



Welcome to Probability and Statistics!

This summer packet is for all students enrolled in **Probability and Statistics** at Herndon High School for Fall 2020.

This summer assignment is not *required*, but it is *strongly recommended*. The exercises will give you the opportunity to self-assess how prepared you are for **Probability and Statistics** this year.

We will provide you with a key at the start of next year for you to check your work. Be sure to keep track of sticky spots and ask questions when we return. You are also welcome to reach out to us over the summer;

our contact information is below.

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FCPS recommend activities for each level of mathematics are also posted on the Herndon High School website. Both resources will help you prepare for next year.

Have a great summer – we are looking forward to meeting you in August!

As you work through the packet, keep track of the following:

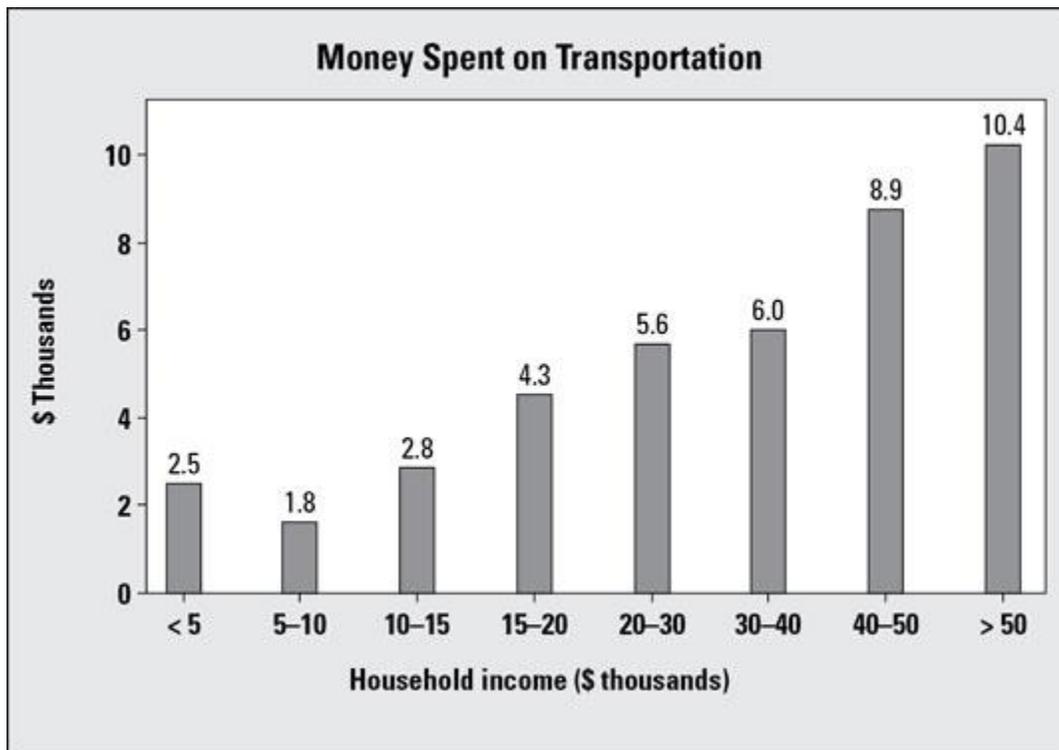
“Things I learned, but forget how to do:”

“Things I never learned:”

Probability and Statistics Summer 2020 Packet

We will be creating and interpreting different types of graphs in the course. One of the goals of the class is to become informed interpreters of graphs.

- I. Watch the video: The Beauty of Data Visualization
https://www.ted.com/talks/david_mccandless_the_beauty_of_data_visualization
- II. Answer the following questions about the bar graph below:



- 1) Do we know who collected this information? _____
- 2) Do we know how the information was collected? _____
- 3) Do we know when the information was collected? _____
- 4) Is it important to know how the information was obtained for this graph? Why or why not?
- 5) How much money does someone who makes \$25,000 spend on transportation? _____
- 6) What is the minimum amount spent on transportation? _____

7) What is the maximum amount spent on transportation? _____

8) What is the minimum amount of household income? _____

9) Does money spent on transportation increase with every increase in income? If not, at what income levels does it not increase?

