Horsepower	Gas Tank Size

Database Example (Cardata.xls)

- A variation to specify the database field
- `Dcount(A1:H117,4,J6:Q7)`

Database range

Database field
Column format

Criteria

J	K	L	M	N	O	P	Q
Task 1	Count the number of cars whose weight > 3000 lbs						
Count	50						
Model	Country	Type	Weight >3000	Turning Circle	Displacemen	Horsepower	Gas Tank Size

Database Example (Cardata.xls)

- A variation to specify the database range
- `Dcount(Cars,4,J6:Q7)`

Database range
Variable format

Database field
Column format

Criteria

J	K	L	M	N	O	P	Q
Task 1	Count the number of cars whose weight > 3000 lbs						
Count	50						
Model	Country	Type	Weight >3000	Turning Circle	Displacemen	Horsepower	Gas Tank Size

Database Example (Cardata.xls)



- Count the number of cars made in Japan whose weight $> 2,700$ lbs
- Verify using the regular filters in Excel or a "Countif" statement

- Give it a try

Database Example (Cardata.xls)

- Count the number of Sporty cars whose horsepower falls between 150 and 200 HP
- This requires two sets of conditions for one variable (Horsepower)

Task 1c	Count the number of Sporty Cars whose engine horsepower falls between 150 and 200 HP														
Count	4														
Model	Country	Type	Weight	Turning Circle	Displacement	Horsepower	Gas Tank Size	Model	Country	Type	Weight	Turning Circle	Displacement	Horsepower	Gas Tank Size
		Sporty				>150								<200	

Pivot Tables

a. Overview



- A Pivot Table is a powerful data-analysis tool that Excel offers flexibility to summarize results quickly
- Pivot Tables summarize data in several fields:
 - | data field
 - | row field
 - | column field

Pivot Tables

b. Demonstration Example

Region	Quarter	Sales Rep	Sales
East	1st	A	192,345
West	1st	B	210,880
East	1st	C	185,223
South	1st	D	165,778
Midwest	1st	E	155,557
South	1st	F	180,567
West	1st	G	200,767
Midwest	1st	H	165,663
East	2nd	A	173,493
West	2nd	B	200,203
East	2nd	C	170,213
South	2nd	D	155,339
Midwest	2nd	E	148,990
South	2nd	F	175,660
West	2nd	G	190,290
South	2nd	H	170,000
East	3rd	A	145,800
West	3rd	B	211,123
East	3rd	C	175,000
South	3rd	D	150,000
Midwest	3rd	E	147,900
South	3rd	F	171,200
West	3rd	G	188,900
South	3rd	H	178,900
East	4th	A	134,980
West	4th	B	203,000
East	4th	C	168,975
South	4th	D	139,000
Midwest	4th	E	150,000
South	4th	F	200,000
West	4th	G	167,980
South	4th	H	189,000

Regular table



Sales Rep (All) ▼

Sum of Sales	Quarter				
Region	1st	2nd	3rd	4th	Grand Total
East	377,568	343,706	320,800	303,955	1,346,029
Midwest	321,220	148,990	147,900	150,000	768,110
South	346,345	500,999	500,100	528,000	1,875,444
West	411,647	390,493	400,023	370,980	1,573,143
Grand Total	1,456,780	1,384,188	1,368,823	1,352,935	5,562,726

Pivot table

Pivot Tables

c. Creating Pivot Tables

- There are four steps to creating a pivot table:
 - | Specify the type of source list to use for the pivot table
 - | Identify the location of the data
 - | Define row, column, values, and filters fields for the table
 - | Select a location, name, and other options of the table

Filter Field → (All) ▼

Data Field →

Row Field →

Row Items {

Region	1st	2nd	3rd	4th	Grand Total
East	377,568	343,706	320,800	303,955	1,346,029
Midwest	321,220	148,990	147,900	150,000	768,110
South	346,345	500,999	500,100	528,000	1,875,444
West	411,647	390,493	400,023	370,980	1,573,143
Grand Total	1,456,780	1,384,188	1,368,823	1,352,935	5,562,726

} Data Area

Pivot Tables

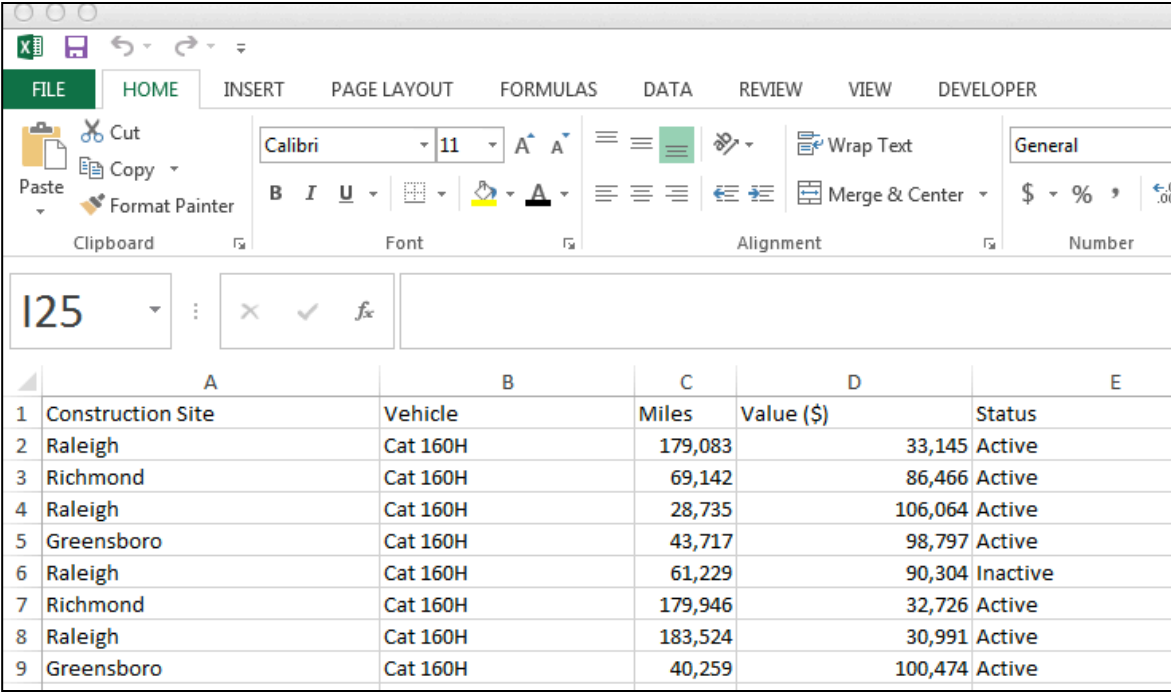
d. Data List or Table



- Data list/table can be:
 - | Excel list or table on a worksheet
 - | A separate database file in Access, FoxPro, etc.
 - | A collection of lists with row and column labels in one or more worksheets
 - | Another pivot table
- An Excel data table must have **labeled** columns

Practice File for Pivot Tables

- Retrieve the file called Construction_assets_cat.xls from the web site



	A	B	C	D	E
1	Construction Site	Vehicle	Miles	Value (\$)	Status
2	Raleigh	Cat 160H	179,083	33,145	Active
3	Richmond	Cat 160H	69,142	86,466	Active
4	Raleigh	Cat 160H	28,735	106,064	Active
5	Greensboro	Cat 160H	43,717	98,797	Active
6	Raleigh	Cat 160H	61,229	90,304	Inactive
7	Richmond	Cat 160H	179,946	32,726	Active
8	Raleigh	Cat 160H	183,524	30,991	Active
9	Greensboro	Cat 160H	40,259	100,474	Active

Excel Pivot Table Example



- File contains the Caterpillar vehicles owned by a construction company
- Three construction sites
- Three types of vehicles (CAT 160H, CAT 725 and CAT 775F)
- Mileage, value and status (active or not) are attributes contained in the data set

