# Using Excel to Troubleshoot EMIS Data

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## Overview

- Basic Excel techniques can be used to analyze EMIS data from Student Information Systems (SISs), from the Data Collector, and on ODE EMIS reports
- This session will demonstrate Excel functions and practical applications that can be helpful in all phases of the EMIS data review process

## Outline

- Simple formulas to troubleshoot student FTEs
- VLOOKUP to add LEA names to a report
- Macro to format an FTE Detail report
- Concatenation and conditional formatting to verify calendar data and student data

# Use Simple Formulas to Troubleshoot Student FTEs

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# Simple Formulas

- In this section we are going to use simple formulas to identify differences between
  - Original FTEs and Adjusted FTEs
  - Adjusted FTEs and Special Education Adjusted FTEs
- We will filter and highlight those differences to aid in troubleshooting the FTE Detail report

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# FTE Detail Report

Open the most recent version of the FTE Detail Report

**Do not format/prepare the report**

**1. Add two new columns by selecting column S and column T, then right click and select "Insert"**

**2. Drag to widen, then name the two new columns**



# Add Simple Formulas

Subtract ADJSTD FTE from ORIG FTE

**In cell S2 type an equal sign then click into cell P2. Type a minus sign. Click into cell Q2 and press enter**

**Double click, or click and drag the bottom right corner of cell S2 to populate the cells below**

**Here we can see if there is a difference between the original and adjusted FTE**

# Add Simple Formulas, cont'd

## Subtract ADJSTD SPECED from ADJSTD FTE

1. In cell T2 type an equal sign then click into cell Q2. Type a minus sign. Click into cell R2 and press enter

=Q2-R2

| | K | L | M | N | O | P | Q | R | S | T |
|---|---|---|---|---|---|---|---|---|---|---|
| L 2 RE | RESULT CC | RESULT CC | FTE FUND | ENRL STAF | ENRL END | ORIG FTE | ADJSTD FT | ADJSTD SF | ORIG vs ADJ | ADJ vs Sp Ed |
| -001 | FT0000 | FTE Detail | STEM | 07/01/201 | 12/31/250 | 1 | 1 | | 0 | =Q2-R2 |
| -001 | FT0000 | FTE Detail | STEM | 08/15/201 | 01/06/201 | 0.491228 | 0.491228 | | 0 | |
| -001 | FT0000 | FTE Detail | COMM | 08/27/201 | 05/31/201 | 1 | 1 | | | |

Here we can see if there is a difference between the adjusted FTE and adjusted special education FTE

2. Double click, or click and drag the bottom right corner of cell S2 to populate the cells below

| | | | | | | Q | R | S | T |
|---|---|---|---|---|---|---|---|---|---|
| L 2 RE | RESULT CC | RESULT CC | FTE FUND | ENRL STAF | ENRL END | ORIG FTE | ADJSTD FT | ADJSTD SE | ORIG vs ADJ | ADJ vs Sp Ed |
| )-001 | FT0000 | FTE Detail | STEM | 07/01/201 | 12/31/250 | 1 | 1 | | 0 | 1 |
| )-001 | FT0000 | FTE Detail | STEM | 08/15/201 | 01/06/201 | 0.491228 | 0.491228 | | 0 | 0.491228 |
| )-001 | FT0000 | FTE Detail | COMM | 08/27/201 | 05/31/201 | 1 | 1 | | 0 | 1 |
| -001 | FT0000 | FTE Detail | COMM | 08/13/201 | 12/31/250 | | 1 | | 0 | |

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# Filter and Highlight ORIG vs ADJ Data

From the Data tab, add filters



Filter on column S, "ORIG vs ADJ", unselect "0" and click OK

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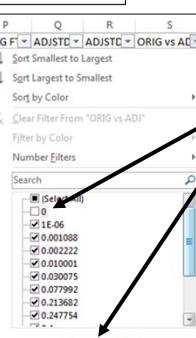
# Filter and Highlight ORIG vs ADJ Data, cont'd



Select cells in column S "ORIG vs ADJ", right click and highlight in yellow

Note that the appearance of IE-06 happens when the difference is 0.000001. This can be corrected by formatting the column to be "Custom" with a value of "0.000000"

# Filter and Highlight ADJ vs Sp Ed Data



From the Data tab, clear filters

Select filter in column "DISAB CNDTN CODE", unselect "**" and "(Blanks)" then click "OK"

Filter and Highlight ADJ vs Sp Ed Data, cont'd

Apply a second filter on column T, "ADJ vs Sp Ed", then unselect "0", and click "OK"



Filter and Highlight ADJ vs Sp Ed Data, cont'd

Select cells in column T, right click and highlight in green

## Remove Filters, View Highlighted Cells, and Save



**From the Data tab click on "Filter" to remove all filters from the report**

**Notice that the highlighted cells are showing the amount of Original FTE (yellow) and Special Education weighted FTE (green) that is not being funded**

**Investigate if the FTE is fundable and if there is an appropriate corrective action. Refer to the FTE Adjustment report for Result Codes**

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## Quick Check

Focusing on differences in original FTEs, adjusted FTEs, and special education adjusted FTEs can aid in troubleshooting FTE report data. Since many FTE Detail reports are quite large, highlighting can make the effected FTEs more obvious.

