



Making Every Child More Visible: Combine Data from Multiple Assessments to Reveal Needs

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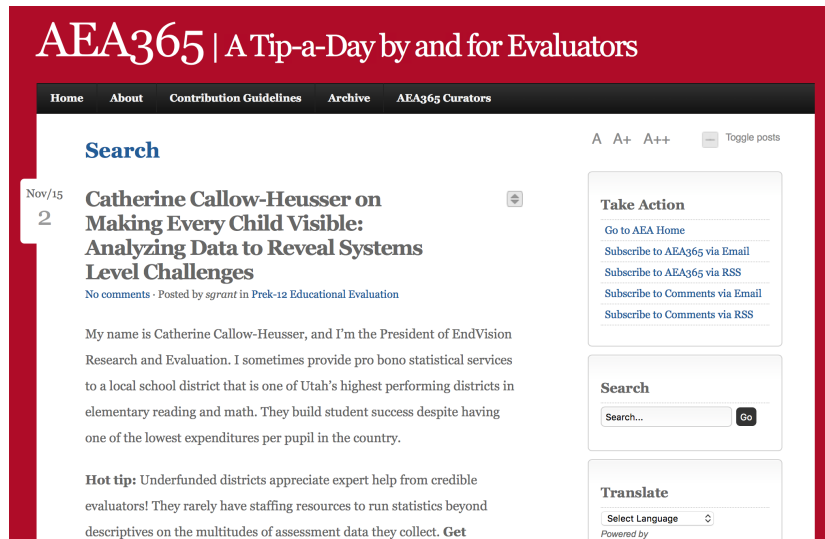


Excel or SPSS or R?

- Excel and SPSS are shown subsequently
 - Everyone has Excel
 - Administrators, coaches and teachers constantly request PD for using Excel to analyze data
 - Few have SPSS licenses, which are inexpensive for educational users
 - Not a single district or school has been interested in using R
- R requires comfort with programming, which in my experiences with professional development for administrators and coaches has not been popular

<http://aea365.org/>

- Go to aea365.org
- Search for “Callow”
- Focused on using SPSS to combine data from multiple sources
- Methods using SPSS in 2016 AEA presentation in AEA library



Today, we will ...

- Restructure and analyze data to make students visible and identify needs using Microsoft Excel
 - Restructure files that have more than one row per student (i.e., DIBELS data files)
 - Merge data from multiple files or worksheets
 - Create pivot tables to identify groups of students
 - Create informational tables from pivot tables
 - Sort data files to locate specific students
- Discuss findings that result from analyzing data

Accessing Files for This Session

■ Go to

- <http://www.endvision.net/AEA2016>
- Click on filenames to download
 - **Example.xls**
contains original DIBELS Next data
 - **StateAssessmentData.xls**
contains original State Assessment of Growth and Excellence (SAGE) data from a Utah school
 - **Combined-DIBELS-SAGE.xls**
contains data combined from both data sets and the Pivot Tables that summarize two variables in the data

Data Files

- Most data systems will export or “Save as” .csv (comma separated variables) files
- Once data are in .csv files, they can be imported by Excel, SPSS, or R
- Start by opening data files that need to be restructured in Excel
 - Identify files that have multiple rows per student
 - Combine and clean data files in Excel
 - Use Excel to restructure and combine with one row per student

First, we need to restructure data files that have more than one row per student. In Excel, make sure variable names are descriptive. Use underscores so variable names will work with any statistics software. Make sure the unique identifier is the first column.

Student_id	LastName	FirstName	Grade	Teacher	Benchmark	Composite_Level	Composite_Score	CLS_Level	CLS_Score
123477553	Student_1	Jesus	1	Krebs	BOY	Below Benchmark		108	Below Benchmark
123477553	Student_1	Jesus	1	Krebs	EOY	Below Benchmark		115	Benchmark
123477553	Student_1	Jesus	1	Krebs	MOY	Well Below Benchmark		91	Benchmark
123474562	Student_10	Kennedy	1	Soto	BOY	Benchmark		119	Benchmark
123474562	Student_10	Kennedy	1	Soto	EOY	Well Below Benchmark		92	Well Below Benchmark
123474562	Student_10	Kennedy	1	Soto	MOY	Well Below Benchmark		61	Below Benchmark
123477695	Student_11	Gabriel	1	Liu					
123477695	Student_11	Gabriel	1	Liu					
123477695	Student_11	Gabriel	1	Liu					
123479490	Student_12	Zakk	1	Be					
123479490	Student_12	Zakk	1	Be					
123477558	Student_2	Advina	1	Kr					
123477558	Student_2	Advina	1	Kr					
123477558	Student_2	Advina	1	Kr					
123477550	Student_3	Salim	1	Be					
123477550	Student_3	Salim	1	Be					
123477548	Student_4	Giohan	1	So					
123477548	Student_4	Giohan	1	So					
123477548	Student_4	Giohan	1	So					
123478773	Student_5	Kelsey	1	Li					
123478773	Student_5	Kelsey	1	Li					

Locate the variable (column) used to identify differences between rows, or cases, for the same student. To ensure time points sort in an appropriate order, replace data with values that will sort as needed, such as 1BOY, 2MOY, 3EOY.

Replace

Find what:
BOY

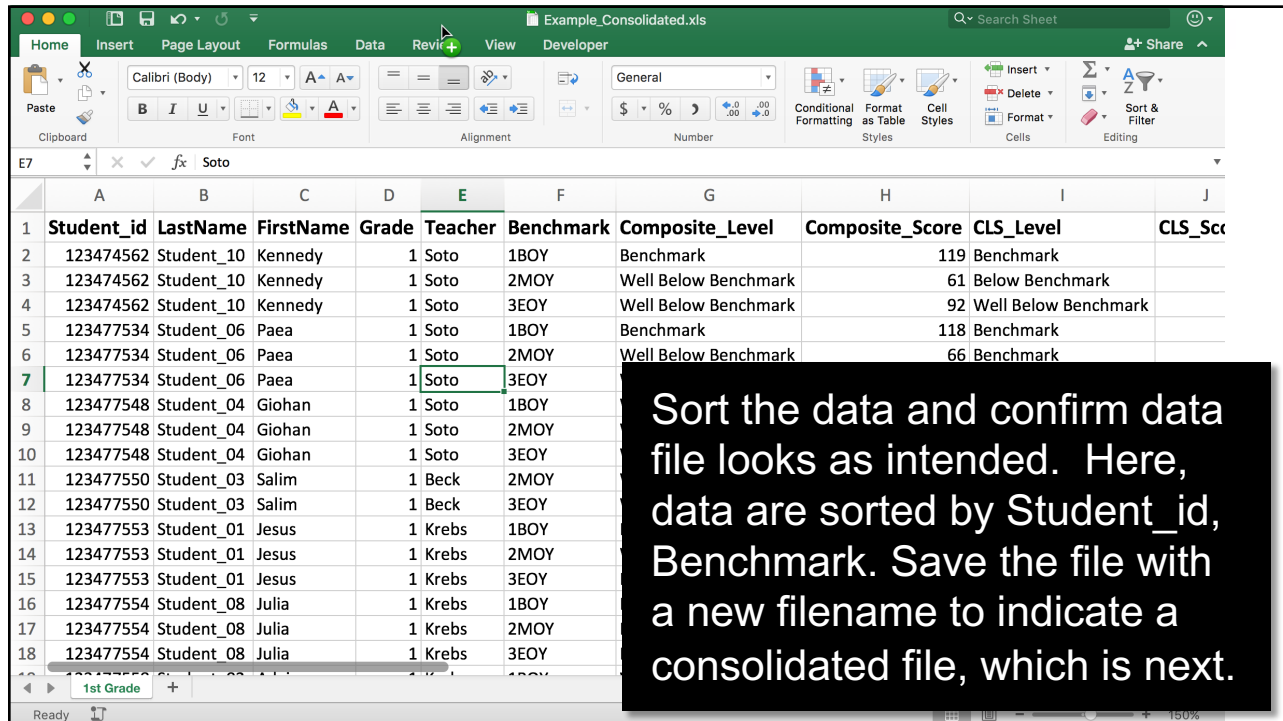
Within: Sheet
Match case: ☐
Find entire cells only: ☒

Search: By Rows

Replace with:
1BOY

Replace All

Student_id	LastName	FirstName	Grade	Teacher	Benchmark	Composite_Level	Composite_Score	CLS_Level	CLS_Score
123474562	Student_10	Kennedy	1	Soto	BOY	Below Benchmark		91	Benchmark
123474562	Student_10	Kennedy	1	Soto	EOY	Below Benchmark		128	Benchmark
123474562	Student_10	Kennedy	1	Soto	MOY	Below Benchmark		299	Benchmark
123477534	Student_06	Paea	1	Soto	BOY	Below Benchmark		260	Benchmark



Sort the data and confirm data file looks as intended. Here, data are sorted by Student_id, Benchmark. Save the file with a new filename to indicate a consolidated file, which is next.

