



Introduction to Excel Dashboards Part 1

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About the speaker:

David H. Ringstrom, CPA, is an author and nationally recognized instructor who teaches scores of webinars each year. His Excel courses are based on over 25 years of consulting and teaching experience. His mantra is “Either you work Excel, or it works you.” David offers spreadsheet and database consulting services nationwide.

Excel Versions

I'll be teaching from the Microsoft 365 version of Excel, and noting any differences or limitations in the legacy versions of Excel. References to Excel 2013+, Excel 2016+, and so on mean a feature is available in all subsequent versions, including Microsoft 365.

The Future of Excel

Microsoft 365 (Formerly Office 365)

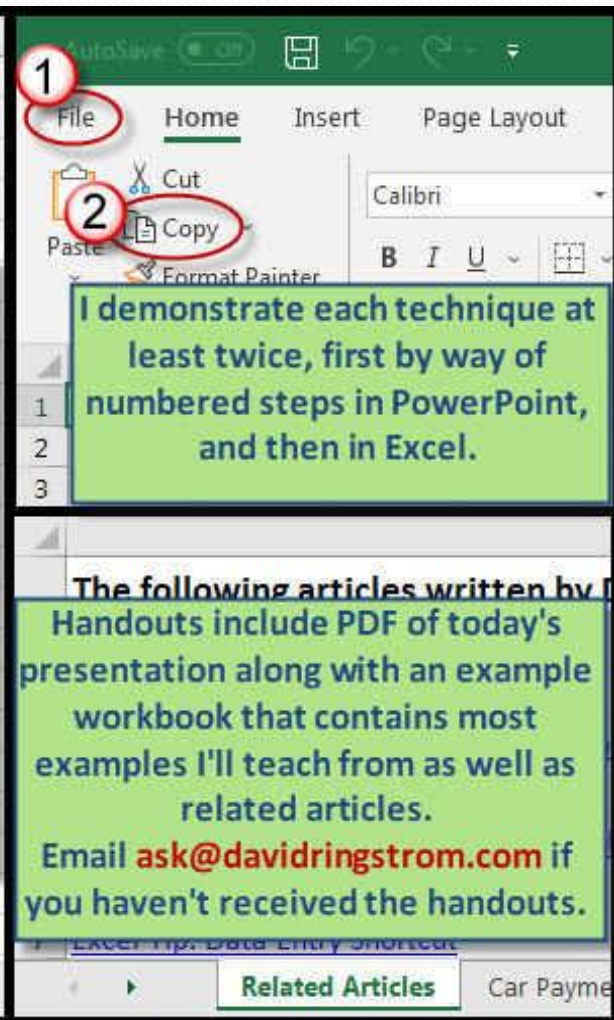
Subscription-based version of Microsoft Office, which includes Excel. Use the software on multiple devices, new calculation engine, services and more features are rolling out that will dramatically set this version apart from past Excel versions.
www.microsoft365.com

Legacy Versions

Perpetual Licenses

Pay once for the software to use on a single computer. No new features added until you buy a new license. Includes

Excel 2019
Excel 2016
Excel 2013
Excel 2010
Excel 2007 and earlier



1 File Home Insert Page Layout

2 Cut Copy

Paste Format Painter

Calibri

B I U

I demonstrate each technique at least twice, first by way of numbered steps in PowerPoint, and then in Excel.

The following articles written by David Ringstrom include PDF of today's presentation along with an example workbook that contains most examples I'll teach from as well as related articles.

Email ask@davidringstrom.com if you haven't received the handouts.