- Are you able to add columns and perform simple formulas?
- Are you able to filter and highlight adjusted values that should be investigated?
- Are you looking at the FTE Adjustment report to identify the causes of the adjustments?

# Use VLOOKUP to add LEA Names from OEDS to a Report

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## Adding LEA Names

- Most EMIS reports contain IRNs and no LEA names which can make troubleshooting difficult

- This section will add LEA names to the FTE Detail report for a more user friendly outcome

- We will begin by running a report of LEA IRNs and names from OEDS and will perform a VLOOKUP to add the LEA names to the FTE Detail report

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# Use OEDS Data to Create a Source File

https://oeds.ode.state.oh.us/SearchOrg

LEA data can be pulled into Excel using the OEDS Data link



# Select LEA Types

Select District LEA Types to Include



Selected District LEA types will appear here

# Select School LEA Types

Select School LEA Types to Include



Selected School LEA types will appear here

# Select More LEA Types and Generate Report



Educational Service Center

State Supported Organization
State Supported School
Developmental Disabilities
Organization

Scholarship Provider
Unclassified OEC Service Provider

Click on "Generate Report"

## Prepare the Source File

Delete the top row



Select the top row, right click, and select "delete"

## Sort Both Files



1. Select all data on the report by clicking on the triangle between row 1 and column A or use CTRL A

2. From the Data tab, choose Sort

3. In the Sort prompt, sort by IRN and click OK. If a sort warning appears, click OK

4. Repeat this sort on the LEA IRN column on the FTE Detail Report

# Adding LEA Names to FTE Detail Report



**1. Select the column to the right of the LEA IRN column, right click and select "Insert". Label the new column "LEA Name"**

**2. Place cursor in the first open cell in the new column, then select the function icon**

# Begin the VLOOKUP



**If VLOOKUP does not appear in the list of functions, search for VLOOKUP and select "Go"**

**Select VLOOKUP from the "Select a Function" list and click "OK"**

## Build the VLOOKUP



**1. Be sure that your cursor is in the field next to "Lookup_value"**

**2. Select cell I2 in the "LEA IRN" column**

**3. See that I2 appears in the Lookup_value field**

**4. Place cursor in the Table_array field**

## Build the VLOOKUP, cont'd

- Toggle to your OEDS Data spreadsheet and place your cursor in cell A2
- While holding down the Shift and CTRL keys at the same time, press right arrow then down arrow

**This will populate the Table_array field**

**Place cursor into Col_Index_Num field**

# Build the VLOOKUP, cont'd



To determine the Col_index_num count the number of columns from the left that contain the values we want to bring back from the OEDS file. In this case, column B is 2 columns from the left

# Build the VLOOKUP, cont'd



The complete VLOOKUP function appears here

=VLOOKUP(I2,[2_DEMO_OEDS_Data.xlsx]Data!$A$2:$X$6320,2,FALSE)

2. Note that the first match appears in the prompt

1. Insert 2 in the Col_index_num and FALSE in the Range_lookup

3. Click OK

## View LEA Names then Save Changes

See the first LEA Name appear, then double click or drag down to populate cells below

Widen the LEA Name column as needed

Before sending this report to others, change the formulas in column J to values. Right click column J and choose "Copy", then right click and paste values

| G | H | I | J | K | L |
|---|---|---|---|---|---|
| | e Na | LEA IRN | LEA Name | LEVEL 2 RE | RESULT ( |
| | e | 011506 | Dayton Regional STEM Scho | TED-001 | FT0000 |
| | e | 011506 | | TED-001 | FT0000 |
| | e | 000236 | | FTED-001 | FT0000 |
| | e | 000577 | | FTED-001 | FT0000 |

J2   =VLOOKUP(I2,[2_DEMO_OEDS_Data.xlsx]Data!$A$2:$X$6320,2,FALSE)

