Basic Quantitative Analysis: Using Excel to Analyze Your Data

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Defining Quantitative Assessment

- Uses Numbers
- Tables/Charts vs. words/stories
- More general information
- Breaks things into variables and factors
- Uses independent and dependent variables

Before you start…

- What is the purpose of your assessment?
  - Determines quantitative/qualitative or mixed methods
- What is your assessment plan?
  - Determines instruments, timeline, sample, etc.
- Who is your final audience?
  - **Determines how you will analyze your data**

Audience is key:

Large Audience or Practice-Based

- Most common
- Less technical language is required
- Less technical analysis is needed
- Simple is better

Technical audience or Research-Based

- Less common, but sometimes needed for faculty and others
- More technical language and reports
- More technical analysis

What types of analysis would we use?

Large Audience or Practice-Based

Technical audience or Research-Based

Where are you getting your data?

- Paper copies – 3 options
    - Enter by hand (careful of human error!)
    - Scan (careful of computer error!)
    - Count (less human error but still there)
- On-line (download into excel)
- PDAs
- Others??

On-Line Example

- Survey Monkey
- Student Voice
- ITS
- Snap
- Others

Excel Basics

- Sorting Data:
    - ALWAYS remember to highlight everything before you sort (click box in top left corner)
    - "Data"
    - "Sort"
    - Pick Column and order
    - Press "OK"
- Formulas: $ vs no $

Quantitative Analysis: Frequency

- Number of times an answer is given for a certain question
- Let's try the hard way first:
  - 3 groups, one for each column
  - Count number of time each answer is given for first 20 rows

	Have you always lived off campus?	What is the average number of hours a day you spend commuting	Do you tend to study while you are commuting?
1			
2	No	30 minutes or less	No
3	No	30 minutes - 1 hour	Yes
4	No	30 minutes or less	No
5	No	1 -1.5 hours	No
6	No	30 minutes - 1 hour	No
7	No	30 minutes or less	No
8	No	30 minutes - 1 hour	No
9	No	30 minutes - 1 hour	Yes
10	No	30 minutes or less	Yes
11	No	1 -1.5 hours	No
12	No	30 minutes or less	No
13	No	30 minutes or less	Yes
14	No	30 minutes or less	No
15	No	1 -1.5 hours	Yes
16	No	30 minutes or less	Yes
17	No	30 minutes - 1 hour	Yes
18	No	30 minutes - 1 hour	No
19	No	1 -1.5 hours	Yes
20	No	30 minutes or less	No

Frequencies

- Now the easy way
- Go to bottom of row
- Use the formula for COUNTIF:

$$=COUNTIF(\$A\$2:\$A\$98, \text{"Yes"})$$

tells excel to count   where to count   what to count

($ will keep the A2:A98 consistent if you copy and past)

	A	B	
67	Yes	1 -1.5 hours	Yes
68	Yes	1 -1.5 hours	Yes
69	Yes	30 minutes - 1 hour	No
70	Yes	30 minutes - 1 hour	No
71	Yes	30 minutes or less	No
72	Yes	1 -1.5 hours	Yes
73	Yes	30 minutes - 1 hour	No
74	Yes	30 minutes - 1 hour	Yes
75	Yes	30 minutes - 1 hour	No
76	Yes	30 minutes - 1 hour	No
77	Yes	30 minutes - 1 hour	Yes
78	Yes	30 minutes - 1 hour	No
79	Yes	30 minutes or less	Yes
80	Yes	1.5-2.0 hours	Yes
81	Yes	30 minutes - 1 hour	No
82	Yes	30 minutes - 1 hour	Yes
83	Yes	1 -1.5 hours	Yes
84	Yes	30 minutes - 1 hour	Yes
85	Yes	30 minutes - 1 hour	No
86	Yes	30 minutes - 1 hour	Yes
87	Yes	1.5-2.0 hours	No
88	Yes	30 minutes or less	No
89	Yes	30 minutes - 1 hour	No
90	Yes	30 minutes - 1 hour	Yes
91	Yes	1 -1.5 hours	No
92	Yes	More than 2 hours	Yes
93	Yes	30 minutes - 1 hour	Yes
94	Yes	1.5-2.0 hours	Yes
95	Yes	More than 2 hours	No
96	Yes	1 -1.5 hours	Yes
97	Yes	1.5-2.0 hours	Yes
98	Yes	30 minutes - 1 hour	Yes
99			
100	=COUNTIF($A$2:$A$98, "Yes")	Yes	

Frequencies

- Repeat for each item you want to count in that question

- Be sure to LABEL what you are doing so when you go back you know what it is ☺

- Quick Tip: Copy and Paste formulas to speed things up, but always double check that Excel is following you correctly!

