Take-Home Activity:

Create a 6 slide PowerPoint presentation as if you were giving talk on the results of the study.

1.   Does body weight predict blood pressure, while controlling for hormonal contraceptive use?, Md Saiful Hasan.

2.   Research question and hypotheses: State the research question (Research question should be stated as a question), null & alternative hypotheses.

Question: Does body weight predict blood pressure, while controlling for contraceptive use?

- **Null Hypothesis (H$_o$):** Body weight does not significantly influence the mean blood pressure of LNG IUS acceptors when controlling for the client's contraceptive use.

- **Alternative Hypothesis (H$_1$):** Body weight significantly influences the mean blood pressure of LNG IUS acceptors when controlling for the client's contraceptive use.

3.   Methods: Give your response (dependent) and your two explanatory (independent) variables and their levels of measurement, the statistical test you chose, the alpha level you will be using and whether 1- or 2-sided.

Sample: Medical records of *170* LNG IUS acceptors collected at the 7 different health facilities in Bangladesh (2021)

Explanatory Variable 1: Body weight

Explanatory Variable 2: Hormonal contraceptive use (Yes or No)

Response Variable: Mean Blood Pressure

Statistical Test: Correlation test, independent two-samples t-test, multiple regression, two-tailed, alpha level 0.05

4.   Results 1: Describe your data, this should include: who was included in the study (entire survey or selected county), the appropriate measures for the two explanatory variables you selected. Please provide the summary statistics for all of your variables (i.e. means or proportions). Also, provide bivariate analysis to compare your explanatory variables to the response variable (i.e. correlation or mean comparison by groups). Comment on the results of the statistical test comparing the multiple groups of the response variable and the correlation. Include the type of test used, the value of the test statistic, the associated p value, and decision about the null hypothesis.

Variables	Summary Statistics
Body Weight*	58.5 (12.01)
Contraceptive Type: **Hormonal** **Non-hormonal** ...	102 (60%) 68 (40%) ...

Mean Blood Pressure**	88.77(6.0307)

* Body weight is measured in KG

** Mean Blood pressure is measured from systolic and diastolic BP reading [diastolic blood pressure (DBP) + 1/3 [systolic blood pressure (SBP) – DBP]]

The correlation between body weight and mean blood pressure was not significant:

r = 0.0482, p = 0.5324.

The mean blood pressure for hormonal contraceptive users was 88.56 (5.201) and 88.382 (6.543) for user of non-hormonal contraceptive.

In the test for equality of variances shows that we fail to reject equal variance assumption (F-statistics is 0.63186, with df1=67, df2=101, p-value=0.04551).

Using an independent two-samples t-test test, I found that the mean blood pressure difference between type of contraceptive users was not significant at an alpha level of .05: t = 0.21759, df = 168, p = 0.828.

5.   Results 2: Describe the results from the multiple regression model. Comment on the results of the statistical test. Please include the type of test used, the value of the test statistic, the associated p value, and decision about the null hypothesis.

Body weight predicts only a small portion of the variance in mean blood pressure (b = 0.0227, t = 0.587, p = 0.558) when controlling for contraceptive use.

As the result is not statistically significant, we fail to reject the null hypothesis.

Body weight, the coefficient is 0.0227, indicating a small, positive relationship with mean blood pressure. However, this relationship is not statistically significant (t = 0.587, p = 0.558).Contraceptive type, the coefficient is -0.2248, suggesting a negligible negative relationship with mean blood pressure. This relationship is also not statistically significant (t = -0.237, p = 0.813).

	Coeffi Estimate	t	p-value
Body weight (B$_1$)	0.0227	0.687	0.558
Contraceptive type (B$_2$)	-0.2248	-0.237	0.813

* Hormonal vs non-hormonal

R^2 = 0.002338

What test(s) you are using? What about the statistical decision (reject or not reject null)?

6.   Conclusion: We found evidence that… or We did not find evidence that… (no numbers or p-values).

The analysis found no evidence that body weight predicts the mean blood pressure of LNG IUS acceptors when controlling for contraceptive use. Therefore, we cannot conclude that an increase in body weight results in an increase in mean blood pressure.