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POS 604: Quantitative Methods

Dr. Meserve

Hypothesis testing

**Question 1**

Table 1. T-test comparing mean income

|  |  |
| --- | --- |
| **T-test** | **P-value** |
| 1.66 | 0.10 |

Figures have been rounded to 2 decimal places

The p-value for mean income for all workers is 0.10. The p-value equals the critical value of 0.10; we reject the null hypothesis that mean income equals $50,000. And we are 90 percent confident that the population mean income will not be equal to $50,000 per the sample data.

At a critical value of 0.01, the p-value of 0.10 is greater than the critical value. We do not reject the null hypothesis that the mean income equals $50,000. And the population mean income will equal $50,000 at a 99 percent confidence level.

**Question 2**

Table 2. Hypothesis test for resample mean income.

|  |  |
| --- | --- |
| **Mean of x** | **P value** |
| 53850.99 | 0.11 |

Figures have been rounded to 2 decimal places

The p-value for the resampled mean income is 0.11 and is greater than the critical value of 0.10. We do not reject the null hypothesis that the mean income of all freelancers is equal to $50,000. And we are 90 percent confident that the population mean income will equal $50,000 per the sample data.

At a critical value of 0.01, the p-value of 0.11 is greater than the critical value. We fail to reject the null hypothesis that the mean income equals $50,000. And the population mean will be equal to $50,000 per the sample data.

**Question 3**

Table 3. T-test comparing women and men income

|  |  |
| --- | --- |
| **T-test** | **P value** |
| 1.46 | 0.15 |

Figures have been rounded to 2 decimal places

The p-value of comparing women's and men's income is 0.15. The p-value is greater than the critical value of 0.10. We fail to reject the null hypothesis that women and men receive the same income at a 90 percent confidence level.

**Question 4**

Table 4a. Comparing information technology workers income to all other workers.

|  |  |
| --- | --- |
| **T-test** | **P value** |
| -3.28 | 0.00 |

Figures have been rounded to 2 decimal places

The p-value for comparing information technology to all other workers is 0.00. The p-value is less than the critical value of 0.10; hence we reject the null hypothesis that information technology workers make the same income as all other workers. And per the sample, the population income for information technology workers will not be equal to all other workers at a 90 percent confidence level.

Table 4b. Comparing finance workers income to all other sectors.

|  |  |
| --- | --- |
| **T-test** | **P value** |
| -0.26 | 0.79 |

Figures have been rounded to 2 decimal places

The p-value for comparing the finance sector to all other workers is 0.79. The p-value is greater than the critical value of 0.01. Hence, we fail to reject the null hypothesis that workers in the finance sector receive the same income as other workers. The finance workers' population income will be the same for all other workers at a 99 percent confidence level per the sample data.

Decision Rule