

Data Analysis & Business Intelligence Made Easy with Excel Power Tools

Excel Data Analysis Basics = E-DAB

Notes for Video:

E-DAB-04: Summary Reports with Standard PivotTables & Slicers

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1. What is a PivotTable? What is a Cross Tab Report?

Objective #1: What Is A PivotTable?

Date	Sales Rep	Autos	Sales
2/11/19	Alma	Chevy	\$38,016
2/11/19	Tyrone	Chevy	\$71,182
2/11/19	Jaeyoung	Honda	\$70,720
2/11/19	Alma	Chevy	\$69,598
2/11/19	Tyrone	Honda	\$55,299
2/11/19	Jaeyoung	Toyota	\$63,882
2/12/19	Alma	Toyota	\$47,352
2/12/19	Tyrone	Ford	\$53,105
2/12/19	Jaeyoung	Toyota	\$32,058
2/12/19	Alma	Honda	\$33,415
2/12/19	Tyrone	Honda	\$71,880
2/13/19	Jaeyoung	Ford	\$63,092
2/13/19	Alma	Ford	\$37,432
2/13/19	Tyrone	Ford	\$45,376
2/13/19	Jaeyoung	Chevy	\$57,034
2/13/19	Tyrone	Honda	\$45,881
2/13/19	Tyrone	Honda	\$39,950

PivotTables:
Create Summary Reports that contain calculations with Conditions or Criteria.

Sum of Sales (\$)	Sales Rep	Autos	Jaeyoung	Tyrone	Grand Total
	Alma	107,614	57,034	71,182	235,830
	Ford	37,432	63,092	98,481	199,005
	Honda	33,415	70,720	213,010	317,145
	Toyota	47,352	95,940		143,292
Grand Total		225,813	286,786	382,673	895,272

Adding Sales where Sales Rep is Alma AND Auto is Honda = \$107,614
 The Intersection of the Row and Column is performing an AND Logical Test for adding.
 This is a Cross Tab Report
 The Grand Totals are Adding with a Single Condition.

2. Steps for Building a Standard PivotTable

- 1) What PivotTables do:
 1. Create Summary Reports that contain calculations with Conditions or Criteria.
- 2) Summary of how to create PivotTable:
 1. Click in one cell in Proper Data Set
 2. Insert Ribbon Tab, Tables group, PivotTable button.
 - Keyboard = Alt, N, V.
 3. From Field List, drag field name to Rows area or Columns area or Filter area. These are the conditions/criteria for the calculation in the Values area of the PivotTable.
 - Fields in the Rows area add a condition/criterion to the row
 - Fields in the Columns area add a condition/criterion to the column
 - Fields in the Filter area add a condition/criterion to the entire PivotTable.
 4. From Field List drag the field you would like to make a calculation on to values area.
 - Number fields default to a SUM calculation (add numbers)
 - Text fields default to a COUNTA calculation (count non-empty cells)
 5. With a cell selected in the PivotTable, click on PivotTable Tools Design Ribbon Tab, go to the Layout group, click drop-down for Report Layout and then click on “Show in Tabular Form” or “Show in Outline Form”. These Layouts shows the Field Names in your Report.
 6. To add Number Formatting to the Values area of the PivotTable, click in one cell in the Values area of the PivotTable, Right-click the cell and click on “Number Format...”, then in the Number Formatting dialog box select the Number Formatting that you would like and then click OK.
 7. If you want to change the summary calculation in the Values area, right-click the Values area in the PivotTable Report, point to one of these two options:
 - “Summarize Values By” and then select an aggregate calculation such as “Average”, or “Max”, or “More Options”.
 - “Show Values As” and then select a calculation such as “% of Column Total”, “Running Total”, “Difference From” or other calculations.
 8. PivotTable Styles:
 - PivotTable Tools Design Ribbon Tab, Styles, More button, New PivotTable Style, then use dialog box to create your own style.
 9. Name PivotTable:
 - Right-click PivotTable, Select PivotTable Options
 - PivotTable Tools Analyze Ribbon Tab, PivotTable group
 10. If your Field List goes away:
 - It may be that your cursor is not inside the PivotTable, try clicking back inside the PivotTable
 - Right-click the PivotTable and point to “Show Field List”
 11. If source data changes, you must Refresh the PivotTable
 - Right-click PivotTable, Refresh
 - Refresh PivotTable keyboard: Alt + F5
 12. Inside the Pivot:
 - Pivot: drag and drop fields in Field List to “Pivot” the report.
 - Filter from dropdown arrows.
 - Sort from dropdown arrows

