For FAAs Who Want to Excel

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1

Agenda

1. Introduction
2. Basic Math Functions
3. Frequently Used Formulas
4. Pivot Tables
5. Use Case: Reconciliation Demonstration
6. Questions

2

Introduction

This PowerPoint Presentation was developed as a guide to the accompanying Excel Workfile. During the live session, we worked with the Excel Workfile exclusively. However, this PowerPoint will guide you through the Workfile if you wish to revisit this content on your own at a later time. A pre-recorded version of the live session is available here.

The title of the PowerPoint slides and the sheets in the Excel Workfile are color-coordinated. For example, PowerPoint slides highlighted in red contain content that corresponds to the red-colored sheets in the Excel Workfile.

The Workfile also has a reference sheet titled "Excel function descriptions", which can help you learn more about all of the formulas and functions available in Excel.

3

Basic Math Functions

- Addition – To add two or more cells together→ =A3+B3
- Subtraction – To subtract cells→ =B3-A3
- Multiplication – to multiply cells→ =A3*B3*
- Division – to divide cells→ =B3/A3
- Exponential – To multiply with exponential variables, use ^. For example, if you wanted to compute what cell B3 would become after 4 years with a 3% annual increase, you would type→ =B3*1.03^4

Formula/Function copy options

- "Double-click" – click on the cell and hover over bottom right corner until + appears, then double-click. Formula will copy down for the full data set.
- "Drag" – click on the cell and hover over bottom right corner until + appears, then single click and drag in the direction (up/down/left/right) to cells where you want the same formula
- "Copy & Paste Formula" – right click on the cell with the formula and select "Copy". Select the cell(s) you want to copy the formula to and right click, under the Paste Options menu, select *fx*.

4

Common Formulas

In the box is a dataset that will be used to demonstrate how many common functions/formulas can be used.

- =PROPER: This formula capitalizes the first letter in each word of a text value, and makes the rest of the text lower-case. Example: If B3 value is "jOHn", =PROPER(Cell1) would return "John".
- =CONCATENATE: This function joins several text strings (from other cells, or any text in quotes) into one cell. Example: If cell A3 is "John" and cell K3 is "Smith", =CONCATENATE(K3,", ",J3) will return "Smith, John".
- =RIGHT: This function returns the specified number of right-most characters from a specified cell. Example: If Cell A3 is "JS-4545", =RIGHT(A3,4) will return the 4 right-most characters from A3, or "4545". (Tip: The =LEFT function works the same way. Likewise, the =MID function can return characters from the middle of text, but it requires that you specify the starting character # (counting from the left) and the number of characters to return).

5

Common Formulas (cont.)

- =IF: Used to create a logical test, and return a value for TRUE and a value for FALSE.
  - Example: If E3 value is "Y", then =IF(E3="Y",.25,1) would return .25 (TRUE).
  - Example: If E3 value is "N", then =IF(E3="Y",.25,1) would return 1 (FALSE).
- =VLOOKUP: Uses a specified "lookup value" and finds the row associated with that value in the first column of a specified array. From that row, it will return the value of the specified column # (counting from the left-most column of the array. Ex. to return column B in array A:B, use 2). If you need an exact match for the lookup value, use "FALSE"; for the closest match, use "TRUE".

=VLOOKUP(M3,'Grad Date table'!A:B,2,FALSE)

(^From cell O3 of the Workfile^)

6

Common Formulas (cont.)

Q. How can I figure out how many students have been employed?
A. Use **=COUNT** to count how many cells in Cum Earnings column have a *number.*
→ =COUNT(G3:G12).

Q. How can I figure out how many on this list have a student ID populated for them?
A. Use **=COUNTA** to count how many cells in the ID Column have *any value.*
→ =COUNT(A3:A12).

Q. How can I figure out how many on this list are missing a Student ID?
A. Use **=COUNTBLANK** to count how many cells in the ID column are blank.
→ =COUNT(A3:A12)

7

Common Formulas (cont.)