Excel Tips, Data Entry Shortcuts

Related Articles Car Payme



Dashboard Data Source

	A	B	C	D	E	F			A	B	C
1	Date	Quantity	Product Code	Vendor					1	Vendor	Region
2	6/17/2022	4	ASPER	Navel Oranges & More					2	Veggies R Us	North GA
3	9/9/2022	57	GRBNC	Oranges 'n Onions					3	Bob's Product Stand	West GA
4	7/16/2022	142	GRBNB	Middle Georgia Farmstand					4	Tomatoju	South GA
5	2/16/2022	84	CABBC	Middle Georgia Farmstand					5	Orange U Glad	North GA
6	12/19/2022	166	CABBB	Middle Georgia Farmstand					6	Mountain Product	North GA
7	10/17/2022	101	RCABC	Bob's Product Stand					7	Farm to Table Direct	North GA
8	3/29/2022	88	RCABB	Mountain Product					8	Middle Georgia Farmstand	Mid GA
9	9/24/2022	182	WCRNC	Bob's Product Stand					9	Whistlestop Produce	Mid GA
10	10/16/2022	39	WCRNB	Tomatoju					10	Navel Oranges & More	South GA
		Sales	+								
	A	B	C	D	E	F			A	B	C
1	Prod Code	Description	Gr Wt	Group #	Pkgs/Pal				12		
2	ASPER	20 lb carton asparagus	22	1	64				13		
3	GRBNC	15 lb carton green beans	17	2	64				14		
4	GRBNB	bushel carton green beans	32	2	49				15		
5	CABBC	carton green cabbage	47	3	35				16		
6	CABBB	bins green cabbage	700	3	1				17		
7	RCABC	carton red cabbage	47	3	35				18		
8	RCABB	25 lb carton red cabbage	27	3	65				19		
9	WCRNC	cartons Amaize White corn	52	4	42				20		
10	WCRNB	bins con	750	4	1				21		
		Products	+								
		</									



Using Power Query to Import Sales

The screenshot illustrates the process of importing sales data into Excel using Power Query. The steps are as follows:

1. Click the **Data** tab in the ribbon.
2. Click the **Get Data** button in the Data tab.
3. Select **From File** in the Get Data menu.
4. Select **From Workbook** in the From File submenu.
5. In the **Import Data** dialog box, select the **Sales.xlsx** file from the list of files on the Desktop.
6. Click the **Import** button in the Import Data dialog box.
7. In the **Navigator** pane, select the **Sales** data source.
8. Click the **Transform Data** button in the Navigator pane.

The **Sales** data source is shown in the Navigator pane with the following data:

Date	Quantity
6/17/2022	
9/9/2022	5
7/16/2022	14
2/16/2022	8
12/19/2022	16
10/17/2022	10
3/29/2022	8
9/24/2022	18
10/16/2022	3
1/27/2022	15
9/17/2022	14
7/15/2022	13
10/29/2022	2



Import Products and Vendors

Step 9: In the Power Query Editor, click the **Home** tab.

Step 10: Click the **New Source** button.

Step 11: Click **File** in the dropdown menu.

Step 12: Click **Excel Workbook** in the list of source types.

Step 13: In the 'Import Data' dialog, select **Products.xlsx** from the list of files.

Step 14: Click the **Import** button.

Step 15: In the 'Navigator' pane, select the **Products** table.

Step 16: Click the **OK** button.

Step 17: Repeat steps 9 - 16 for the Vendors.xlsx file.

Description
20 lb carton asp
15 lb carton gre
bushel carton gr
carton green cab
bins green cabba
carton red cabba
25 lb carton red
cartons Amaize
bins con
60 lb carton cuc
dill weed
cartons eggplan
cartons concord
10 lb carton



Merging Sales and Products Tables

Sales - Power Query Editor

File | **Home** | **Transform** | **Add Column**

Close & Load | Refresh Preview | Properties | Advanced Editor | Choose Columns | Manage

Close | Query | Manage

18 Sales

Products

Vendors

19 Home

Refresh Preview

20 Merge Queries

21 Merge Queries as New

Combine

22

23

24

25 OK

Merge

Select tables and matching columns to create a merged table.

Sales

Date	Quantity	Product Code	Vendor	Product Code
6/17/2022	4	ASPER	Navel Oranges & More	null
9/9/2022	57	GRBNC	Oranges 'n Onions	null
7/16/2022	142	GRBNB	Middle Georgia Farmstand	null

Products

Prod Code	Description	Gr Wt	Group #	Pkgs
ASPER	20 lb carton asparagus	22	1	
GRBNC	15 lb carton green beans	17	2	
GRBNB	1 bushel carton green beans	32	2	

Join Kind

Left Outer (all from first, matching from second)

☐ Use fuzzy matching to perform the merge

Fuzzy matching options

✓ The selection matches 210 of 210 rows from the first table.



