

## TORNADO Chart

<https://excelchamps.com/blog/tornado-chart/>

An Excel Tornado Chart is useful for those who want to analyze their data for better decision making. Primarily it is effective for sensitivity analyses but it can also be used for comparative purposes. In today's session we are going to use a file that I have pre-downloaded for you.

[Access TORNADO Chart Data.xls](#)

As a refresher back to some of our previous classes, we are going to perform some quick sorting and data insertion, as well as build a PIVOT table to create some quick summary data to build our Tornado Chart.

- 1) Once your data file is open, SORT the entire data table (Select ALL (CTRL+A)), using Column L "Award Activated Date".
  - a. Insert a new column to the right of COL L, and name it FY
  - b. Insert FY19 at M2, copy it down – CTRL-D until FY19 ends
  - c. Insert FY20 at M89, copy it down to end of column – CTRL-D

	K	L	M	N	O	P
	Reporting Sponsor Award ID	Award ActivatedDate	FY	Overall StartDate	Overall EndDate	Sponsors AwardDate
1	INCB-USMA-GVHD-008	7/11/2018	FY19	3/2/2018	3/1/2023	3/8/2018
2	IVA337	7/11/2018	FY19	4/4/2018	4/3/2023	4/4/2018
3	Kamada-AAT (inhaled)-006 FU-FL	7/18/2018	FY19	5/13/2018	5/12/2023	5/17/2018
4	3392-19	7/20/2018	FY19	7/1/2018	6/30/2021	2/6/2018
5	8JK04	7/20/2018	FY19	6/6/2018	3/31/2023	6/6/2018
6	HDTRA1-14-C-0122	7/20/2018	FY19	7/1/2018	3/31/2019	6/28/2018
7	K08HL144085	7/23/2018	FY19	7/15/2018	1/31/2020	7/13/2018
8	562017	8/1/2018	FY19	7/1/2018	8/21/2020	6/1/2018
9	VCTE Screening	8/10/2018	FY19	6/6/2018	6/5/2023	6/6/2018
10	CC109-AD	8/14/2018	FY19	7/1/2018	6/30/2019	6/20/2018
11	WO No 1	8/24/2018	FY19	6/26/2018	6/25/2019	6/26/2018
12	AGR00009608 SoW #1	8/27/2018	FY19	5/29/2018	12/31/2019	5/29/2018
13	R01HD071779	9/11/2018	FY19	9/1/2018	8/31/2023	8/24/2018
14	VICTORIA HF Registry	9/13/2018	FY19	8/29/2018	8/28/2023	8/29/2018
15	MRT5005-101	9/14/2018	FY19	8/1/2018	7/31/2023	8/2/2018
16	IDSEP160030-02-00	9/19/2018	FY19	1/1/2018	6/30/2019	9/7/2018
17	AGR DTD 03-01-2018	9/21/2018	FY19	3/1/2018	5/31/2021	8/30/2018
18	R01AI132304-01	10/3/2018	FY19	6/1/2018	5/31/2021	6/1/2018

- 2) CTRL-A (select All), INSERT MENU, Insert Pivot Table into a new Worksheet
  - a. Drag Award Department to ROWS
  - b. Drag FY to COLUMNS
  - c. Drag Sponsor Auth Amount to VALUES
  - d. Choose any cell value in the FY19 column, and right click, SORT LARGEST TO SMALLEST

Row Labels	FY19	FY20	(blank)	Grand Total
MD-INFECTIOUS DISEASES	3631856	2436001		6067857
MD-INST FOR THERAPEUTIC INNOV	3243572.66	3385610		6629182.66
MD-HEMATOLOGY/ONCOLOGY-OTHER	3139835.23	64155		3203990.23
MD-PULMONARY MEDICINE	1518195.43	3204284		4722479.43
MD-HEMATOLOGY/ONCOLOGY-ONCOL	937317.65	1262958		2200275.65
MD-GASTROENTEROLOGY	934976.1	50000		984976.1
MD-NEPHROLOGY	241143.5	418104		659247.5
MD-PULMONARY-OTHER	223753.33	2378901.64		2602654.97
MD-ENDOCRINOLOGY	133044.25	859583		992627.25
MD-CARDIOLOGY-RESEARCH	110529.08	668536.46		779065.54
MD-INTERNAL MEDICINE	3500	13468.55		16968.55
MD-HEMATOLOGY/ONCOLOGY				
MD-HEMATOLOGY/ONCOLOGY-BMTU				
MD-RHEUMATOLOGY				
MD-PULMONARY-TRANSPLANT				
(blank)				
MD-HEMATOLOGY/ONCOLOGY-HEMATO				
MD-GASTROENTEROLOGY-LIVER		78000		78000
MD-DERMATOLOGY				
<b>Grand Total</b>	<b>14117723.23</b>	<b>14819601.65</b>		<b>28937324.88</b>

