MICROSOFT EXCEL 1

QCL Graduate Fellow

BEFORE WE START

Microsoft Excel

https://www.microsoft.com/en-us/education/products/office

Survey sign-in

Github link

AGENDA

Excel Overview

Excel Worksheets

- Structure
- Today's Data

Content

- Sort, filter, conditional formatting
- VLOOKUP (extact match)
- Calculations (mean, min and max)
- Frequency and histogram

Hands-on Exercises throughout

EXCEL OVERVIEW

POPULAR: COMMONLY USED PROGRAM

DATA ENTRY: IMPUTING DATA TO MAKE SENSE OF INFORMATION

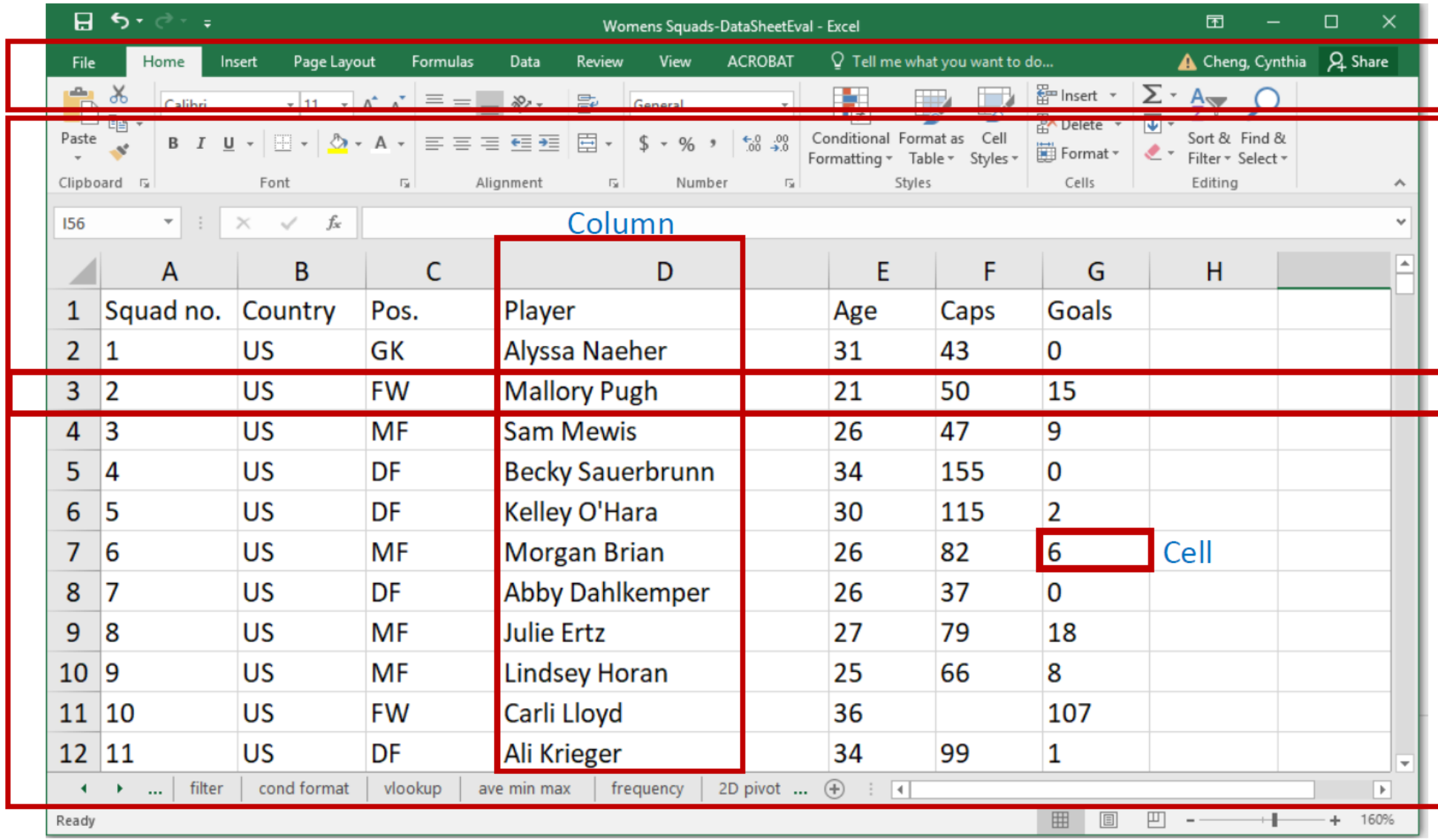
CALCULATIONS: SIMPLE AND COMPLEX TO A POINT