| | A | B | C | D | E | F | G | H | I | J | K | L | M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | RPT DEST | Bldg IRN | S | | | | | Middle Na | LEA IRN | LEA Name | LEVEL 2 RE | RESULT CC | RESULT CC |
| 2 | 040404 | 011111 | | | | | | Middle | 011506 | Dayton Regional STEM School | FTED-001 | FT0000 | FTE Detail |
| 3 | 040404 | 011111 | | | | | | Middle | 011506 | Dayton Regional STEM School | FTED-001 | FT0000 | FTE Detail |
| 4 | 040404 | 011111 | I | | | | | Middle | 000236 | Ohio Connections Academy In | FTED-001 | FT0000 | FTE Detail |
| 5 | 040404 | 011111 | | | | | | Middle | 000577 | Emerson Academy | FTED-001 | FT0000 | FTE Detail |
| 6 | 040404 | 011111 | I | BX668420 | 123456829 | Last | First | Middle | 009957 | Klepinger Community School | FTED-001 | FT0000 | FTE Detail |
| 7 | 040404 | 011111 | I | NH408420 | 12345 | | | | | | | | |
| 8 | 040404 | 011111 | I | VH860662 | 12345 | | | | | | | | il |
| 9 | 040404 | 011111 | I | PH284246 | 12345 | | | | | | | | |
| 10 | 040404 | 011111 | I | LF0022882 | 12345 | | | | | | | | |
| 11 | 040404 | 011111 | I | TZ800248 | 12345 | | | | | | | | |
| 12 | 040404 | 011111 | I | TT4424462 | 12345 | | | | | | | | |

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## Quick Check

Using data from OEDs to populate LEA names into an FTE Detail report can make the report easier to troubleshoot. Consider doing the VLOOKUP on other columns in the FTE Detail report or on other EMIS reports.

- Are you able to generate an LEA report from OEDS?

- Are you able to perform a VLOOKUP to add LEA names to the FTE Detail report?

- What other EMIS reports could be made more user friendly by populating LEA names into the report?

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# Create a MACRO to Format a Spreadsheet

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## Create a Macro

- A macro can be created to complete spreadsheet set ups with one click
  - Freeze Top Row
  - Wrap Text in the Header Row
  - Justify column width
  - Apply Filters
- Create it once and use it over and over
- Start by opening any FTE Report from the Data Collector

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# Begin Creating a Macro

From the View tab, select the down arrow under Macros and select "Record Macro"
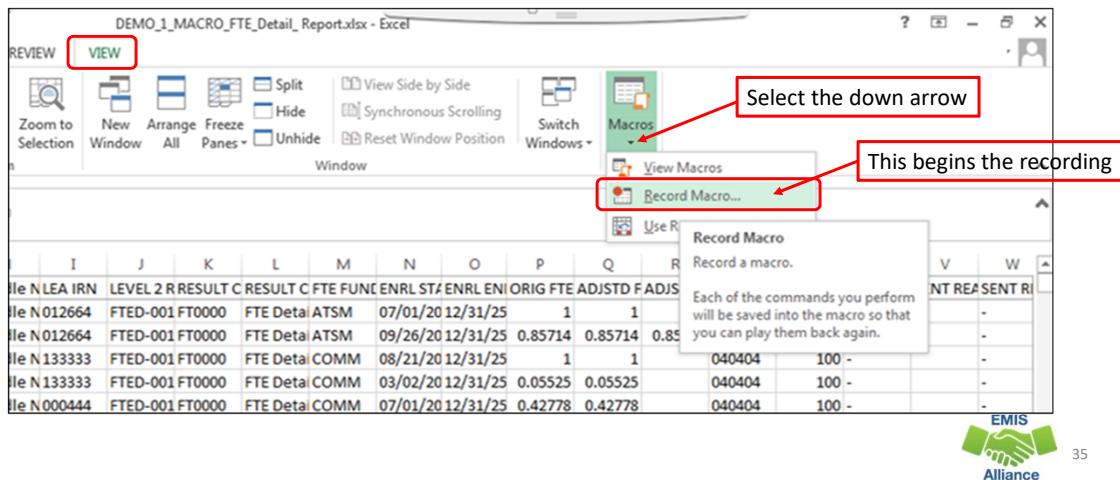


# Record Macro Prompt

Set up the prompt
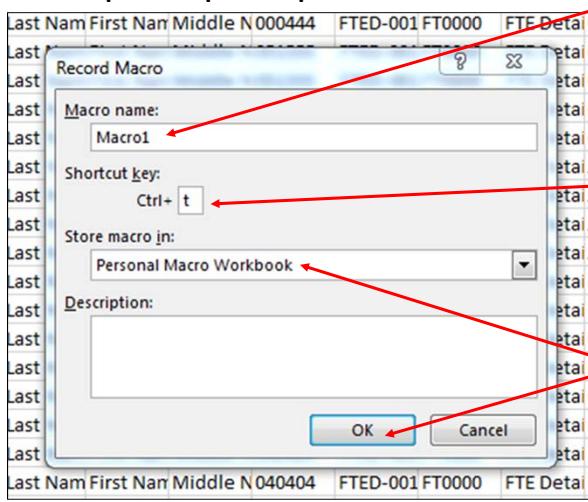


**Enter a Macro name or leave as the default value**

**Enter a unique Shortcut key value**
**Tip- enter a value that you don't typically use as a Ctrl command (don't use values such as Ctrl A, Ctrl C, Ctrl V, etc.)**

**Select "Personal Macro Workbook" from the "Store macro in" dropdown menu then click OK**

## Recording the Macro

- Macro is now recording
- Ready status and a small square icon show at bottom left



Hovering over the icon will generate the message-
"A macro is currently recording. Click to stop recording."