	A	B	C	D	E	F	G	H	I	J
	Student_id	LastName	FirstName	Grade	Teacher	Benchmark	Composite_Level	Composite_Score	CLS_Level	CLS_Score
2	123474562	Student_10	Kennedy	1	Soto	1BOY	Benchmark	119	Benchmark	
3	123474562	Student_10	Kennedy	1	Soto	2MOY	Well Below Benchmark	61	Below Benchmark	
4	123474562	Student_10	Kennedy	1	Soto	3EOY	Well Below Benchmark	92	Well Below Benchmark	
5	123477534	Student_06	Paea	1	Soto	1BOY	Benchmark	118	Benchmark	
6	123477534	Student_06	Paea	1	Soto	2MOY	Well Below Benchmark	66	Benchmark	
7	123477534	Student_06	Paea	1	Soto	3EOY				
8	123477548	Student_04	Giohan	1	Soto	1BOY				
9	123477548	Student_04	Giohan	1	Soto	2MOY				
10	123477548	Student_04	Giohan	1	Soto	3EOY				
11	123477550	Student_03	Salim	1	Beck	2MOY				
12	123477550	Student_03	Salim	1	Beck	3EOY				
13	123477553	Student_01	Jesus	1	Krebs	1BOY				
14	123477553	Student_01	Jesus	1	Krebs	2MOY				
15	123477553	Student_01	Jesus	1	Krebs	3EOY				
16	123477554	Student_08	Julia	1	Krebs	1BOY				
17	123477554	Student_08	Julia	1	Krebs	2MOY				
18	123477554	Student_08	Julia	1	Krebs	3EOY				

USING EXCEL TO RESTRUCTURE AND ANALYZE DATA

Example_Consolidated.xls

Home Insert Page Layout Formulas Data Review View Developer

Clipboard Font Alignment Number Conditional Formatting Styles Cell Styles Cells Editing

fx 3

	A	B	C	D	E	F	G	H	I	J	K	
1	Student_id	LastName	FirstName	Grade	Teacher	Benchmark	Composite_Level	Composite_Score	CLS_Level	CLS_Score	WWR_Level	WWF
2	123474562	Student_10	Kennedy	1	4	1BOY	1	119	1	27		2
3	123474562	Student_10	Kennedy	1	4	2MOY	3	61	2	36		1
4	123474562	Student_10	Kennedy	1	4	3EOY	3	92	3	40		2
5	123477534	Student_06	Paea	1	4	1BOY	1	118	1	31		2
6	123477534	Student_06	Paea	1	4	2MOY	3	66	1	44		3
7	123477534	Student_06	Paea	1	4	3EOY						
8	123477548	Student_04	Giohan	1	4	1BOY						
9	123477548	Student_04	Giohan	1	4	2MOY						
10	123477548	Student_04	Giohan	1	4	3EOY						
11	123477550	Student_03	Salim	1	1	2MOY						
12	123477550	Student_03	Salim	1	1	3EOY						
13	123477553	Student_01	Jesus	1	2	1BOY						
14	123477553	Student_01	Jesus	1	2	2MOY						
15	123477553	Student_01	Jesus	1	2	3EOY						
16	123477554	Student_08	Julia	1	2	1BOY						
17	123477554	Student_08	Julia	1	2	2MOY						
18	123477554	Student_08	Julia	1	2	3EOY						
19	123477558	Student_02	Advina	1	2	1BOY						
20	123477558	Student_02	Advina	1	2	2MOY						
21	123477558	Student_02	Advina	1	2	3EOY						
22	123477695	Student_11	Gabriel	1	3	1BOY						
23	123477695	Student_11	Gabriel	1	3	2MOY						
24	123477695	Student_11	Gabriel	1	3	3EOY						

1st Grade Coding

Ready

We are going to use the Consolidate option, which only likes numerical data.

Replace any text data with numerical codes if it needs to be in the final data set.

Example_Consolidated.xls

Home Insert Page Layout Formulas Data Review View Developer

Clipboard Font Alignment Number Conditional Formatting Styles Cell Styles Cells Editing

fx Variable

	A	B	C	D	E	F	G	H	I	J	K
1	Variable	Original Value	Code								
2	DIBELS Levels	Benchmark	1								
3		Below Benchmark	2								
4		Well Below Benchmark	3								
5		Not Determined	9								
6											
7	Teachers	Beck	1								
8		Krebs	2								
9		Liu	3								
10		Soto	4								
11											
12											
13											
14											
15											
16											
17											
18											
19											
20											
21											

1st Grade Coding

Ready

I like to create a worksheet that identifies my original values and codes for those values.

	A	B	C	D	E	F
1	CompositeStudentID	Student_id	LastName	FirstName	Grade	Teacher
2	=B2&\"&C2&\"&D2\"	123477550	Student_03	Salim	1	1
3		123477550	Student_03	Salim	1	1
4		123479490	Student_12	Zakk	1	1

I also like to create a composite ID by concatenating (using & or the function concat) ID, LastName and FirstName so I can identify students quickly and use the composite ID as the "key" for identifying similar cases (rows). Only use variables for which the data never changes.

After I copy and paste that formula into each cell in the column, I select the column, copy and Paste Special...Values so I can later delete the columns that are referenced, as they won't be used in the Consolidate option.

	A	B	C	D	E	F	G	H	I	J	K
1	CompositeID	Student_id	LastName	FirstName	Grade	Teacher	Benchmark	Composite_Level	Composite_Score	CLS_Level	CLS_Score
2	123474562.Student_10.Kennedy	123474562	Student_10	Kennedy	1	4	1BOY	1	119	1	
3	123474562.Student_10.Kennedy	123474562	Student_10	Kennedy	1	4	2MOY	3	61	2	
4	123474562.Student_10.Kennedy	123474562	Student_10	Kennedy	1	4	3EOY	3	92	3	
5	123477534.Student_06.Paea	123477534	Student_06	Paea	1	4	1BOY	1	118	1	
6	123477534.Student_06.Paea	123477534	Student_06	Paea	1	4	2MOY	3	66	1	
7	123477534.Student_06.Paea	123477534	Student_06	Paea	1	4	3EOY	3			
8	123477548.Student_04.Giohan	123477548	Student_04	Giohan	1	4	1BOY	1			
9	123477548.Student_04.Giohan	123477548	Student_04	Giohan	1	4	2MOY	3			
10	123477548.Student_04.Giohan	123477548	Student_04	Giohan	1	4	3EOY	3			
11	123477550.Student_03.Salim	123477550	Student_03	Salim	1	4	1BOY	1			
12	123477550.Student_03.Salim	123477550	Student_03	Salim	1	4	2MOY	3			
13	123477553.Student_01.Jesus	123477553	Student_01	Jesus	1	4	1BOY	1			
14	123477553.Student_01.Jesus	123477553	Student_01	Jesus	1	4	2MOY	3			
15	123477553.Student_01.Jesus	123477553	Student_01	Jesus	1	4	3EOY	3			
16	123477554.Student_08.Julia	123477554	Student_08	Julia	1	4	1BOY	1			
17	123477554.Student_08.Julia	123477554	Student_08	Julia	1	4	2MOY	3			
18	123477554.Student_08.Julia	123477554	Student_08	Julia	1	4	3EOY	3			
19	123477558.Student_02.Advina	123477558	Student_02	Advina	1	2	2MOY	3	25	3	
20	123477558.Student_02.Advina	123477558	Student_02	Advina	1	2	3EOY	3	11	1	
21	123477695.Student_11.Gabriel	123477695	Student_11	Gabriel	1	3	1BOY	1	120	2	
22	123477695.Student_11.Gabriel	123477695	Student_11	Gabriel	1	3	2MOY	1	131	3	
23	123477695.Student_11.Gabriel	123477695	Student_11	Gabriel	1	3	3EOY	1	166	1	
24	123477695.Student_11.Gabriel	123477695	Student_11	Gabriel	1	3	3EOY	1			

Now all data that needs to be analyzed are numerical, with the first column providing an index (which can be text, not necessarily numerical) for using the Consolidate function.

Because the CompositeID identifies students, I delete the StudentID, LastName and FirstName columns so they don't clutter successive steps. Remember, they are still in our original file if we need them.

Next, sort by Benchmark, with CompositeID used as a second sorting variable.

CompositeID	Grade	Teacher	Benchmark	Composite_Level	Composite_Score	CLS_Level	CLS_Score	WWR_Level	WWR_Score
123474562.Student_10.Kennedy	1	4	1BOY						
123477534.Student_06.Paea	1	4	1BOY						
123477548.Student_04.Giohan	1	4	1BOY						
123477553.Student_01.Jesus	1	2	1BOY						
123477554.Student_08.Julia	1	2	1BOY						
123477558.Student_02.Advina	1	2	1BOY						
123477695.Student_11.Gabriel	1	3	1BOY						
123477742.Student_07.Liel	1	4	1BOY						
123478199.Student_09.Riley	1	2	1BOY						
123478773.Student_05.Kelsey	1	3	1BOY						
123479490.Student_12.Zakk	1	1	1BOY						
123474562.Student_10.Kennedy	1	4	2MOY						
123477534.Student_06.Paea	1	4	2MOY						
123477548.Student_04.Giohan	1	4	2MOY						
123477550.Student_03.Salim	1	1	2MOY						
123477553.Student_01.Jesus	1	2	2MOY						
123477554.Student_08.Julia	1	2	2MOY						
123477558.Student_02.Advina	1	2	2MOY						
123477695.Student_11.Gabriel	1	3	2MOY						
123477742.Student_07.Liel	1	4	2MOY						
123478199.Student_09.Riley	1	2	2MOY						
123478773.Student_05.Kelsey	1	3	2MOY						
123474562.Student_10.Kennedy	1	4	3EOY						
123474562.Student_10.Kennedy	1	4	3EOY	1	302	1	126	1	
123477534.Student_06.Paea	1	4	3EOY	3	52	2	40	2	
123477548.Student_04.Giohan	1	4	3EOY	3	92	3	40	2	

Create a worksheet for each value of the index variable. Here, the worksheets are 1BOY, 2MOY, and 3EOY.