VISUALS: TABLES, PLOTS AND DIAGRAMS

TODAY'S GOALS

- ❑ Learn how to move data around with **Sort**
- ❑ Learn how to highlight and hide data with **Filter and Conditional Formatting**
- ❑ Make a simple search feature with **VLOOKUP (exact match)**
- ❑ Make simple **Calculations** about your data
- ❑ Put data in "boxes" for visuals with **Frequency**

Excel worksheet



	A	B	C	D	E	F	G	H
1	Squad no.	Country	Pos.	Player	Age	Caps	Goals	
2	1	US	GK	Alyssa Naeher	31	43	0	
3	2	US	FW	Mallory Pugh	21	50	15	
4	3	US	MF	Sam Mewis	26	47	9	
5	4	US	DF	Becky Sauerbrunn	34	155	0	
6	5	US	DF	Kelley O'Hara	30	115	2	
7	6	US	MF	Morgan Brian	26	82	6	
8	7	US	DF	Abby Dahlkemper	26	37	0	
9	8	US	MF	Julie Ertz	27	79	18	
10	9	US	MF	Lindsey Horan	25	66	8	
11	10	US	FW	Carli Lloyd	36		107	
12	11	US	DF	Ali Krieger	34	99	1	

https://data.world/sportsvizsunday/womens-world-cup-data

Today's data

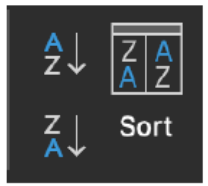
	A	B	C	D	E
1	id	country	gender	age	window
2	1	South Korea	female	62	0
3	2	Singapore	male	27	1
4	3	Taiwan	male	35	1
5	4	Hong Kong	male	43	1
6	5	China	female	32	2
7	6	China	male	44	2
8	7	Singapore	female	48	2
9	8	Germany	male	32	2
10	9	Switzerland	male	70	2
11	10	Japan	female	25	3

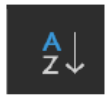
File name: COV19_IndividualList.xlsx

5 fields (column): id, country, gender, age and window (days from exposure to symptom onset)

Total of 1086 records (rows)

Sort

Under Data, find Sort 

Sort country in alphabetical order by highlight cell in desired column and click on 

Sort country in reverse alphabetical order by highlight cell in desired and click on 

	A	B	C	D	E
1	id	country	gender	age	window
2	1083	Afghanistan	n/a	35	n/a
3	1084	Algeria	male	n/a	n/a
4	790	Australia	male	35	n/a
5	791	Australia	male	43	n/a
6	792	Australia	male	53	n/a
7	793	Australia	male	55	n/a
8	794	Australia	female	21	n/a
9	795	Australia	male	44	n/a
10	796	Australia	male	65	n/a

	A	B	C	D	E
1	id	country	gender	age	window
2	30	Vietnam	female	55	5
3	47	Vietnam	male	28	7
4	61	Vietnam	female	42	9
5	777	Vietnam	male	66	n/a
6	778	Vietnam	n/a	n/a	n/a
7	779	Vietnam	n/a	n/a	n/a
8	780	Vietnam	n/a	n/a	n/a
9	781	Vietnam	n/a	n/a	n/a
10	782	Vietnam	n/a	n/a	n/a