What can you use frequencies for?

■ Basic summary data

Do you tend to study while you are commuting?
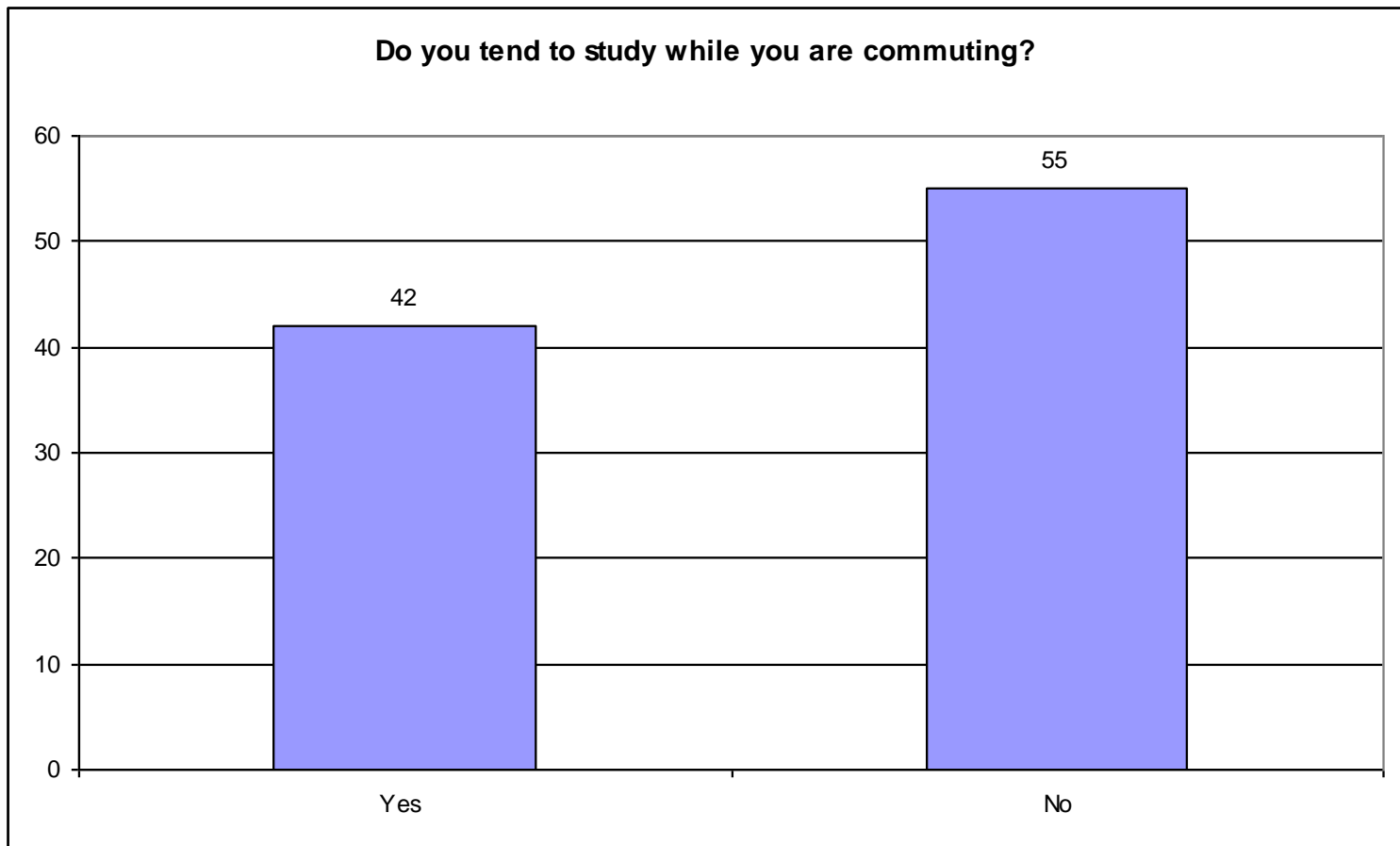
But wait, how did you make that pretty graph?