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## Recording the Macro, cont'd

Start by selecting the top row



Click on the "1" to select the first row

# Recording the Macro, cont'd

From the View tab, select "Freeze Panes" and "Freeze Top Row"



# Recording the Macro, cont'd

From the Home Tab, select "Wrap Text"

# Recording the Macro, cont'd

**Click on the triangle between Column A and Row 1 to select the entire spreadsheet**

**Place cursor between any two column headers and double click**



# Recording the Macro, cont'd

From the Home tab, select "Sort & Filter" and then "Filter"

# Stop the Recording

Click on the small square icon at the bottom left to stop the recording



The appearance of the icon will change and a hover message will appear. "No macros are currently recording. Click to begin recording a new macro."
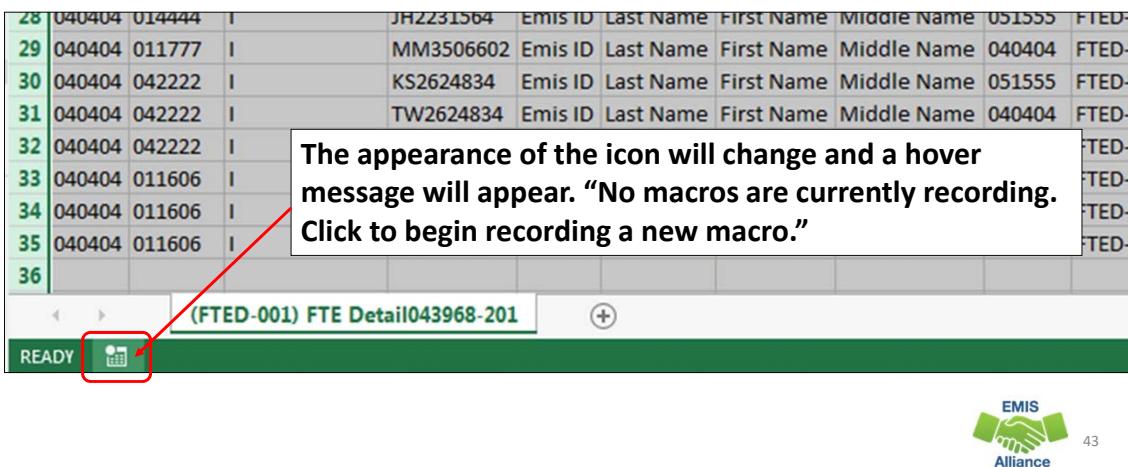
# Make the Macro a Quick Link

Select the Quick Link dropdown arrow, then "More Commands"



In the "Choose commands from" dropdown, select "Macros"
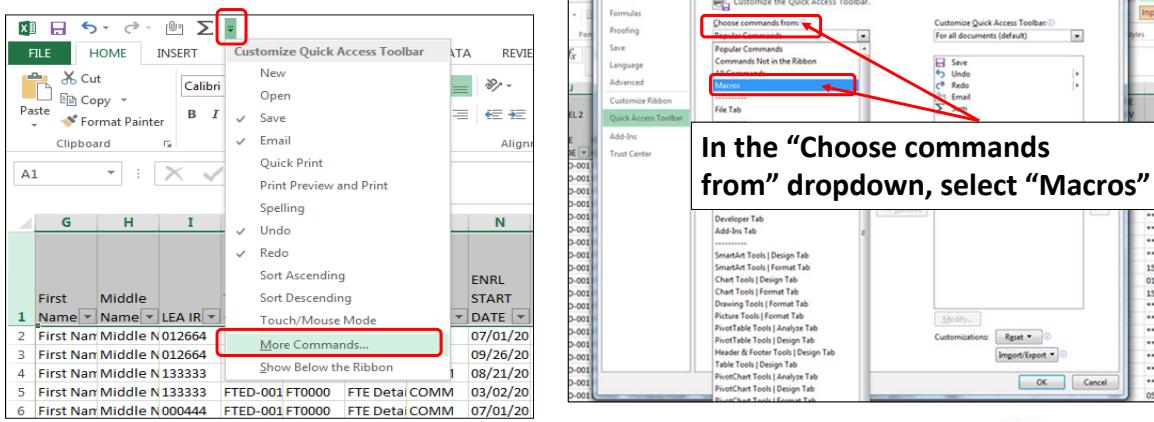
# Make the Macro a Quick Link