Pivot Table in Excel Ribbon (2013)

The screenshot shows the Excel 2013 ribbon with the **INSERT** tab selected. The **PivotTable** icon is highlighted with a red box. A black arrow points from this icon to the **Create PivotTable** dialog box. The dialog box is open, showing the following options:

- Choose the data that you want to analyze**
 - Select a table or range**
Table/Range: []
 - Use an external data source**
Choose Connection...
Connection name:
- Choose where you want the PivotTable report to be placed**
 - New Worksheet**
 - Existing Worksheet**
Location: Sheet1!\$G\$7
- Choose whether you want to analyze multiple tables**
 - Add this data to the Data Model**

Buttons: **OK** and **Cancel**

	A	B
1	Construction Site	Vehicle
2	Raleigh	Cat 160H
3	Richmond	Cat 160H
4	Raleigh	Cat 160H
5	Greensboro	Cat 160H

Customizing Pivot Tables

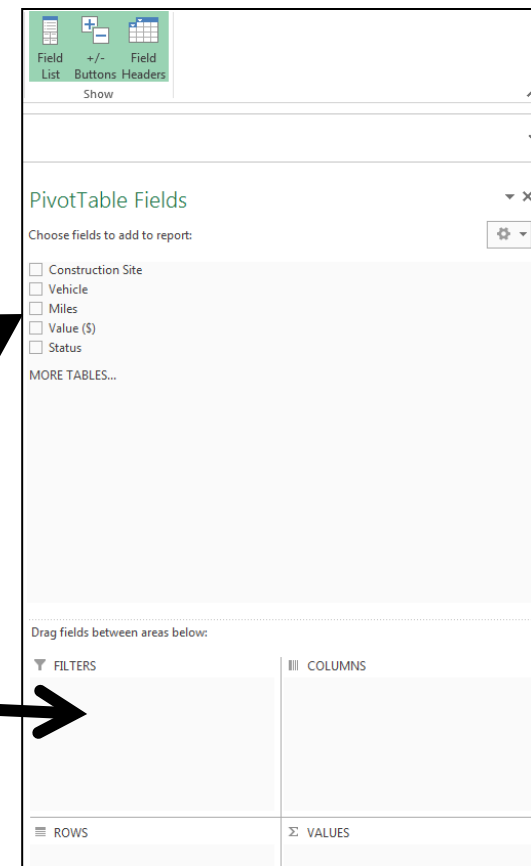
a. Specifying the Layout of a Pivot Table

■ The PivotTable toolbar simplifies the customizing of the pivot table:

- | enable/disable element selection
- | change row/column/page/data

Pivot Table Fields

Areas to Build
Pivot Table



Building the Pivot Table (Excel 2013)

- Start by selecting from the Pivot Table fields

The screenshot shows the Excel 2013 PivotTable Fields task pane. The 'Choose fields to add to report' section has 'Construction Site' checked. The 'Drag fields between areas below' section shows 'Construction Site' in the 'ROWS' area. The 'Row Labels' dropdown menu is open, showing 'Greensboro', 'Raleigh', 'Richmond', and 'Grand Total'. Three yellow callout boxes with arrows point to these elements: 'Adding a data field Starts the process' points to the 'Construction Site' checkbox; 'Pivot Table is Built in the same Spreadsheet' points to the 'Row Labels' dropdown; and 'Construction Site Variable gets added To Row Pivot Area' points to the 'Construction Site' field in the 'ROWS' area.

Adding a data field Starts the process

Pivot Table is Built in the same Spreadsheet

Construction Site Variable gets added To Row Pivot Area

Building the Pivot Table (Excel 2013)

- Adding more variables starts making the Pivot Table more useful

The screenshot shows the Excel 2013 PivotTable Fields task pane. The 'PivotTable Fields' task pane is open, showing the following fields: Construction Site, Vehicle, Miles, Value (\$), and Status. The 'Vehicle' field is checked. Below the 'Choose fields to add to report:' section, there is a 'MORE TABLES...' link. The 'Drag fields between areas below:' section shows four areas: FILTERS, COLUMNS, ROWS, and VALUES. The 'Construction Site' field is currently in the ROWS area, and the 'Vehicle' field is being added to the ROWS area. The 'Vehicle' field is also checked in the 'Choose fields to add to report:' section.

Adding a second data field (Vehicle)

A second set of rows Is added to existing ones

Vehicle is added to the Area

Building the Pivot Table (Excel 2013)

- Adding a numeric variable summarizes the data based on the **Values** field

Adding a numeric data field (Miles)

Cat 775F	2569071
▣ Raleigh	11844353
Cat 160H	3035247
Cat 725	4254011
Cat 775F	4555095
▣ Richmond	14675986
Cat 160H	2789254
Cat 725	6259090
Cat 775F	5627642
Grand Total	33923990

PivotTable Fields

Choose fields to add to report:

- Construction Site
- Vehicle
- Miles
- Value (\$)
- Status

MORE TABLES...

Drag fields between areas below:

FILTERS	COLUMNS
ROWS	Σ VALUES
Construction Site	Sum of Miles
Vehicle	

Vehicle is added to the Area

Building the Pivot Table (Excel 2013)

- You can change the summary in the Value area

The screenshot shows an Excel spreadsheet with a PivotTable. The PivotTable has 'Construction Site' and 'Vehicle' in the Filter area, 'Construction Site' and 'Vehicle' in the Row Labels area, and 'Sum of Miles' in the Values area. A 'Value Field Settings' dialog box is open, showing the 'Sum' option selected in the 'Summarize value field by' list. A yellow callout box with the text 'Change the Sum of Miles To Average Miles' has an arrow pointing to the 'Average' option in the list. Another arrow points from the callout box to the 'Sum of Miles' field in the Values area of the PivotTable.

Row Labels	Sum of Miles
Greensboro	7403651
Cat 160H	1787869
Cat 725	3046711
Cat 775F	2569071
Raleigh	11844353
Cat 160H	3035247
Cat 725	4254011
Cat 775F	4555095
Richmond	14675986
Cat 160H	2789254
Cat 725	6259090
Cat 775F	5627642
Grand Total	33923990

Customizing Pivot Tables

d. Changing Excel's Value/Data Field Summary

■ Eleven summary functions:

- Sum: totals the values
- Count: Counts the values
- Average: Computes the average
- Max: Computes the largest value
- Min: Returns the smallest value
- Product: Computes the product of the values
- Count Nums: Counts the number of numeric data
- StdDev: Computes the standard deviation of the data
- StdDevp: Computes the standard deviation for a population
- Var and Varp: Computes the variance

Customizing Pivot Tables

b. Changing Fields (Use your Imagination)

Option 1:

Sales Rep (All)

Sum of Sales	Quarter				
Region	1st	2nd	3rd	4th	Grand Total
East	377,568	343,706	320,800	303,955	1,346,029
Midwest	321,220	148,990	147,900	150,000	768,110
South	346,345	500,999	500,100	528,000	1,875,444
West	411,647	390,493	400,023	370,980	1,573,143
Grand Total	1,456,780	1,384,188	1,368,823	1,352,935	5,562,726

Option 2:

Sum of Sales		Quarter				
Region	Sales Rep	1st	2nd	3rd	4th	Grand Total
East	A	192,345	173,493	145,800	134,980	646,618
	C	185,223	170,213	175,000	168,975	699,411
East Total		377,568	343,706	320,800	303,955	1,346,029
Midwest	E	155,557	148,990	147,900	150,000	602,447
	H	165,663				165,663
Midwest Total		321,220	148,990	147,900	150,000	768,110
South	D	165,778	155,339	150,000	139,000	610,117
	F	180,567	175,660	171,200	200,000	727,427
	H		170,000	178,900	189,000	537,900
South Total		346,345	500,999	500,100	528,000	1,875,444
West	B	210,880	200,203	211,123	203,000	825,206
	G	200,767	190,290	188,900	167,980	747,937
West Total		411,647	390,493	400,023	370,980	1,573,143
Grand Total		1,456,780	1,384,188	1,368,823	1,352,935	5,562,726