Merge Vendors Table

FileHome

Close & Load

Refresh Preview

Close

Queries [4]

Sales

Products

Vendors

Merge1

27

Merge Queries

Append Queries

Combine Files

Combine

Code"}, "Products",

Vendor

Navel Oranges & More

Oranges 'n Onions

Middle Georgia Farmstand

Middle Georgia Farmstand

Middle Georgia Farmstand

Bob's Product Stand

Mountain Product

Bob's Product Stand

Tomatoju

Oranges 'n Onions

Veggies R Us

Middle Georgia Farmstand

Whistlestop Produce

Middle Georgia Farmstand

Merge

Select a table and matching columns to create a merged table

Merge1

Date	Quantity	Product Code	Vendor
6/17/2022	4	ASPER	Navel Oranges & More
9/9/2022	57	GRBNC	Oranges 'n Onions
7/16/2022	142	GRBNB	Middle Georgia Farm

28

Vendor

Navel Oranges & More

Oranges 'n Onions

Middle Georgia Farm

29

Vendors

30

Column1

Vendor

Veggies R Us

Bob's Product Stand

Column2

Region

North GA

West GA

Join Kind

Left Outer (all from first, matching from second)

☐ Use fuzzy matching to perform the merge

Fuzzy matching options

☒ The selection matches 210 of 210 rows from the first table.

31

OK

Cancel



Expand Merged Tables

Column5 | Column6 | Products

Search Columns to Expand

☒ Expand ☐ Aggregate

33 ☐ (Select All Columns)

☒ Prod Code

☒ Description

☒ Gr Wt

☒ Group #

☒ Pkgs/Pal

☒ Use original column name as prefix

34 OK Cancel

null	null	Table
null	null	Table
null	null	Table
null	null	Table
null	null	Table
null	null	Table
null	null	Table
null	null	Table
null	null	Table
null	null	Table
null	null	Table

Products.Group # | Products.Pkgs/Pal | Vendors

Search Columns to Expand

☒ Expand ☐ Aggregate

36 ☐ (Select All Columns)

☐ Vendor

☒ Region

☒ Use original column name as prefix

37 OK Cancel

6	45	Table
7	64	Table
9	80	Table
9	80	Table
9	80	Table
10	45	Table
10	3	Table
10	45	Table
10	1	Table
14	1	Table



Initiate PivotTable

38 Select unwanted columns and then press Delete.

ABC	123	Column5	Column6
		null	
		null	
		null	
		null	
		null	
		null	
		null	

Import Data

Select how you want to view this data in your workbook

☒ Table

☐ PivotTable Report

☐ PivotChart

☐ Only Create Connection

Where do you want to put the data?

☐ Existing worksheet:

=SA\$1

☒ New worksheet

☐ Add this data to the existing data in the selected worksheet

41 Model

OK Cancel

42 The data appears in a new workbook. Any worksheets other than Merge1 can be deleted. Merge1 can be renamed to anything you like.

	A	B	C	
1	Date	Quantity	Product Code	V
2	6/17/2022	4	ASPER	N
3	12/1/2022	197	ASPER	M
10	7/16/2022	142	GRBNB	M

Merge1 Vendors ...

39 Close & Load

40 Close & Load To...

File Home Transform Add Column

Properties

Advanced Editor

Choose Columns

Manage

Sales

Products

Vendors

44 Summarize with PivotTable

43 Table Design

File Home Insert Page Layout Formulas Data

Table Name: Merge1

Remove Duplicates

Convert to Range

Insert Slicer

Export Refresh

External Table

	A	B	C	D
1	Date	Quantity	Product Code	Vendor
2	6/17/2022	4	ASPER	Navel Oranges & More
3	12/1/2022	197	ASPER	Mountain Product



Add Fields to PivotTable

Create PivotTable

Choose the data that you want to analyze

☒ Select a table or range

Table/Range: Merge1

☐ Use external data source

Location:

Choose whether you want to analyze multiple tables

☐ Add this data to the Data Model

OK

Filters

Columns

Values

Vendors:Region

Vendor

Sum of Quantity

Defer Layout Update

Row Labels	Sum of Quantity
Mid GA	5,504
Middle Georgia Farmstand	2,746
Whistlestop Produce	2,758
North GA	8,327
Farm to Table Direct	1,859
Mountain Product	1,529
Orange U Glad	2,999
Veggies R Us	1,940
South GA	5,596
Navel Oranges & More	1,516
Oranges 'n Onions	1,731
Tomatoju	2,349
West GA	1,433
Bob's Product Stand	1,433
Grand Total	20,860