Sort by conditions

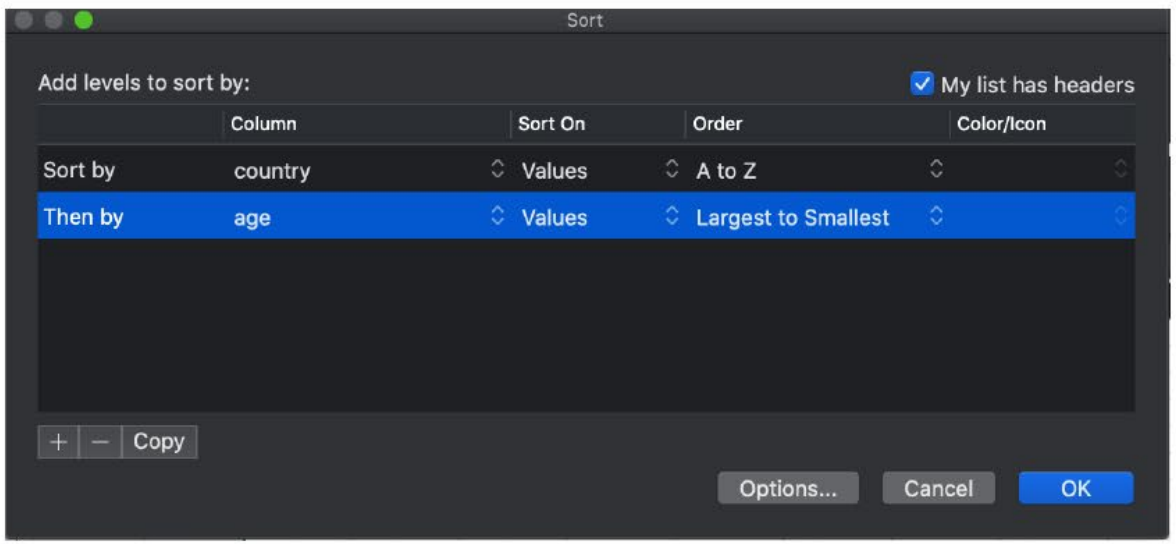
Under Data, click on Sort 

To sort country by alphabetical order followed by age in decreasing order:

Click on any cell in the column that needs to be sorted

When the Sort box opens, select country under Column and A to Z under Order

Click on "+" to add another level, select age under Column and Largest to Smallest under Order



	A	B	C	D	E
1	id	country	gender	age	window
2	1083	Afghanistan	n/a	35	n/a
3	1084	Algeria	male	n/a	n/a
4	796	Australia	male	65	n/a
5	799	Australia	male	60	n/a
6	800	Australia	female	60	n/a
7	793	Australia	male	55	n/a
8	792	Australia	male	53	n/a
9	797	Australia	female	45	n/a
10	795	Australia	male	44	n/a

HANDS-ON EXERCISE #1

Using the Broadway data set:

Go to the “broadway” data sheet in the workbook

Generate the output for sorting show type first followed by show title in alphabetical order.

Filter

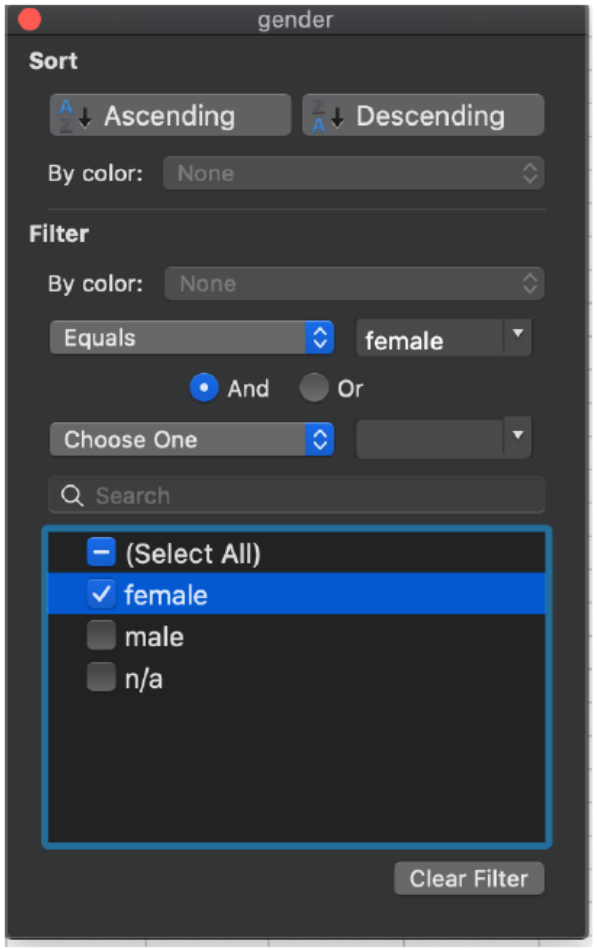
Filter by gender (female) by:

Click on any cell in the column that needs to be sorted

Under Data, click on Filter 

Once the downward arrows appear, go to the gender column (C) and click on the downward arrow

When the gender filter window opens, uncheck Select All and click on female to display only female patients



	A	B	C	D	E
1		coun	gen	a	wind
2	1	South Korea	female	62	0
6	5	China	female	32	2
8	7	Singapore	female	48	2
11	10	Japan	female	25	3
12	11	Japan	female	55	3
14	13	China	female	50	4
15	14	China	female	32	4
19	18	China	female	42	4
21	20	Singapore	female	38	4

Conditional formatting

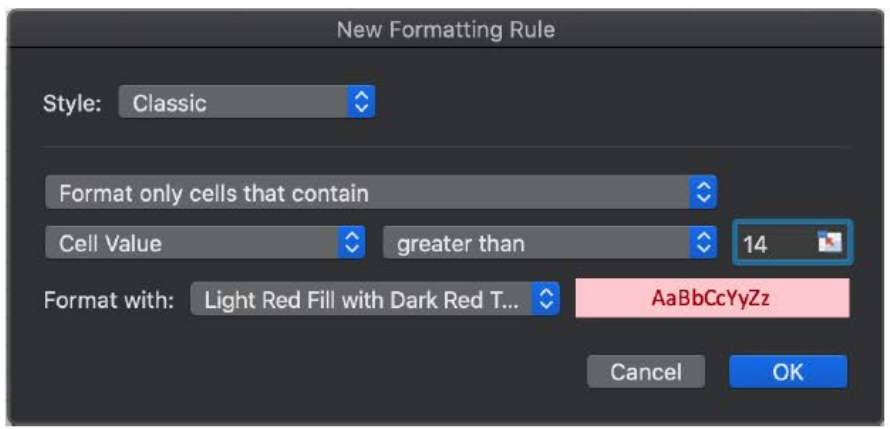
CDC indicated that average window is 14 days (link)

High-light the cells that are going to be subjected to condition (in this example, highlight all cells under window column or column E)

On the Home tab, click on Conditional Formatting

Click Highlight Cells Rules, Greater Than

When Greater Than window appears, enter 14 and select formatting style



	A	B	C	D	E
1	id	country	gender	age	window
72	71	Japan	female	55	12
73	72	Hong Kong	male	42	12
74	73	Hong Kong	male	52	13
75	74	Hong Kong	male	37	13
76	75	USA	male	65	15
77	76	Hong Kong	female	21	18
78	77	China	male	56	21
79	78	Malaysia	female	32	22
80	79	Hong Kong	male	16	23
81	80	Hong Kong	male	68	26
82	81	Hong Kong	female	59	30
83	82	Japan	male	55	32
84	83	Japan	male	85	34
85	84	China	female	56	n/a
86	85	China	male	46	n/a
87	86	China	female	60	n/a
88	87	China	male	58	n/a
89	88	China	female	44	n/a
90	89	China	male	34	n/a

VLOOKUP exact match

Find the age of patient based upon ID:

Enter “Exact” in Cell G1, ”ID” in Cell G2 and “Age” in Cell G3

In Cell H3, input the VLOOKUP function:
“=VLOOKUP(H2, A1:D1086, 4, FALSE)”

- H2 - cell to enter id
- A1: D1086 - vertical search range
- #4 – column away from input column
- False – return value when true

H3 =VLOOKUP(H2, A1:D1086, 4, FALSE)