Customizing Pivot Tables

c. Adding Filters

- Adding categorical fields (non-numeric) to the Filter area allows you to execute quick filters

Apply the filter using this pull down menu

Adding the Status Variable To be used as filter

Categorical fields Are good filters

Row Labels	Average of Miles	Sum of Value (\$)
Greensboro	117518.2698	8501591
Cat 160H	127704.9286	862997
Cat 725	117181.1923	3628800
Cat 775	111698.7391	4009794
Raleigh	131603.9222	10719636
Cat 160H	131967.2609	1347881
Cat 725	128909.4242	4296237
Cat 775F	133973.3824	5075518
Richmond	120294.9672	15664078
Cat 160H	107279	1776654
Cat 725	120367.1154	7018524
Cat 775F	127900.9545	6868900
Grand Total	123359.9636	34885305

PivotTable Fields

Choose fields to add to report:

- Construction Site
- Vehicle
- Miles
- Value (\$)
- Status

MORE TABLES...

Drag fields between areas below:

FILTERS	COLUMNS
Status	Σ Values

ROWS	VALUES
Construction Site	Average of Miles
Vehicle	Sum of Value (\$)

Customizing Pivot Tables

c. Adding Filters

- Adding categorical fields (non-numeric) to the Filter area allows you to execute quick filters

Selected "Active" Vehicles

Status field is Used as filter

PivotTable Fields

Choose fields to add to report:

- Construction Site
- Vehicle
- Miles
- Value (\$)
- Status

MORE TABLES...

Drag fields between areas below:

FILTERS	COLUMNS
Status	Σ Values

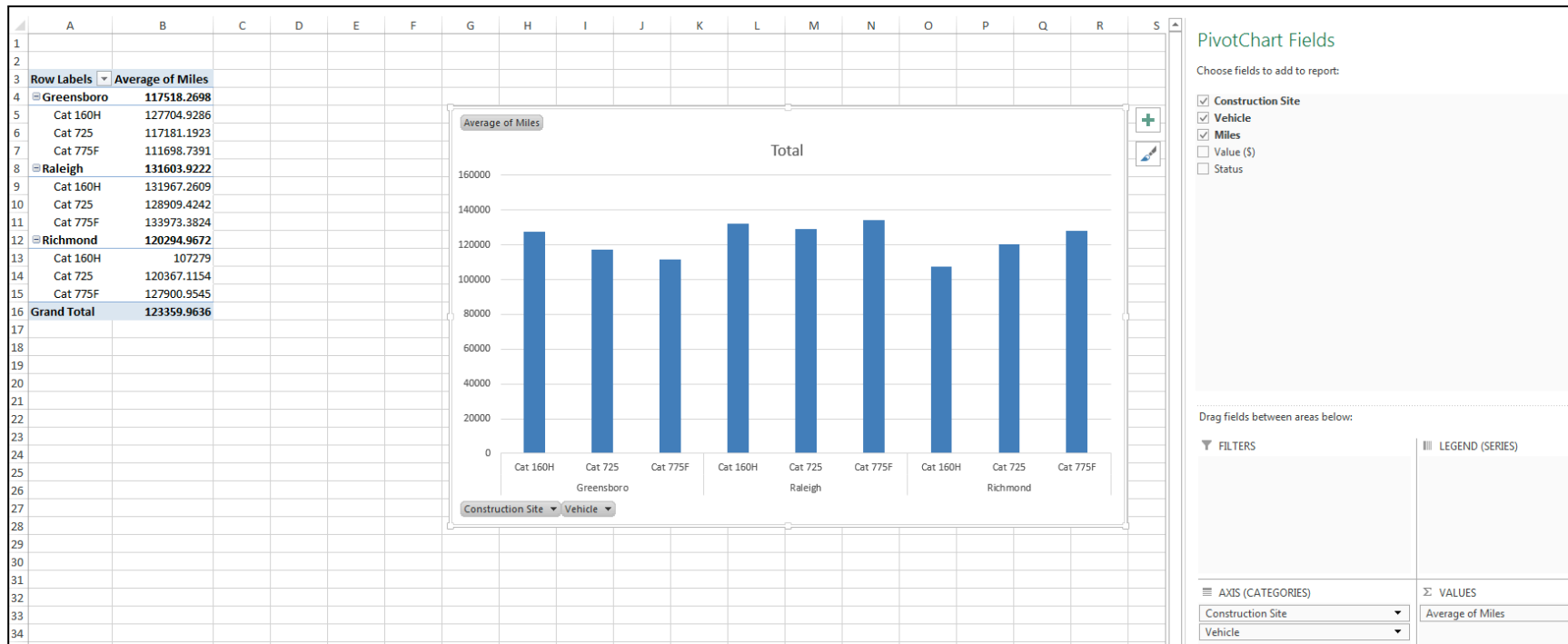
ROWS	Σ VALUES
Construction Site	Average of Miles
Vehicle	Count of Value (\$)

Row Labels	Average of Miles	Count of Value (\$)
Greensboro	118257.0656	61
Cat 160H	131853.6154	13
Cat 725	117220.52	25
Cat 775F	111698.7391	23
Raleigh	130869.8736	87
Cat 160H	135182.6364	22
Cat 725	126317.0938	32
Cat 775F	132409.5152	33
Richmond	117195.1391	115
Cat 160H	107279	26
Cat 725	118884.88	50
Cat 775F	121639.5641	39
Grand Total	121965.0228	263

Customizing Pivot Tables

c. Adding Pivot Charts

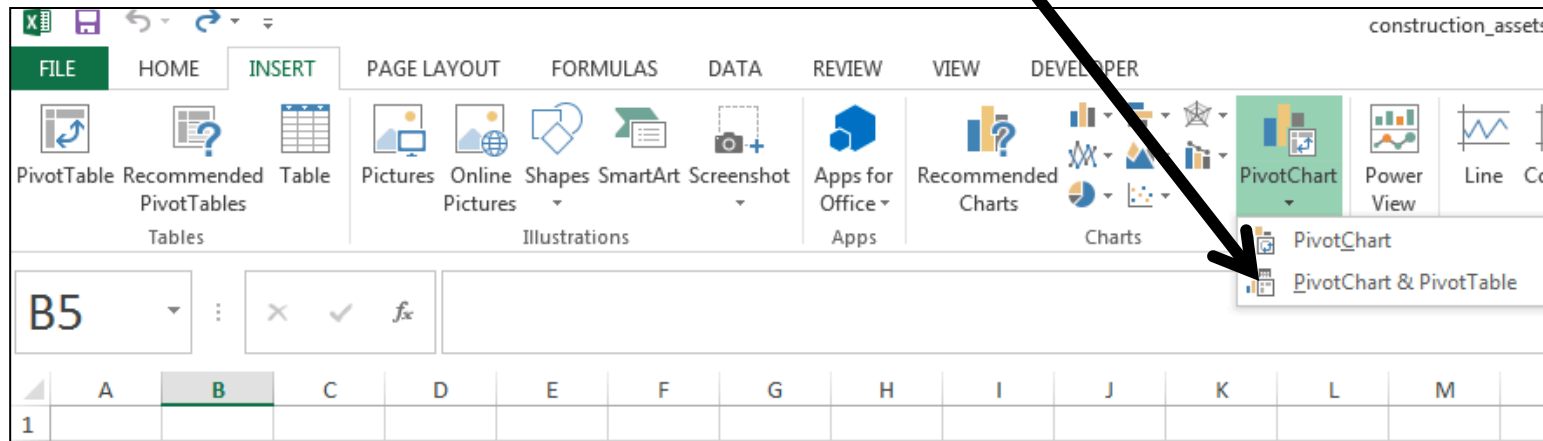
- You can also build Pivot Tables and Pivot Charts at the same time (Windows version of Excel)