Product Sales	Quantity
Mid GA	5,504
Middle Georgia Farmstand	2,746
Whistlestop Produce	2,758
North GA	8,327
Farm to Table Direct	1,859
Mountain Product	1,529
Orange U Glad	2,999
Veggies R Us	1,940
South GA	5,596
Navel Oranges & More	1,516
Oranges 'n Onions	1,731
Tomatoju	2,349
West GA	1,433
Bob's Product Stand	1,433
Grand Total	20,860

Type Product Sales here.

Type "Quantity" here, meaning keep an extra space before or after the word Quantity, otherwise you'll encounter the "PivotTable Field Name Already Exists" error.

Format the numbers.

The beginning of our dashboard.



Create PivotChart from PivotTable

Step 1: Click any cell within the pivottable.

Product Sales	Quantity
Mid GA	5,504
Mountain Georgia Farmstand	2,746
Weststop Produce	2,758
Mountain Product	1,529
Orange U Glad	2,999
Veggies R Us	1,940

Step 2: Click the **Insert** tab in the ribbon.

Step 3: Click the **PivotChart** button in the **PivotTable Analyze** group.

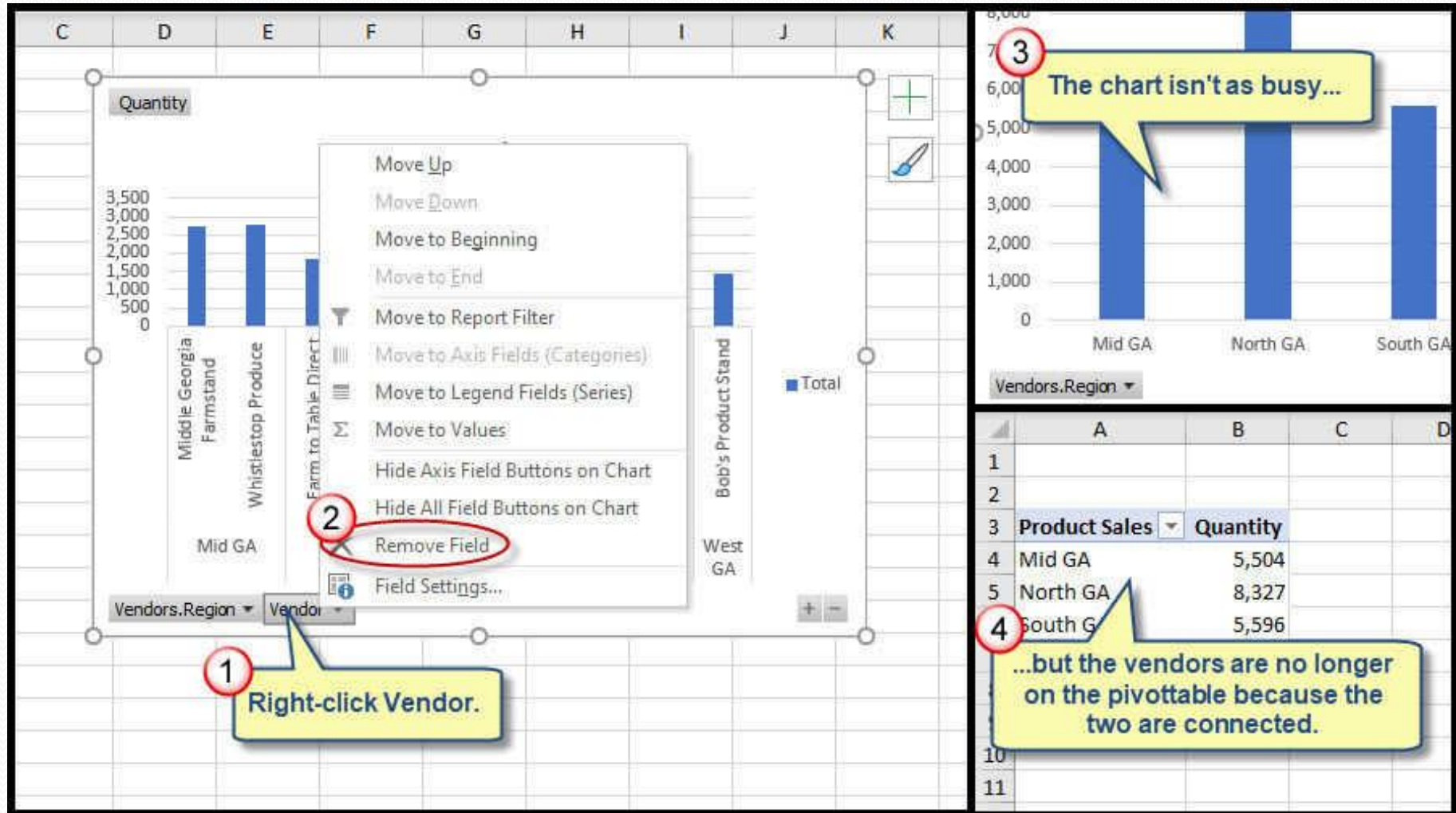
Step 4: Choose any chart format.

