

CHAPTER 10 (Test #3) ANOVA (Analysis Of Variance)

1. In a nutrition experiment, an investigator studied the effects of different diets on the growth of young rats. Twenty rats from the same inbred strain were divided at random into four groups of 5 each and used for the experiment. A different diet was fed to each group and, after a specified length of time, the increase in growth of each rat was measured (in grams). The data are shown below. Test the claim that the mean increase is the same for all four diets. Test at the 0.01 significance level. Provide a one sentence statement to accompany your conclusion.

<u>Diet A</u>	<u>Diet B</u>	<u>Diet C</u>	<u>Diet D</u>
10	13	12	15
8	15	16	13
12	14	13	15
11	13	11	10
9	17	15	12

Claim → Ho: $\mu_1 = \mu_2 = \mu_3 = \mu_4$
 H1: at least one mean is not equal
 $\alpha = 0.01$

Test Statistic

F ≈ 5.087 P-Value ≈ 0.012 Fail to Reject Ho

There is not sufficient evidence to reject the claim that the mean increase is the same for all four diets.

$$F \approx \frac{\frac{53.8}{3}}{\frac{56.4}{16}} \approx \frac{17.933}{3.525} \approx \boxed{5.087}$$