Customizing Pivot Tables

c. Adding Pivot Charts

- Building Pivot Tables and Pivot Charts in one step
- Select the icon in the Insert Tab

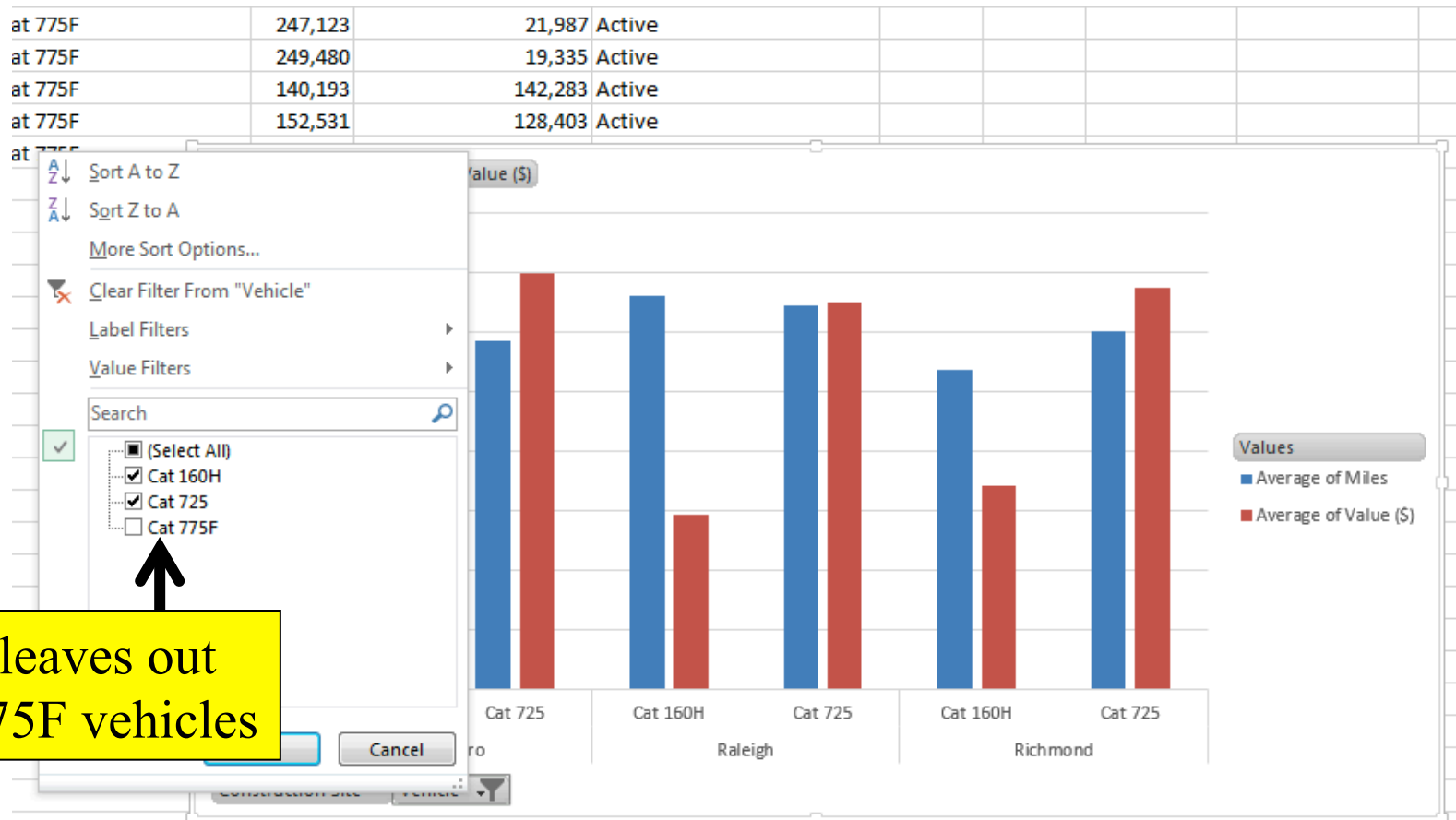


- The following steps are the same as those used to create a Pivot Table

Customizing Pivot Tables

c. Filtering on the Fly in Pivot Charts

- You can apply filters to Pivot Charts



Customizing Pivot Tables

e. Calculation Types

- Excel can perform a number of calculations:
 - | Difference from, % Of, % Difference From, Running Total in, % of row, % of column, % of total, Index

Percent Difference from East Region

Sales Rep (All) ▼

Sum of Sales	Quarter				
Region	1st	2nd	3rd	4th	Grand Total
East					
Midwest	-14.92%	-56.65%	-53.90%	-50.65%	-42.94%
South	-8.27%	45.76%	55.89%	73.71%	39.33%
West	9.03%	13.61%	24.70%	22.05%	16.87%
Grand Total					

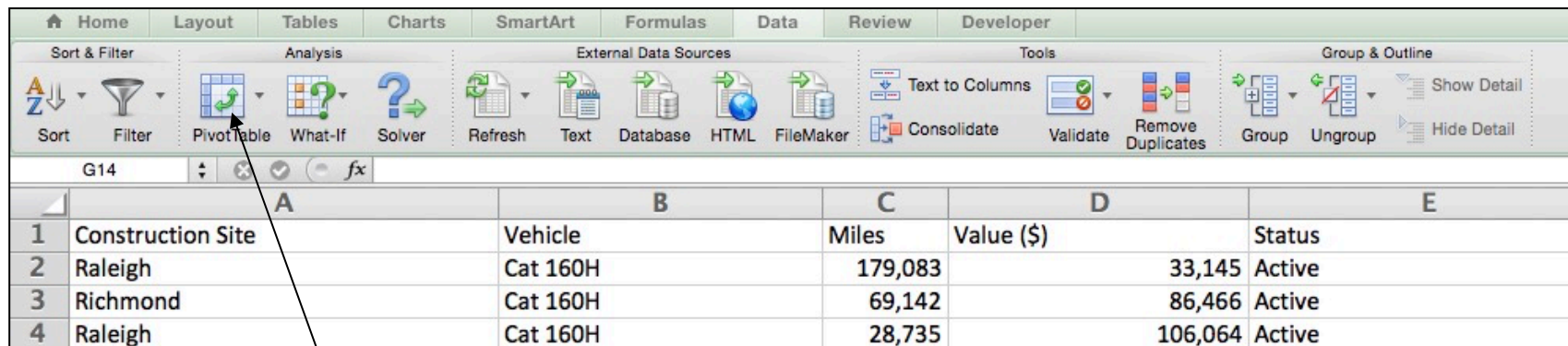
Percent of Row

Sales Rep (All) ▼

Sum of Sales	Quarter				
Region	1st	2nd	3rd	4th	Grand Total
East	28.05%	25.53%	23.83%	22.58%	100.00%
Midwest	41.82%	19.40%	19.26%	19.53%	100.00%
South	18.47%	26.71%	26.67%	28.15%	100.00%
West	26.17%	24.82%	25.43%	23.58%	100.00%
Grand Total	26.19%	24.88%	24.61%	24.32%	100.00%

Pivot Tables in Excel 2011 for Mac

- Look under Insert pull-down menu



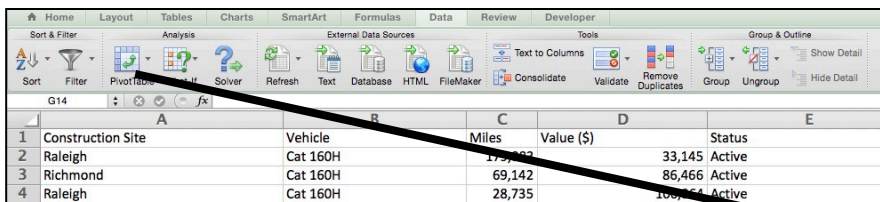
The screenshot shows the Excel ribbon with the following groups: Home, Layout, Tables, Charts, SmartArt, Formulas, Data, Review, and Developer. The Analysis group is expanded, showing icons for PivotTable, What-If, and Solver. An arrow points from the PivotTable icon to a text box below.