10) Does it make sense that money spent on transportation generally increases with income level? Why or why not?

11) Now, calculate the amount spent on transportation as a percent of total income:

Percent is: part/whole $2,500 \text{ spent on transportation} / \text{household income of } 5,000 = 2500/5000 = .5 = 50\%$

< 5 _____ 50% _____

5 – 10 _____

10-15 _____

20-30 _____

30-40 _____

40-50 _____

>50 _____

12) Does your conclusion about the amount of money spent on transportation change based on these figures? If so, how? Which category spends the most percent of their income on transportation?

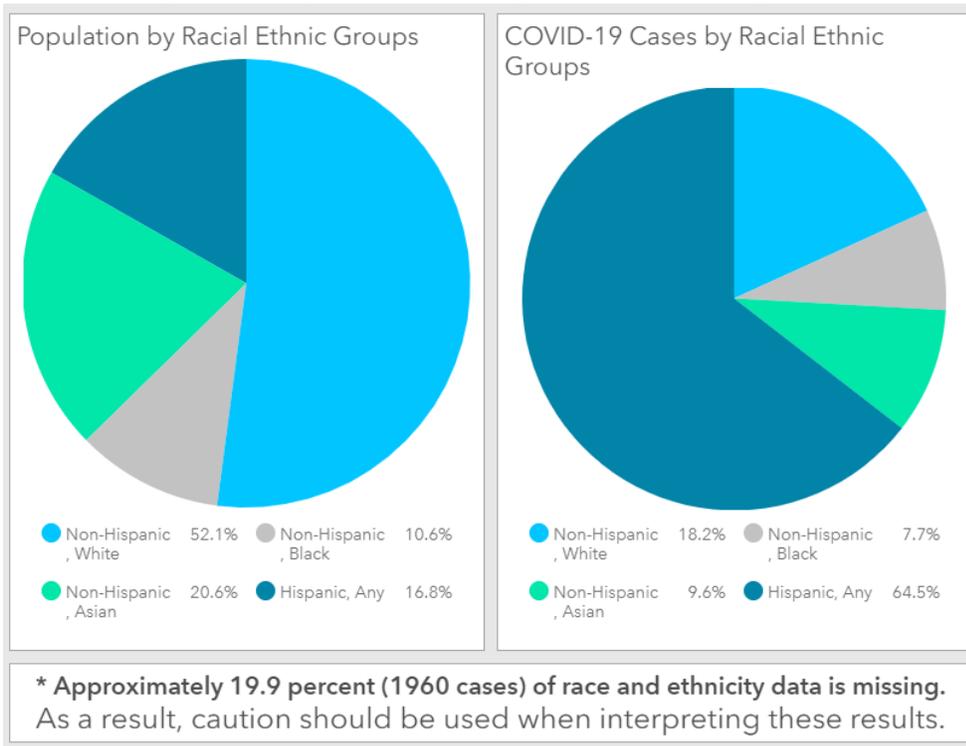
13) What is a problem with the way the groupings are set up? For example, which group would you put someone with an income of exactly 40,000

14) How could you change the groupings so that an income could not be placed in two categories?

15) What else do you notice about the graph groupings that is inconsistent and could cause a misrepresentation of the data?

- III. 1) Watch the video: Simulating an Epidemic, Covid19
<https://www.youtube.com/watch?v=54XLXg4fYsc&feature=youtu.be>

Fairfax County Health Department Cases by Racial Ethnic Group



Note: Data is from May 15th

- 1) Which ethnic group has the highest population? _____
- 2) Which ethnic group has the highest number of Covid 19 cases? _____
- 3) What are some possible reasons that the group with the highest population does not have the highest number of Covid-19 cases?
- 4) How could county health experts use this information to provide Covid-19 support services?
- 5) Why should “caution be used when interpreting these results” ?
- 6) Do the graphs give a true representation of population data and Covid-19 cases?