Step 5: Click the **OK** button in the **Insert Chart** task pane.

The **Insert Chart** task pane shows the **Column** chart type selected under **All Charts**. The **Clustered Column** chart format is highlighted.



PivotTable/PivotChart Conflicts





Separate PivotChart from PivotTable

Step 1: Right-click the pivotchart.

Step 2: Cut

Step 3: Select any cell within the source data.

Step 4: Insert

Step 5: Choose a pivotchart format.

Step 6: Axis (Categories): Vendors.Region; Values: Sum of Quantity

Step 7: The pivotchart appears on a new worksheet and is not connected to our original pivot table.

Date	Quantity	Product Code	V
6/17/2022	4	ASPER	N
12/1/2022	197	ASPER	M
9/29/2022	88	RCABB	M
1/27/2022	150	CUKEB	B
10/16/2022	39	WCRNB	T
7/16/2022	142	GRBNB	M

	A	B	C
4	South GA	5596	9000
5	West GA	1433	8000
6	Grand Total	20860	7000
7			6000
8			5000
9			4000
10			3000
11			2000
12			1000
13			0

Mid GA North GA South GA West GA



Data Bars Conditional Formatting

1 Add vendor back to the original pivottable.

2 Add quantity a second time to the original pivottable.

3 Select any regional total.

4 Conditional Formatting

5 Data Bars

6 All cells showing "Sum of Quantity" values

7 Choose Show Bar Only.

8 Color

9 OK

	Quantity	Sum of Quantity
Georgia Farmstand	2,746	2746
stop Pro	2,758	2758
Table Dire	1,529	1529
in Product	2,999	2999
U Glad	1,940	1940
S R Us	5,596	5596
ranges & More	1,516	1516
s'n Onions	1,731	1731



Data Bars Conditional Formatting

9 Apply a different color data bar to the vendor rows.

11 Select cell C3 and then hold down the Ctrl key and choose the Grand Total in column C.

12 Blue, Accent 1, Lighter 80%

13 The heading and grand total are now hidden.

Product Sales	Quantity	Sum of Quantity
Mid GA	5,504	
Mid GA	2,746	
Mid GA	327	
Farm to Table Direct	1,859	
Mountain Product	1,529	
Orange U Glad	2,999	
Veggies R Us	1,940	
South GA	5,596	
Navel Oranges & More	1,516	
Oranges 'n Onions	1,731	
Tomatoju	2,349	
West GA	1,433	
Bob's Product Stand	1,433	
Grand Total	20,860	20860

Dashboard | Sheet1 | Source Data



Using Slicers for Interactivity

1 Choose any field within the pivottable.

Product Sales	Quantity
Mid GA	5,504
Mid Georgia Farmstand	2,746
	2,758
	8,327
	1,859
Mountain Product	1,529
Orange U Glad	2,999
Veggies R Us	1,940