	A	B	C	D	E
1	Construction Site	Vehicle	Miles	Value (\$)	Status
2	Raleigh	Cat 160H	179,083	33,145	Active
3	Richmond	Cat 160H	69,142	86,466	Active
4	Raleigh	Cat 160H	28,735	106,064	Active

Pivot Table information

Pivot Tables in Excel 2011 for Mac (2)

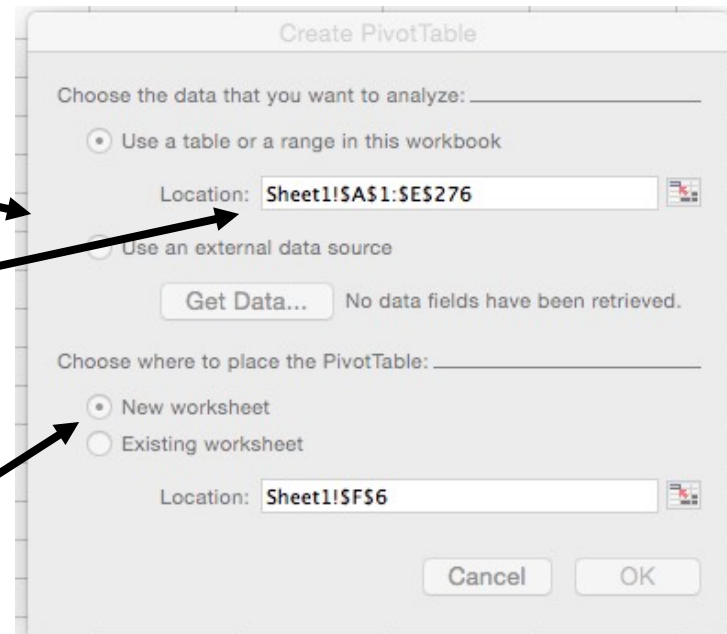
■ Create a pivot table manually



	A	B	C	D	E
1	Construction Site	Vehicle	Miles	Value (\$)	Status
2	Raleigh	Cat 160H	17,572	33,145	Active
3	Richmond	Cat 160H	69,142	86,466	Active
4	Raleigh	Cat 160H	28,735	100,254	Active

Specify the data range
For Pivot Table

Specify the location of
The new Pivot Table
(new worksheet shown)



Create PivotTable

Choose the data that you want to analyze: _____

Use a table or a range in this workbook

Location:

Use an external data source

No data fields have been retrieved.

Choose where to place the PivotTable: _____

New worksheet

Existing worksheet

Location:

Pivot Tables in Excel 2011 for Mac (3)

■ Complete the Pivot Table

Status	(All)		
		Values	
Row Labels	Count of Construction Site	Sum of Miles	
Cat 160H	63	7612370	
Cat 725	111	13559812	
Cat 775F	101	12751808	
Grand Total	275	33923990	

Specify the operation
To display totals of
Numeric field names

Specify the reporting
Filter used in the Pivot Table

PivotTable Field

Source field: Miles

Field Name: Sum of Miles

Summarize by:

- Sum
- Count
- Average
- Max
- Min
- Product
- Count Numbers

OK

Cancel

Delete

Number...

Options >>

Pivot Tables in Excel 2011 for Mac (4)

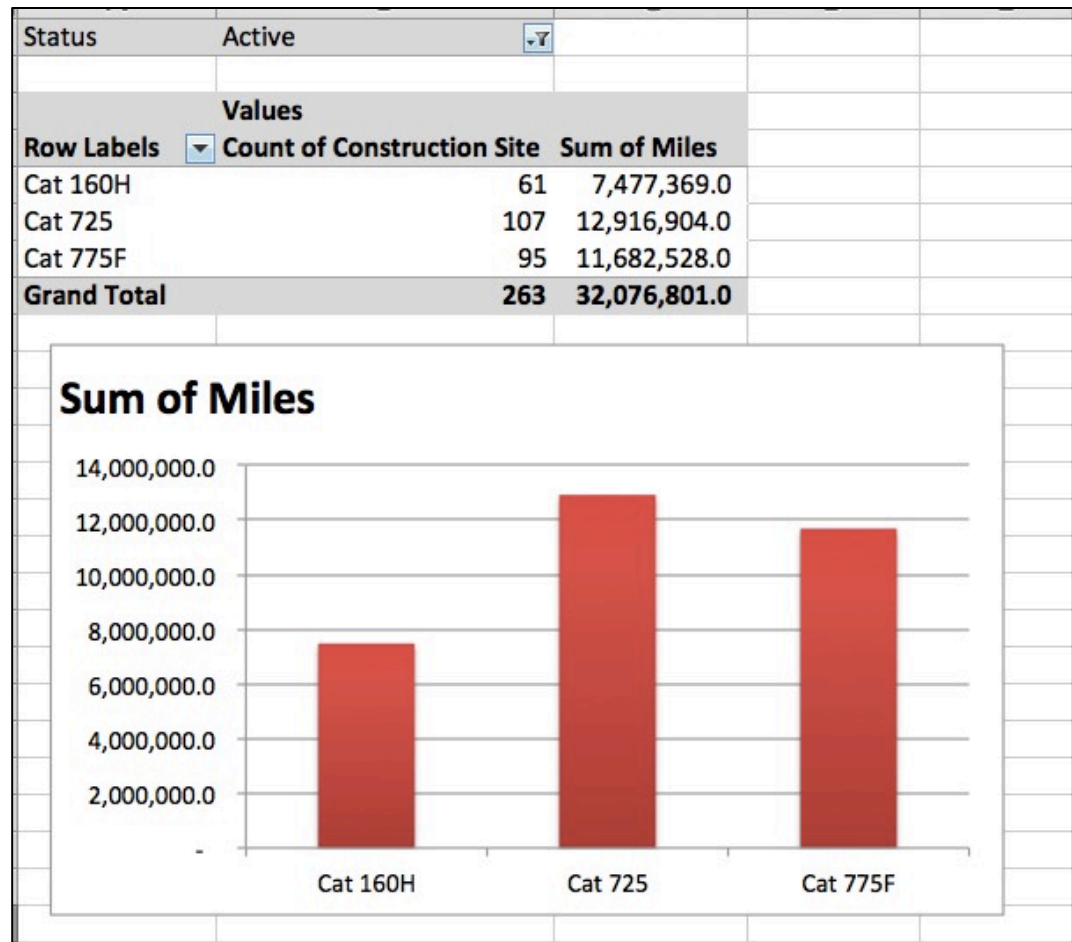
■ Try other variations of the Pivot Table

Construction Site (All)		
	Values	
Row Labels	Sum of Miles	Sum of Value (\$)
▼ Cat 160H	7477369	3813007
Active	7477369	3813007
▼ Cat 725	12916904	14555674
Active	12916904	14555674
▼ Cat 775F	11682528	15357153
Active	11682528	15357153
Grand Total	32076801	33725834

