

HOMEWORK 3
STA 321, Basic Statistical Theory I
Spring Semester, 2014

Due: Feb 13th, 2014

- 1** On the Bureau of Justice Statistics, you can find state by state data on crime trends: <http://bjsdata.ojp.usdoj.gov/dataonline/> Choose a variable and summarize the data - either “by hand” or using software. Describe the distribution.
- 2** (a) Why is the median sometimes preferred over the mean as a measure of central tendency? Give an example where the median is more appropriate than the mean.
(b) Why is the mean sometimes preferred over the median? Illustrate with an example.
(c) Give an example where neither mean nor median can be used, but only the mode.
- 3** Give an example from your research field (or area of interest) for each of the following.
(a) An approximately symmetric distribution.
(b) A right-skewed distribution.
(c) A left-skewed distribution.
- 4** The following data set lists the number of goals in 2007 FIFA Womens World Cup games (starting with the opening match that had 11 goals, and ending with the final with 2 goals):

11, 4, 1, 0, 2, 7, 4, 2, 2, 2, 1, 3, 5, 3, 4, 2, 9, 4, 5, 5, 2, 4, 2, 1, 3, 1, 3, 5, 3, 4, 5, 2.

The number of goals in the 2006 FIFA Mens World Cup games were as follows:

6, 2, 1, 3, 3, 3, 1, 0, 2, 1, 4, 2, 3, 1, 6, 3, 0, 5, 4, 1, 0, 2, 3,
2, 2, 3, 2, 2, 2, 3, 1, 4, 2, 0, 5, 4, 0, 3, 2, 2, 2, 2, 4, 4, 4, 4,
1, 1, 2, 3, 1, 1, 1, 0, 3, 4, 2, 3, 0, 1, 2, 1, 4, 2.

(Goals in extra time are counted, whereas goals in penalty shoot-outs are not counted) Describe the two data sets individually and comparatively. Did mens or womens soccer world cup matches tend to have more goals? Was there more variation in the number of goals in mens or womens matches? Use a side-by-side stem-and-leaf plot to visualize the data.