Regression-analysis-rat-survival.R

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#BASICS OF REGRESSION MODEL:  
# Regression model is only applied to the bivariate continuous variable not for categorical variable.  
# This dataset consist of two columns Dose radiation and surv.  
# So,here we can say that Dose is an independent variable and surv is a dependent variable.  
survival=read.csv(file='C:/Users/genz/Downloads/survival.csv')  
head(survival)

## X dose surv  
## 1 1 117.5 44.00  
## 2 2 117.5 55.00  
## 3 3 235.0 16.00  
## 4 4 235.0 13.00  
## 5 5 470.0 4.00  
## 6 6 470.0 1.96

tail(survival$dose)

## [1] 705 940 940 940 1410 1410

s=survival  
x=s$dose  
x

## [1] 117.5 117.5 235.0 235.0 470.0 470.0 470.0 705.0 705.0 940.0  
## [11] 940.0 940.0 1410.0 1410.0

y=s$surv  
y

## [1] 44.000 55.000 16.000 13.000 4.000 1.960 6.120 0.500 0.320 0.110  
## [11] 0.015 0.019 0.700 0.006

cor(x,y)

## [1] -0.6795532

regression=lm(y~x)#lm is linear model  
summary(regression)

##   
## Call:  
## lm(formula = y ~ x)  
##   
## Residuals:  
## Min 1Q Median 3Q Max   
## -13.270 -8.648 -3.974 7.542 30.025   
##   
## Coefficients:  
## Estimate Std. Error t value Pr(>|t|)   
## (Intercept) 28.223985 6.682659 4.223 0.00118 \*\*  
## x -0.027647 0.008616 -3.209 0.00751 \*\*  
## ---  
## Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1  
##   
## Residual standard error: 13.41 on 12 degrees of freedom  
## Multiple R-squared: 0.4618, Adjusted R-squared: 0.4169   
## F-statistic: 10.3 on 1 and 12 DF, p-value: 0.007509

#NUTSHELL:  
#There exists a negative relationship between dose and survival rates.  
#Thus this is a significant hypothesis not a null hypothesis   
# Also there exists a two star significant relationship  
# Between negative correlation of dependent and independent data values  
#In conclusion,we can say that higher the number of doses lesser the survival will be for Rats