

Chapter Project

Employee Satisfaction: Statistical Inference Using Hypothesis Testing

Part 1

If the level of employee satisfaction drops below 0.60 overall, then there is a belief that there may be a serious problem with morale in that department. There have been rumors that the Human Resources department (*hr* in the data file) may be having just such issues. Using a statistical package, test to determine if the mean employee satisfaction level in the Human Resources department is less than 0.60.

1. Is *satisfaction_level* a qualitative or quantitative variable?
2. Graph the employee satisfaction level for the Human Resources department with an appropriate graph and calculate statistics appropriate for this type of data.
3. Conduct the appropriate hypothesis test using the following steps.
 - a. Determine the null and alternative hypotheses.
 - b. Use a significance level of $\alpha = 0.05$.
 - c. Validate the assumptions of the hypothesis test, identify the appropriate test statistic, and compute its value.
 - d. Determine the *P-value*.
 - e. Make a decision to reject or fail to reject the null hypothesis, H_0 .
 - f. State the conclusion in terms of the original problem.
4. Based on our conclusion from the previous step, what type of error could we have just made (Type I or Type II)? State the practical implications of this error.
5. Would it be appropriate to compare this test to a confidence interval for the mean? Why or why not?

Part 2

According to the US Bureau of Labor Statistics, there was a 12.4% incidence of workplace injury in 2016 in the private sector. If the workplace accident rate is above 12.4%, the company will increase inspections and implement additional safety training. For this data, is there statistical support to increase inspections and implement additional safety training? Use the entire dataset and the *work_accident* variable where 0 = no accident and 1 = an accident occurred.

1. Is *work_accident* a qualitative or quantitative variable?
2. Graph the accident at work data with an appropriate graph and calculate statistics appropriate for this type of data.
3. Conduct the appropriate hypothesis test using the following steps.
 - a. Determine the null and alternative hypotheses.
 - b. Use a significance level of $\alpha = 0.05$.
 - c. Validate the assumptions of the hypothesis test, identify the appropriate test statistic, and compute its value.
 - d. Determine the *P-value*.
 - e. Make a decision to reject or fail to reject H_0 .
 - f. State the conclusion in terms of the original problem.
4. Based on our conclusion from the previous step, what type of error could we have just made (Type I or Type II)? State the practical implications of this error

Data

The data can be found at stat.hawkeslearning.com **Data Sets > Employee Satisfaction.**