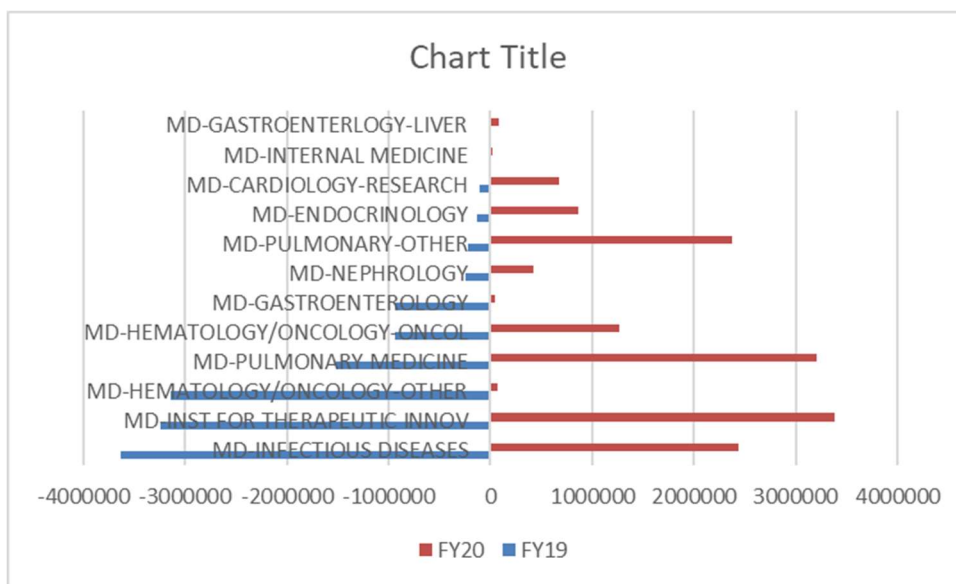
- 3) SELECT the data from ROW LABELS to the last cell value in FY20 (exclude the grant total row and grand total column), COPY and SPECIAL PASTE it into a new worksheet, using VALUES ONLY
  - a. Expand the columns to show all of the data
  - b. Delete rows for departments that have NULL or BLANK values

Row Labels	FY19	FY20	
MD-INFECTIOUS DISEASES	3631856	2436001	
MD-INST FOR THERAPEUTIC INNOV	3243572.66	3385610	
MD-HEMATOLOGY/ONCOLOGY-OTHER	3139835.23	64155	
MD-PULMONARY MEDICINE	1518195.43	3204284	
MD-HEMATOLOGY/ONCOLOGY-ONCOL	937317.65	1262958	
MD-GASTROENTEROLOGY	934976.1	50000	
MD-NEPHROLOGY	241143.5	418104	
MD-PULMONARY-OTHER	223753.33	2378901.64	
MD-ENDOCRINOLOGY	133044.25	859583	
MD-CARDIOLOGY-RESEARCH	110529.08	668536.46	
MD-INTERNAL MEDICINE	3500	13468.55	
MD-HEMATOLOGY/ONCOLOGY			
MD-HEMATOLOGY/ONCOLOGY-BMTU			
MD-RHEUMATOLOGY			
MD-PULMONARY-TRANSPLANT			
(blank)			
MD-HEMATOLOGY/ONCOLOGY-HEMATO			
MD-GASTROENTEROLOGY-LIVER		78000	
MD-DERMATOLOGY			