1. Go to the "Chart Wizard" icon or "Insert" then "Chart"
2. Pick which chart you would like (this example is bar so we picked the "Column" option)
3. "Next"
4. Want to name things? Hit "Series". In this example we need to change the "Category Labels" so we click on that space and then highlight the "Yes" and "No" cells in our Excel worksheet
5. "Next"
6. "Title" – Have you Always Lived on Campus

   "Axes" and "Gridlines"– don't usually have to do anything

   "Legend" – turned off "Show Legend"

   "Data Labels" – clicked on "Value"

   "Data Table" – did nothing
7. "Next"
8. "Finish"

Percents

- Why percents vs. straight frequencies?
  - Compare different sized groups
  - Proportions
  - Sometimes easier to understand
  - Audience

Percents

- The hard way

- The easy way:
  - Add the Column (highlight what you want to add, hit "Sum" key on menu or use

    =SUM (A100:A101)

  - Use formula:

    = A100/$A$102

    Item frequency/Total Sum

|	A	B	
67	Yes	1 -1.5 hours	Yes
68	Yes	1 -1.5 hours	Yes
69	Yes	30 minutes - 1 hour	No
70	Yes	30 minutes - 1 hour	No
71	Yes	30 minutes or less	No
72	Yes	1 -1.5 hours	Yes
73	Yes	30 minutes - 1 hour	No
74	Yes	30 minutes - 1 hour	Yes
75	Yes	30 minutes - 1 hour	No
76	Yes	30 minutes - 1 hour	No
77	Yes	30 minutes - 1 hour	Yes
78	Yes	30 minutes - 1 hour	No
79	Yes	30 minutes or less	Yes
80	Yes	1.5-2.0 hours	Yes
81	Yes	30 minutes - 1 hour	No
82	Yes	30 minutes - 1 hour	Yes
83	Yes	1 -1.5 hours	Yes
84	Yes	30 minutes - 1 hour	Yes
85	Yes	30 minutes - 1 hour	No
86	Yes	30 minutes - 1 hour	Yes
87	Yes	1.5-2.0 hours	No
88	Yes	30 minutes or less	No
89	Yes	30 minutes - 1 hour	No
90	Yes	30 minutes - 1 hour	Yes
91	Yes	1 -1.5 hours	No
92	Yes	More than 2 hours	Yes
93	Yes	30 minutes - 1 hour	Yes
94	Yes	1.5-2.0 hours	Yes
95	Yes	More than 2 hours	No
96	Yes	1 -1.5 hours	Yes
97	Yes	1.5-2.0 hours	Yes
98	Yes	30 minutes - 1 hour	Yes
99			
100	41	Yes	
101	56	No	
102	97		
103			
104	=A100/$A$102		
105			

Percents

- You will get a long decimal number, such as 0.422680412

- To change it to a percent:
  - Highlight cell
  - Go to "Format" then "Cell"
  - Click on "Number" then "Percentage" then choose number of decimal points
  - "Ok"
- Don't forget to label again

Percents

- Pie Chart – Same process, go to Chart Wizard

- Select Pie Chart then "Next"

- Under "Series" put cursor on "Category Labels" then highlight "Yes" and "No" cells on your worksheet

- "Next" – "Title" added a title, under "Data Labels" selected "Values"

- "Next" and "Finish"