The vehicle and status Variables are rows in this Pivot Table

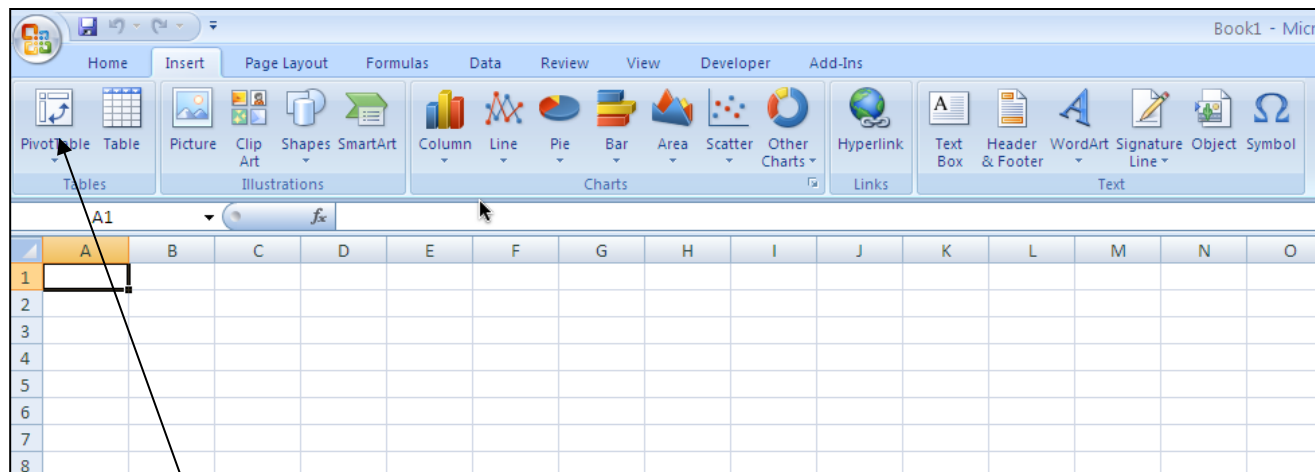
Pivot Tables in Excel 2011 for Mac (4)

- Add a graphical depiction to the Pivot Table
- Plot is done manually on the Mac



Pivot Tables in Excel 2010

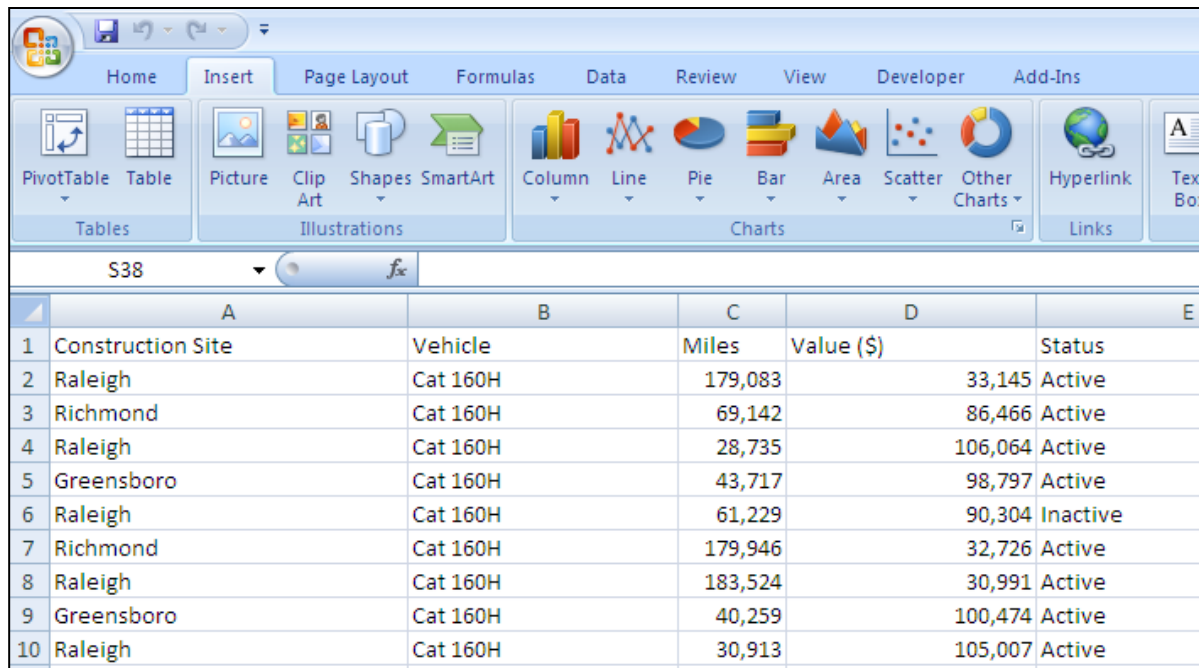
- Look under Insert pull-down menu



Pivot Table information

Example in Excel 2010

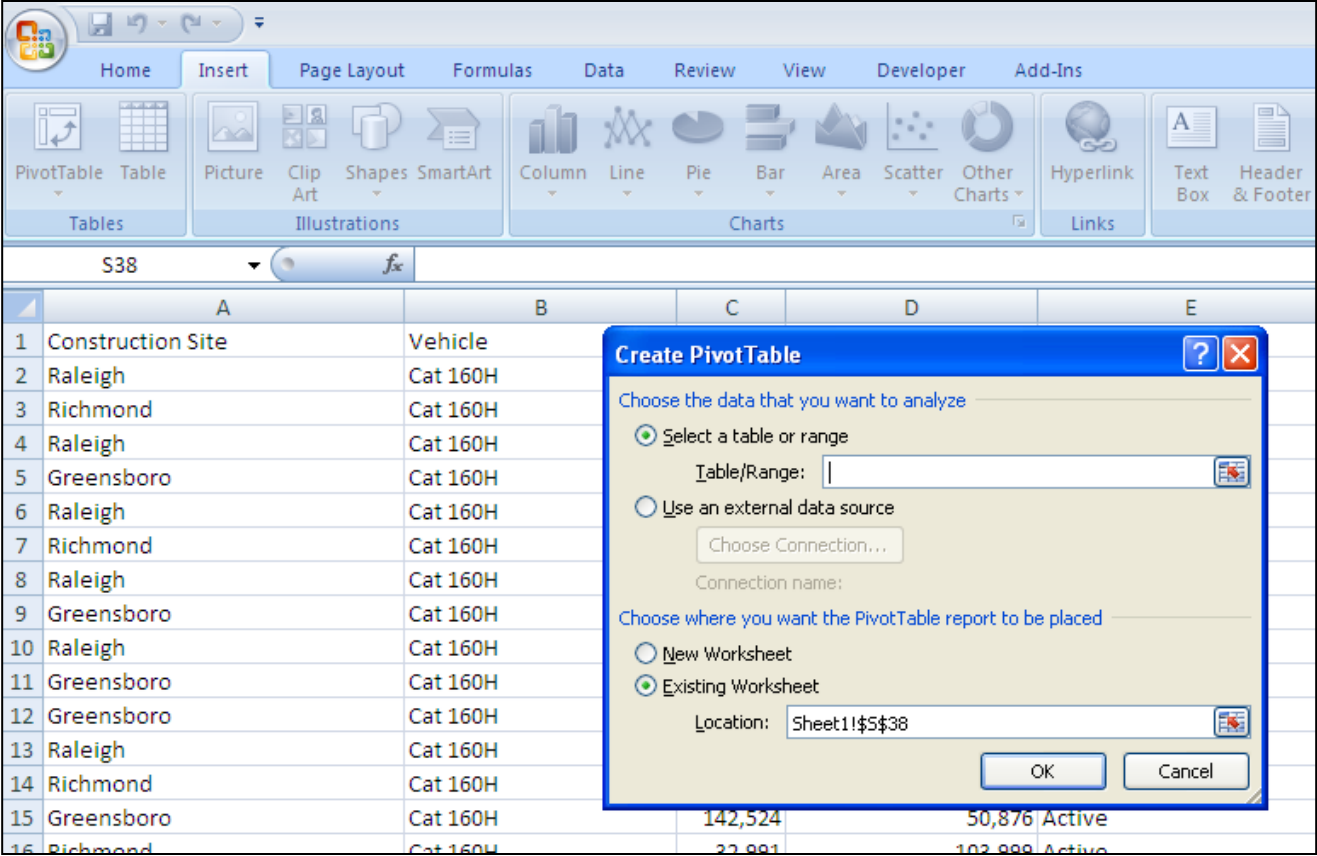
- Retrieve the file called Construction_assets_cat.xls from the web site