Highlight your macro from the list and click "Add"
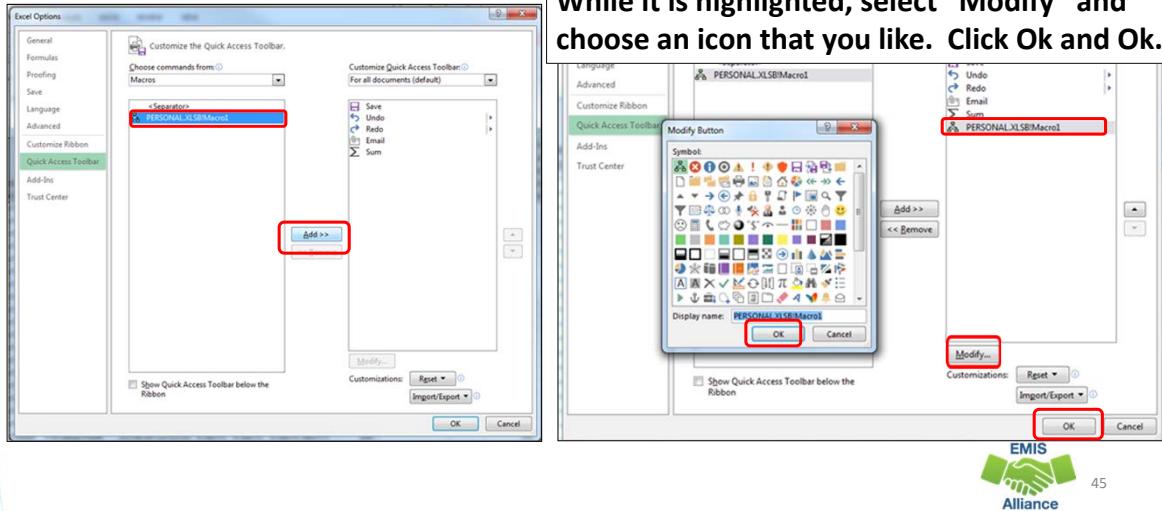
**The macro will move to the list on the right. While it is highlighted, select "Modify" and choose an icon that you like. Click Ok and Ok.**

# Quick Link

New Quick Link now appears
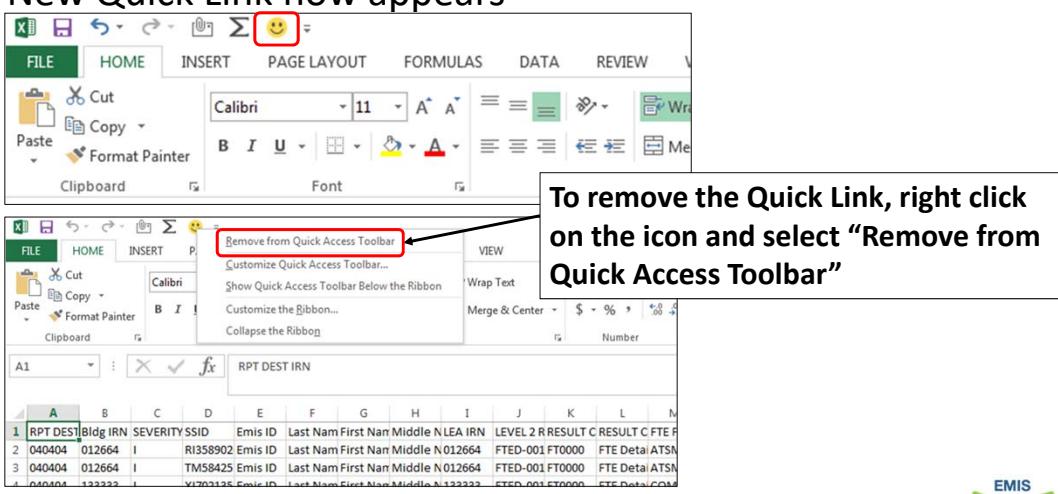
**To remove the Quick Link, right click on the icon and select "Remove from Quick Access Toolbar"**

## Save the Macro

- You can choose to save or not save your spreadsheet
- A second prompt will ask if you want to save the changes made to your Personal Macro Workbook



Select Save so that the macro will be available to use on future spreadsheets
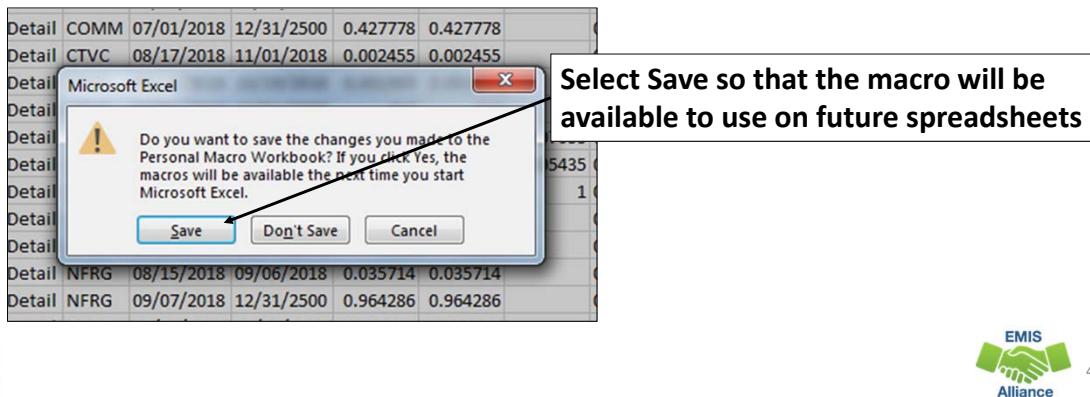
## Delete a Macro