I do this by creating 2 additional copies of the worksheet, renaming worksheets, and deleting rows, leaving rows needed for that worksheet.

CompositeID	Grade	Teacher	Benchmark	Composite_Level	Composite_Score	CLS_Level	CLS_Score	WWR_Level	WWR_Score
123474562.Student_10.Kennedy	1	4	1BOY						
123477534.Student_06.Paea	1	4	1BOY						
123477548.Student_04.Giohan	1	4	1BOY						
123477553.Student_01.Jesus	1	2	1BOY						
123477554.Student_08.Julia	1	2	1BOY						
123477558.Student_02.Advina	1	2	1BOY						
123477695.Student_11.Gabriel	1	3	1BOY						
123477742.Student_07.Liel	1	4	1BOY						
123478199.Student_09.Riley	1	2	1BOY						
123478773.Student_05.Kelsey	1	3	1BOY						
123479490.Student_12.Zakk	1	1	1BOY						
123474562.Student_10.Kennedy	1	4	2MOY						
123477534.Student_06.Paea	1	4	2MOY						
123477548.Student_04.Giohan	1	4	2MOY						
123477550.Student_03.Salim	1	1	2MOY						
123477553.Student_01.Jesus	1	2	2MOY						
123477554.Student_08.Julia	1	2	2MOY						
123477558.Student_02.Advina	1	2	2MOY						
123477695.Student_11.Gabriel	1	3	2MOY						
123477742.Student_07.Liel	1	4	2MOY						
123478199.Student_09.Riley	1	2	2MOY						
123478773.Student_05.Kelsey	1	3	2MOY						
123474562.Student_10.Kennedy	1	4	3EOY						
123477534.Student_06.Paea	1	4	3EOY						
123477548.Student_04.Giohan	1	4	3EOY						
123477550.Student_03.Salim	1	1	3EOY						
123477553.Student_01.Jesus	1	2	3EOY						
123477554.Student_08.Julia	1	2	3EOY						
123477558.Student_02.Advina	1	2	3EOY						
123477695.Student_11.Gabriel	1	3	3EOY						
123477742.Student_07.Liel	1	4	3EOY						
123478199.Student_09.Riley	1	2	3EOY						
123478773.Student_05.Kelsey	1	3	3EOY						
123474562.Student_10.Kennedy	1	4	3EOY	3	92	3	40	2	
123477534.Student_06.Paea	1	4	3EOY	3	72	1	73	1	
123477548.Student_04.Giohan	1	4	3EOY	3	6	3	39	3	
123477550.Student_03.Salim	1	1	3EOY	3	0	3	3	3	
123477553.Student_01.Jesus	1	2	3EOY	2	115	1	66	1	
123477554.Student_08.Julia	1	2	3EOY	1	299	1	143	1	
123477558.Student_02.Advina	1	2	3EOY	3	11	1	63	3	
123477695.Student_11.Gabriel	1	3	3EOY	1	166	1	68	2	
123477742.Student_07.Liel	1	4	3EOY	1	267	1	103	1	
123478199.Student_09.Riley	1	2	3EOY	3	73	1	77	1	

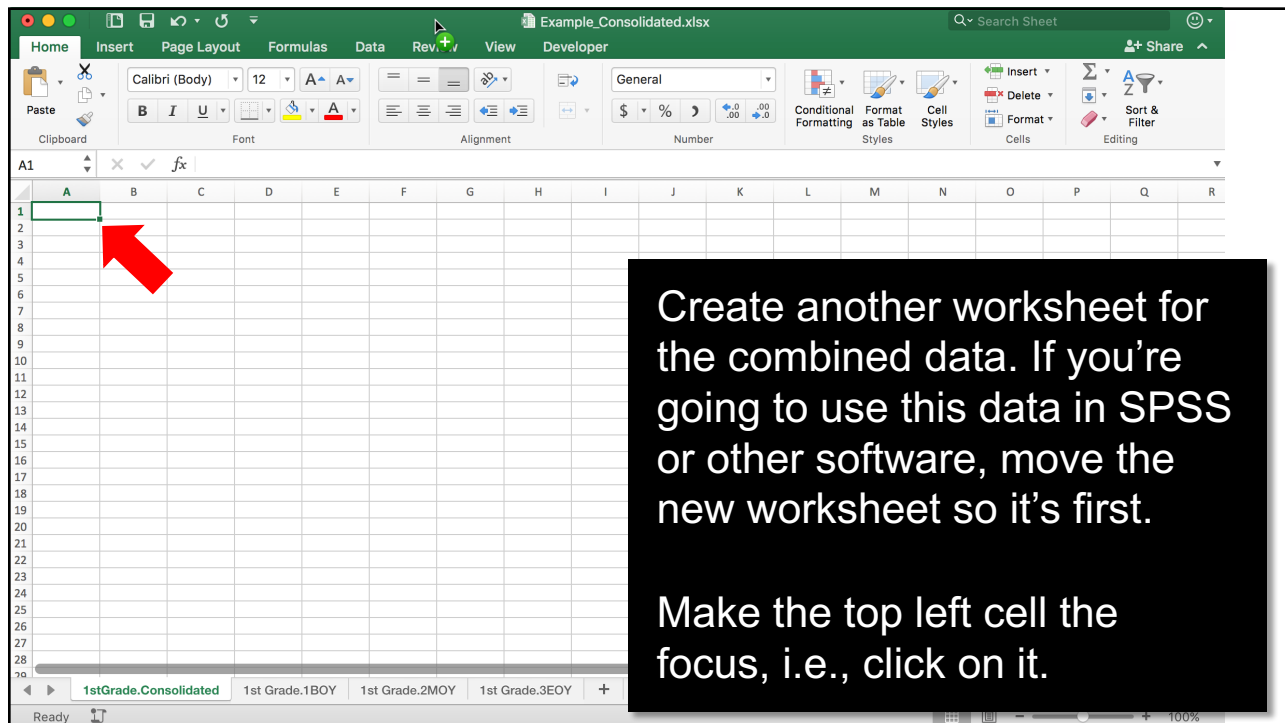
On each worksheet,

- 1) Insert a new row at the top
- 2) Copy the unique identifier into the first cell
- 3) In the first column that contains data to be combined, type the following function, replacing 1BOY with the appropriate characters and "B" with the column label (if not the second column):
="1BOY."&B2
- 4) Copy the function into each cell in the first row for columns that contain data
- 5) Select the first row, copy, and Paste Special...Values to replace the formula with the variable names
- 6) Delete the second row that contained the original variable names

	A	B	C	D
1	CompositeID	= "1BOY."&B2		
2	CompositeID	Grade	Teacher	Benchm
3	123474562.Student_10.Kennedy	1	4	1BOY
4	123477534.Student_06.Paea	1	4	1BOY
5	123477548.Student_04.Giohan	1	4	1BOY
6	123477553.Student_01.Jesus	1	2	1BOY
7	123477554.Student_08.Julia	1	2	1BOY

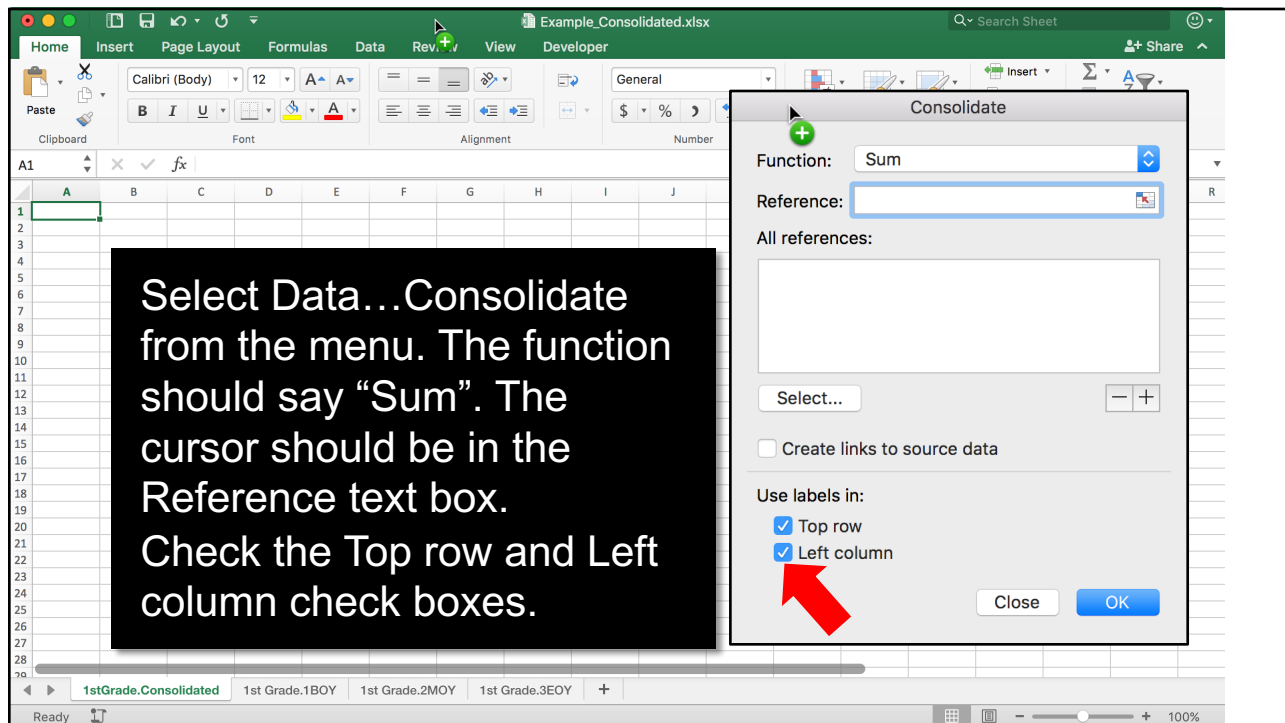
You can also delete the column that indicated time period.
Save the file!