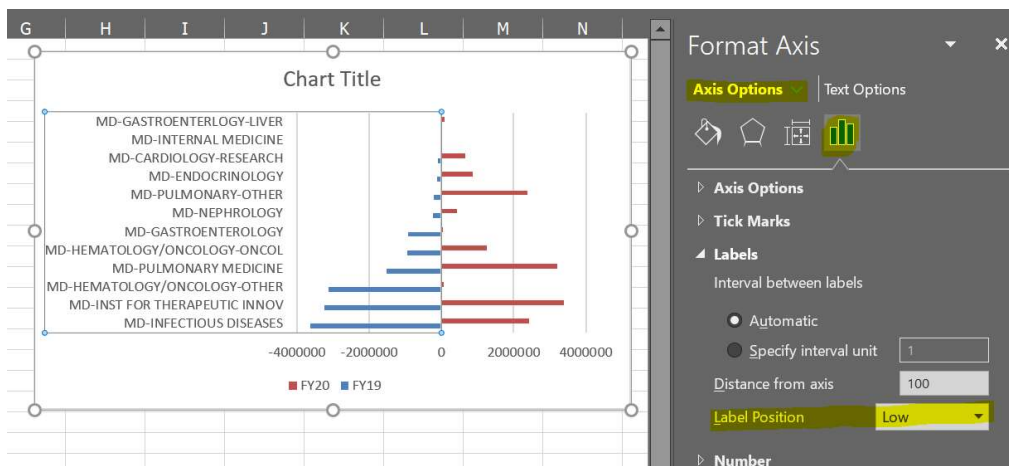
- 4) For this chart, we need FY19 to actually appear to have negative values, don't worry they won't display that way when we are finished
  - a. In column D, cell D2 create this formula (excluding the quotes) " $=B2*-1$ "
  - b. Copy that formula to the end of the data table range
  - c. Now copy the values in D2:D13 and PASTE them as VALUES over B2:B13
  - d. Now delete column D

Row Labels	FY19	FY20
MD-INFECTIOUS DISEASES	-3631856	2436001
MD-INST FOR THERAPEUTIC INNOV	-3243572.7	3385610
MD-HEMATOLOGY/ONCOLOGY-OTHER	-3139835.2	64155
MD-PULMONARY MEDICINE	-1518195.4	3204284
MD-HEMATOLOGY/ONCOLOGY-ONCOL	-937317.65	1262958
MD-GASTROENTEROLOGY	-934976.1	50000
MD-NEPHROLOGY	-241143.5	418104
MD-PULMONARY-OTHER	-223753.33	2378901.64
MD-ENDOCRINOLOGY	-133044.25	859583
MD-CARDIOLOGY-RESEARCH	-110529.08	668536.46
MD-INTERNAL MEDICINE	-3500	13468.55
MD-GASTROENTEROLOGY-LIVER	0	78000

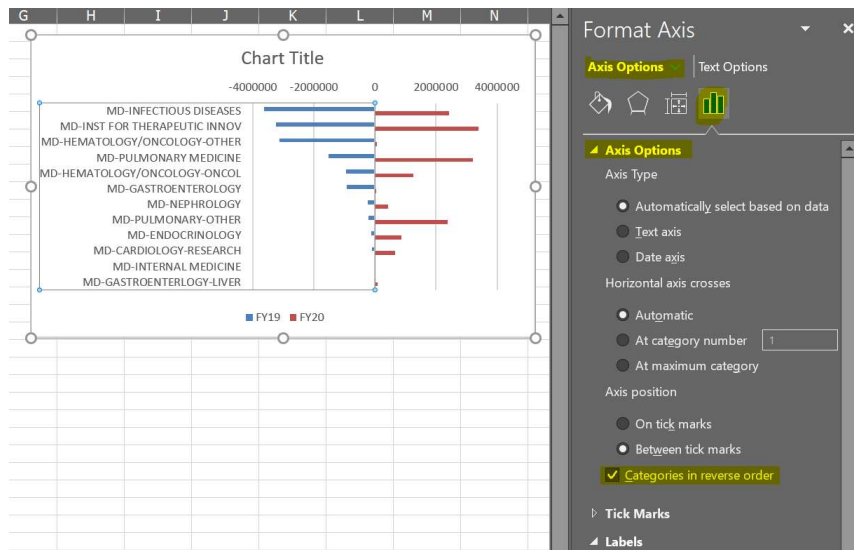
5) Select the A1:C13 (the entire table) and go to INSERT menu and insert a BAR CHART



