

45分

生物統計 Homework 1 (total 100分)

1. Which color attracts beetles best? An experiment looked at the number of beetles trapped on sticky boards of identical size but various colors placed throughout a field of oats (there were six boards for each color). Here are the data:

Board color	Insects trapped					
Blue	16	11	20	21	14	7
Green	37	32	20	29	37	32
White	21	12	14	17	13	20
Yellow	45	59	48	46	38	47

(20分) (a) Make a side-by-side boxplots comparing the number of beetles trapped per board for each color (blue, green, white, and yellow).

(10分) (b) Briefly compare the four distributions. What are the major differences? Which color or colors seem to attract beetles best?

(15分) (c) Compute the mean ( $\bar{x}$ ) and standard deviation ( $s$ ) for each group. Use these measures to compare the four groups.

15分 2. A study of weights of 2-year-old girls in Great Britain yielded a sample mean of 12.74 kilograms with a sample standard deviation of 1.60 kilograms. A similar study in the United States resulted in a sample mean of 29.2 pounds with a sample standard deviation of 2 pounds. Find the coefficient of variation for each group. Which group exhibits greater variability?

3 40分

A study of male cardiac clinic patients is conducted. The purpose of the study is to pinpoint variables that contribute to stress in these patients. Stress is measured by means of the Hamilton anxiety score. These scores fall on a scale from 1 to 25 with 18 denoting moderate stress and 25 denoting severe stress. Two groups of patients are to be compared. These data are obtained: (Based on data reported in Earl Burch, Jr., and Jeffery Brandenburg, "Variables Contributing to Distress in Male Cardiac Patients," *Journal of Family Practice*, January 1990, pp. 43-47.)

Living alone					Living with others				
8.6	9.0	9.3	9.6	9.6	13.2	15.4	17.5	18.5	18.5
9.3	13.5	9.5	8.3	8.3	14.7	16.9	14.0	13.3	13.3
10.1	11.0	10.3	8.1	8.1	14.2	16.0	13.6	14.6	14.6
9.4	8.7	10.7	9.4	9.4	15.6	17.3	18.1	15.2	15.2
14.2	8.2	12.9	11.6	11.6	18.0	16.1	17.4	17.2	17.2

(a) Construct stem-and-leaf diagrams for each group. 用整數為 stem, 用十分位為 leaf  
 (b) Does either distribution appear to be bell-shaped? 小數第一位為 leaf  
 (c) Does either distribution appear to be skewed? If so, in what direction?  
 (d) Construct a back-to-back stem-and-leaf diagram for these data.  
 (e) Which group tends to have a lower average stress score?  
 (f) Based on these data, can we conclude that the average stress score for all male cardiac patients living alone falls below that of all male cardiac patients living with others? Explain.

52分 (a) (d) 15分  
 (b) (c) 10分  
 (e) 5分  
 (f) 5分