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- Week 0: Introduction to Data (Optional Review)
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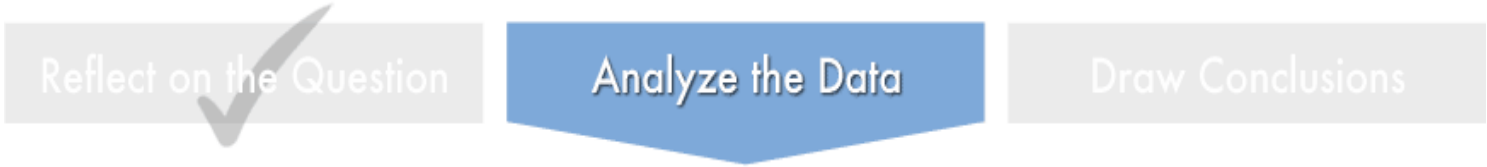

Primary Research Questions

1) Can you confirm the claim that Beck Depression Inventory score is a significant predictor of Overall Quality of Life among students enrolled in the Clinical Sciences program?

2) For students enrolled in the Clinical Sciences program, examine the effects of DREEM: Social Self Perception, DREEM: Academic Self Perception, Resilience, BDI, and Age on Med School Quality of Life?

Breakdown Your Analysis

Let's break this analysis into its required steps:

Testing (One Group Means)

- Week 3: Hypothesis Testing (Two Group Means)
- Week 4: Hypothesis Testing (Categorical Data)
- Week 5: Hypothesis Testing (More Than Two Group Means)
- **Week 6: Correlation and Regression**

Readings
Reading Check due May 03, 2016 at 17:00 UTC

Lecture Videos
Comprehension Check due May 03, 2016 at 17:00 UTC

R Tutorial Videos

Pre-Lab

1. Subset out just students in the Clinical Sciences program.
2. Run a basic correlation matrix for Research Question 1.
3. Run the model for Research Question 1 and examine.
4. Run a basic correlation matrix for Research Question 2.
5. Run the model for Research Question 2 and examine.
6. Follow up Research Question 2 with contextual analysis.

Here is the code you will use:

```
#Subset into the Clinical Sciences
clin <- res[res$Group == "Clinical Sciences",]
```

Question One

```
#Intial Correlations
vars <- c("QoL", "BDI")
cor(clin[,vars])

#RQ1 Model
ov_mod <- lm(QoL ~ BDI, data=clin)
summary(ov_mod)
confint(ov_mod)
```

Pre-Lab due May 03, 2016 at 17:00 UTC

Lab
Lab due May 03, 2016 at 17:00 UTC

Problem Set
Problem Set due May 03, 2016 at 17:00 UTC

```
#Diagnostics
plot(ov_mod, which=1)
cutoff <- 4/(ov_mod$df)
plot(ov_mod, which=4, cook.levels=cutoff)
```

Question Two

```
#Initial correlations
vars <- c("MS.QoL", "DREEM.S.SP", "DREEM.A.SP", "Resilience", "BDI", "Age")
cor(clin[,vars], use="pairwise.complete.obs")

#Test the initial correlations
library(psych)
corr.test(clin[,vars], use="pairwise.complete.obs")

#RQ2 Model
ms_mod <- lm(MS.QoL ~ DREEM.S.SP + DREEM.A.SP + Resilience + BDI + Age, data=clin)
summary(ms_mod)
confint(ms_mod)

#Diagnostics
library(car)
vif(ms_mod)
plot(ms_mod, which=1)
cutoff <- 4/(ms_mod$df)
plot(ms_mod, which=4, cook.levels=cutoff)
```

```
#Put model into context
lmBeta(ms_mod)
round(pCorr(ms_mod), 4)
```

(1/1 point)

1. What does the summary() function do?

- (•) provides the output from the linear model in the console ✔
- ( ) shows the standardized betas of the model
- ( ) runs the linear model for the research question
- ( ) provides summary statistics for the outcome variable

Click here for a video explanation of how to answer this question.

You have used 1 of 1 submissions

(1/1 point)

2. What is the purpose of the following code option in cor()?

```
use="pairwise.complete.obs"
```

- It is the option that shows the correlation matrix
- It shows the p-values associated with each correlation
- It allows for all complete data to be used in the correlations ✔
- It calls the "pairwise.complete.obs" data set

Click here for a video explanation of how to answer this question.

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(1/1 point)

3. What kind of diagnostic plot is provided from the following code?

```
plot(ov_mod, which=1)
```

- A Cook's Distance plot
- A Q-Q plot for normality
- A scatterplot
- A Residuals vs. Fitted plot ✔

Click here for a video explanation of how to answer this question.

You have used 1 of 1 submissions

(1/1 point)

4. What does the function lmBeta() do?

- Provides the partial correlation coefficients for the model

- Provides the semi-partial (part) correlation coefficients for the model
- Provides the Standardized Betas for the model ✔
- Runs all diagnostic plots

Click here for a video explanation of how to answer this question.

You have used 1 of 1 submissions

(1/1 point)

5. You want to run a correlation matrix, and then get the p-value for each bivariate correlation. You run the following code. What caused the error?

```
vars <- c('MS.QoL', 'DREEM.S.SP', 'DREEM.A.SP', 'Resilience', 'BDI',
'Age')
cor.test(clin[,vars], use="pairwise.complete.obs")

Warning messages:
```

```
Error in cor.test.default(clin[, vars], use = "pairwise.complete.obs") :
,
argument "y" is missing, with no default
```

- (●) The function is called corr.test rather than cor.test ✔
- ( ) A correlation matrix only has two variables, not six.
- ( ) The dataset "pairwise.complete.obs" is not provided.
- ( ) DREEM.S.SP is not the outcome varaible (y)

Click here for a video explanation of how to answer this question.

You have used 1 of 1 submissions