3. PivotTable Cached Data

1. When you create a Standard PivotTable, Excel creates a copy of the source data and stores it in the Pivot Cache.
2. The Pivot Cache is stored in Excel's memory.
3. This is why the PivotTable does not update when source data changes.
4. If source data changes, you can right-click the PivotTable and click Refresh, or use the Refresh button in the Data Ribbon Tab.
5. You can't see Cached PivotTable Data, but that's the data the PivotTable references when you build your PivotTable, or change a Slicer selection or move rows/columns around.
6. When we group dates in a PivotTable, the Pivot Cache is where this action takes place. The Pivot Cache save the action of grouping by dates so that when we use the date column in other places, the date column will remain grouped.
7. When we use a Slicer or change the conditions and criteria in the PivotTable, these actions are interacting with the Pivot Cache of data, not the original source data.

4. Use Slicers to Filter Entire PivotTable

1. Slicers can be added to the PivotTable to add a condition/criterion to the entire PivotTable, similar to a field in the Filter area. To insert a Slicer into a PivotTable, click in one cell in the PivotTable Report, then go to the PivotTable Tools Analyze Ribbon Tab, then in the Filter Group, click the Insert Slicer button
2. To Select Items not next to each other in a Slicer, use the Ctrl Key.
3. To Clear the selected items in the Slicer, use the "Red X" Clear Button in the Upper Right area of the Slicer.
4. Hide Buttons in Slicer when there is no data:
 - Right-click Slicer and point to "Slicer Settings", then check the box for: "Hide items with no data."
5. Connect Multiple PivotTables to a Slicer:
 - Right-click Slicer and point to "Report Connections" and then check the boxes for the desired PivotTables.

5. Use Group By Feature to group Monthly and Yearly Amounts

1. In Excel 2016, when you drag a Date Field into the Row area of a PivotTable, it is automatically grouping into:
 - Year
 - Quarter
 - Month
2. If you WANT a unique list of Dates (like for a Daily Sales Report) you must:
 - Right-click the date field in the PivotTable
 - Click on Ungroup.
3. Grouping allows the aggregate calculation, like sum of sales, to easily get Monthly and Yearly Sales Totals.

6. Summarize Values By to Change Aggregate Function

- List of "Summarize Values By" Aggregate Calculations:

11 Functions available in a PivotTable		
What you see in Value Field Settings dialog box	Function	What it does
Average	AVERAGE	Calculates arithmetic mean
Count Numbers	COUNT	Counts numbers
Count	COUNTA	Counts non empty cells
Max	MAX	Finds largest value
Min	MIN	Finds smallest value
Product	PRODUCT	Multiplies
Stdev	STDEV	Standard Deviation for a sample
Stdevp	STDEVP	Standard Deviation for a population
Sum	SUM	Adds
Var	VAR	Variation for a sample
Varp	VARP	Variation for a population

7. Show Values As to Change to Specific Calculations

- Using "Show Values As" to make calculations in a PivotTable.

Show Values As Calculation	What it does
% of Grand Total	Divides each value inside the PivotTable by The Grand Total, and adds Number Formatting.
% of Column Total	Divides each value in the Column by the Column Total, and adds Number Formatting.
% of Row Total	Divides each value in the Row by the Row Total, and adds Number Formatting.
Difference From	Displays values as the difference from the value of the Base item in the Base field . Our Example takes current month and subtracts the previous month to get the "Change" from month to month.
% Difference From	Displays values as the difference from the value of the Base item in the Base field . Our Example takes current month and subtracts the previous month and calculates the "% Change" from month to month.
Running Total in	Displays the value for successive items in the Base field as a running total. Our Example adds each successive month to get the "Running" Total or "Cummulative" Total.