	A	B	C	D	E	F	G	H	I	J
1	CompositeID	1BOY.Grade	1BOY.Teacher	1BOY.Composite_Level	1BOY.Composite_Score	1BOY.CLS_Level	1BOY.CLS_Score	1BOY.WWR_Level	1BOY.WWR_Score	
2	123474562.Student_10.Kennedy	1	4	1	119	1	27	2	0	
3	123477534.Student_06.Paea	1	4	1	118	1	31	2	0	
4	123477548.Student_04.Giohan	1	4	3	61	3	10	2	0	
5	123477553.Student_01.Jesus	1	2							
6	123477554.Student_08.Julia	1	2							
7	123477558.Student_02.Advina	1	2							
8	123477695.Student_11.Gabriel	1	3							
9	123477742.Student_07.Liel	1	4							
10	123478199.Student_09.Riley	1	2							
11	123478773.Student_05.Kelsey	1	3							



Create another worksheet for the combined data. If you're going to use this data in SPSS or other software, move the new worksheet so it's first.

Make the top left cell the focus, i.e., click on it.



Select Data...Consolidate from the menu. The function should say "Sum". The cursor should be in the Reference text box. Check the Top row and Left column check boxes.

Function: Sum
Reference: 1st Grade.1BOY!\$A\$1:\$I\$12
All references:
1st Grade.1BOY!\$A\$1:\$I\$12
Select...
☐ Create links to source data
Use labels in:
☒ Top row
☒ Left column
Close OK

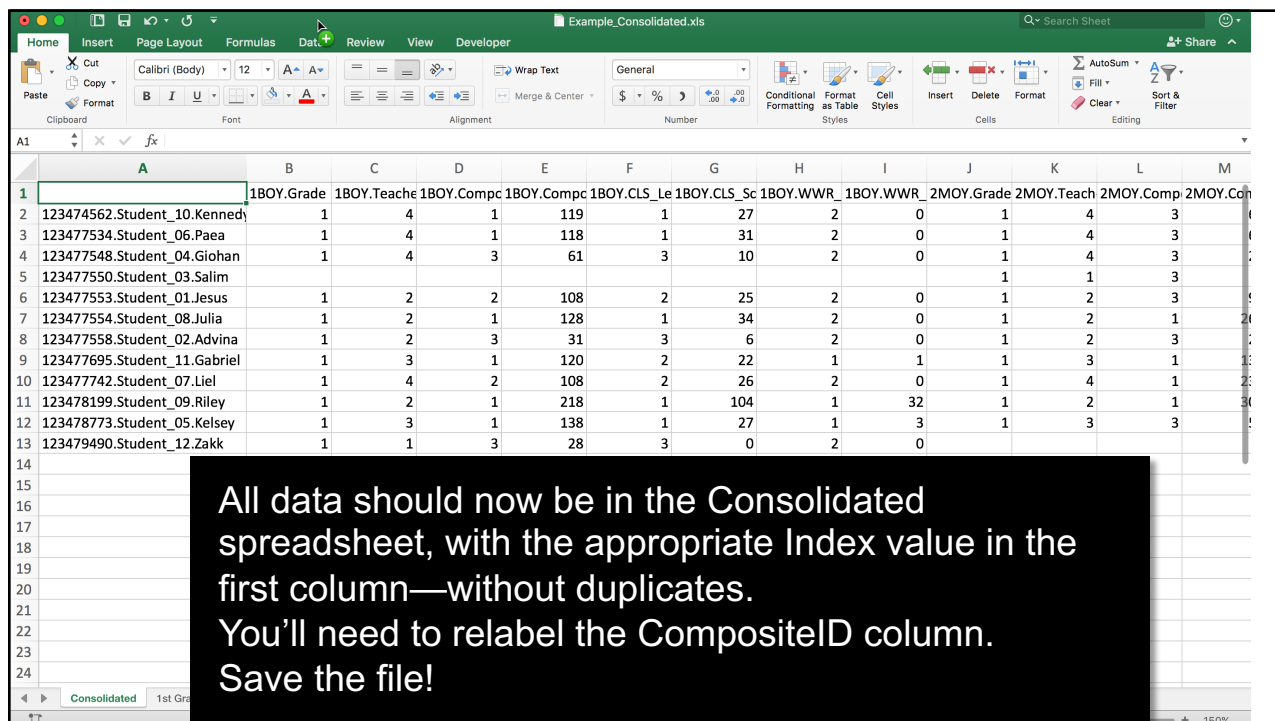
Change to the first worksheet from which to consolidate or combine data. Select the cells that contain the data. Click "+".

CompositeID	1BOY.Gi	1BOY.Tea	1BOY.Compo
123474562.Student_10.Kennedy	1	4	
123477534.Student_06.Paea	1	4	
123477548.Student_04.Giohan	1	4	
123477553.Student_01.Jesus	1	2	
123477554.Student_08.Julia	1	2	
123477558.Student_02.Advina	1	2	
123477695.Student_11.Gabriel	1	3	
123477742.Student_07.Liel	1	4	
123478199.Student_09.Riley	1	2	
123478773.Student_05.Kelsey	1	3	
123479490.Student_12.Zakk	1	1	

Function: Sum
Reference: 1st Grade.3EOY!\$A\$1:\$O\$11
All references:
1st Grade.1BOY!\$A\$1:\$I\$12
1st Grade.2MOY!\$A\$1:\$O\$12
1st Grade.3EOY!\$A\$1:\$O\$11
Select...
☐ Create links to source data
Use labels in:
☒ Top row
☒ Left column
Close OK

Repeat the same steps with the other worksheets. Click OK.

CompositeID	3EOY.Gi	3EOY.Tea	3EOY.Compo
123474562.Student_10.Kennedy	1	4	
123477534.Student_06.Paea	1	4	
123477548.Student_04.Giohan	1	4	
123477550.Student_03.Salim	1	1	
123477553.Student_01.Jesus	1	2	
123477554.Student_08.Julia	1	2	
123477558.Student_02.Advina	1	2	
123477695.Student_11.Gabriel	1	3	
123477742.Student_07.Liel	1	4	
123478773.Student_05.Kelsey	1	3	



All data should now be in the Consolidated spreadsheet, with the appropriate Index value in the first column—without duplicates. You'll need to relabel the CompositeID column. Save the file!

	A	B	C	D	E	F	G	H	I	J	K	L	M
1		1BOY.Grade	1BOY.Teach	1BOY.Compc	1BOY.Compc	1BOY.CLS_Le	1BOY.CLS_Sc	1BOY.WWR	1BOY.WWR	2MOY.Grade	2MOY.Teach	2MOY.Compc	2MOY.Compc
2	123474562.Student_10.Kennedy	1	4	1	119	1	27	2	0	1	4	3	0
3	123477534.Student_06.Paea	1	4	1	118	1	31	2	0	1	4	3	0
4	123477548.Student_04.Giohan	1	4	3	61	3	10	2	0	1	4	3	0
5	123477550.Student_03.Salim									1	1	3	
6	123477553.Student_01.Jesus	1	2	2	108	2	25	2	0	1	2	3	0
7	123477554.Student_08.Julia	1	2	1	128	1	34	2	0	1	2	1	20
8	123477558.Student_02.Advina	1	2	3	31	3	6	2	0	1	2	3	
9	123477695.Student_11.Gabriel	1	3	1	120	2	22	1	1	1	3	1	10
10	123477742.Student_07.Liel	1	4	2	108	2	26	2	0	1	4	1	20
11	123478199.Student_09.Riley	1	2	1	218	1	104	1	32	1	2	1	30
12	123478773.Student_05.Kelsey	1	3	1	138	1	27	1	3	1	3	3	
13	123479490.Student_12.Zakk	1	1	3	28	3	0	2	0				

You can also add data from other files.

