Assignment 9

Use the raw data at the bottom of this file that describes differences in pay and overtime pay of different rank firefighters, in total there are 38 rows of data. In total there are three main parts to this assignment.

Part 1) Create a new categorical variable called OverTimePay in the data set that categorizes those who make over 25000 dollars in overtime pay as 'High' and those who make under 25000 dollars in overtime pay as 'Low'. Use a test to determine if the proportion of High vs Low categories are significantly different from 40% and 60%, respectively. Report the p-value and its interpretation, along with the actual observed proportions of the data.

Part 2) Using OverTimePay and Rank run a two-way chi square test for independence. State the null hypothesis of this test versus the alternative hypothesis of this test, in context. Report the p-value and state whether you should reject the null hypothesis.

Part 3) Run a one-way anova test using the variable OT as the response and Rank as the independent variable to determine if a specific rank of Firefighter on average gets paid more in overtime. In addition, run any additional tests necessary to see if there are any significant differences amongst any of the rank categories. State the null hypothesis and whether you should reject it as well as if there were any significant differences between pairs. Report the p-value and any other statistic deemed necessary to justify your conclusions.

RAW DATA

Input Rank BasePay OT

Datalines;

FIREFIGHTER $78,554 $17,640

FIREFIGHTER $78,526 $18,111

CAPTAIN $110,006 $20,955

FIREFIGHTER $80,466 $28,833

ENGINEER $85,256 $19,865

ENGINEER $93,521 $29,621

FIREFIGHTER $78,505 $23,786

ENGINEER $94,040 $27,945

FIREFIGHTER $82,845 $26,886

ENGINEER $87,852 $21,589

ENGINEER $88,963 $29,529

FIREFIGHTER $78,562 $29,632

FIREFIGHTER $78,549 $17,862

CAPTAIN $107,686 $27,838

FIREFIGHTER $78,530 $26,711

ENGINEER $85,318 $22,702

ENGINEER $87,833 $24,297

FIREFIGHTER $78,390 $28,634

CAPTAIN $110,525 $18,607

CAPTAIN $107,242 $23,892

FIREFIGHTER $78,494 $29,549

FIREFIGHTER $78,493 $20,961

CAPTAIN $110,456 $15,222

ENGINEER $93,703 $21,775

FIREFIGHTER $84,347 $20,577

CAPTAIN $109,896 $18,172

ENGINEER $92,641 $20,557

FIREFIGHTER $78,392 $26,611

FIREFIGHTER $78,509 $16,329

FIREFIGHTER $82,033 $23,983

CAPTAIN $107,527 $27,828

CAPTAIN $117,656 $29,836

ENGINEER $93,521 $26,651

ENGINEER $93,521 $28,421

ENGINEER $93,521 $26,431

CAPTAIN $119,333 $25,938

CAPTAIN $120,686 $26,138

CAPTAIN $110,898 $28,832

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