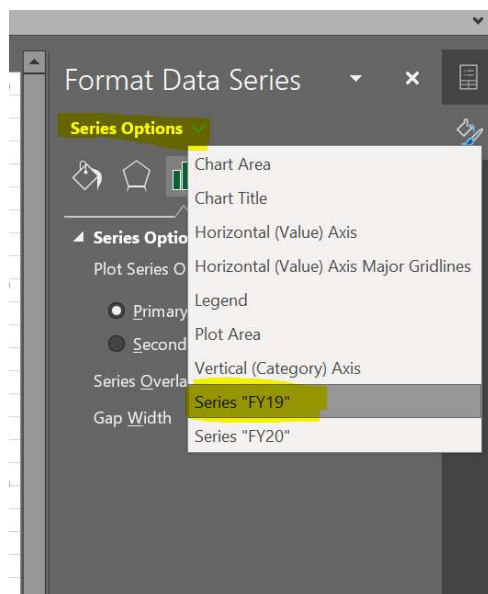
- 6) Now right click on the chart and select Format Chart Area
- Choose AXIS OPTIONS
  - Inside the TEXT OPTIONS submenu, select LABELS → Label Position → LOW



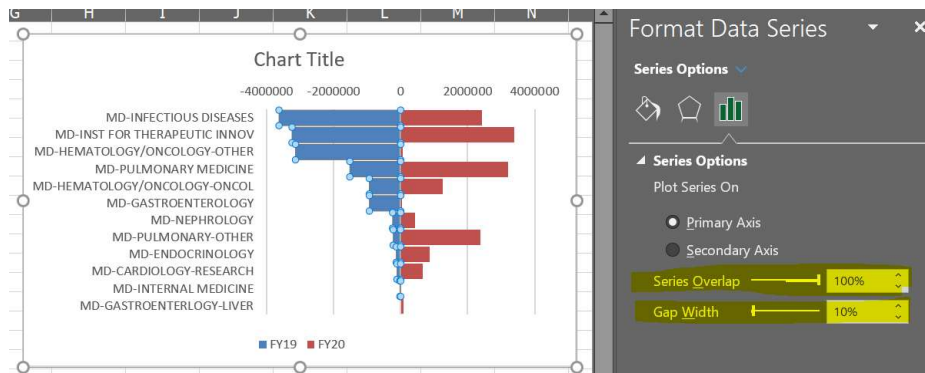
- 7) Now in the same Format Axis submenu, choose **AXIS OPTIONS**, and select **Categories in Reverse Order**



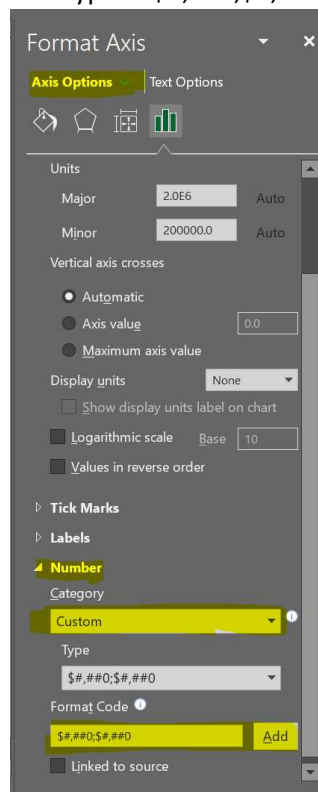
- 8) Now you need to change the series gap and gap width. This will help to streamline data bars with each other and for this go to series options, do this by selecting the FY19 series from the drop-down arrow in the Format Chart Area panel.



- Now set the SERIES OVERLAP to 100% (best to just type it in)
- Now set the GAP WIDTH to 10%



- Now we have to get rid of the those negative number values on the left side of the Clustered Bar Chart.
  - From the Format Chart Area Panel, Choose Horizontal (Value) Axis , and scroll down until you can expand the “NUMBER” submenu.
  - Choose custom
  - And type in \$#,##0;\$#,##0 in the Format Code box, then hit Add



## 10) This is the final product of your Tornado Chart