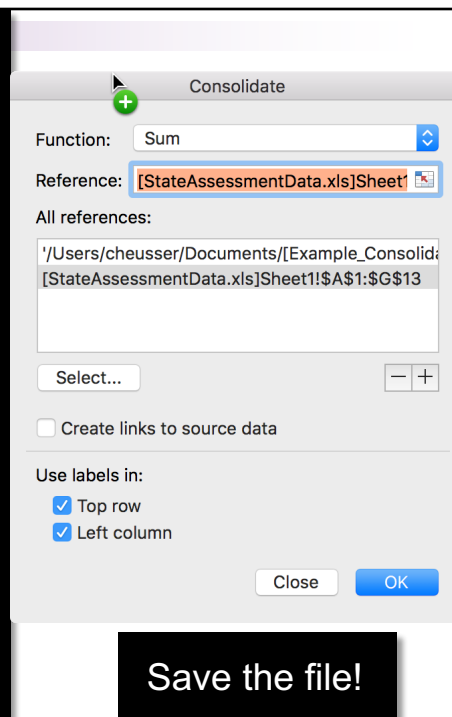
Here, I've got two files open from which I want to consolidate data. Both have been cleaned using the previous steps so text data are numerically coded and they have a common CompositeID.

I've opened a new blank file with the cursor in the top left cell.

Select Data...Consolidate.

Go to each of the data spreadsheets, select the data to be added, including the leftmost index column, and click on "+".

When you are done adding data, click OK.



Consolidate

Function: Sum

Reference: [StateAssessmentData.xls]Sheet1

All references:

'/Users/cheusser/Documents/[Example_Consolidated.xls]Sheet1'
[StateAssessmentData.xls]Sheet1!\$A\$1:\$G\$13

Select...

☐ Create links to source data

Use labels in:

☒ Top row

☒ Left column

Close OK

Save the file!

CREATE AN EXCEL PIVOT TABLE

Create an Excel Pivot Table to Aggregate Data

- Once we've combined data sets with each row containing data for a unique student, we can do some analysis.
- We might want to know
 - How many students did better/worse (when comparing levels) on EOY DIBELS than they did on BOY DIBELS?
 - How well do EOY DIBELS levels align with state assessment levels?
- A pivot table can provide information to answer questions like these.

First, copy the data you want to compare into a new file or worksheet.
I like to always include the ID.

CompositeID	3EOY.Composite_Level	SAGE.2014LA3Proficiency
123474562.Student_10.Kennedy	3	1
123477534.Student_06.Paea	3	3
123477548.Student_04.Giohan	3	4
123477550.Student_03.Salim	3	
123477553.Student_01.Jesus	2	1
123477554.Student_08.Julia	1	2
123477558.Student_02.Advina	3	2
123477695.Student_11.Gabriel	1	1
123477742.Student_07.Liel	1	3
123478199.Student_09.Riley		2
123478773.Student_05.Kelsey	3	4
123479490.Student_12.Zakk		2

Select the data to be summarized in a Pivot Table, including column headers (variable labels).

CompositeID	3EOY.Composite_Level	SAGE.2014LA3Proficiency
123474562.Student_10.Kennedy	3	1
123477534.Student_06.Paea	3	3
123477548.Student_04.Giohan	3	4
123477550.Student_03.Salim	3	
123477553.Student_01.Jesus	2	1
123477554.Student_08.Julia	1	2
123477558.Student_02.Advina	3	2
123477695.Student_11.Gabriel	1	1
123477742.Student_07.Liel	1	3
123478199.Student_09.Riley		2
123478773.Student_05.Kelsey	3	4
123479490.Student_12.Zakk		2

Create PivotTable

Choose the data that you want to analyze.

☒ Select a table or range

Table/Range: 'EOY Levels Only!\$B\$1:\$C\$13'

☐ Use an external data source

Choose Connection... No data fields have been retrieved.

Choose where to place the PivotTable.

☒ New worksheet

☐ Existing worksheet

Table/Range:

Cancel OK

Select Data... Summarize with PivotTable. Place the Pivot Table in a new worksheet (or select the cells where you want the Pivot Table placed).

PivotTable Builder

FIELD NAME

3EOY.Composite_Level

SAGE.2014LA3Proficiency

Filters

Columns

Rows

Values

Drag fields between areas

A new worksheet will be created with the PivotTable Builder window on top. Notice it shows the labels in the first row of each column that was selected.

Drag the variable names to the rows and columns windows. Also, drag the variable for which you want a “Sum” to the Values window. The Pivot Table will show as you drag variables to windows.

If you prefer percentages in the Pivot Table, click on the “f” in the circle next to the variable in the Values window.

Select Show Data as...% of total (in the dropdown box). When you click on OK, the data will show as percentages of the total (or row or column, if you prefer).

Count of SAGE.2014LA3Proficiency	1	2	3	4 (blank)	Grand Total
1	9.09%	9.09%	9.09%	0.00%	27.27%
2	9.09%	0.00%	0.00%	0.00%	9.09%
3	9.09%	9.09%	18.18%	0.00%	45.45%
(blank)	0.00%	18.18%	0.00%	0.00%	18.18%
Grand Total	27.27%	36.36%	18.18%	18.18%	100.00%

I prefer to select the cells with percentages and change the cell format to no decimal places. Then, I can select the Pivot Table cells, copy, and paste them into Word, where I can make them "prettier."

Count of SAGE.2014LA3Proficiency	1	2	3	4 (blank)	Grand Total
1	9%	9%	9%	0%	27%
2	9%	0%	0%	0%	9%
3	9%	9%	18%	0%	45%
(blank)	0%	18%	0%	0%	18%
Grand Total	27%	36%	18%	18%	100%

Pivot Tables Revised in Word

Percentage of 3rd grade students in each category		Utah SAGE 2014 Language Arts Proficiency Levels			Total
		0-1	2	3-4	
DIBELS Next End-of- Year 2014 Composite Score Risk Status	At or Above Benchmark	10	18	62	90
	Below Benchmark	2	1	1	4
	Well Below Benchmark	5	1	0	6
	Total	17	20	63	100

RED = TWO Levels Apart

YELLOW = ONE Level Apart

GREEN = Accurate Prediction

Identifying Specific Students

- To find students from a particular cell in the Pivot Table,
 - Go to the combined data worksheet
 - Sort by the variables, with one as the first sorting variable (i.e., DIBELS Composite Level) and the other as the second sorting variable (i.e., SAGE 2014 LA Proficiency)
 - Locate the students by
 - Finding the values for the first variable, i.e., those whose level was a 1, or Benchmark, on the DIBELS Composite Level
 - Within that group, finding students with values for the second variable, i.e., those whose proficiency level on the state assessment was 0 or 1

Pivot Tables Revised in Word

- Identified students who were low performing on both assessments
- Identified students who performed well on DIBELS but low on state assessment, SAGE
- Discussed mismatch in performance for those who did well on DIBELS but not on SAGE with DIBELS developers
- Implemented interventions for that group of students

Percentage of 3rd grade students in each category
n = 1166

		Utah SAGE 2014 Language Arts Proficiency Levels			Total
		0-1	2	3-4	
DIBELS Next End-of-Year 2014 Composite Score Risk Status	At or Above Benchmark	10	18	62	90
	Below Benchmark	2	1	1	4
	Well Below Benchmark	5	1	0	6
	Total	17	20	63	100

RED = TWO Levels Apart

YELLOW = ONE Level Apart

GREEN = Accurate Prediction

Discussion & Questions



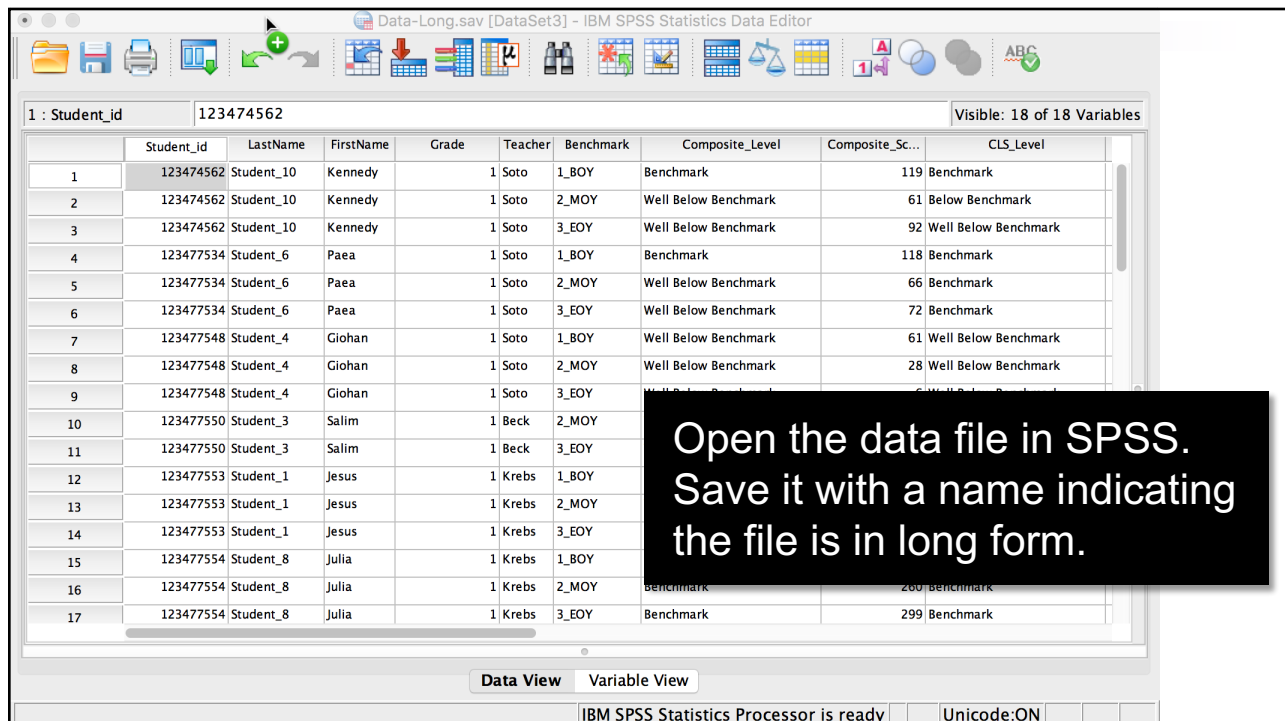
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USING SPSS TO RESTRUCTURE AND ANALYZE DATA



