

STATISTICS 211

Tutorial #6

1. Beth wants to see if a die is weighted. She records the number of times that a number comes up out of 60 throws. She records the following data:

Value	frequency
1	12
2	8
3	15
4	9
5	10
6	6

Is the die weighted? Carry out the appropriate test procedure.

2. An official of a plastics industry claimed that the industry employed 30% white women, 5% minority women, 50% white men, and 15% minority men. To test the claim, an affirmative action committee randomly sampled 150 employees and obtained the following information:

Category	observed
White females	40
Minority females	15
White males	80
Minority males	15

Test the official's claim.

3. A shipment of assorted nuts is labeled as having 45% walnuts, 20% hazelnuts, 20% almonds, and 15% pistachios. By randomly picking several scoops of nuts from this shipment, an inspector find the following counts.

	Walnuts	Hazelnuts	Almonds	Pistachios	Total
Counts	92	69	32	42	235

Could these findings be a strong basis for an accusation of mislabeling?

4. A personnel administrator provided the following data as an example of hiring to fill 12 positions from among 40 male and 40 female applicants.

Applicant	Selected	Not Selected	Total
Male	7	33	40
Female	5	35	40

Does this sample indicate a selection bias in favour of males?

5. Applicants for public assistance are allowed an appeals process when they feel unfairly treated. At such a hearing, the applicant may choose self-representation or representation by an attorney. The appeal may result in an increase, decrease, or no change of the aid recommendation. Court records of 320 appeals cases provided the following data.

Amount of Aid

Type of Representation	Increased	Unchanged	Decreased
Self	59	108	17
Attorney	70	63	3

Are the patterns of the appeals decision significantly different between the two types of representation?

6. avg yr of car = 5.3 SD = 1.3
 avg price of car = 88 (in hundreds) SD = 29.7 (in hundreds)
 $r = -.85$
 (a) Find the slope of the SD line
 (b) If the age of the car is 7 years, find the price of the car that would fall on the SD line.
7. In a study of the stability of IQ scores, a large group of individuals is tested once at age 18 and again at age 35. The following results are obtained
 Age 18: average score = 100, SD=15
 Age 35: average score = 100, SD=15, $r=0.8$
 (a) Find the regression equation.
 (b) Estimate the average score at age 35 for all the individuals who scored 115 at age 18.
8. A computer program prints out the following data set shown below.
- | | |
|---|---|
| X | y |
| 1 | 6 |
| 2 | 5 |
| 3 | 7 |
| 4 | 3 |
| 5 | 4 |
| 6 | 1 |
| 7 | 2 |
- (a) Compute r and interpret it.
 (b) Find the regression equation
 (c) Estimate the y value when $x = 3.5$.
 (d) Find the r.m.s error.
9. In a study of heights, a large group of fathers and sons heights were recorded.
 Father: average height = 68 inches, SD=2.7 inches
 Son: average height = 69 inches, SD=2.7 inches, $r=0.5$
 (a) Find the r.m.s error of the regression line for predicting son's height from father's height.
 (b) If a father is 72 inches tall, predict his son's height
 (c) This prediction is likely to be off by _____ inches or so. If more information is needed, say what it is and why.
10. Review chapters 28, 8,9,10, 11, and 12 in the text and do as many questions as possible from these chapters.