Q. How can I figure out how many on this list are active student employees?
A. Use **=COUNTIF** to count how many cells in the Status column are equal to "Active".
→ =COUNTIF(I3:I12,"Active")

Q. How can I figure out how many on this list are active student employees in FINAID Dept?
A. Use **=COUNTIFS** to count how the instances where the Status is "Active" AND the Dept is "FINAID"→ =COUNTIFS(I3:I12,"Active",H3:H12,"FINAID")

Q. How can I figure out the average and median hourly rate paid to students?
A. Use **=AVERAGE** to compute the average value from the Rate column→ =AVERAGE(D3:D12)
Use **=MEDIAN** to compute the median value from the Rate column→ =MEDIAN(D3:D12)

8

Common Formulas (cont.)

Q. How can I figure out the total Cum Earnings for all students on this list?
A. Use the **=SUM** function to add all of the numbers in the Cum Earnings column.
→ =SUM(G3:G12)

Q. How can I figure out the total Cum Earnings for all students in the ADMISSION Dept?
A. Us the **=SUMIF** function to add all of the numbers in the Cum Earnings Column ***IF*** the value in that row's Dept column is "ADMISSION".
→ =SUMIF(H3:H12,"ADMISSION",G3:G12)

Q. How can I figure out the total Cum Earnings for Active students in the ADMISSION Dept?
A. Use the **=SUMIFS** function to add the numbers in the Cum Earnings Column ***IF*** the value in that row's Dept Column is "ADMISSION" ***AND*** that row's Status Column indicates "Active".
→ =SUMIFS(G3:G12,H3:H12,"ADMISSION",I3:I12,"Active")

9

Common Formulas (cont.)

Q. How can I compute the total amount of work-study wages paid with institutional budget?
A. Use the **=SUMPRODUCT** function to multiply each student's Cum Earnings by the Inst Pay Factor, and then add all of the products together.
→ =SUMPRODUCT(G3:G12,N3:N12)

10

Pivot Tables

Pivot tables can help you quickly analyze large amounts of data. The "Scholarship Offers" sheet contains data about prospective students who were offered one of 3 scholarships for the past three award years.

To create a pivot table, select the data to be included in the pivot table. Under the "Insert" tab, click "PivotTable" and then click OK. On the right, you will see the PivotTable Fields section. Each column from your data will appear as an available field. You can drag those fields into one of four areas below:

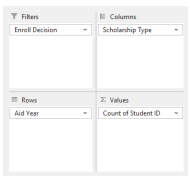
- Filters – Used to include/exclude data from pivot table based on values selected here
- Rows – Define and organize the row(s) of your pivot table
- Columns – Define and organize the column(s) of your pivot table
- Values – Identify the field(s) that are being counted, and how (count, sum, average, min, max, etc).

Use a pivot table to answer the following questions about scholarship offers.

11

Pivot Tables (cont.)

Question: How many scholarship recipients enrolled each year, itemized by scholarship type?

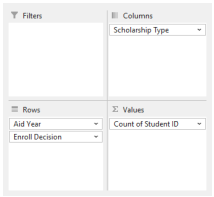


Enroll Decision	Enrolled			
Count of Student ID	**Column Labels**			
Row Labels	**Art**	**Music**	**Theatre**	**Grand Total**
2019-2020	7	71	12	90
2020-2021	18	78	13	109
2021-2022	9	51	20	80
Grand Total	**34**	**200**	**45**	**279**

12

Pivot Tables (cont.)

Question: What is the 3-year yield for each scholarship type?

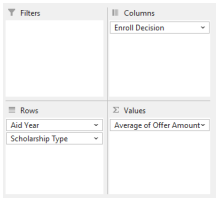


Count of Student ID	Column Labels			
Row Labels	Art	Music	Theatre	Grand Total
2019-2020	12	142	72	226
Enrolled	7	71	12	90
Withdrawn	5	71	60	136
2020-2021	23	123	70	216
Enrolled	18	78	13	109
Withdrawn	5	45	57	107
2021-2022	18	115	74	207
Enrolled	9	51	20	80
Withdrawn	9	64	54	127
Grand Total	53	380	216	649

13

Pivot Tables (cont.)

Question: What is the average scholarship offer of those who enroll vs those who do not?