Data-Long.sav [DataSet3] - IBM SPSS Statistics Data Editor

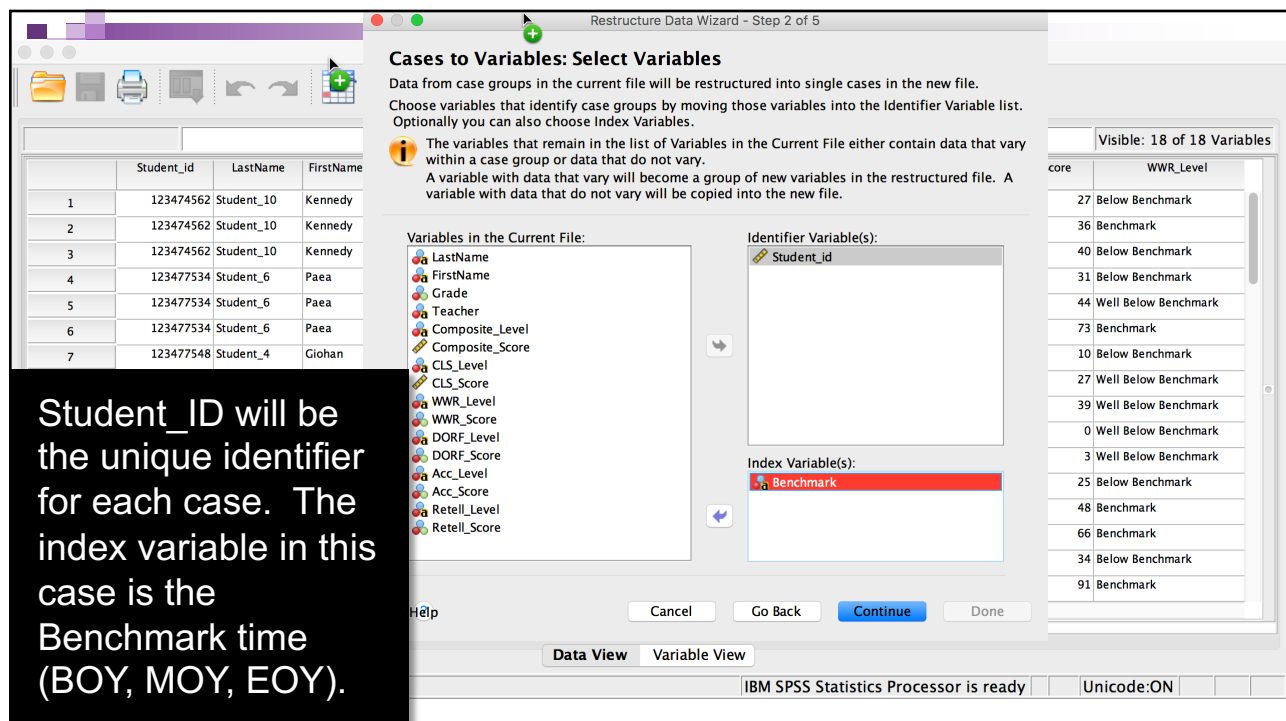
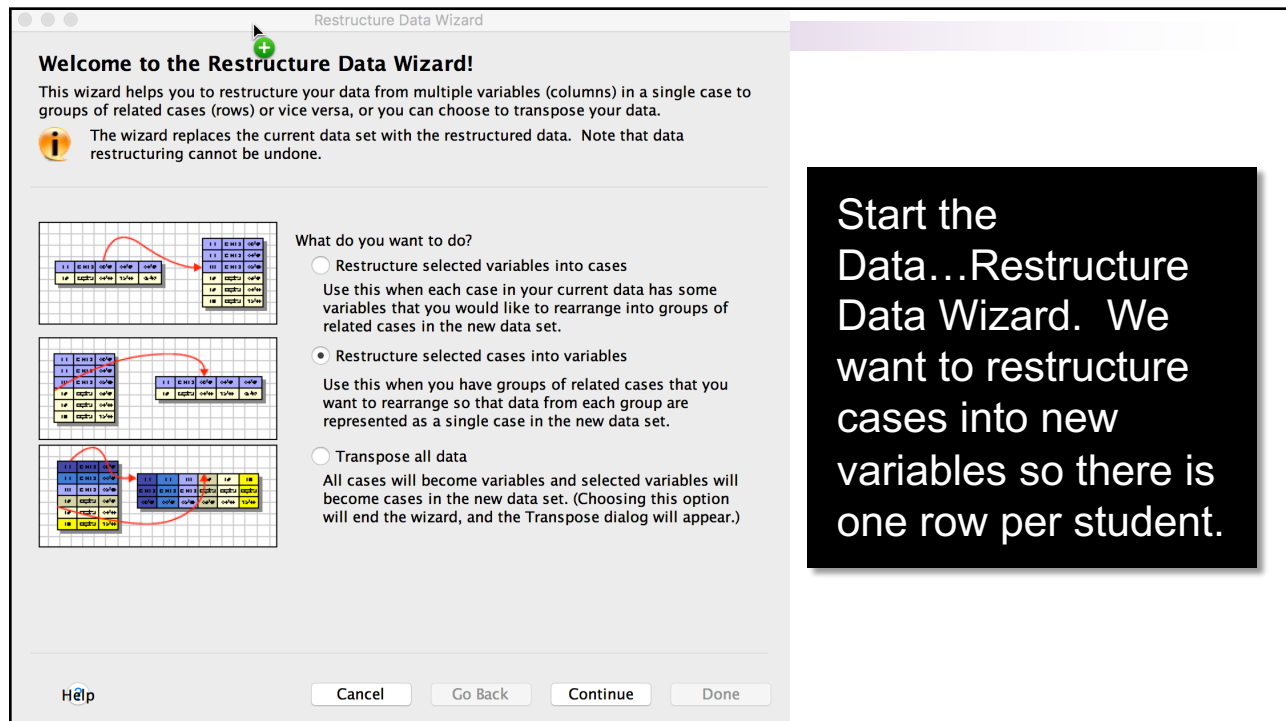
1 : Student_id 123474562 Visible: 18 of 18 Variables

	Student_id	LastName	FirstName	Grade	Teacher	Benchmark	Composite_Level	Composite_Sc...	CLS_Level
1	123474562	Student_10	Kennedy		1 Soto	1_BOY	Benchmark	119	Benchmark
2	123474562	Student_10	Kennedy		1 Soto	2_MOY	Well Below Benchmark	61	Below Benchmark
3	123474562	Student_10	Kennedy		1 Soto	3_EOY	Well Below Benchmark	92	Well Below Benchmark
4	123477534	Student_6	Paea		1 Soto	1_BOY	Benchmark	118	Benchmark
5	123477534	Student_6	Paea		1 Soto	2_MOY	Well Below Benchmark	66	Benchmark
6	123477534	Student_6	Paea		1 Soto	3_EOY	Well Below Benchmark	72	Benchmark
7	123477548	Student_4	Giohan		1 Soto	1_BOY	Well Below Benchmark	61	Well Below Benchmark
8	123477548	Student_4	Giohan		1 Soto	2_MOY	Well Below Benchmark	28	Well Below Benchmark
9	123477548	Student_4	Giohan		1 Soto	3_EOY	Well Below Benchmark	61	Well Below Benchmark
10	123477550	Student_3	Salim		1 Beck	2_MOY	Well Below Benchmark	61	Well Below Benchmark
11	123477550	Student_3	Salim		1 Beck	3_EOY	Well Below Benchmark	61	Well Below Benchmark
12	123477553	Student_1	Jesus		1 Krebs	1_BOY	Benchmark	119	Benchmark
13	123477553	Student_1	Jesus		1 Krebs	2_MOY	Well Below Benchmark	61	Below Benchmark
14	123477553	Student_1	Jesus		1 Krebs	3_EOY	Well Below Benchmark	92	Well Below Benchmark
15	123477554	Student_8	Julia		1 Krebs	1_BOY	Benchmark	118	Benchmark
16	123477554	Student_8	Julia		1 Krebs	2_MOY	Benchmark	260	Benchmark
17	123477554	Student_8	Julia		1 Krebs	3_EOY	Benchmark	299	Benchmark

Open the data file in SPSS. Save it with a name indicating the file is in long form.

