**# R code for** RANDOM EFFECT model

Data: mydata

Models:

Model0: AwarenessStat ~ 1 + (1 | Zone)

Model1: AwarenessStat ~ (1 | Zone) + OrgType

npar AIC BIC logLik deviance Chisq Df

Model0 2 1922.155231 1932.655082 -959.0776155 1918.155231

Model1 3 1924.098590 1939.848367 -959.0492952 1918.098590 0.05664 1

Pr(>Chisq)

Model0

Model1 0.81189

[[2]]

Data: mydata

Models:

Model0: AwarenessStat ~ 1 + (1 | Zone)

Model2: AwarenessStat ~ (1 | Zone) + Sex

npar AIC BIC logLik deviance Chisq Df

Model0 2 1922.155231 1932.655082 -959.0776155 1918.155231

Model2 3 1890.256550 1906.006326 -942.1282748 1884.256550 33.89868 1

Pr(>Chisq)

Model0

Model2 0.0000000058058 \*\*\*

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

[[3]]

Data: mydata

Models:

Model2: AwarenessStat ~ (1 | Zone) + Sex

Model3: AwarenessStat ~ (1 | Zone) + Sex + Agecat

npar AIC BIC logLik deviance Chisq Df

Model2 3 1890.256550 1906.006326 -942.1282748 1884.256550

Model3 5 1884.304709 1910.554336 -937.1523544 1874.304709 9.95184 2

Pr(>Chisq)

Model2

Model3 0.0069022 \*\*

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

[[4]]

Data: mydata

Models:

Model3: AwarenessStat ~ (1 | Zone) + Sex + Agecat

Model4: AwarenessStat ~ (1 | Zone) + Sex + Agecat + MarStatus

npar AIC BIC logLik deviance Chisq Df

Model3 5 1884.304709 1910.554336 -937.1523544 1874.304709

Model4 6 1881.423913 1912.923466 -934.7119566 1869.423913 4.8808 1

Pr(>Chisq)

Model3

Model4 0.027157 \*

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

[[5]]

Data: mydata

Models:

Model4: AwarenessStat ~ (1 | Zone) + Sex + Agecat + MarStatus

Model5: AwarenessStat ~ (1 | Zone) + Sex + Agecat + MarStatus + EduLevele

npar AIC BIC logLik deviance Chisq Df

Model4 6 1881.423913 1912.923466 -934.7119566 1869.423913

Model5 7 1831.786470 1868.535949 -908.8932352 1817.786470 51.63744 1

Pr(>Chisq)

Model4

Model5 0.00000000000066756 \*\*\*

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

[[6]]

Data: mydata

Models:

Model5: AwarenessStat ~ (1 | Zone) + Sex + Agecat + MarStatus + EduLevele

Model6: AwarenessStat ~ (1 | Zone) + Sex + Agecat + MarStatus + EduLevele + Fieldcat

npar AIC BIC logLik deviance Chisq Df

Model5 7 1831.786470 1868.535949 -908.8932352 1817.786470

Model6 13 1814.510546 1882.759578 -894.2552730 1788.510546 29.27592 6

Pr(>Chisq)

Model5

Model6 0.000053941 \*\*\*

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

[[7]]

Data: mydata

Models:

Model5: AwarenessStat ~ (1 | Zone) + Sex + Agecat + MarStatus + EduLevele

Model7: AwarenessStat ~ (1 | Zone) + Sex + Agecat + MarStatus + EduLevele + Expcat

npar AIC BIC logLik deviance Chisq Df

Model5 7 1831.786470 1868.535949 -908.8932352 1817.786470

Model7 10 1834.808369 1887.307625 -907.4041846 1814.808369 2.9781 3

Pr(>Chisq)

Model5

Model7 0.39501

[[8]]

Data: mydata

Models:

Model5: AwarenessStat ~ (1 | Zone) + Sex + Agecat + MarStatus + EduLevele

Model8: AwarenessStat ~ (1 | Zone) + Sex + Agecat + MarStatus + EduLevele + Possition

npar AIC BIC logLik deviance Chisq Df

Model5 7 1831.786470 1868.535949 -908.8932352 1817.786470

Model8 8 1826.099058 1868.098463 -905.0495292 1810.099058 7.68741 1

Pr(>Chisq)