	A	B	C	D	E	F	G	H
1	id	country	gender	age	window		Exact	
2	1	South Korea	female	62	0		ID	235
3	2	Singapore	male	27	1		Age	34
4	3	Taiwan	male	35	1			
5	4	Hong Kong	male	43	1			
6	5	China	female	32	2			
7	6	China	male	44	2			
8	7	Singapore	female	48	2			
9	8	Germany	male	32	2			
10	9	Switzerland	male	70	2			
11	10	Japan	female	25	3			

HANDS-ON EXERCISE #2

Using the Broadway data set:

Suppose that you are the theatre manager for Richard Rogers Theatre, where Hamilton is playing (see tab that is named “hamilton”), what are the exact VLOOKUP functions that can be used to find the statistics attendance, capacity and number of performances, by entering the Date.Full?

Calculations

Find average, min and max of age by:

Enter “Age” in Cell H1, ”Average” in Cell G2, “Min” in Cell G3 and “Max” in Cell G4

In Cell H2, enter “=average(D2:D1086)”

In Cell H3, enter “=min(D2:D1086)”

In Cell H4, enter “=max(D2:D1086)”

	A	B	C	D	E	F	G	H
1	id	country	gender	age	window			Age
2	1	South Korea	female	62	0		Average	49.48
3	2	Singapore	male	27	1		Min	0.25
4	3	Taiwan	male	35	1		Max	96.00
5	4	Hong Kong	male	43	1			
6	5	China	female	32	2			
7	6	China	male	44	2			
8	7	Singapore	female	48	2			
9	8	Germany	male	32	2			
10	9	Switzerland	male	70	2			

Note: excel understands the difference between text and numbers, if you use the right data type.

HANDS-ON EXERCISE #3

Using the Broadway data set:

Go to the “broadway” data sheet in the workbook

Calculate minimum, maximum and average values for statistics attendance and capacity using the whole data set.

Frequency

Determine age frequency by:

Enter "Upper bin" in Cell H1, "25" in Cell H2, "50" in Cell H3, "75" in H4 and "100" in H5

Highlight range I2:I5, enter "=FREQUENCY(D2:D1086, H2:H5)" and finish by pressing:

PC: Ctrl + Shift + Enter

Mac: Ctrl + Shift + Return (365) or Ctrl + Shift + Command (Excel 2016)

Make histogram:
Enter the Bin numbers: "0-25" in G2, "26-50" in G3, "51-75" in G4 and "76-100" in G5

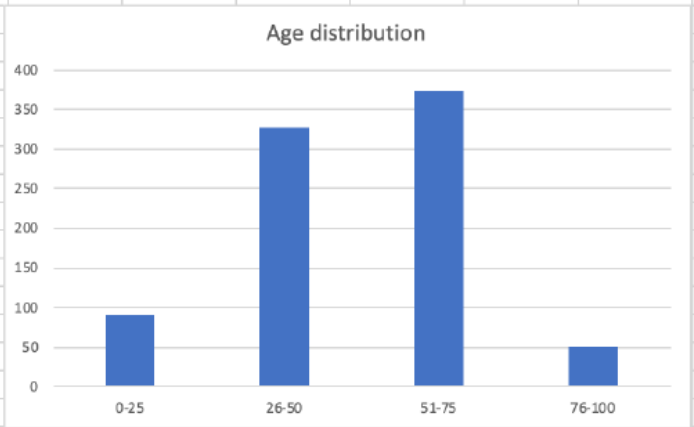
Highlight Cells G2:G5 and I2:I5

Under Insert, select Column and click on Clustered Column to generate the histogram

To edit or change the design or format of the histogram, click on the histogram to turn on the Chart Tools

