

Anova hypothesis testing paper



**ASSIGN
BUSTER**

ANOVA Hypothesis Testing Paper RES/342 July 5, 2011 University of Phoenix
ANOVA Hypothesis Testing Paper According to Payscale. com an individual with a high school education entering the work force will earn less than an individual with the same level of education who has worked longer in that particular field (Harrison, 2010). Team A has selected data from the Wages and Wage Earners data set and will be using the analysis of variance, also known as ANOVA, to compare the mean of age groups 18 - 63 which were broken down into four age groups to compare the average salary of each age group and will determine the accuracy of Payscale's claim.

In this paper we discuss our research question and the hypothesis and show how we concluded the selected hypothesis. Research Question and Hypothesis Statement Is there a difference in earned wages for workers with a 12th grade education based on the age of the worker? At a five percent level of significance (α), the team's null hypothesis (H_0) is that the mean scores are the same for the four groups 18-25, 26-33, 36-44, and 46-53. The alternate hypothesis (H_1) is that at least one mean is different. These hypotheses are simply illustrated as: $H_0: \mu_{\text{group 1}} = \mu_{\text{group 2}} = \mu_{\text{group 3}} = \mu_{\text{group 4}}$, H_1 : At least one mean is different. Five Steps Hypothesis Testing and Results of F Test Team A conducted the following steps to test their hypothesis. Step 1 - The null and alternate hypotheses: $H_0: \mu_{\text{group 1}} = \mu_{\text{group 2}} = \mu_{\text{group 3}} = \mu_{\text{group 4}}$ H_1 : At least one mean is different Step 2 - Select the level of significance: $\alpha = .05$ Step 3 -Identify test statistic: Use the " F" distribution because this is an ANOVA test Step 4 - Formulate the decision rule

Reject the null hypothesis if F-calculated is greater than 2. 85 (F-critical) Step

5 - Calculate the test statistic, arrive at a decision, and state a conclusion:

Degrees of freedom in the numerator: $df = c - 1 = 4 - 1 = 3$ Degrees of freedom

in the denominator: $df = n - c = 43 - 4 = 39$ Decision is to retain the null

hypothesis. Conclusion is that a difference cannot be proven between wages

of workers with a 12th grade education based upon age. p-value = 0. 086

Excel Output: Anova: Single Factor | | | | | SUMMARY | | | | | Groups |
 Count | Sum | Average | Variance | | | Group 1 | 9 | 165739 | 18415. 44 |
 75696297 | | | Group 2 | 15 | 349791 | 23319. | 75244077 | | | Group 3 | 9 |
 249868 | 27763. 11 | 1. 03E+08 | | | Group 4 | 10 | 306802 | 30680. 2 | 2.
 28E+08 | | | ANOVA | | | | | Source of Variation | SS | df | MS | F | P-value
 | F critical | | Between Groups | 8. 4E+08 | 3 | 2. 75E+08 | 2. 358418 | 0.
 086439 | 2. 845068 | | Within Groups | 4. 54E+09 | 39 | 1. 16E+08 | | | |
 Total | 5. 36E+09 | 42 | | | | | | | | Raw Data and Charts Wages and
 Wage Earners 2005 Data Set Yearly | Group 1 | Group 2 | Group 3 | Group 4 |
 | Wages | | | | | \$11, 186. 00 | \$11, 451. 00 | \$18, 121. 00 | \$9, 879. 00 | | |
 \$20, 852. 00 | \$29, 191. 00 | \$26, 614. 00 | \$49, 898. 0 | | | \$14, 476. 00 | \$41,
 780. 00 | \$33, 411. 00 | \$20, 852. 00 | | | \$16, 667. 00 | \$13, 312. 00 | \$22, 485.
 00 | \$32, 235. 00 | | | \$15, 234. 00 | \$15, 957. 00 | \$21, 994. 00 | \$50, 171. 00 | |
 | \$39, 888. 00 | \$25, 166. 00 | \$28, 440. 0 | \$31, 702. 00 | | | \$13, 162. 00 | \$30,
 308. 00 | \$50, 187. 00 | \$36, 178. 00 | | | \$20, 793. 00 | \$21, 716. 00 | \$31, 799.
 00 | \$12, 285. 00 | | | \$13, 481. 00 | \$28, 219. 00 | \$16, 817. 00 | \$45, 976. 00 | |
 | | \$31, 691. 0 | | \$17, 626. 00 | | | | \$17, 690. 00 | | | | | \$16, 796. 00 | | | | |
 \$32, 094. 00 | | | | | \$15, 193. 0 | | | | | \$19, 227. 00 | | | References

Harrison, H. (2010). The Average Salary of High School Graduates. Retrieved July 2, 2011, from http://www. ehow. com/facts_5232664_average-salary-

<https://assignbuster.com/anova-hypothesis-testing-paper/>

high-school-graduates. html ----- [pic] Reject H0 Do not reject

$H_0: \mu = .05$ $F = 2.85$ $H_0: \mu \neq .05$ $F = 2.85$