The screenshot shows the Microsoft Excel 2010 interface. The ribbon is set to the 'Insert' tab, with the 'Charts' group selected. The formula bar shows 'S38'. The active cell is A1, which contains the text 'Construction Site'. The table below is a data table with 10 rows and 5 columns. The columns are labeled 'Construction Site', 'Vehicle', 'Miles', 'Value (\$)', and 'Status'. The data rows contain the following information:

	A	B	C	D	E
1	Construction Site	Vehicle	Miles	Value (\$)	Status
2	Raleigh	Cat 160H	179,083	33,145	Active
3	Richmond	Cat 160H	69,142	86,466	Active
4	Raleigh	Cat 160H	28,735	106,064	Active
5	Greensboro	Cat 160H	43,717	98,797	Active
6	Raleigh	Cat 160H	61,229	90,304	Inactive
7	Richmond	Cat 160H	179,946	32,726	Active
8	Raleigh	Cat 160H	183,524	30,991	Active
9	Greensboro	Cat 160H	40,259	100,474	Active
10	Raleigh	Cat 160H	30,913	105,007	Active

Creating Pivot Table (Excel 2007/2010)



Creating Pivot Table (Excel 2007/2010)

The screenshot displays the Microsoft Excel 2010 interface. The main window shows a PivotTable with the following data:

	A	B	C	D	E	F	G	H	I	J
229	Richmond	Cat 775F	42,544	252,138	Active					
230	Raleigh	Cat 775F	185,581	91,221	Inactive					
231	Raleigh	Cat 775F	30,730	265,429	Active					
232	Raleigh	Cat 775F	6,573	292,605	Active					
233	Greensboro	Cat 775F	141,083	141,281	Active					
234	Greensboro	Cat 775F	108,794	177,607	Active					
235	Greensboro	Cat 775F	215,157	57,948	Active					
236	Raleigh	Cat 775F	149,122	132,238	Active					
237	Richmond	Cat 775F	152,610	128,313	Active					
238	Raleigh	Cat 775F	207,842	66,178	Active					
239	Greensboro	Cat 775F	134,009	149,240	Active					
240	Raleigh	Cat 775F	186,865	89,777	Active					
241	Raleigh	Cat 775F	207,174	66,929	Active					
242	Richmond	Cat 775F	105,276	181,565	Active					
243	Raleigh	Cat 775F	89,431	199,390	Active					
244	Greensboro	Cat 775F	172,217	106,256	Active					
245	Richmond	Cat 775F	265	299,702	Active					
246	Richmond	Cat 775F	242,403	27,297	Active					
247	Greensboro	Cat 775F	17,609	280,189	Active					
248	Raleigh	Cat 775F	115,307	170,279	Active					
249	Richmond	Cat 775F	58,080	234,660	Active					
250	Richmond	Cat 775F	42,863	251,780	Active					
251	Greensboro	Cat 775F	83,761	205,769	Active					
252	Raleigh	Cat 775F	126,061	158,182	Active					
253	Raleigh	Cat 775F	228,706	42,705	Active					
254	Raleigh	Cat 775F	129,808	153,966	Active					
255	Greensboro	Cat 775F	216,070	56,921	Active					
256	Richmond	Cat 775F	140,712	141,699	Active					
257	Richmond	Cat 775F	101,430	185,891	Active					
258	Greensboro	Cat 775F	118,582	166,595	Active					
259	Richmond	Cat 775F	218,361	54,343	Inactive					
260	Raleigh	Cat 775F	126,286	157,928	Active					
261	Richmond	Cat 775F	59,885	232,629	Active					
262	Richmond	Cat 775F	189,915	86,345	Active					
263	Richmond	Cat 775F	198,037	77,208	Active					
264	Raleigh	Cat 775F	203,763	70,766	Active					
265	Greensboro	Cat 775F	199,325	75,760	Active					
266	Richmond	Cat 775F	1,016	298,857	Active					
267	Richmond	Cat 775F	184,003	92,997	Active					
268	Greensboro	Cat 775F	27,328	269,257	Active					

The PivotTable Field List task pane on the right shows the following fields to be added to the report:

- Construction Site
- Vehicle
- Miles
- Value (\$)
- Status

Below the field list, there are sections for 'Report Filter' and 'Column Labels', and a section for 'Row Labels' and 'Values'.

Pivot Table
Builder Panel

Adding Elements to the Pivot Table (Excel 2007)

The screenshot displays the Microsoft Excel 2007 interface. The main window shows a PivotTable with the following data:

	A	B	C	D	E	F
229	Richmond	Cat 775F	42,544	252,138	Active	
230	Raleigh	Cat 775F	185,581	91,221	Inactive	
231	Raleigh	Cat 775F	30,730	265,429	Active	
232	Raleigh	Cat 775F	6,573	292,605	Active	
233	Greensboro	Cat 775F	141,083	141,281	Active	
234	Greensboro	Cat 775F	108,794	177,607	Active	
235	Greensboro	Cat 775F	215,157	57,948	Active	
236	Raleigh	Cat 775F	149,122	132,238	Active	
237	Richmond	Cat 775F	152,610	128,313	Active	
238	Raleigh	Cat 775F	207,842	66,178	Active	
239	Greensboro	Cat 775F	134,009	149,240	Active	
240	Raleigh	Cat 775F	186,865	89,777	Active	
241	Raleigh	Cat 775F	207,174	66,929	Active	
242	Richmond	Cat 775F	105,276	181,565	Active	
243	Raleigh	Cat 775F	89,431	199,390	Active	
244	Greensboro	Cat 775F	172,217	106,256	Active	
245	Richmond	Cat 775F	265	299,702	Active	
246	Richmond	Cat 775F	242,403	27,297	Active	
247	Greensboro	Cat 775F	17,609	280,189	Active	
248	Raleigh	Cat 775F	115,307	170,279	Active	
249	Richmond	Cat 775F	58,080	234,660	Active	
250	Richmond	Cat 775F	42,863	251,780	Active	
251	Greensboro	Cat 775F	83,761	205,769	Active	
252	Raleigh	Cat 775F	126,061	158,182	Active	
253	Raleigh	Cat 775F	228,706	42,705	Active	
254	Raleigh	Cat 775F	129,808	153,966	Active	
255	Greensboro	Cat 775F	216,070	56,921	Active	
256	Richmond	Cat 775F	140,712	141,699	Active	
257	Richmond	Cat 775F	101,430	185,891	Active	
258	Greensboro	Cat 775F	118,582	166,595	Active	
259	Richmond	Cat 775F	218,361	54,343	Inactive	
260	Raleigh	Cat 775F	126,286	157,928	Active	
261	Richmond	Cat 775F	59,885	232,629	Active	
262	Richmond	Cat 775F	189,915	86,345	Active	
263	Richmond	Cat 775F	198,037	77,208	Active	
264	Raleigh	Cat 775F	203,763	70,766	Active	
265	Greensboro	Cat 775F	199,325	75,760	Active	
266	Richmond	Cat 775F	1,016	298,857	Active	
267	Richmond	Cat 775F	184,003	92,997	Active	
268	Greensboro	Cat 775F	27,328	269,257	Active	
269	Richmond	Cat 775F	104,635	182,286	Active	
270	Richmond	Cat 775F	129,681	154,109	Active	
271	Raleigh	Cat 775F	182,199	95,026	Active	

The PivotTable Field List task pane on the right shows the following configuration:

- Choose fields to add to report:
 - Construction Site
 - Vehicle
 - Miles
 - Value (\$)
 - Status
- Drag fields between areas below:
 - Report Filter: Construction ...
 - Column Labels: Vehicle
 - Row Labels: Value (\$)
 - Values: (Empty)
- Defer Layout Update: Update

Displaying Summaries in the Pivot Table (Excel 2007/2010)

Here we display the sum of the vehicle values for every type of vehicle and every location

Construction Site	Cat 160H	Cat 725	Cat 775F	Grand Total
Sum of Value (\$)	862,997.00	3,628,800.00	4,009,794.00	8,501,591.00

Finding the Average Value of Vehicles in the Fleet (Excel 2007/2010)

The screenshot displays the Microsoft Excel interface with a PivotTable and the Value Field Settings dialog box open. The PivotTable is set up to summarize the 'Value (\$)' field by 'Vehicle' category, with 'Construction Site' as the report filter. The 'Sum of Value (\$)' field is currently set to 'Sum', but the dialog box is open to change it to 'Average'.