8. Dashboards

1. Dashboard:
 - A Dashboard is defined as one location where we can present the information we create in a neat and organized manner.
 - When new data arrives, the Dashboard can be refreshed.
 - Just like a dashboard in a car, a dashboard should present information that is required for making good decisions.
 - Data Visualization that presents useful information and metrics and will update automatically when new data become available.
 - Dashboards may contain: Tables, Charts, Data Validation, Pictures, Other visualizations of Data.
2. Effective Dashboards:
 - Presents timely summary data, metrics or key performance indicators (KPI).
 - Metrics/KPIs should be useful for the user/decision maker.
 - Dashboard should inform rather than overwhelm.
 - Should call attention to unusual metrics/KPIs that require attention or are of interest.

9. SUMIFS and similar Functions or PivotTables?

1. Advantage of PivotTable:
 - Quick and easy to make.
 - Conditions or Criteria in Rows or Columns area are created automatically by dragging a field to Rows or Columns area. When you drag a field to the Rows or Columns area a unique list of items from the field is created.
2. Disadvantage of PivotTable:
 - If source data changes, you must right-click PivotTable and point to Refresh.
3. Advantage of SUMIFS:
 - If source data changes, formulas update instantly.
4. Disadvantage of SUMIFS:
 - Have to type out conditions/criteria for Rows or Columns area.
 - When making Calculations with Conditions or Criteria, it often takes longer to create a formula solution than it does to create a PivotTable solution.

10. Standard PivotTables or Data Model PivotTables?

1. Standard PivotTables:
 - Use when you have about 50,000 rows of data or less.
 - Use when you have one Proper Data Set with all your Data.
 - You don't mind applying Number Formatting every time you make a PivotTable Calculation.
 - PivotTable Calculations are sufficient.
2. Data Model PivotTables:
 - Good for two reasons when you have large data sets:
 - i. File size is reduced when your Data is in the Data Model.
 - ii. You can easily build reports from millions of rows of data (Excel Spreadsheet only allows 1 million rows)
 - Great when you have more than one Proper Data Set as the source Data
 - Allows you to add Number Formatting to Formulas.
 - Has more options for calculations than a Standard PivotTable.

11. Sales Data Dashboard Examples from Video:

1. Starting Data and Goals:

	A	B	C	D	E	F	G	H																																																																																																
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2	Objective #2: PivotTable Cached Data																																																																																																							
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5	Objective #5: Summarize Values By to Change Aggregate Function																																																																																																							
6	Objective #7: Dashboard to Present Information																																																																																																							
7																																																																																																								
8	Goal:																																																																																																							
9	Create Two Summary Reports and Connect to Slicer for Quick Analysis in a Dashboard.																																																																																																							
10	Managers want to see: 1) Number of units by Country and Product and 2) Sum and Ave of Rev by Month.																																																																																																							
11	3) Managers want to filter reports by Year and Country.																																																																																																							
12	We will learn about the five objectives that are listed above.																																																																																																							
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2. Finished Dashboard:

Boomerang Incorporated Dashboard						
Country	Product	Sum of Units	Years (Date)	Date	Sum of Rev (\$)	Average of Rev (\$)
Spain	Alpine	22	2017	Jan	5,456	419.71
	Aspen	41		Feb	690	69.03
	Bellen	51		Mar	1,278	98.27
	Bower Aussie Round	9		Apr	3,221	153.36
	Carlota	252		May	723	42.50
	Carlota Doublers	9		Jun	890	88.96
	Crested Beaut	4		Jul	1,408	127.99
	Darnell Tri Fly	15		Aug	1,244	77.74
	Eagle	18		Sep	1,031	64.41
	Fire Aspen	6		Oct	1,277	85.16
	Frido Fast Catch	12		Nov	2,259	55.10
	Fun Fly	287		Dec	5,604	109.88
	Gelfast	22		2017 Total	25,079	107.18
Majestic Beaut	75	Grand Total	25,079	107.18		
Manu LD	7					
Manu MTA	76					
Phoenix	82					
Quad	13					
Sunset	12					
Sunshine	71					
Sunspot	62					
Yanaki	96					
Spain Total	1242					
Grand Total	1242					

