

Elementary Statistics – Homework No. 5

Issued: Thursday, 6 May 2021

Submission deadline: Thursday, 13 May 2021

Question 1 (6 points)

California and New York lead the list of average teachers' salaries. The California yearly average is \$64,421 while teachers in New York make an average annual salary of \$62,332. Random sample of 42 teachers from each state yielded the following.

	California	New York
Sample mean	66,567	62,685
Population standard deviation	8,258	7,758

Use μ_1 for the average teachers' salaries in California. At $\alpha=0.01$, is there a difference in means of the salaries?

Question 2 (6 points)

A researcher wishes to see if there is a difference between the mean number of hours per week that a family with no children and a family with children participate in recreational activities. She selects two random samples and the data are shown below.

	\bar{X}	σ	n
No children	8.8	2.4	34
Children	10.4	2.9	34

Use μ_1 for the mean hours for families with no children. At $\alpha=0.01$, is there a difference between the means?
Use the P-value method.

NOTE: For Questions 1 and 2

- (1) state clearly the hypotheses and identify the claim,
- (2) find the critical value (or P-value, if required),
- (3) compute the test value,
- (4) make the decision,
- (5) summarize the results.

Question 3 (8 points)

An environmentalist wants to determine the relationship between the numbers (in thousands) of forest fires over the year and the number (in hundred thousands) of acres burned. The data for 7 years is shown below.

Number of fires x	72	69	58	47	84	62	57
Number of acres burned y	62	42	19	26	51	15	30

Source: National Interagency Fire Center.

- (a) Draw the scatter plot.
- (b) Compute the value of the correlation coefficient.
- (c) Is there a significant linear relationship between the variables?
- (d) Give a brief explanation of the type of relationship.