Statistics

Chapter 2 graphing assignment. Copy your graphs here and then write about them.

1. Construct a pie chart for math class. Describe what you see.

This pie chart shows the percentage of all students (grades 9, 10, 11, 12) attending four math classes. The number of students taking calculus is roughly twice that of those taking pre-calculus, and combined, their attendance consists of more than half of the all the students. Those taking algebra and statistics make up the remainder with an approximately even split.

1. Construct a pie chart for math class for sophomores only. Describe what you see.

This pie chart shows the split in the number of sophomores attending four math classes. The number of sophomore students taking calculus is roughly three times that of those taking pre-calculus, and combined, their attendance consists of roughly half of the sophomores. Those taking algebra and statistics make up the other half with an approximately even split.

1. Construct a column graph (bar chart) for car color. Describe what you see.

In this sampling of 300 cars, most of the cars (30%) are silver-colored, while only 9% of them are green. The remaining color categories are 26% red, 19% blue, and 16% white.

1. Construct a column graph (bar chart) for brown haired people’s cars. Describe what you see.

For this sampling of brown-haired people, I don’t recognize any correlation between their choice for car brand and their choice for car color. Generally, green seems to be a less popular color. Brown-haired Chevy owners did not select blue for their car color. I would not expect their to be a meaningful relationship between the variables brown hair and car color.

1. By comparing pie charts, does it look to be a difference in color of cars that men and women drive?

When comparing these two pie charts, although there are minor differences (on the order of 2-3%), gender does not seem to be a significant factor in determining the driver’s choice for car color, and I would not expect it either.

1. Construct a stacked bar chart with hair color on the x axis and feeling about running on the bars. Does it seem that different hair color has anything to do with the feeling about running? Would you expect it to?

From this data, it appears the largest number of people with brown hair hate running. This is an unlikely relationship, and it seems to me there would be no expected correlation between the two categories. I would not expect any relationship at all.

1. Construct a histogram of the number of toothbrushes. (it was late, I don’t know why I labeled this column of made up numbers toothbrushes). Use 7 bars. Describe what you see.

This data is slightly skewed right. The peak of toothbrush count is in the 12-14.5 grouping with most of the toothbrush counts in the 12-19.5 range.

1. Construct a histogram with 5 bars for donuts consumed. Is there anything weird in this data?

This data is suspicious, since at first glance is seems unlikely that any individual eats enough donuts to be in the group of 11.5-15.5 donuts – but I was first thinking it was in one day! There is no time given for the duration of counting, so maybe this is for a month of consumption.

1. Construct a histogram with 7 bars for pounds of meat consumed. Describe what you see.

This is a generally normal distribution of meat consumption centered around the   
4 – 5.2 pounds weight grouping.

1. Now using the data from problem 9, make a histogram with 7 bars for women and a histogram with 7 bars for men as to the amount of meat each consumes. Is there a difference? Would you expect one? If you expected a difference and didn’t see one, why might that be? Remember, I made this data up.

Both graphs are nearly symmetrical about the center and thus nearly normal distributions, except for females, the data is skewed right a bit, and for them, there is a greater amount of meat consumption in the 4 – 5.2 pounds weight grouping. Even though one might think that males would tend to eat more meat than females (possibly due to bodybuilding being more predominant in males) this data does not seem to support that theory. Of course, this could all be irrelevant since the data is apparently fabricated out of thin air (“made up”).

1. Construct a side by side graph for living with parent and car brand. Describe what you see.

It appears that among all car brand owners, except for Ford owners, the count of owners is most strongly influenced by living with both parents. Living with Mom has the next strongest influence, again except for Ford owners. Ford owners are influenced more by living with Mom than by living with both parents. The next strongest influence for all car brand owners except for Dodge owners, is living with Dad compared with the lowest influence of living with someone else (besides Mom or Dad or Both). With Dodge owners, living with someone else has the stronger influence.