Once a Macro is created a few extra steps are needed to delete it if needed



From a new or existing spreadsheet select "Unhide" from the View tab

In the Unhide prompt with PERSONAL.XLSB selected, click OK
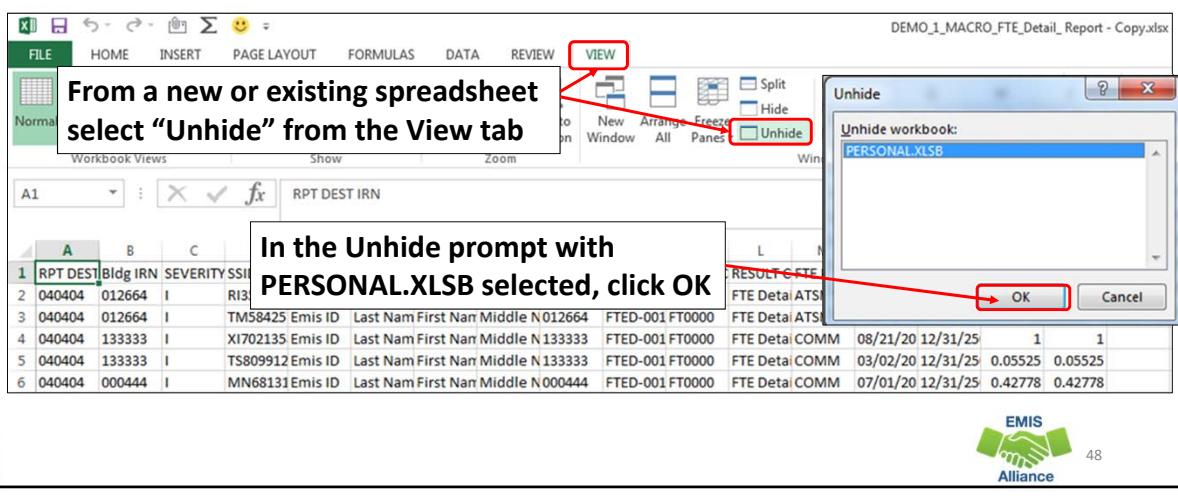
# Delete a Macro, cont'd

A blank spreadsheet named PERSONAL.XLSB will open



**Select "Macros" from the View tab, then in the Macro prompt select the macro to be deleted select "delete"**

**When finished, close the Macro prompt and select "Hide" and the PERSONAL.XLSB will close**

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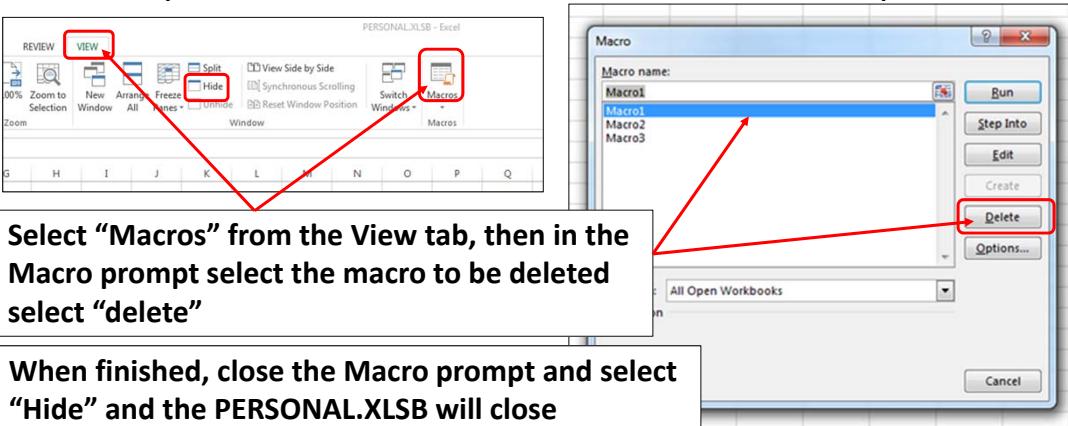
## Quick Check

Macros are a quick way to turn a multi-step process in Excel into one click. Creating a quick link macro does not embed the macro into the spreadsheet. This macro is for use on the machine where it is created.

- Are you able to record and save your macro?

