This problem set covers material from Week 3, dates 2/24 – 2/27.

Instructions: Write or type complete solutions to the following problems and submit answers to the corresponding Gradescope assignment. Your solutions should be neatly-written, show all work and computations, include figures or graphs where appropriate, and include some written explanation of your method or process (enough that I can understand your reasoning without having to guess or make assumptions). A general rubric for homework problems appears on the final page of this assignment.

Monday 2/24

1. In 2008, the General Social Survey randomly polled Americans over the age of 65. The respondents were asked about their political ideology and degree of happiness. The results of the 321 people surveyed are shown below.

	Not too happy	Pretty happy	Very happy
Liberal	13	23	14
Moderate	29	59	67
Conservative	15	47	54

   Be sure to show your work!

   (a) What percent of these respondents identified themselves as moderate?

   (b) What percent of respondents identified as very happy?

   (c) What percent of these respondents identified themselves as moderate and very happy?

   (d) What percent of these respondents who identified themselves as moderates are very happy? What percent of conservatives share this view? What percent of liberals share this view?

   (e) In 2008, did political ideology and happiness appear to be associated among Americans over 65? Explain your reasoning.

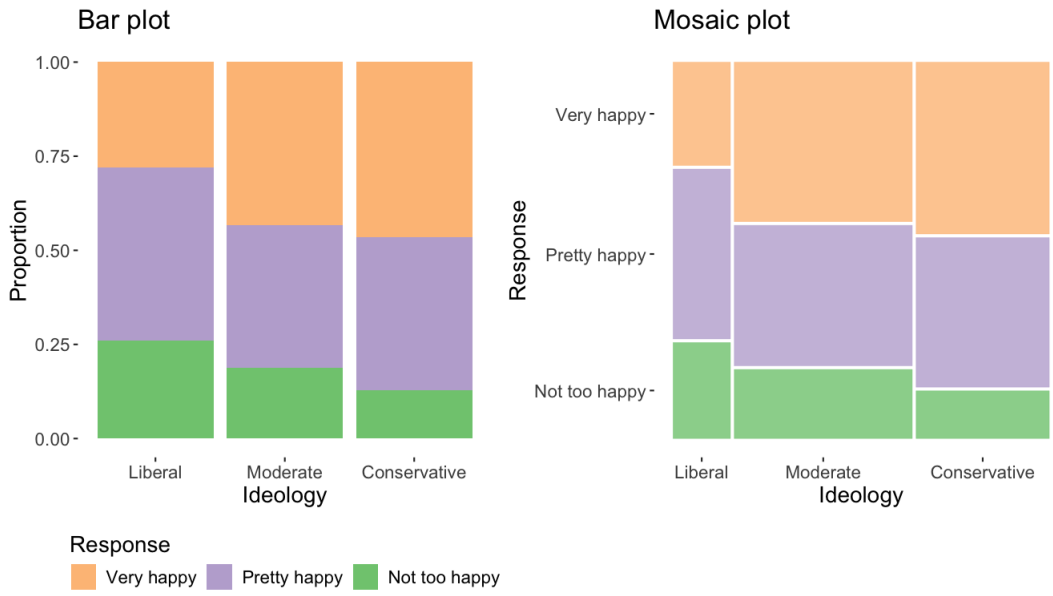
2. The figure below visualizes the data from Exercise 1 using two different types of plots: a standardized bar plot and a mosaic plot. Based on the data in the table from Exercise 1 and using the plots below, answer the following:

   (a) In the mosaic plot, what are the widths and heights of the rectangles proportional to?

   (b) What do you think the areas of each rectangle in the mosaic plot correspond to?

   (c) What aspects of the data are present/visible in the mosaic plot but not the standardized bar plot?

   (d) Are there scenarios where you might prefer the bar plot over the mosaic plot? (No single right answer here!)



Wednesday 2/26

TBD

Thursday 2/27

TBD

General rubric

Points	Criteria
5	The solution is correct *and* well-written. The author leaves no doubt as to why the solution is valid.
4.5	The solution is well-written, and is correct except for some minor arithmetic or calculation mistake.
4	The solution is technically correct, but author has omitted some key justification for why the solution is valid. Alternatively, the solution is well-written, but is missing a small, but essential component.
3	The solution is well-written, but either overlooks a significant component of the problem or makes a significant mistake. Alternatively, in a multi-part problem, a majority of the solutions are correct and well-written, but one part is missing or is significantly incorrect.
2	The solution is either correct but not adequately written, or it is adequately written but overlooks a significant component of the problem or makes a significant mistake.
1	The solution is rudimentary, but contains some relevant ideas. Alternatively, the solution briefly indicates the correct answer, but provides no further justification.
0	Either the solution is missing entirely, or the author makes no non-trivial progress toward a solution (i.e. just writes the statement of the problem and/or restates given information).
Notes:	For problems with multiple parts, the score represents a holistic review of the entire problem. Additionally, half-points may be used if the solution falls between two point values above.
Notes:	For problems with code, well-written means only having lines of code that are necessary to solving the problem, as well as presenting the solution for the reader to easily see. It might also be worth adding comments to your code.