1. Construct a time series graph for the data in time series one. Describe what you see.

This scatter plot with connecting lines illustrates the change in population over the years 1970 through 2005. The population grows initially from a minimum of 1300 in 1970, reaches a maximum of 1900 in 1985, then drops off to 1500 by 2005. There is a local flattening of growth to around 1600 which is apparent during the years  
1995-2000.

1. Go to this link and look at the graph about population in Oregon, describe what you see. Look at the scrub bar below it. Move that back toward the left. Now what do you see? Has the rate of growth been more or less steady? <https://fred.stlouisfed.org/series/ORPOP>

This graph shows the Resident Population of Oregon from 1900 through 2021. From 1900 through 1940, the population in this state had an initial, generally steady-state growth with a slope of about 16800/year. Continuing on from 1940 through 2021, the growth has again increased with a general steady state, but with an steeper slope of about 39,000/year.

1. Go to this link and look at the graph for unemployment in West Virginia, describe what you see. Look at the scrub bar below it. Move that back toward the left. Now what do you see? Has the rate of growth been more or less steady? Can you think of why some of what you see has happened? Hint, do some research. <https://fred.stlouisfed.org/series/WVUR>

This graph shows a history of unemployment in West Virginia with six highlighted gray-bar time periods indicating specific unemployment events. I explored this subject via Google, and I discovered a discussion relating U.S. unemployment to recessions.

Within the following economic commentary by Kurt G Lunsford written for The Federal Reserve Bank of Cleveland, the author explains that although it is easy to tie unemployment to macroeconomic slack or contraction, it is more complicated to determine the underlying causal factors. The Frequency of recessions is suggested as the “unrecognized source of the trend”.

[Recessions and the Trend in the US Unemployment Rate (clevelandfed.org)](https://www.clevelandfed.org/publications/economic-commentary/2021/ec-202101-recessions-and-the-trend-in-the-us-unemployment-rate)

“ … An appealing feature of the unemployment rate is its perceived ease of interpretation. A high or rising unemployment rate is a signal of macroeconomic slack or contraction, and a low or falling unemployment rate is a signal of macroeconomic health or expansion.

One issue that can confound this simple interpretation is that the unemployment rate may have a slow-moving trend that changes over time. If the trend is not static, then it is hard to know how far the current or forecasted unemployment rates are from the underlying trend. …

… Research has attributed much of the trend in the unemployment rate to demographic changes.[6](https://www.clevelandfed.org/publications/economic-commentary/2021/ec-202101-recessions-and-the-trend-in-the-us-unemployment-rate#cf-fn-6) In this Commentary, I suggest an additional, previously unrecognized source of the trend: the frequency of recessions.”

With this discussion in mind, I searched <https://fred.stlouisfed.org> for recessions within the U.S., and I found this graph which reinforces the above claim:

<https://fred.stlouisfed.org/series/JHDUSRGDPBR>

1. Go to this link about median income in Oregon. What do you see happening?

Anything pop out to you? <https://fred.stlouisfed.org/series/MEHOINUSORA672N>

I see that within the last decade, the Real Median Household Income in Oregon has increased approximately 32%, while during the previous two decades, the same income only rose about 6%. The local minimum income in 2013 delineates a time when there was a dramatic, and rather steep upward change in median incomes.

According to the following article, income gains were seen for those with lower incomes:

[Oregon Median Household Income Rises (Finally) | Oregon Office of Economic Analysis (oregoneconomicanalysis.com)](https://oregoneconomicanalysis.com/2016/09/19/oregon-median-household-income-rises-finally/)

“ … One issue that can confound this simple interpretation is that the unemployment rate may have a slow-moving trend that changes over time. If the trend is not static, then it is hard to know how far the current or forecasted unemployment rates are from the underlying trend. …”

1. Construct a time series graph for population of germs in time series 2. What do you see?

This time series scatter plot for Germ Population growth suggests exponential growth over time.