

Quiz 14

Question 6

Your answer is **INCORRECT**.

The Blue Diamond Company advertises that their nut mix contains (by weight) 40% cashews, 15% Brazil nuts, 20% almonds and only 25% peanuts. The truth-in-advertising investigators took a random sample (of size 20 lbs) of the nut mix and found the distribution to be as follows: 5 lbs of Cashews, 5 lbs of Brazil nuts, 7 lbs of Almonds and 3 lbs of Peanuts. At the 0.05 level of significance, is the claim made by Blue Diamond true?

Select the [p-value, Decision to Reject (RH_0) or Failure to Reject (FRH_0)].

Nut	Cashews	B.N.	Almonds	Peanuts
Exp	8	3	4	5
Obs.	5	5	7	3

(= 20 lbs)

$$\chi^2 = \frac{(5-8)^2}{8} + \frac{(5-3)^2}{3} + \frac{(7-4)^2}{7} + \frac{(3-5)^2}{5} = 4.544$$

$$p\text{value: } p(\chi^2 > 4.544) = \chi^2\text{cdf}(4.544, 99999, 3)$$

$$= .208 > \alpha$$

Fail to reject.

Question 10**Your answer is INCORRECT.**

The community hospital is studying its distribution of patients. A random sample of 313 patients presently in the hospital gave the following information:

Type of Patient	Old Rate of Occurrences	Present Number of Occurrences
Maternity Ward	20% 62.6	71
Cardiac Ward	32% 100.16	93
Burn Ward	10% 31.3	29
Children's Ward	15% 46.95	47
All Other Wards	23% 71.99	73

Test the claim at the 5% significance level that the distribution of patients in these wards has not changed. Select the [p-value, Decision to Reject (RH_0) or Failure to Reject (FRH_0)].

$$\chi^2 = \frac{(71 - 62.6)^2}{62.6} + \frac{(93 - 100.16)^2}{100.16} + \frac{(29 - 31.3)^2}{31.3} + \frac{(47 - 46.95)^2}{46.95} + \frac{(73 - 71.99)^2}{71.99}$$

$$= 1.127 + .512 + .169 + .000053 + .014 = 1.822$$

$$P(\chi^2 > 1.822) = .768$$

Final Exam outline:

18 m/c (no f/r)

1-13 are 5 pts each and 14-18 are 7 pts each

Topics:

- Probability distributions
- Normal distributions
- Conditional probabilities
- Choosing correct hypothesis test
- Mean and variance (or standard deviation) of probability distributions
- Mean and variance (or standard deviation) of linear combinations of distributions ($E[aX+b]$, $\text{Var}[aX+b]$)
- Find c such that $P(Z < c) = \text{some value}$
- Standard error of sample proportion
- Confidence intervals
- Probability rules (several questions on this)
- Binomial distribution probabilities
- Geometric distribution probabilities
- LSRL, r , r^2 , residuals
- Hypothesis tests

★ take practice final ★

+ review all other test reviews ★

Hyp. Testing

1 sample z test (σ)

1 sample t test (s)

Means \leftarrow 1 or 2

dependent \Rightarrow matched pairs t-test.

proportions % $\frac{\square}{\square}$

indep \Rightarrow 2 sample t-test

counts (categories)
 χ^2 test for indep.
(or homogeneity)

1 \Rightarrow 1 prop z test

2 \Rightarrow 2 prop z test

more than 2 \Rightarrow χ^2 test
goodness of fit

How many?

$H_0 \mu_1 = \mu_2$

$H_a \mu_1 \square \mu_2$

one tailed test



two tailed