Do you tend to study while commuting by percent

43.3%

56.7%

Yes
No
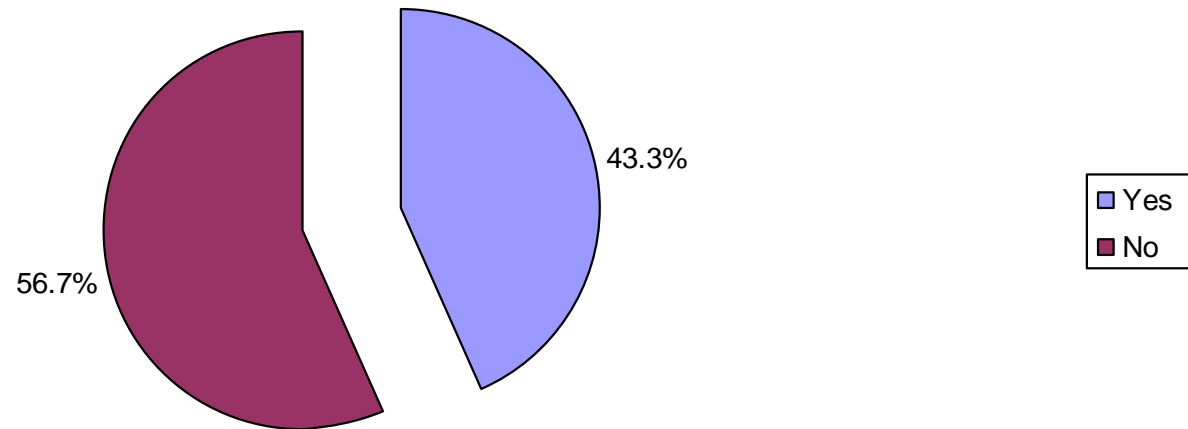
Frequencies/Percents by Groups

- Looking at two different factors/questions
- Combine information to make new information
- Helps to see if there are relationships
- Helps to compare groups

Frequencies/Percents by Groups

- Similar concept only you group your formulas by selected groups or factors using the data limits

- Example: What about whether people study combined with the length of their commute?

Frequencies/Percents by Groups

1. Sort your data by one group (think about which is most logical). Remember select all data, then go to "Data", "Sort" pick the column, and "Ok"

2. Note the range of the group you sorted by (for example "No" is from A2:A56 and "Yes" is from A57:A98)

Frequencies/Percents by Groups

3. Set up chart at bottom so your labels are done

4. Write in COUNTIF formulas to correspond with the range, ie. 2-56 for "No" and 57-98 for "Yes", but to count the items in column B
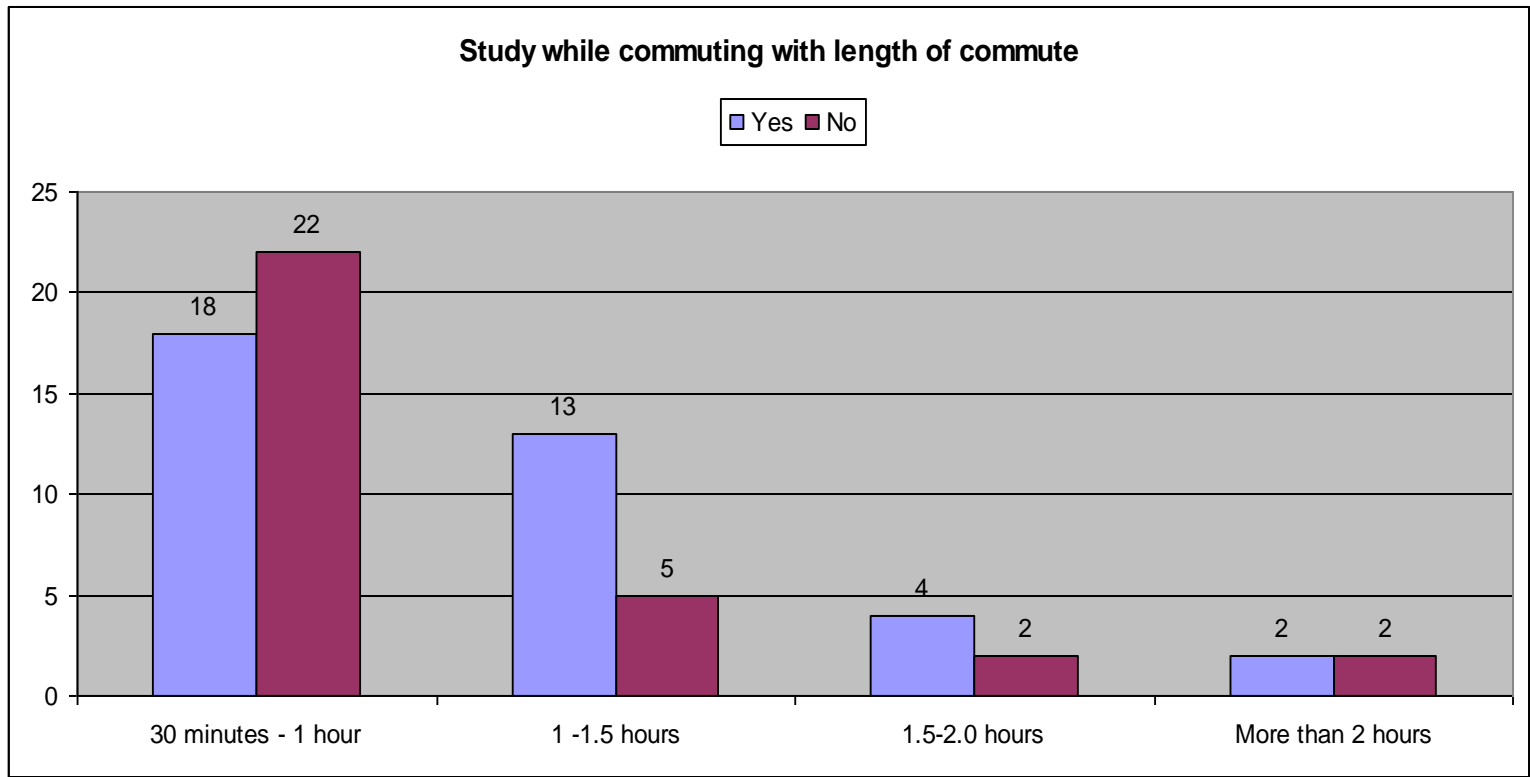
	Yes	No
30 minutes - 1 hour	=COUNTIF($B$57:$B$98, "30 minutes – 1 hour")	=COUNTIF($B$2:$B$56, "30 minutes – 1 hour")
1 -1.5 hours	=COUNTIF($B$57:$B$98, "1 – 1.5 hours")	=COUNTIF($B$2:$B$56, "1 – 1.5 hours")
1.5-2.0 hours	=COUNTIF($B$57:$B$98, "1.5-2.0 hours")	=COUNTIF($B$2:$B$56, "1.5-2.0 hours")
More than 2 hours	=COUNTIF($B$57:$B$98, "More than 2 hours")	=COUNTIF($B$2:$B$56, "More than 2 hours")

