

PSYCHOLOGY 415 - EXPERIMENTAL PSYCHOLOGY II

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Homework No. 4

Below are several data sets from experimental studies. Your task in each case is to decide upon an appropriate data analysis, carry out the analysis using *JMP* and interpret the results. *Be sure you include a clear statement of your conclusions and what about the statistical results leads you to those conclusions.*

1. A suggested side effect of a proposed drug intended to reduce blood pressure in adult males is that it may be accompanied by a gain in body weight. Since this and other side effects of the drug are unknown, it was decided to use a small sample of 12 men to determine if the drug resulted in a noticeable weight gain, *defined to be 5 lb. or more*. Based upon similar experiments in the past, the population of weight gains was believed to be normally distributed. A researcher obtained a sample by randomly selecting men who weighed between 150 and 175 lb. These individuals were made fully aware of the nature and risks of the experiment. The resulting weight gains are (a negative value indicates a weight loss):

15.3, 12.9 -3.2, 16.4, 4.3, 14.6, 15.0, -2.1, 15.5, 7.2, 9.1, 15.2

2. A researcher in Riverport decided to take a look at the female population to determine if there is a difference in life satisfaction among women in various marital categories. She considered four subpopulations (groups), namely:

Population 1: never-married females

Population 2: ever-married females (married only once to the same man)

Population 3: remarried

Population 4: divorced

The Life Satisfaction Index questionnaire was given to random samples of six women selected from each of the four groups. The researcher wants to know if there is any difference in general life satisfaction among these four groups of women.

<i>Never Married</i>	<i>Ever Married</i>	<i>Remarried</i>	<i>Divorced</i>
41	66	43	47
54	49	28	36
77	82	51	20
95	62	48	25
64	75	30	31
69	93	23	38

3. The 'discomfort index' is a composite of the inflation rate and the unemployment rate. A social worker had some suspicions about whether the discomfort index might be related to the crime rate in a large city. The following data are for 10 randomly selected months.

<i>Discomfort Index</i>	11.2	10.9	18.0	14.0	21.3	18.8	17.5	12.6	15.0	16.8
<i>Crime Rate (coded)</i>	16	15	24	22	25	23	19	18	21	21

Is there such a relationship? If there is, *describe that relationship in as much detail as you can*. If the discomfort index was 16 what is your best guess about what the crime rate would be?

4. A local auto dealer wants to know whether single male buyers purchase the same amount of "extras" (such as air conditioning, power steering, exterior trim) as do single females when ordering a new car. A sample of eight males and ten females was obtained. The data consist of the amounts of the ordered extras in hundreds of dollars.

<i>Males</i>	<i>Females</i>
23.00	16.42
23.86	14.20
19.20	21.30
15.78	18.46
30.65	11.70
23.12	12.10
17.90	16.50
30.25	9.20
	21.05
	18.05

5. The Life Satisfaction Index was given to 12 men and 12 women (3 in each of the four marital status categories given below). The Life Satisfaction scores for each are given below. Analyze the data and describe Life Satisfaction scores as a function of sex and marital status.

	<i>Never Married</i>	<i>Ever Married</i>	<i>Remarried</i>	<i>Divorced</i>
<i>Male</i>	58, 65, 60	47, 56, 40	72, 86, 90	81, 75, 68
<i>Female</i>	67, 58, 74	75, 81, 77	52, 61, 48	51, 42, 35

6. Each of six subjects read descriptions of four crimes and recommended prison sentences for the offenders involved. Below are the lengths of sentences (in years) recommended by each subject for each crime:

<i>Subject</i>	<i>Crime</i>			
	<i>Robbery</i>	<i>Burglary</i>	<i>Rape</i>	<i>Murder</i>
1	11	10	15	23
2	2	5	9	13
3	6	3	12	13
4	7	4	13	15
5	11	12	9	19
6	7	5	12	20

Does type of crime have an effect on length of sentence? If so, interpret that effect.