Data View Variable View

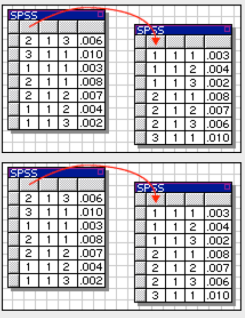
IBM SPSS Statistics Processor is ready Unicode:ON



Restructure Data Wizard - Step 3 of 5

Cases to Variables: Sorting Data

The variables that you used to identify case groups in the current file need to be sorted before the file can be restructured. If you are not sure about your data, select "Yes".



Sort the current data?

☒ Yes - data will be sorted by the Identifier and Index variab...

☐ No - use the data as currently sorted

Help Cancel Go Back Continue Done

I recommend letting SPSS sort the data. If data are not sorted, funny things can happen.

Restructure Data Wizard - Step 4 of 5

Cases to Variables: Options

In this step you can set options that will be applied to the restructured data file.

Order of New Variable Groups

☒ Group by original variable (for example: w1 w2 w3, h1 h2 h3)

☐ Group by index (for example: w1 h1, w2 h2, w3 h3)

Case Count Variable

☒ Count the number of cases in the current data used to create a new case

Name:

Label:

Indicator Variables

☒ Create indicator variables

Root Name:

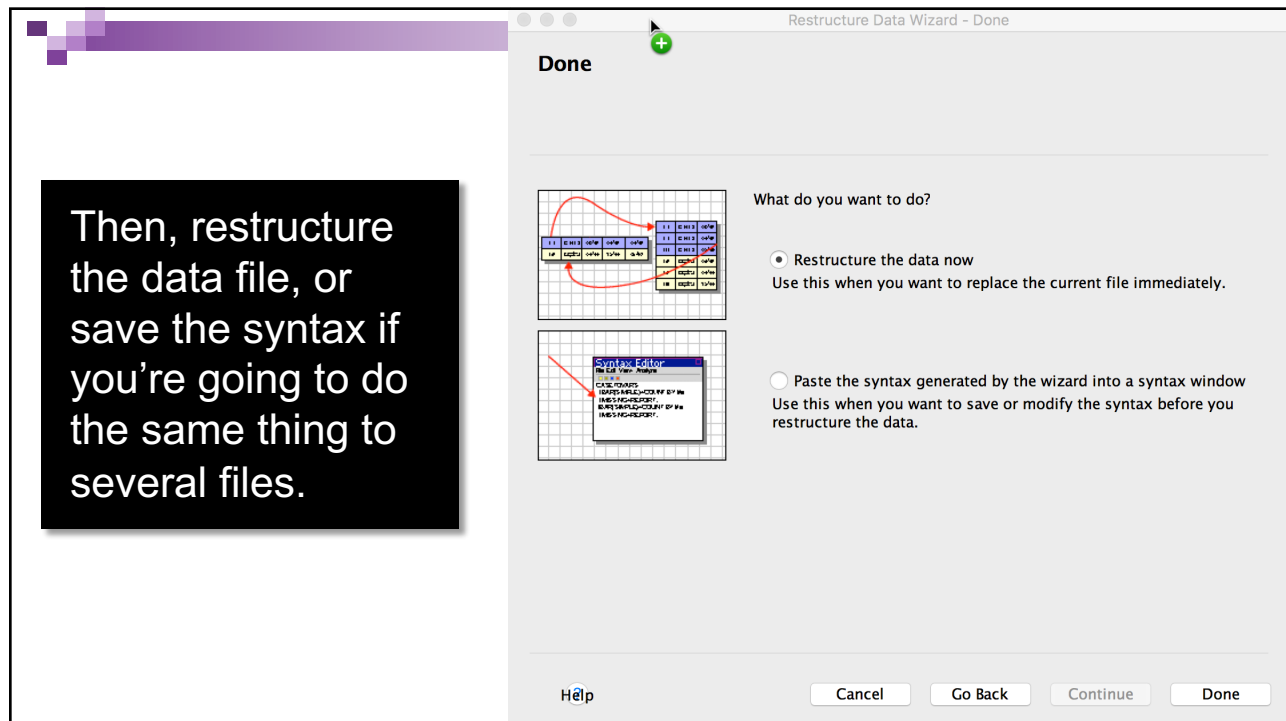
Help Cancel Go Back Continue Done

I like to group so same data are together, e.g.,

- Composite_Level.BOY,
- Composite_Level.MOY, and
- Composite_Level.EOY

are next to each other.

It's also useful to create a variable telling how many benchmarks each student completed, and a variable that tells whether we have each benchmark.



Data-Wide.sav [DataSet3] - IBM SPSS Statistics Data Editor

1 : Student_id 123474562 Visible: 43 of 43 Variables

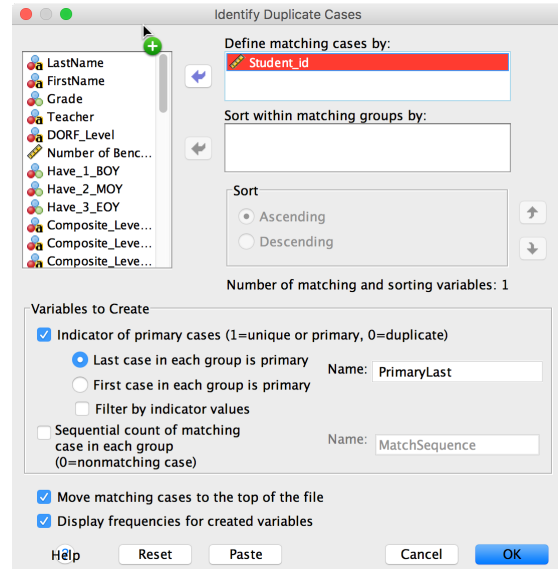
	Student_id	LastName	FirstName	Grade	Teacher	DORF_Level	NumBench arks	Have_1_BOY	Have_2_M...	Have_3_EOY	Composite_Level_1_BOY
1	123474562	Student_10	Kennedy	1	Soto	Well Below Benchmark	3	1	1	1	Benchmark
2	123477534	Student_6	Paea	1	Soto	Well Below Benchmark	3	1	1	1	Benchmark
3	123477548	Student_4	Giohan	1	Soto	Well Below Benchmark	3	1	1	1	Well Below Benchmark
4	123477550	Student_3	Salim	1	Beck	Well Below Benchmark	2	0	1	1	
5	123477553	Student_1	Jesus	1	Krebs	Well Below Benchmark	3	1	1	1	Below Benchmark
6	123477554	Student_8	Julia	1	Krebs	Benchmark	3	1	1	1	Benchmark
7	123477558	Student_2	Advina	1	Krebs	Well Below Benchmark	3	1	1	1	Well Below Benchmark
8	123477695	Student_11	Gabriel	1	Liu	Benchmark	3	1	1	1	Benchmark
9	123477742	Student_7	Liel	1	Soto	Benchmark	3	1	1	1	Below Benchmark
10	123478199	Student_9	Riley	1	Krebs	Benchmark	2	1	1	0	Benchmark
							3	1	1	1	Benchmark
							2	1	1	0	Well Below Benchmark

Save the file with a name indicating the file is in wide form.

IBM SPSS Statistics Processor is ready Unicode:ON

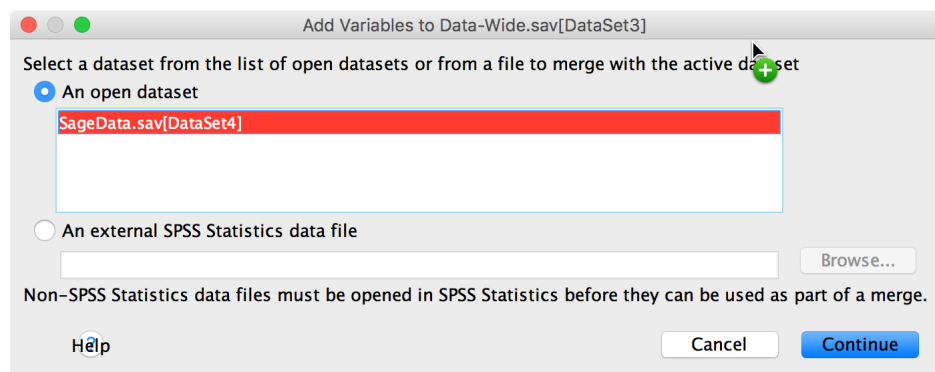
Check to Ensure One Row Per Student and Sort