- Can you think of other instances where a macro can save time?

- Are you able to find and manage your macros?

# FTE Detail Report Subtotaling

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# FTE Detail Report Subtotaling

Subtotal the FTE Detail Report

- Sort by SSID, then by Enrollment Start Date



From the Data Tab choose Sort

Sort by SSID, then select "Add Level", then sort by "ENRL START DATE", then select "OK"

## Sort Warning

This Sort Warning is generated because the ENRL START DATE column contains some numbers that are formatted as text



If a Sort Warning is generated, leave as defaulted and select "OK"

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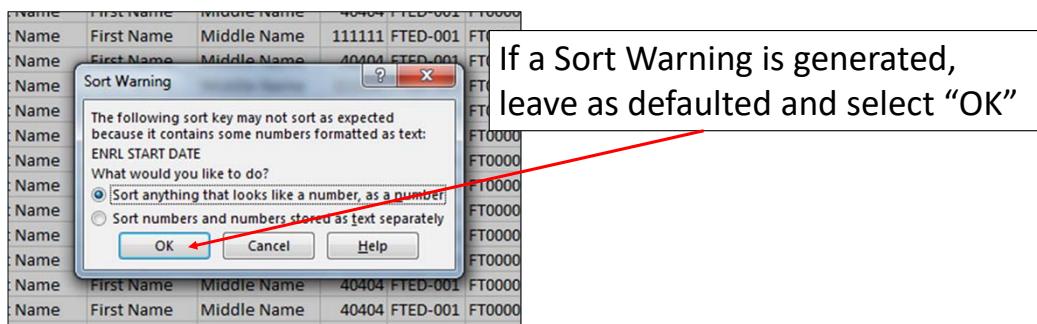
## Apply Subtotals



From the Data Tab select Subtotal

In the Subtotal Prompt select
1. "At each change in:" SSID
2. "Use function:" Sum
3. "Add subtotal to:" ORIG FTE and ADJSTD FTE and ADJSTD SPECED CAT FTE
4. Select "OK"

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# FTE Detail Report Subtotaled



This student's Original FTE, Adjusted FTE, and Special Education FTE, have been subtotaled and appear chronological order

# Undo Subtotals



To undo subtotals select "Subtotal" and then "Remove All"

# Using Concatenation and Conditional Formatting to Verify Calendar Data and Student Data

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## Data Comparison

- Compare the Calendar Display report to the Student Attributes Effective Date Record (FD)
- Look for students who have no matching calendar in the calendar collection
- Look for calendars being reported to EMIS that have no students assigned to them
- Result will be cleaner data and correct calendar assignments on the FTE Detail report

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# Calendar Display Report

Find the Calendar Display report that aligns with the current student collection

- In this example we will use the Final Calendar Collection for FY19 and compare it to the End of Year Student Collection for FY19

**Calendar Collection - Final (FY19)**

FY19-C-Cal Final: The Final Calendar Collection is required for all EMIS reporting entities educating students in 2019. Source files for DL And DN re... ⓘ

| | |
|---|---|
| Submissions: | October |
| Version: | 1 |
| Status: | The col |
| Submission Status: | Process |
| Submission Number: | 3 (atte |
| Actions: | Start C |
| | Add Ne |
| | Set De |

**Select "View submission # Data" and find the Calendar Display Report and the Student Attributes Date Effective (FD) file**

e outputs: Level 1 Validations

View submission 3 Data

**End of Year Student Collection (FY19)**

FY19-S-TRAD Final: Collection required for all Traditional Districts, JVSDs, ESCs, and State Supported Schools. Source file(s) for DL, GI, FS, FD, FB,... ⓘ

| | |
|---|---|
| Submissions: | May 03, 2019 - July 17, 2019 (closed) |
| Version: | 6 |
| Status: | The collection was submitted July 09, 2019 at 01:03:59 PM by |
| Submission Status: | Processing Completed (July 09, 2019 at 01:03:39 PM) |
| Submission Number: | 4 (attempt 1) |
| Actions: | Start Collection |
| | Add New Scheduled Collection |
| | Set Default Collection properties |

Data only available via Reports > Received Files: in 501 days
From ODE: Level 2 Reports

Prepare Outputs: Level 1 Validations
View submission 4 Data

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# Prepare the Calendar Display Report

- Run macro to prepare the report (original macro from FY19, not new subtotaling macro) or prepare the report manually
- Filter Row Number column to include only Row 1

| | A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|---|
| 1 | Calendar For: Dist-Bldg-Grade-AP | Row Numb | Mont | Sund | Monday | Tuesday | Wednesday | Thursd |
| 2 | 040404-001111-01-** | 01 | Jul-18 | | | | |
| 80 | 040404-001111-02-** | 01 | | | | | |
| 158 | 040404-001111-03-** | 01 | | | | | |
| 236 | 040404-001111-04-** | 01 | | | | | |
| 314 | 040404-001111-05-** | 01 | Jul-18 | | | | |
| 392 | 040404-001111-KG-HA | 01 | Jul-18 | | | | |
| 470 | 040404-001111-KG-HP | 01 | Jul-18 | | | | |
| 548 | 040404-001111-KG-WC | 01 | Jul-18 | | | | |
| 625 | 040404-008888-01-** | 01 | Jul-18 | | | | |
| 703 | 040404-008888-02-** | 01 | Jul-18 | | | | |