Construction Site	Cat 160H	Cat 725	Cat 775F	Grand Total
Greensboro	862,997.00	3,628,800.00	4,009,794.00	8,501,591.00

Value Field Settings

Source Name: Value (\$)
Custom Name: Sum of Value (\$)

Summarize by: Show values as

Summarize value field by
Choose the type of calculation that you want to use to summarize the data from selected field

- Sum
- Count
- Average
- Max
- Min
- Product

Number Format: [OK] [Cancel]

PivotTable Field List

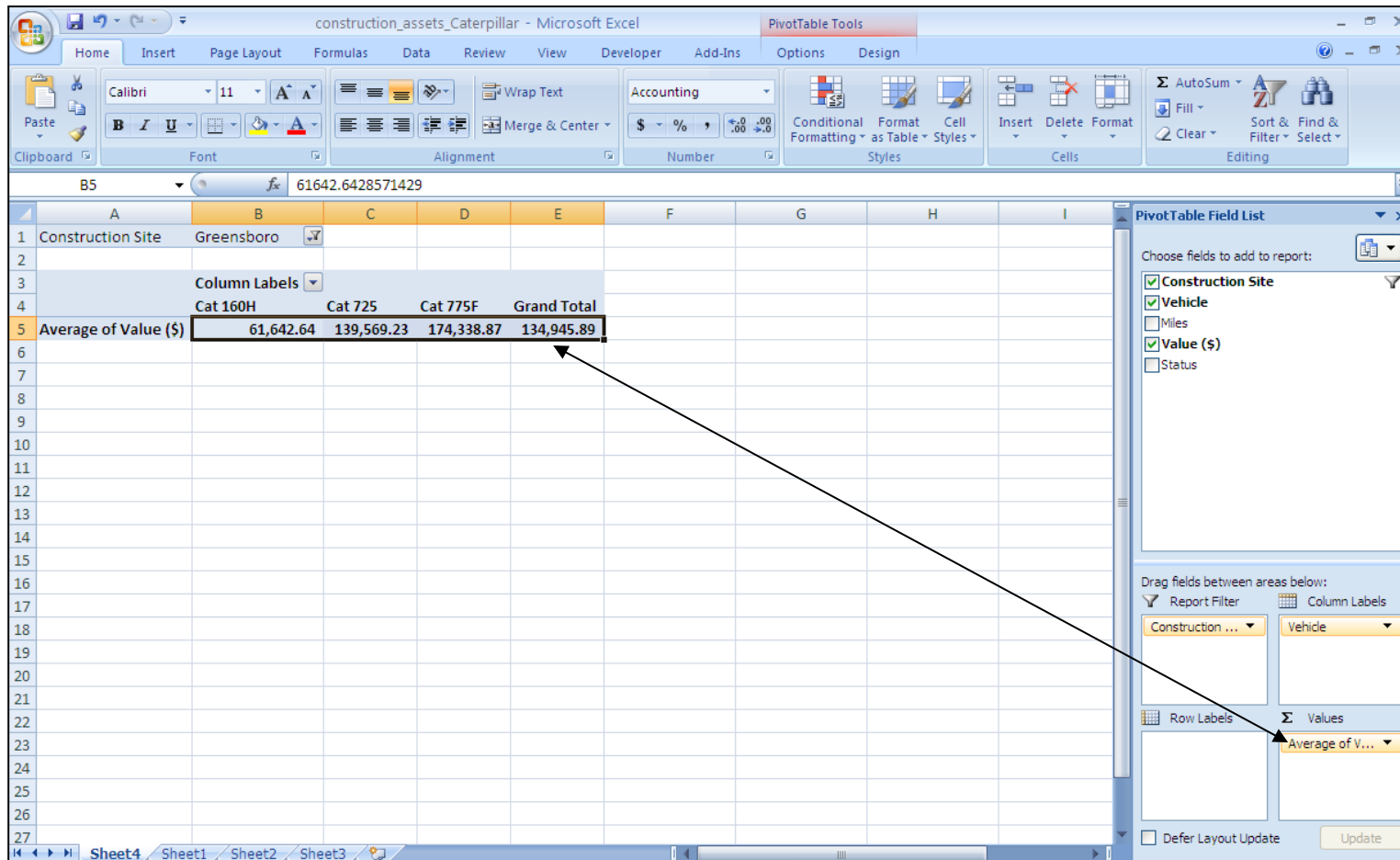
Choose fields to add to report:

- Construction Site
- Vehicle
- Miles
- Value (\$)
- Status

Drag fields between areas below:

- Report Filter: Construction ...
- Column Labels: Vehicle
- Row Labels: Values
- Values: Sum of Value ...

Finding the Average Value of Vehicles (Excel 2007/2010)



The screenshot shows a Microsoft Excel spreadsheet with a PivotTable. The PivotTable is located in the range B5:E5 and shows the average value of vehicles by construction site and category. The PivotTable Field List is open on the right side of the spreadsheet, showing the fields used in the report.

Construction Site	Cat 160H	Cat 725	Cat 775F	Grand Total
Average of Value (\$)	61,642.64	139,569.23	174,338.87	134,945.89

The PivotTable Field List shows the following fields:

- Construction Site (checked)
- Vehicle (checked)
- Miles (unchecked)
- Value (\$) (checked)
- Status (unchecked)

The PivotTable Field List also shows the following fields in the Report Filter, Column Labels, Row Labels, and Values areas:

- Report Filter: Construction ...
- Column Labels: Vehicle
- Row Labels: (empty)
- Values: Average of V...

Try Other Formats of Your Own

The screenshot shows a PivotTable in Microsoft Excel with the following data:

Construction Site	Vehicle	Average of Miles	Average of Value (\$)
Greensboro		117,518	134,946
Raleigh		131,604	119,107
Cat 160H		131,967	58,604
Active		135,183	57,163
Inactive		61,229	90,304
Cat 725		128,909	130,189
Active		126,317	132,507
Inactive		211,864	56,006
Cat 775F		133,973	149,280
Active		132,410	151,039
Inactive		185,581	91,221
Richmond		120,295	128,394
Cat 160H		107,279	68,333
Active		107,279	68,333
Cat 725		120,367	134,972
Active		118,885	136,479
Inactive		157,423	97,300
Cat 775F		127,901	156,111
Active		121,640	163,155
Inactive		176,740	101,168
Grand Total		123,360	126,856

The PivotTable Field List on the right shows the following configuration:

- Report Filter: Construction Site
- Row Labels: Vehicle
- Values: Miles, Value (\$)

Arrows indicate the mapping from the PivotTable Field List to the PivotTable:

- Construction Site (Report Filter) points to the filter box in the PivotTable.
- Vehicle (Row Labels) points to the 'Vehicle' column in the PivotTable.
- Miles (Value) points to the 'Average of Miles' column in the PivotTable.
- Value (\$) (Value) points to the 'Average of Value (\$)' column in the PivotTable.