2 PivotTable Analyze

3 Insert Slicer

4 Choose the field(s) you wish to filter on.

5 OK

6 You can now filter the pivottable by choosing a region. Hold down the Ctrl key to make multiple choices.

7 Click Clear when enabled to reset the slicer.

Vendors.Region

- Mid GA
- North GA
- South GA
- West GA



Create Top 10 PivotTable

1 Select any cell within the Power Query data.

2 Table Design

3 Summarize with PivotTable

4 OK

5 Rows: Products.Description, Values: Sum of Quantity

6 Row Labels

7 Label Filters, Value Filters

8 Top 10...

Date	Quantity	Product Code
6/17/2022	4	ASPER
12/1/2022	197	ASPER
3/29/2022	88	RCABB
6/17/2022	101	RCABB
1/27/2022	150	COKEB
10/16/2022	39	WCRNB
7/16/2022	142	GRBNB
2/16/2022	84	CABBC

Source Data

Create PivotTable:

Choose the data that you want to analyze

☒ Select a table or range

Table/Range: Merge1

☐ Use an external data source

Choose whether you want to analyze multiple tables

☐ Add this data to the Data Model

OK

Filters

Columns

Rows: Products.Description

Values: Sum of Quantity

Row Labels

Sort A to Z

Sort Z to A

More Sort Options...

Clear Filter From "Products.Description"

Label Filters

Value Filters

Search

☒ (Select All)

☒ 10 lb carton an

☒ 10 lb carton ba

☒ 10 lb carton ca

☒ 10 lb carton sn

☒ 10 lb carton sug

☒ 10 lb carton tor

☒ 15 lb carton gre

OK

Equals...

Does Not Equal...

Greater Than...

Greater Than Or Equal...

Less Than...

Less Than Or Equal...

Between...

Not Between...

Top 10...



Create Top 10 PivotTable

Left Panel (Initial State):

Row Labels	Sum of Quantity
10 lb carton anaheim hot peppers	621
10 lb carton banana hot pep	414
10 lb carton caribe/yellow ho	
10 lb carton snow peas	
10 lb	
10 lb	
15 lb	
15 lb	
15 lb	
25 lb carton red cabbage	459
25 lb carton tomatoes	362
40 lb carton green zucchini	526
40 lb carton tomatillos	375
5 lb carton tomatillos	474
60 lb carton cucumbers	395
bins buttercup squash	455
	540
	469

Top 10 Filter (Products, Des)

Show: **Top** **10** Items by Sum of Quantity

Optional: Choose Top or Bottom here. (Callout 9)

Optional: Change the number to anything you like. (Callout 10)

OK (Callout 11)

Right Panel (Sorted State):

Row Labels	Sum of Quantity
cartons personal waterme	864
10 lb carton tomatillos	737
bins of orange pumpkins	725
carton green cabbage	698
bins green cabbage	641
10 lb carton anaheim hot p	621
bushel carton green bean:	609
10 lb carton caribe/yellow	600
cartons buttercup squash	587
10 lb carton snow peas	572
Grand Total	6654

Optional: Right-click the Quantity column, choose Sort, and then Largest to Smallest to rank the data in descending order. (Callout 12)



Assemble Dashboard

1 Presently all of the pivottables and charts are on separate sheets. This is purposeful, and a best practice for design. Pivottables cannot expand and show new data if placed too close in proximity to other pivottables. We'll now assemble the dashboard itself.

2 Click to add a new worksheet, which you'll rename Dashboard. If you already have a Dashboard worksheet first rename the original sheet Product Sales.

3 Select the cells in the Product Sales pivottable plus some additional blank rows to allow for the pivottable to expand.

4 Select cell A1 of the dashboard.

Product	Quantity
Farm to Table Direct	175
Mountain Product	184
Veggies R Us	160
South GA	333

Product	Quantity
Product Sales	Quantity
Mid GA	435



Assemble Dashboard

5 Paste

6 Paste Special...

7 View

8 Gridlines

9 Right-click the Slicer.

10 Paste the Slicer onto the Dashboard.

11 Cut and paste the Timeline onto the Dashboard in the same fashion.

Copy other pivot tables and paste as linked pictures as well.

Turn Gridlines off on the Dashboard as well as any worksheets you're copying linked pictures from.

Vendors.Region

Mid GA

North GA

South GA

West GA

Dashboard

Produ ...

Jul 2022

2022

JN JUL AUG SEP OCT

Dashboard

Produ ...