**The result will be an unduplicated list of calendars that are being reported to EMIS**

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# Prepare the Student Attributes (FD) Report

Run macro to prepare the report (original macro from FY19, not new subtotaling macro) or prepare the report manually



**Select the column to the right of the Attendance Pattern column, then right click and select "insert"**

# Concatenate Calendar Data

Name the new column (i.e. Calendar) and expand width of column



**1. Place cursor into cell K2 then select the Insert Function Wizard**

**2. If CONCATENATE does not appear in the list of functions, search for CONCATENATE and select "Go"**

**3. Select CONCATENATE from the "Select a Function" list and click "OK"**

# Concatenate Function Arguments

Using the CONCATENATE Wizard, select the cells to include

- **Place cursor in Text1 field**
  - **then select cell A2**
- **In Text 2 enter a dash**
- **Place cursor in Text3 field**
  - **then select cell B2**
- **In Text4 enter a dash**
- **Place cursor in Text5 field**
  - **then select cell I2**

**Click the down arrow to see more fields**

# Concatenate Function Arguments, cont'd

- **In Text6 enter a dash**
- **Place cursor in Text7 field**
  - **then select cell J2**
- **Click "OK"**

**Preview of results**

# Concatenated Calendar Data

Data from all four cells is joined together with dashes in the same format at the data on the Calendar Display report



Double click or drag to copy into cells below

# Remove Duplicates



Select all data

From the Data tab, select "Remove Duplicates"

From the Remove Duplicates prompt, click "Unselect All" and check the box for the column containing the concatenated data, then click "OK"

## Duplicates Removed



2. With duplicates removed, the report now contains an unduplicated list of calendars assigned to students

1. Click OK

3. Scroll to the bottom of the report

## Copy Data from Calendar Display Report

Toggle to the Calendar Display report



Select cells in Column A (not including the header row) then right click and select "copy"

Paste Data into Student Attributes (FD) Report

Toggle to the Student Attributes (FD) report

In the cell below the concatenated data column, paste the data from the Calendar Display report



Conditional Formatting

Select column containing calendar data, then from the Home tab, select "Conditional Formatting", "Highlight Cell Rules", then "Duplicate Values"

# Conditional Formatting, cont'd



**Duplicate values will be highlighted in pink**

**Click OK**

**Cells highlighted in pink indicate a matching calendar in the calendar collection for calendar assigned to the student**

# Filter for Mismatches



**Click on the filter in the column containing concatenated data then select "Filter by Color", then "No Fill"**

# Troubleshoot the data



Students without calendars in the calendar collection

Calendars with no students in the student collection

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# Troubleshoot the data

Why do students not have a matching calendar?

- Is there something preventing a calendar from being reported, or is there no matching calendar being reported?
  - If yes, fix or create a matching calendar in the SIS and submit it to EMIS
- Is the student on a calendar that is not reportable to EMIS?
  - If yes, ignore the mismatch
- Does the student match to a calendar based on a wildcard grade level?
  - Grade level ** in the calendar collection is a wildcard
  - Example - District IRN-Building IRN-01-** matches to District IRN-Building IRN-**-**
  - Match these students and calendars manually
- Check your FTE Detail Report to verify that students are being correctly assigned to calendars through the calendar determination process

# Troubleshoot the data, cont'd

Why are there calendars with no students?

- Typically okay to report calendars with no students just be careful if the unused calendar has a start date that is before your district's earliest calendar or an end date that is after your latest calendar as this could effect some of the checks that EMIS uses such as separated staff and summer graduates
- The early start date issue can be found for any calendar in the calendar collection whether it is used for students or not
- Consider not reporting unused calendars to EMIS

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## Quick Check

Calendar verification is very important since there are no checks in EMIS between the student collections and the calendar collections. This exercise will allow for a very quick comparison to identify EMIS reporting issues.

- Are you able to perform concatenation and conditional formatting?
- Do you have students with no calendar in the calendar collection?
- Do you have calendars reported to EMIS with no students assigned?

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## Summary

- Basic Excel techniques can be very useful when troubleshooting
    - EMIS data in the Student Information System
    - EMIS reports
    - preview/review files
-  These techniques should be part of your everyday practices

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## Resources

- Microsoft Excel Help within Excel "?" Articles and Videos
- Google it
- Microsoft Excel Classes
- Your ITC

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# Questions?

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