Principle of Measurement – Assignment 1

Exercise 1

a) Estimated variance of sum score = sum of all numbers in the covariance matrix =  
0,25 + 0,12 + 0,36 + 0,16 + 0,12 + 0,77 + 0,66 + 0,35 + 0,36 + 0,66 + 3,68 + 0,74 + 0,16 + 0,35 + 0,74 + 1,18 = 10,66

b)

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c)

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d)

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Exercise 2

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Exercise 3

a) In part 1 of the questionnaire, I scored each item according to a 4 tier system that I created which indicates to what degree the item is deemed difficult to use as a part of a total score that indicates that the user is proficient in the use of technology and does so very frequently (“Use of technology in everyday life index score”). This gave a max score of 28, which would indicate that a person is a proficient and frequent user of informational technology.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Variable | Abv. name | Never | <Monthly | <Weekly | <Everyday | Everyday |
| X1 | Email | 0 | 2 | 2 | 2 | 2 |
| X2 | Reading | 0 | 1 | 1 | 1 | 1 |
| X3 | Transaction | 0 | 3 | 3 | 4 | 4 |
| X4 | Spreadsheet | 0 | 3 | 3 | 4 | 4 |
| X5 | Word processor | 0 | 2 | 2 | 2 | 2 |
| X6 | Programing | 0 | 5 | 5 | 6 | 6 |
| X7 | Chatting | 0 | 1 | 1 | 1 | 1 |

Tier 1 is reading and chatting (0-1-1-1-1)  
Tier 2 is email and word processor (0-2-2-2-2)  
Tier 3 is Transactions and spreadsheets (0-3-3-4-4)  
Tier 4 is programming (0-5-5-6-6)

In part 2 of the questionnaire, I scored each item equally since the items are important factors in explaining/understanding climate change. 0 is giving for having no idea about the given climate change indicator/problem/issue, 1 is for knowing what it is, 3 is for being able to explain it and 4 is given for a detailed explanation. A high score on this part would indicate that a person is knowledgeable about climate change (“Climate change knowledge index score”).

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Variable | Abv. name | No idea what it is | Know what it is | Can explain it | Can explain it in detail |
| X1 | Greenhouse gas | 0 | 1 | 3 | 4 |
| X2 | GMO | 0 | 1 | 3 | 4 |
| X3 | Nuclear Waste | 0 | 1 | 3 | 4 |
| X4 | Clearing forests | 0 | 1 | 3 | 4 |
| X5 | Air pollution | 0 | 1 | 3 | 4 |
| X6 | Bio-extinction | 0 | 1 | 3 | 4 |
| X7 | Water shortage | 0 | 1 | 3 | 4 |

In part 3, there is no reason for giving the different answers a score other than that it might be a bit easier to look at large dataset without having to read individual sentences and/or names. I gave a score from highest to lowest (lowest ending with 1) based upon the order they appeared in the questionnaire.

|  |  |  |  |
| --- | --- | --- | --- |
| Gender | Male | Female | Other |
| Gender score | 3 | 2 | 1 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Eye color | Blue | Green | Red | Yellow |
| Eye color score | 4 | 3 | 2 | 1 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Friendly country | Denmark | Finland | Iceland | Norway | Sweden |
| Friendly country score | 5 | 4 | 3 | 2 | 1 |

b) Summary statistics for “X6..Use.a.programming.language.to.program.or.write.computer.code.” using summary() and table() functions in R.   
16 out of 17 students got 6 points on this question which indicates that they use programming at least once a week. 1 out of 17 students got 5 points which indicates that they use programming less that once a week. It is interesting to note that all the students are enrolled in a masters program that uses programming almost daily, while the students have an 80 % mandatory attendance. This is either a student that does not want to use programming often even though they are enrolled in a master’s program that heavily uses it, someone who answered wrong/incorrect, or a troll.

Summary statistics for “X1..The.increases.of.greenhouse.gases.in.the.atmosphere.” using summary() and table() functions in R.  
A score of 3 or 4 on this item indicates that a student is knowledgeable about the most widely known cause of climate change. A score of 0 or 1 would indicate the opposite. 2 out of 17 students got a score of 1 on this item, which indicates that even though they have heard about greenhouse gases, they cannot explain what it is. It is surprising that 2 out of 17 students in a master’s program in a rich liberal country does not have the capability to explain what greenhouse gases are.

Summary statistics for “What.is.your.gender.using” summary() and table() functions in R.

After rescoring all answers, the mode of gender is 3 which indicates that most respondents are male.

c) Composite score on part 1 = total score of all items in part 1 (for each individual). Max score is 28 and indicates a person that is a frequent and proficient user of informational technology. A low score indicates that a person is not a frequent and/or proficient user of informational technology.

Composite score on part 2 = total score of all items in part 2 (for each individual). Max score is 20 and indicates a person that is very knowledgeable about climate change issues. A low score indicates that a person is not knowledgeable about climate change issues.

d) The graphical visualization displays the frequency of composite scores for both part 1 and part 2 according to the new score criteria’s which we have named “Use of technology in everyday life index score” and “Climate change knowledge score”. (Pretend that we have color-coded the total scores for each panel so that it indicates if the total score is 100 - 76 %, 75 – 51 %, 50-26 % or < 25 % of the max total score for each index)

Et bilde som inneholder bord

Automatisk generert beskrivelse