1. I’m developing some pretty healthy SNAPstreaks with some of my SNAP buddies, but is the length of a SNAPstreak and indication of the strength of a relationship? I ask 25 of my SNAPfriends to rate how close they feel to me on a 10-point scale (smaller scores = less distance). I use these data to examine the relationship between the length of the SNAPStreak (which ranged between 1 and 5 days) and the closeness of my relationship.
2. Calculate the regression equation from the data collected (8 pts).

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| X (Streak) | Y (Closeness) | X2 | Y2 | x\*y |
| Σ = 75 | Σ = 125 | Σ = 279 | Σ = 685 | Σ = 339 |

 

 



1. Calculate the predicted closeness for a SNAPfriend with a SNAPstreak of 9 days Is this value meaningful? (3 pts)

 This value is not meaningful because 9 was not within the range of x values used to calculate the regression model.

1. If I continue my streak with a SNAPfriend tomorrow, how much closer should that person feel to me compared to how they feel today? (3 pts)

Because the slope is negative, we would expect them to 2/3 of a point less distant.

1. Calculate the correlation coefficient? Do the data suggest that longer SNAPstreaks yield closer relationships? (4 pts)

 Yes. b/c r is negative.

1. Is the length of the SNAPstreak a significant predictor of relationship quality?

$$SS\_{regression}= \left(r^{2}\right)SS\_{y}= \left(-.63^{2}\right)60=\left(.40\right)60=24 $$

$$SS\_{residual}= \left(1-r^{2}\right)SS\_{y}= \left(1-.40\right)60=\left(.60\right)60=36 $$

$$MS\_{regression}= \frac{SS\_{regression}}{df\_{regression}}=\frac{24}{1}$$

$$MS\_{residual}= \frac{SS\_{residual}}{df\_{residual}}=\frac{36}{25-2}= \frac{36}{23}=1.56$$

$$F= \frac{MS\_{regression}}{MS\_{residual}}=\frac{24}{1.56}=15.33$$

 Fcrit = (1, 23) = 4.28

Decision: reject the null; the length of a SNAPstreak is a significant predictor of relationship quality F(1,23) = 15.33, p < .05. The correlation coefficient is negative which suggest an inverse relationship. Therefore, the longer the SNAPstreak, the less distance that friend feels in the relationship.

1. You are responsible for organizing the end of the year ΣΜΣ ‘Beirut Tournament’, Last year, the ΣΜΣ team came in last place. You are determined to win this year, so you decide to investigate the factors that might be related to Beirut performance. Ultimately, you hope to use this information to choose the best available players. The factors that you consider are: Beirut experience (# of games played this semester), alcohol consumption (average drinks per weekend evening), GPA, ability to talk trash (verbally intimidate other players; scored on a 10-point scale), and average visits to the bathroom per evening. The results of your analysis appear below. Use this information to answer the questions that follow.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Source | DF | SS | MS | F | p-value |
| ModelErrorTotal | 68490 | 181.44272.16453.60 | 30.243.24 | 9.33 | .001 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Variable | df | Param Est | Std Err | t | p-value |
| InterceptExperienceAlcoholGPATrash-talkBR | 111111 | 2.296.931.34-2.614.86-4.58 | 2.013.180.452.931.432.62 | 1.142.182.96-0.893.40-1.75 | .257.032.004.375.001.084 |

1. Which of the identified factors are significant predictors of Beirut success? Explain.

Experience, Alcohol, and Trash-Talk

1. What is the regression equation relating the predictor variables to performance?

Ÿ = 2.29 + 6.93(Exp) + 1.34(Alc) – 2.61(GPA) + 4.86(TT) – 4.58(BR)

1. Which single factor is the best predictor of performance? Explain your answer. (3 pts)

Trash-talk

1. Which factor(s) would you remove from the model if you wanted to run a reduced model? Explain.

I would definitely remove GPA because it is not close to being significant. I would also probably remove trips to the BR although you could argue that its p-value is less than .10 so it might be worth retaining.

1. I have no Beirut experience (that is the truth), consume 0 alcoholic drinks over the weekend (also the truth), my GPA in college was a 4.0 (that is a HUGE lie), scored a perfect 10 in trash-talking ability, and visit the bathroom 3 times per night. What would my predicted Beirut score be according to the regression model.

Ÿ = 2.29 + 6.93(Exp) + 1.34(Alc) – 2.61(GPA) + 4.86(TT) – 4.58(BR)

Ÿ = 2.29 + 6.93(0) + 1.34(0) – 2.61(4) + 4.86(10) – 4.58(3)

Ÿ = 2.29 + 0 + 0 – 10.44 + 48.60 – 13.74

Ÿ = 26.71