EoS - E-tutorial 02 - WiSe 2022/2023

StatRef.C.2.2.00032 (60 Punkte)

Sie haben die folgende Antwort gegeben:

The Economic and Social Statistics Department of Trier University conducts a survey among 100 master students who participated in the recent statistics exam. Among other things, the students were asked about the time they spent in preparation for the exam. The department wants to know whether there is a significant relation between the achieved number of points in the exam and the time the individual took for preparation. The following table contains information on seven participants randomly drawn.

Hint: Please round your results - if necessary and if not asked otherwise - to **four** decimal places.

Student	1	2	3	4	5	6	7
Preparation time in hours	34	37	85	67	34	116	42
Points achieved	132	166	218	180	135	235	138

a) (12 Points) Please calculate the empirical covariance between the variables *preparation time in hours* and *achieved points*. 1069.429 ✓

b) (8 Points) Please calculate Pearson's correlation coefficient for the variables *preparation time in hours* and *achieved points*. 0.9509 ✓

c) (10 Points) Suppose that several students spent the same amount of time for preparation and also end up with the same amount of points achieved in the exam. You plan to calculate the Spearman's rank correlation coefficient in order to assess the relation between the two variables. Which problem links to this procedure? quadratic contingency table ✗

d) (30 Points) Finally, you want to calculate Spearman's rank correlation coefficient based on the data for all 100 students interviewed. You already know that: $\sum_{i=1}^{100} [Rk(x_i) - Rk(y_i)]^2$ = 13758. 0.955 ✗

Die bestmögliche Lösung lautet:

The Economic and Social Statistics Department of Trier University conducts a survey among 100 master students who participated in the recent statistics exam. Among other things, the students were asked about the time they spent in preparation for the exam. The department wants to know whether there is a significant relation between the achieved number of points in the exam and the time the individual took for preparation. The following table contains information on seven participants randomly drawn.

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Student	1	2	3	4	5	6	7

Preparation time in hours	34	37	85	67	34	116	42
Points achieved	132	166	218	180	135	235	138

a) (12 Points) Please calculate the empirical covariance between the variables $preparation\ time\ in\ hours$ and $achieved\ points$. 1069.42857142857

b) (8 Points) Please calculate Pearson's correlation coefficient for the variables $preparation\ time\ in\ hours$ and $achieved\ points$. 0.950892987345151

c) (10 Points) Suppose that several students spent the same amount of time for preparation and also end up with the same amount of points achieved in the exam. You plan to calculate the Spearman's rank correlation coefficient in order to assess the relation between the two variables. Which problem links to this procedure? bindings

d) (30 Points) Finally, you want to calculate Spearman's rank correlation coefficient based on the data for all 100 students interviewed. You already know that: $\sum_{i=1}^{100} [Rk(x_i) - Rk(y_i)]^2$ = 13758. 0.917443744374437

Sie haben 20 von 60 möglichen Punkten erreicht.