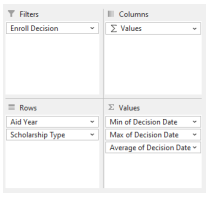


Average of Offer Amount	Column Labels		
Row Labels	Enrolled	Withdrawn	Grand Total
2019-2020	6669	7357	7083
Art	11000	11200	11083
Music	6060	6542	6301
Theatre	7750	8000	7958
2020-2021	7749	7981	7864
Art	9625	10800	9880
Music	7325	7022	7214
Theatre	7692	8491	8343
2021-2022	6156	7618	7053
Art	8000	7778	7889
Music	5029	7148	6209
Theatre	8200	8148	8162
Grand Total	6944	7627	7333

14

Pivot Tables (cont.)

Question: What is the earliest/latest/average commitment dates by scholarship, by year, for enrolled scholarship recipients?



Enroll Decision	Enrolled		
Row Labels	Min of Decision Date	Max of Decision Date	Average of Decision Date
2019-2020	11/25	8/5	3/29
Art	2/27	6/17	4/8
Music	11/25	8/5	3/27
Theatre	12/19	6/18	4/5
2020-2021	12/6	1/12	3/27
Art	2/2	1/12	4/5
Music	12/6	5/29	3/20
Theatre	3/2	11/10	4/25
2021-2022	10/23	4/17	3/1
Art	11/25	4/1	3/2
Music	10/23	4/16	2/24
Theatre	11/10	4/17	3/14
Grand Total	11/25	4/17	3/7

15

Reconciliation Demonstration

For this example, we need to reconcile awards in our student information system with the state system. We have a report from our SIS (*SIS awards*) that includes the annual total of award amount by student (unduplicated – each student listed only once), and we have the ICAPS certification roster which itemizes awards by semester for each student (duplicated – students have a row for every semester they received the award).

In order to make comparison of the two lists easy, we will convert the ICAPS certification roster into an unduplicated list that displays the total amount of the award for each student. This is easily done with a pivot table.

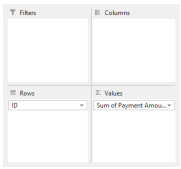
Select all data in the ICAPS ITG Cert Roster sheet, and then under the *Insert* tab click "PivotTable" and then "OK".

16

Reconciliation Demonstration (cont.)

Select all data in the ICAPS ITG Cert Roster sheet, and then under the *Insert* tab click "PivotTable" and then "OK".

Drag the field "ID" into the *Rows* section and the field "Payment Amount" into the *Values* section (as shown below). You now have an unduplicated list with annual total amounts.



Row Labels	Sum of Payment Amount
100000	1983
100001	3400
100002	3400
100003	3400
100004	6800
100005	6800
100006	1700
100007	6800
100008	6800
100009	6800

←Copy and Paste (values only) the pivot table into the ICAPS Undup sheet.

17

Reconciliation Demonstration (cont.)

Next, we'll create the reconciliation list, which should include IDs found on either the *SIS awards* or the *ICAPS Undup* sheets. To do this,

1. select and copy all IDs from the *SIS awards* sheet and paste into column A of the *ITG Reconciliation* sheet.
2. Select and copy all IDs from the *ICAPS Undup* sheet and paste into column A of the *ITG Reconciliation* sheet (directly under the IDs from step 1).
3. Highlight column A of the *ITG Reconciliation* sheet. Under the *Data* tab, click "Remove Duplicates" and then click "OK".

18

Reconciliation Demonstration (cont.)

In the *ITG Reconciliation* sheet, we will now use VLOOKUP to populate the total annual amounts listed for each student from each of our two lists. Follow the steps below:

1. In cell B1, type"SIS Amount". In cell B2, use VLOOKUP to return the value of that student's annual amount from the *SIS awards* sheet→ =VLOOKUP(A2,'SIS awards'!A:B,2,FALSE). Copy down this formula in column B.
2. In cell C1, type "ICAPS Amount". In cell C2, use VLOOKUP to return the value of that student's annual amount from the *ICAPS Undup* sheet→ =VLOOKUP(A2,'ICAPS Undup'!A:B,2,FALSE). Copy down this formula in column C.

19

Reconciliation Demonstration (cont.)

We can now use a simple math formula to quickly identify discrepancies between the two lists.

1. In cell D1, type "Difference".
2. In cell D2, subtract cell B2 from C2→ =C2-B2
3. Copy down this formula in column C.
4. Filter your list (under *Home* tab click "Sort and Filter") and select any values in Column D (Difference) that are not zero.

20

Questions

21