Data-Driven Decision-Making Task 1

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A.   The purpose of the linear regression analysis attached is to answer the following

question: Is there a significant relationship between the monthly rate of nurse participation and

the nurse attrition rate over the span of 36 months?

B.

    1. The relevant data characteristics for the linear regression analysis, include the following:

- the independent variable utilized for the purpose of this analysis is the program

    participation rate

- the dependent variable utilized for the purpose of this analysis is the nurse attrition rate

- the type of data utilized in the analysis is, linear regression analysis, numerical

    continuous data, ratio, and quantitative research

- quantity of data includes 36 months' worth of data

    2. The graphical display attached is of the data using a scatter plot, and includes each of the

       following elements:

- chart title: Program Participation Rate Line Fit Plot

- legend: included in the attachment

- axis titles: nurse attrition rate and program participation rate

- data intervals: included in the attachment

C. The data was analyzed by utilizing the linear regression analysis resource, reported as

  follows:

  1. The output and linear regression calculations are included in the Linear Regression

     Analysis Resource spreadsheet attached. Y=MX+B and R squared were utilized to

     analyze the data. The program participation rate is the independent variable, and the nurse

attrition rate is the dependent variable. The independent and dependent variables are

percentages which are ratios. This is numerical continuous data, ratio, and quantitative

research. It is quantitative research as it quantifies the problem using numerical data. The

software utilized is the regression analysis resource excel spreadsheet: select data, data

analysis, regression, input the independent and dependent variables, and select line fit

plots. This will create the output and chart for the analysis.

2. Linear regression is the appropriate analysis technique for predicting the dependent

variable, the nurse attrition rate, due to it being the most reliable when the quantity of data

is 30 or more and we have data for 36 months. Linear regression uses 1 independent

variable, program participation rate, to show a relationship with the outcome of the 1

dependent variable. Linear regression analysis predicts the value of a variable based on

the value of another variable as we have done here with program participation rate and

nurse attrition rate over the span of 36 months. Utilizing Y=MX+B as demonstrated on

the attached excel sheet.

D.

1. The null hypothesis is that the program participation rate is not a significant variable in the

nurse attrition rate.

2. The data analysis results can be interpreted by doing the following:

a. R Square =.55; R Square is the measure of goodness of fit between two variables the

nurse attrition rate and the program participation rate. .55 is a moderate fit between the

program participation rate and attrition rate.

b. P-Value =2.59891E-07 which is the same as 0.000000259891; P-Value above .05

means we accept the null, if the P-Value is below .05 then we reject the null. In this

analysis, the program participation rate correlates with the attrition rate as the P-Value is 0.00000259891. Therefore, we must reject the null hypothesis that states, the program participation rate is not a significant variable in the nurse attrition rate.

c. The linear equation is Y=MX+B or Y=-0.0891X+5.8342, M, and B are coefficients from the table. The R Square of .55 tells us that the regression equation accounts for 55% of the variation, however, 45% is made up of other things.

3. Limitations of the research are the other variables not identified in the analysis. The results indicate that there are other factors that correlate with the nurse attrition rate. The recommended course of action would be impacted by these other factors and limit the ability to develop a plan for nurse attrition rate and the program based on the results.

4. There is a significant relationship between the monthly participation rate and the nurse attrition rate. A recommended course of action that aligns with the linear regression analysis results would be to continue the program due to its efficacy in reducing turnover and increasing job satisfaction. The next step in this process would be to determine if the cost of the program is below the cost of a high turnover rate. It could also be beneficial to identify what other factors could correlate with the nurse attrition rate and then complete a multiple regression analysis to determine the next course of action based on those results.