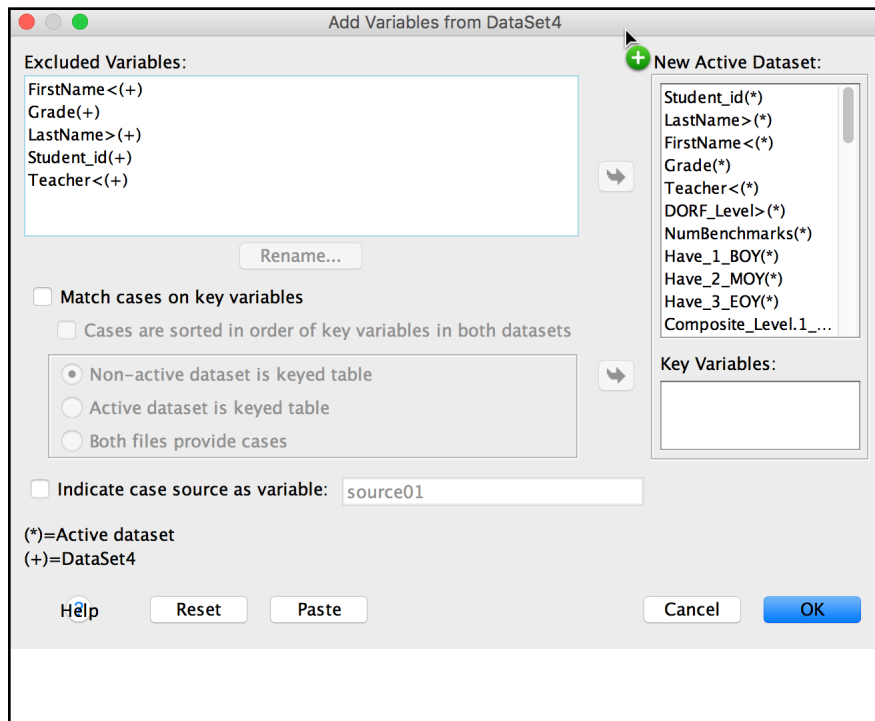
- If you used more than one identifier variable to restructure data, make sure files have only one row per student
 - In SPSS, you can do this by Identifying Duplicate Cases (under the Data menu)
- Merge/Delete duplicate cases
- Sort on key variable (Student_ID) and save file.



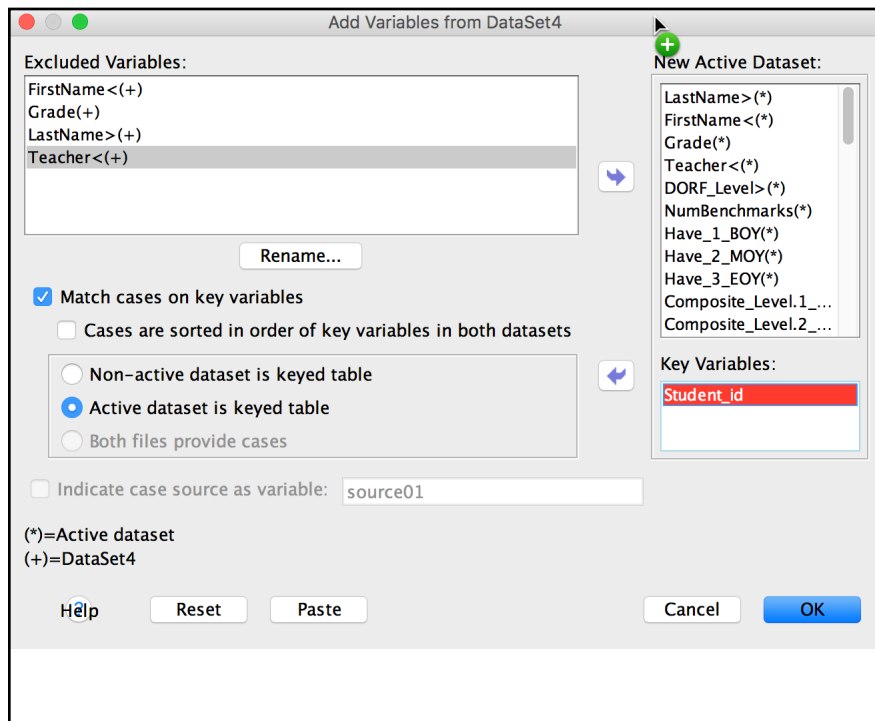
Merging Data Files

- Make the file you will be adding data to your active window
- Data...Merge Files by adding variables (not cases, which would be new students). Make sure you sort data using identifier variables in each file first.





All variables from the active data set plus unique variables from the data set to be added show in the window on the right. Variables with the same name are in the window on the left. If you want one of those variables in the final data set (i.e., teacher if it has different values), rename it.



The key variable for matching is Student_ID.

Save the file with a name indicating data files have been combined and the file is in wide form.

	Retell_Score.1_BOY	Retell_Score.2_MOY	Retell_Score.3_EOY	SAGE_2014LA3Proficiency	SAGE_2014LA3ScaledScore	SAGE_2014MA3Proficiency	SAGE_2014MA3ScaledScore
1	.	.	20	1	257	1	27
2	.	0	.	3	349	3	32
3	.	0	0	4	428	4	35
4
5	.	.	.	1	269	2	31
6	.	15	38	2	307	3	32
7	.	0	.	2	302	2	25
8	.	.	0	1	179	1	25
9	.	20	26	3	371	3	32
10	.	.	.	2	329	2	31
					450	4	36
					294	2	31

Analyze...Descriptive Statistics...Crosstabs

Crosstabs, or cross tabulation, creates a table that shows the joint distribution of two or more variables.

Crosstabs

Row(s): Composite_Level.1_BOY

Column(s): SAGE_2014LA3Proficiency

Layer 1 of 1

Previous Next

☐ Display clustered bar charts

☐ Suppress tables

Help Reset Paste Cancel OK

The Cells... option allows you to choose how the table will display. I like to run Crosstabs once with just Observed Counts, and once with just Total Percentages.

Crosstabs: Cell Display

Counts

☒ Observed
☐ Expected
☐ Hide small counts
Less than 5

Percentages

☐ Row
☐ Column
☒ Total

Noninteger Weights

☒ Round cell counts
☐ Truncate cell counts
☐ No adjustments

z-test

☒ Compare column proportions
☐ Adjust p-values (Bonferroni method)

Residuals

☐ Unstandardized
☐ Standardized
☒ Adjusted standardized

Help **Cancel** **Continue**

Crosstabs Tables in SPSS

Count

		SAGE_2014LA3Proficiency					Total
		0	1	2	3	4	
Composite_Level. 3_EOY	At or Above Benchmark	0	1	0	1	1	3
		5	116	213	477	242	1053
	Below Benchmark	1	22	10	6	0	39
	Well Below Benchmark	2	60	7	5	0	74
Total		8	199	230	489	243	1169

% of Total

		SAGE_2014LA3Proficiency					Total
		0	1	2	3	4	
Composite_Level. 3_EOY	At or Above Benchmark	0.4%	9.9%	18.2%	40.8%	20.7%	90.1%
		0.4%	9.9%	18.2%	40.8%	20.7%	90.1%
	Below Benchmark	0.1%	1.9%	0.9%	0.5%		3.3%
	Well Below Benchmark	0.2%	5.1%	0.6%	0.4%		6.3%
Total		0.7%	17.0%	19.7%	41.8%	20.8%	100.0%

Crosstabs Tables Revised in Word

Percentage of 3rd grade students in each category		Utah SAGE 2014 Language Arts Proficiency Levels			Total
		0-1	2	3-4	
DIBELS Next End-of- Year 2014 Composite Score Risk Status	At or Above Benchmark	10	18	62	90
	Below Benchmark	2	1	1	4
	Well Below Benchmark	5	1	0	6
	Total	17	20	63	100

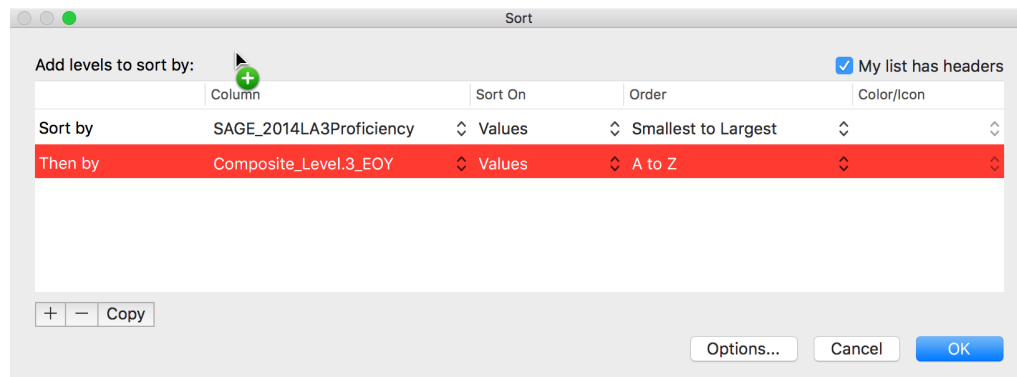
RED = TWO Levels Apart

YELLOW = ONE Level Apart

GREEN = Accurate Prediction

Identifying Students in Groups

- “Save as” SPSS file to file type Excel
- In Excel, sort by variables of interest to identify groups of students



Crosstabs Tables Revised in Word

- Identified students who were low performing on both assessments
- Identified students who performed well on DIBELS but low on state assessment, SAGE
- Discussed mismatch in performance for those who did well on DIBELS but not on SAGE with DIBELS developers

Percentage of 3rd grade students in each category n = 1166		Utah SAGE 2014 Language Arts Proficiency Levels			Total
		0-1	2	3-4	
DIBELS Next End-of- Year 2014 Composite Score Risk Status	At or Above Benchmark	10	18	62	90
	Below Benchmark	2	1	1	4
	Well Below Benchmark	5	1	0	6
	Total	17	20	63	100

RED = TWO Levels Apart

YELLOW = ONE Level Apart

GREEN = Accurate Prediction

Discussion & Questions



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