Transaction Country Origin				
Algeria	Argentina	Armenia	Australia	Austria
Bahamas	Belgium	Brazil	Bulgaria	Cambodia
Canada	Chile	Colombia	Costa Rica	Czech Republic
Denmark	Dominican Repu...	Ecuador	Egypt	Fiji
Finland	France	Germany	Greece	Guatemala
Hong Kong	Hungary	Iceland	India	Indonesia
Ireland	Israel	Italy	Jamaica	Japan
Kenya	Luxembourg	Macao	Malaysia	Mexico
Morocco	Namibia	Nepal	Netherlands	New Zealand
Norway	Peru	Philippines	Poland	Portugal
Puerto Rico	Russian Federati...	Saudi Arabia	Singapore	South Africa
Spain	Sri Lanka	Sweden	Switzerland	Taiwan, Province...
Thailand	Turkey	Ukraine	United Arab Emi...	United Kingdom
United States	Venezuela	Viet Nam	Zambia	

Years (Date)		
2016	2017	2018

12. Cell Phone Data Examples from Video to Build Frequency Distribution:

	A	B	C	D	E	F
1						
2		Objective #5: Summarize Values By to Change Aggregate Function				
3		Objective #6: Show Values As to Change to Specific Calculations				
4						
5						
6		Goal:				
7		Create Frequency Distribution Report. "Count of Phones Purchased Report & % Phones Purchased" Report.				
8		using Count Aggregate Function and Show Values As "% of Column Total"				
9		This is an example of:				
10		1) A small data set.				
11		2) Built-in Calculations in a Standard PivotTable are perfect for the task at hand.				
12		3) We do not need report to update instantly when source data changes.				
13		4) This is a one time sample of data that we do not need to refresh				
14						
15		Data = about 560 rows =				Relative Frequency
16		From sample of Phone Purchases			Frequency	% Frequency
17						
18		Phones Purchased	Phones Purchased	Count of Phones Purchased	% Phones Purchased	
19		Apple iPhone 9	Apple iPhone 10	87	15.56%	
20		Apple iPhone 9	Apple iPhone 9	123	22.00%	
21		Apple iPhone 9	LeEco	74	13.24%	
22		Samsung Galaxy S8	Moto G Plus	20	3.58%	
23		Apple iPhone 10	Pixel	39	6.98%	
24		Samsung Galaxy S5	Samsung Galaxy S5	64	11.45%	
25		Samsung Galaxy S5	Samsung Galaxy S8	152	27.19%	
26		Apple iPhone 10	Grand Total	559	100.00%	
27		Apple iPhone 9				
28		Apple iPhone 9				
29		Apple iPhone 9				
30		Apple iPhone 9				

13. CPA Data Examples from Video to Build CPA Pass Rate Report:

	A	B	C	D	E	F	G	H	I	J	
1											
2	Objective #6: Show Values As to Change to Specific Calculations										
3											
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CPA Score	Prep Course?	CPA Prep Course?	Test Pass/Fail	Does Prep Course Help? Report			
				Fail	Pass	Grand Total	
945	PC	Took CPA Preparation Course	Pass				
846	PC	Took CPA Preparation Course	Pass				
903	PC	Took CPA Preparation Course	Pass				
795	PC	Took CPA Preparation Course	Pass				
865	PC	Took CPA Preparation Course	Pass				
765	PC	Took CPA Preparation Course	Pass				
802	PC	Took CPA Preparation Course	Pass				
921	PC	Took CPA Preparation Course	Pass				
948	PC	Took CPA Preparation Course	Pass				
				Did NOT Take CPA Preparation Course	83.81%	16.19%	100.00%
				Took CPA Preparation Course	60.78%	39.22%	100.00%
				Grand Total	75.00%	25.00%	100.00%