Assemble Dashboard

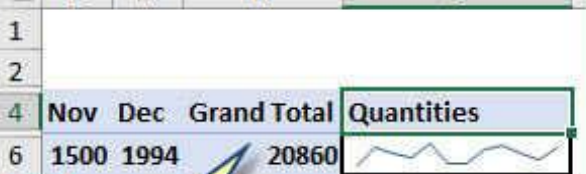
12

Cut and paste the Regional chart to the dashboard in the same fashion as the Slicer and Timeline.



13

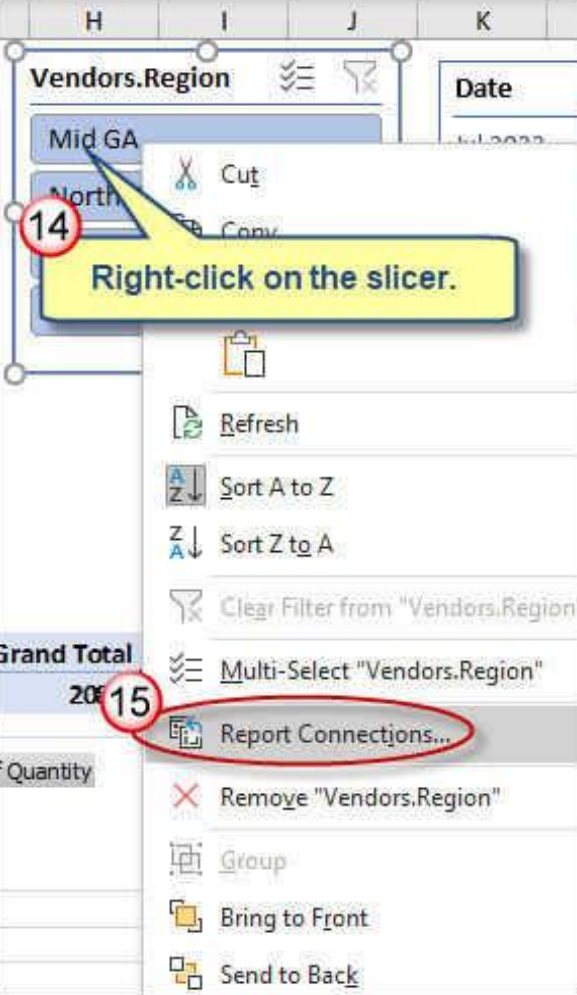
Copy and paste a linked picture of the Quantity by Month to the dashboard.



Vendors.Region

14

Right-click on the slicer.



15

Report Connections...

Report Connections (Vendors.Region)

16

Select PivotTable and PivotChart reports to connect to

Name	Sheet
PivotTable1	Product Sales
PivotTable3	Quantity By M
PivotTable2	Regional Chart
PivotTable5	Top 10

17

OK

Date

18

Steps 14-17 enable you to control all of the pivot tables with the slicer. Repeat the same steps for the Timeline.





PivotTable Drill-Down

1 Double-click a linked picture to navigate to the corresponding pivottable.

	A	B	C	D
1	Product Sales		Quantity	
2	Mid GA		5,504	
3	Middle Georgia Farmstand		2,746	
4	Whistlestop Produce		2,758	
5	North GA		8,327	
6	Farm to Table Direct		1,859	
7	Mountain Product		1,529	
8	Orange U Glad		2,999	
9	Veggies R Us		1,940	
10	South GA		5,596	
11			1,516	
12			1,731	
13			1,349	
14			1,433	
15	Bob's Product Stand		1,433	
16	Grand Total		20,860	
17				
18				
19	Jan	Feb	Mar	Apr
20	1282	1963	1773	1597
21				
22	Top 10 Items			

2 Double-click any number in a pivottable to drill-down into the details.

	A	B	C	D	E	F
3	Product Sales		Quantity			
4	Mid GA		5,504			
5	Middle Georgia Farmstand		2,746			
6	Whistlestop Produce		2,758			
7	North GA		8,327			
8	Farm to Table Dir					
9	Mountain Product					
10	Orange U Glad					
11	Veggies R Us		1,940			
12	South GA		5,596			

