

Statistics I, Fall 2012

Suggested Solution for Homework 01

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1. (a) Ordinal.
 (b) Ratio.
 (c) Nominal.
 (d) Ratio.
 (e) Ratio.
2. **Note.** Except in Part (c), you are not required to answer exactly the same as the suggested solution. You should get full credits if your answer is meaningful and logical.
 - (a) All the potential consumers of this product. A more specific description of the population may be, e.g., all the people whose ages are within 15 and 40.
 - (b) Yes, as long as you remove those votes from people that do not belong to the population. As the data you collect form a subset of the population, it is a sample.
 - (c) Nominal.
 - (d) The parameters are (1) the proportion of potential consumers who prefer red, (2) the proportion of potential consumers who prefer blue, and (3) the proportion of potential consumers who prefer yellow.
 - (e) I would use the proportions of people in the sample preferring each color as my statistics. In short, I would use the sample proportions to estimate the population proportions.
3. **Note.** Excepting constructing the frequency distribution and the figures, you are not required to answer exactly the same as the suggested solution. You should get full credits if your answer is meaningful and logical.
 - (a) The frequency distribution is as follows.

Class (in million lb)	Frequency	Relative frequency	Cumulative frequency	Cumulative relative frequency
[30, 70)	4	0.02	4	0.02
[70, 110)	35	0.21	39	0.23
[110, 150)	32	0.19	71	0.42
[150, 190)	29	0.17	100	0.60
[190, 230)	25	0.15	125	0.74
[230, 270)	27	0.16	152	0.90
[270, 310)	12	0.07	164	0.98
[310, 350)	3	0.02	167	0.99
[350, 390)	1	0.01	168	1.00

- (b) The histogram is depicted in Figure 1.

Note. The caption of the figure, the titles of the axes, and the unit of measurement for the x -axis are all required. For “frequency” you do not need to specify the unit of measurement unless those numbers are counted in hundreds, thousands, etc.
- (c) According to the histogram, we can see that most values fall in the range [70, 270).
- (d) There are five classes in the range [70, 270). The frequencies of these classes are roughly the same. Certainly there are some differences, but compared with those classes outside the range, these five classes look similar.

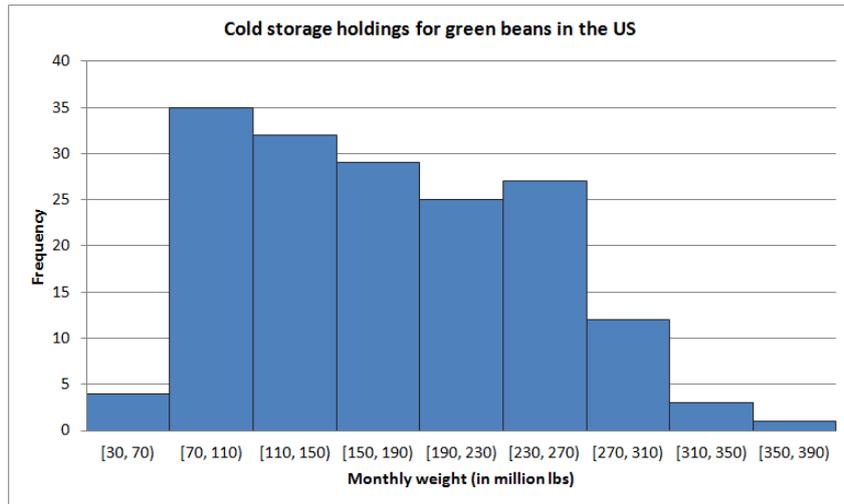


Figure 1: The histogram for Problem 3b.

- (e) The new histogram is depicted in Figure 2. This one looks quite different from the original one (in Figure 1). In particular, it seems that most values now fall within $[100, 170)$. The size of this range and the proportion of values contained in this range are all different from the ones we found in Part (c).

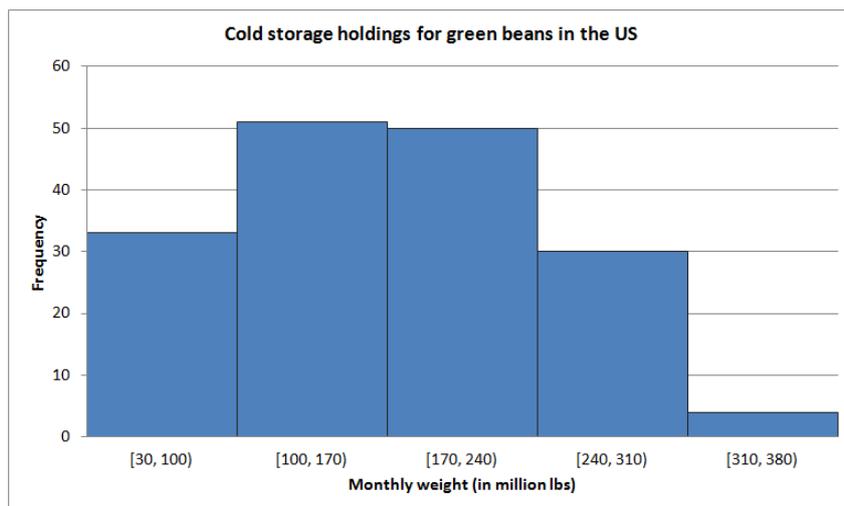


Figure 2: The histogram for Problem 3e.