

Mock exam "Multivariate Statistics", fall semester 2023

Linear regression

Linear regression (single choice) (Choice) - 1

Which of the following statements refers to an overfitting issue that may affect the quality of a linear regression model?

Decide which of the following statements is correct by clicking on a single box.

Overfitting does not affect the quality of the regression model.

The estimated Y values and the empirical Y values correlate less than in reality.

The residuals are bigger than they should actually be.

The explained variance is consequently higher than it should be.

Logistic regression

Logistic regression (single choice) (Choice) - 1

Which of the following statements about the interpretation of logit (also called: log odds) in logistic regression is correct?

Decide which of the following statements is correct by clicking on a single box.

The logit (or log odds) gives us an indication about the size of the effect

The values of the logit (or log odds) range between 0 and 1

For logit (or log odds), only the sign of the coefficient (and its associated significance level) can be interpreted

Logit (or log odds) give us an indication about the magnitude of the implied change in the probabilities

Moderation/Mediation

Moderation (Kprim) (Kprim) - 2

In a moderation mean centering is important. Why?

Decide whether the following statements are true or false by clicking the respective box.

	True	False
For changing the regression slope	<input type="checkbox"/>	<input checked="" type="checkbox"/>
For reducing effects of multicollinearity	<input checked="" type="checkbox"/>	<input type="checkbox"/>
It facilitates the interpretation of the effects	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Because this way effects get standardized (from b to β)	<input type="checkbox"/>	<input checked="" type="checkbox"/>

ANOVA

Repeated Measures ANOVA (open-ended) (Essay) - 1

How do individual differences affect the F-statistic in repeated measures ANOVA?

Tips: think about the size of the F-statistics and about its statistical significance.

Answer: In repeated measures ANOVA, the individual difference portion of the error term is removed (0.5 point). Therefore, the denominator in the F-ratio will be smaller and the F will be larger (0.5 point). This means that the procedure will be more sensitive to small differences between groups (or 0.5 point).

Factor analysis (EFA/CFA)

EFA (open-ended) (Essay) - 2

List two formal tests that enable you to assess the suitability of a data set for conducting exploratory factor analysis.

Answer: The KMO (Kaiser-Meyer-Olkin measure of sampling adequacy) describes the amount of variance of one item that is explained by all items (1 point). The Bartlett's test, which should have a significant value when correlations between items are large enough to be used in factor analysis (1 point).

SEM

SEM (single choice) (Choice) - 1

Which of the following is NOT a typical model fit index used in SEM?

Decide which of the following statements is NOT correct by clicking on a single box.

- | | |
|--|-------------------------------------|
| Tucker-Lewis index (TLI) | <input type="checkbox"/> |
| Root mean squared error of approximation (RMSEA) | <input type="checkbox"/> |
| Adjusted R-square | <input checked="" type="checkbox"/> |
| Comparative fit index (CFI) | <input type="checkbox"/> |

MLM

MLM (Kprim) (Kprim) - 2

Which of the following statements about multilevel modelling (MLM) are correct, and which are incorrect?

Decide whether the following statements are true or false by clicking the respective box.

	True	False
MLM aims to correct for biased estimates resulting from the clustering of the observations (e.g. students nested in schools).	<input checked="" type="checkbox"/>	<input type="checkbox"/>
MLM decomposes the total variance of the dependent variable into the within-context variance and the between-context variance.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
You might not want to use random effects when the number of factor levels is very low.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
If the value of the ICC (Interclass Correlation Coefficient) is high, then use of a single level model.	<input type="checkbox"/>	<input checked="" type="checkbox"/>