3 A new worksheet appears that shows the underlying detail behind the pivottable amount.

	A	B	C	D	E	F
1	Date	Quantity	Product Code	Vendor	Products.Description	Products.Gr W
2	8/10/2022	150	ZU40C	Middle Ge	40 lb carton green zucch	
3	4/11/2022	170	TM15C	Middle Ge	15 lb carton tomatoes	
4	8/8/2022	116	RCABB	Middle Ge	25 lb carton red cabbage	
5	10/20/2022		ZUCCB	Middle Ge	bins of green zucchini	
6	1/7/2022					
7	1/25/2022	18				
8	9/18/2022	14				
9	12/19/2022	82	SWTRB	Middle Ge	bins seeded watermelon	
10	7/16/2022	142	GRBNB	Middle Ge	bushel carton green bea	



PivotTable Refresh Options

1 Click Refresh All to refresh the dashboard, meaning the pivottables, pivotchart, and Power Query.

2 Click Refresh All to refresh the dashboard, meaning the pivottables, pivotchart, and Power Query.

3 Right-click a heading.

4 PivotTable Name: PivotTable1
Layout & Format Totals & Filters Display Printing Data Alt Text

5 Clear this checkbox to prevent columns from resizing when you use the Slicer and Timeline.

6 PivotTable Name: PivotTable1
Layout & Format Totals & Filters Display Printing Data Alt Text

7 When set this caused the pivottable to refresh when you open the dashboard spreadsheet.

8 OK Cancel

Product	Sales	Quantity
Mid C	504	746
North G	758	327
Farm t	859	529
Mount	999	1,940
Orange		
Veggies R Us		



Set Power Query Auto-Refresh

Query Properties

Query name: Merge1
Description:

Usage Definition Used In

Refresh control

4 Last Refreshed:

5 ☐ Enable background refresh

☐ Refresh every 60 minutes

6 ☒ Refresh data when opening the file

☐ Remove data from the external data range before saving the workbook

☒ Refresh this connection on Refresh All

☒ Enable Fast Data Load

OLAP Server Formatting

Retrieve the following formats from the server when using this connection:

☐ Number Format ☐ Fill Color

☐ Font Style ☐ Text Color

OLAP Drill Through

Maximum number of records to retrieve:

Language

☒ Retrieve data and errors in the Office display language when available

7 OK Cancel

Click any cell on the source data worksheet.

Date	Quantity
6/7/2022	197
7/1/2022	197
7/16/2022	142
2/16/2022	84
12/19/2022	166
9/17/2022	14
7/15/2022	133

Products.Gr	Wt	Products.
	22	
	22	
	27	
	47	
	52	
	17	
	62	
	750	
	32	
	47	
	700	
	0	
	37	



External Data Connections Prompt

SECURITY WARNING External Data Connections have been disabled. [Enable Content](#)

Info
Dashboard
Desktop » Dashboard

1. Save

2. Info

3. Enable Content

4. Enable All Content
Always enable this (make this a Trust)

Advanced Options
Select which active

Table Data:

	A	B	C	D	E
1	Date	Quantity	Product Code	Vendor	Products.Description
2	6/17/2022	4	ASPER	Navel Oranges & Mo	20 lb carton asparagus
3	12/1/2022				asparagus
4	3/29/2022				red cabbage
5	10/17/2022				cabbage
6	9/24/2022				size White
7	9/9/2022				green bea
8	1/27/2022	150	CUKEB	Oranges n Onions	60 lb carton cucumber
9	10/16/2022	39	WCRNB	Tomatoju	bins con
10	7/16/2022	142	GRBNB	Middle Georgia Farmstand	bushel carton green b
11	2/16/2022	84	CABBC	Middle Georgia Farmstand	carton green cabbage
12	12/19/2022	166	CABBB	Middle Georgia Farmstand	bins green cabbage
13	8/17/2022	14	DILL	Middle Georgia Farmstand	dillwood

Dashboard Source Data

Text Box: This prompt appears every time you open a spreadsheet that contains one or more Power Query connections. If you click Enable Content you'll have to click it every time you open the file. Do steps 1 through 4 instead.

Thank you for attending!

I'm happy to hear from you. In particular let me know if you did not receive the handouts for this presentation.

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Is there something you were hoping to learn today but didn't?
Please let me know. You can ask me anything about Excel.