Frequencies/Percents by Groups

	Yes	No
30 minutes - 1 hour	18	22
1 -1.5 hours	13	5
1.5-2.0 hours	4	2
More than 2 hours	2	2

Frequencies/Percents by Groups

■ Sometimes easier to see on a graph

Study while commuting with length of commute

☐ Yes ■ No

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Other examples:

- Multiple factors (such as time of day):

What days/times are you typically on campus (choose all that apply)?

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
7-9 am	112	131	120	117	63	12	6
9-11 am	375	412	387	388	183	35	15
11-1 pm	512	521	522	518	220	64	33
1-3 pm	527	523	555	506	206	102	68
3-5 pm	477	479	504	469	183	96	72
5-7 pm	371	356	376	349	135	66	62
7-9 pm	224	225	214	204	77	51	44
9-11 pm	81	77	72	84	50	31	24
11 pm or later	21	21	22	30	31	21	=COUNTIF(DS$3:DS$820,"11 pm or later")

COUNTIF(range, criteria)

"Real Life" Example:

- Can show by tables, graphs or just in words
- Pictures are easier and faster to read

Random Drawings

- Incentives, prizes, samples and more
- Formula: = RANDBETWEEN (1, ____)
- The formula will draw a random number between the numbers you indicate
- You can match that number up with a line in excel with a corresponding email address
- If you need more than 1 drawing (i.e. drawing for 10 iTunes cards), copy and paste formula 10 times

Tips to Remember:

- Copying and Pasting formulas saves a lot of time
  - Remember to double check
  - Use $ when you want a cell to stay constant
  - Do not use $ when you want excel to follow you
- Save frequently
- Move graphs to new worksheets (copy/paste OR you can set to displan on a new worksheet when in the chart-maker before you hit "Finish" on last page select "As a new sheet" and give it a new name)

Where can you go for help?

- Staff Development/Training – Take an Excel course
- Formula and other books
- "Help" tab on Excel is EXCELLENT!
- kmy209@nyu.edu ☺

Questions?

Thanks for coming!