I2 f_x {=FREQUENCY(D2:D1086, H2:H5)}

	A	B	C	D	E	F	G	H	I	J	K	L
1	id	country	gender	age	window		Actul Bin	Upper bin				
2	1	South Korea	female	62	0		0-25	25	91			
3	2	Singapore	male	27	1		26-50	50	328			
4	3	Taiwan	male	35	1		51-75	75	374			
5	4	Hong Kong	male	43	1		76-100	100	50			
6	5	China	female	32	2							
7	6	China	male	44	2			n/a count	242			
8	7	Singapore	female	48	2			sum	1085			
9	8	Germany	male	32	2							
10	9	Switzerland	male	70	2							
11	10	Japan	female	25	3							
12	11	Japan	female	55	3							
13	12	China	male	37	4							
14	13	China	female	50	4							
15	14	China	female	32	4							
16	15	China	male	29	4							
17	16	China	male	n/a	4							
18	17	China	male	n/a	4							
19	18	China	female	42	4							
20	19	Japan	male	75	4							
21	20	Singapore	female	38	4							
22	21	Germany	male	33	4							
23	22	Hong Kong	female	55	4							
24	23	China	male	66	5							
25	24	China	male	22	5							



Insert Pivot Table

Create Pivot table that filters by country and shows shows age by gender:

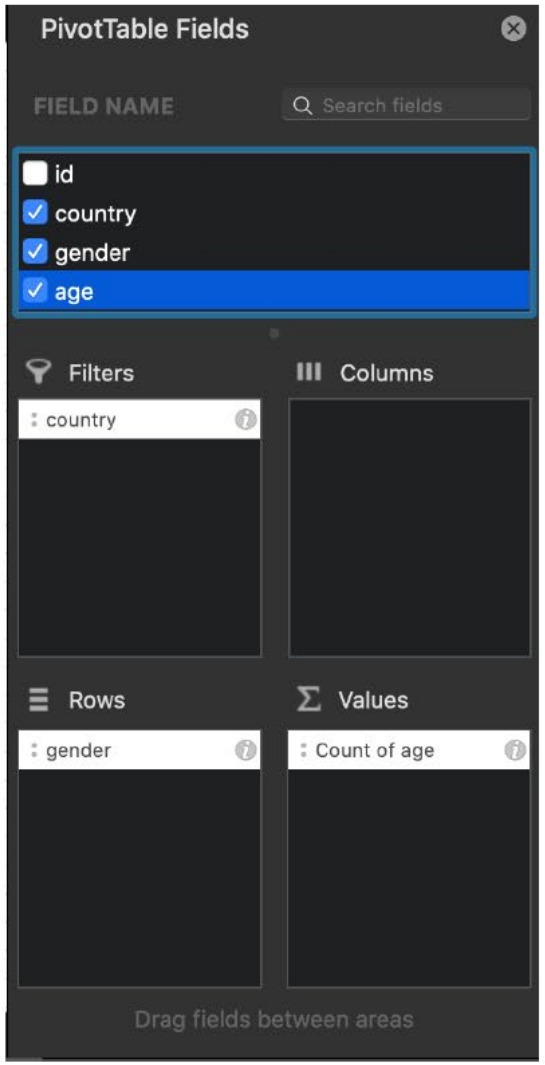
Click on any cells in the data set

Under Insert, select Pivot Table

When Create PivotTable box appears, default is new worksheet, so click OK

Pivot Table Fields pane then appear, drag the following into different areas:

- Country to the Filter area
- Gender to the Rows area
- Age to the Values area



	A	B
1	country	(All)
2		
3	**Row Labels**	**Count of age**
4	female	382
5	male	519
6	n/a	184
7	**Grand Total**	**1085**

THE MORE YOU KNOW…

- There are lots of features and functions in Excel than what you think
- Practice makes perfect, the more you use it, the better you will be
- Lots of resources:

Microsoft: https://support.office.com/en-us/article/excel-forwindows-training-9bc05390-e94c-46af-a5b3-d7c22f6990bb

Excel Exposure: https://excelexposure.com/lesson-guide/

Contextures: https://www.contextures.com/

LinkedIn Learning: https://www.cmc.edu/informationtechnology/linkedin-learning

FUTURE WORKSHOPS

Excel Level 2

- Pivot Tables
- Lookup functions
  - VLOOKUP (approximate match)
  - Index Match
- Common functions
  - Count
  - Sum
- Logical functions
  - IF
  - AND
  - OR
  - NOT

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