Model5

Model8 0.0055607 \*\*

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

[[9]]

Data: mydata

Models:

Model8: AwarenessStat ~ (1 | Zone) + Sex + Agecat + MarStatus + EduLevele + Possition

Model9: AwarenessStat ~ (1 | Zone) + Sex + Agecat + MarStatus + EduLevele + Possition + AvilStatistician

npar AIC BIC logLik deviance Chisq Df

Model8 8 1826.099058 1868.098463 -905.0495292 1810.099058

Model9 9 1822.858288 1870.107618 -902.4291439 1804.858288 5.24077 1

Pr(>Chisq)

Model8

Model9 0.022064 \*

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

[[10]]

Data: mydata

Models:

Model9: AwarenessStat ~ (1 | Zone) + Sex + Agecat + MarStatus + EduLevele + Possition + AvilStatistician

Model10: AwarenessStat ~ (1 | Zone) + Sex + Agecat + MarStatus + EduLevele + Possition + AvilStatistician + ResearchPractice

npar AIC BIC logLik deviance Chisq Df

Model9 9 1822.858288 1870.107618 -902.4291439 1804.858288

Model10 12 1820.651753 1883.650860 -898.3258767 1796.651753 8.20653 3

Pr(>Chisq)

Model9

Model10 0.041931 \*

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

[[11]]

Data: mydata

Models:

Model10: AwarenessStat ~ (1 | Zone) + Sex + Agecat + MarStatus + EduLevele + Possition + AvilStatistician + ResearchPractice

Model11: AwarenessStat ~ (1 | Zone) + Sex + Agecat + MarStatus + EduLevele + Possition + AvilStatistician + ResearchPractice + statisticalprocedures

npar AIC BIC logLik deviance Chisq Df

Model10 12 1820.651753 1883.650860 -898.3258767 1796.651753

Model11 13 1822.412650 1890.661682 -898.2063249 1796.412650 0.2391 1

Pr(>Chisq)

Model10

Model11 0.62485

[[12]]

Data: mydata

Models:

Model10: AwarenessStat ~ (1 | Zone) + Sex + Agecat + MarStatus + EduLevele + Possition + AvilStatistician + ResearchPractice

Model12: AwarenessStat ~ (1 | Zone) + Sex + Agecat + MarStatus + EduLevele + Possition + AvilStatistician + ResearchPractice + DataHandling

npar AIC BIC logLik deviance Chisq Df

Model10 12 1820.651753 1883.650860 -898.3258767 1796.651753

Model12 15 1824.004195 1902.753078 -897.0020975 1794.004195 2.64756 3

Pr(>Chisq)

Model10

Model12 0.44921

[[13]]

Data: mydata

Models:

Model10: AwarenessStat ~ (1 | Zone) + Sex + Agecat + MarStatus + EduLevele + Possition + AvilStatistician + ResearchPractice

Model13: AwarenessStat ~ (1 | Zone) + Sex + Agecat + MarStatus + EduLevele + Possition + AvilStatistician + ResearchPractice + WayDatAnalysis

npar AIC BIC logLik deviance Chisq Df

Model10 12 1820.651753 1883.650860 -898.3258767 1796.651753

Model13 15 1817.296185 1896.045068 -893.6480923 1787.296185 9.35557 3

Pr(>Chisq)

Model10

Model13 0.024919 \*

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

[[14]]

Data: mydata

Models:

Model13: AwarenessStat ~ (1 | Zone) + Sex + Agecat + MarStatus + EduLevele + Possition + AvilStatistician + ResearchPractice + WayDatAnalysis

Model14: AwarenessStat ~ (1 | Zone) + Sex + Agecat + MarStatus + EduLevele + Possition + AvilStatistician + ResearchPractice + WayDatAnalysis + AsField

npar AIC BIC logLik deviance Chisq Df

Model13 15 1817.296185 1896.045068 -893.6480923 1787.296185

Model14 16 1810.496756 1894.495565 -889.2483783 1778.496756 8.79943 1

Pr(>Chisq)

Model13

Model14 0.0030132 \*\*

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

[[15]]

Data: mydata

Models:

Model14: AwarenessStat ~ (1 | Zone) + Sex + Agecat + MarStatus + EduLevele + Possition + AvilStatistician + ResearchPractice + WayDatAnalysis + AsField

Model15: AwarenessStat ~ (1 | Zone) + Sex + Agecat + MarStatus + EduLevele + Possition + AvilStatistician + ResearchPractice + WayDatAnalysis + AsField + InstStatician

npar AIC BIC logLik deviance Chisq Df

Model14 16 1810.496756 1894.495565 -889.2483783 1778.496756

Model15 17 1812.118695 1901.367429 -889.0593474 1778.118695 0.37806 1

Pr(>Chisq)

Model14

Model15 0.53864

[[16]]

Data: mydata

Models:

Model14: AwarenessStat ~ (1 | Zone) + Sex + Agecat + MarStatus + EduLevele + Possition + AvilStatistician + ResearchPractice + WayDatAnalysis + AsField

Model16: AwarenessStat ~ (1 | Zone) + Sex + Agecat + MarStatus + EduLevele + Possition + AvilStatistician + ResearchPractice + WayDatAnalysis + AsField + Attention

npar AIC BIC logLik deviance Chisq Df

Model14 16 1810.496756 1894.495565 -889.2483783 1778.496756

Model16 18 1810.022205 1904.520865 -887.0111024 1774.022205 4.47455 2

Pr(>Chisq)

Model14

Model16 0.10675

[[17]]

Data: mydata

Models:

Model14: AwarenessStat ~ (1 | Zone) + Sex + Agecat + MarStatus + EduLevele + Possition + AvilStatistician + ResearchPractice + WayDatAnalysis + AsField

Model17: AwarenessStat ~ (1 | Zone) + Sex + Agecat + MarStatus + EduLevele + Possition + AvilStatistician + ResearchPractice + WayDatAnalysis + AsField + SuportResearch

npar AIC BIC logLik deviance Chisq Df

Model14 16 1810.496756 1894.495565 -889.2483783 1778.496756

Model17 17 1812.426912 1901.675646 -889.2134560 1778.426912 0.06984 1

Pr(>Chisq)

Model14

Model17 0.79156

[[18]]

Data: mydata

Models:

Model14: AwarenessStat ~ (1 | Zone) + Sex + Agecat + MarStatus + EduLevele + Possition + AvilStatistician + ResearchPractice + WayDatAnalysis + AsField

Model18: AwarenessStat ~ (1 | Zone) + Sex + Agecat + MarStatus + EduLevele + Possition + AvilStatistician + ResearchPractice + WayDatAnalysis + AsField + workposition

npar AIC BIC logLik deviance Chisq Df

Model14 16 1810.496756 1894.495565 -889.2483783 1778.496756

Model18 17 1806.330072 1895.578806 -886.1650362 1772.330072 6.16668 1

Pr(>Chisq)

Model14

Model18 0.013018 \*

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

[[19]]

Data: mydata

Models:

Model18: AwarenessStat ~ (1 | Zone) + Sex + Agecat + MarStatus + EduLevele + Possition + AvilStatistician + ResearchPractice + WayDatAnalysis + AsField + workposition

Model19: AwarenessStat ~ (1 | Zone) + Sex + Agecat + MarStatus + EduLevele + Possition + AvilStatistician + ResearchPractice + WayDatAnalysis + AsField + workposition + understood

npar AIC BIC logLik deviance Chisq Df

Model18 17 1806.330072 1895.578806 -886.1650362 1772.330072

Model19 18 1807.596937 1902.095596 -885.7984684 1771.596937 0.73314 1

Pr(>Chisq)

Model18

Model19 0.39187

[[20]]

Data: mydata

Models:

Model18: AwarenessStat ~ (1 | Zone) + Sex + Agecat + MarStatus + EduLevele + Possition + AvilStatistician + ResearchPractice + WayDatAnalysis + AsField + workposition

Model20: AwarenessStat ~ (1 | Zone) + Sex + Agecat + MarStatus + EduLevele + Possition + AvilStatistician + ResearchPractice + WayDatAnalysis + AsField + workposition + DegreeLevel

npar AIC BIC logLik deviance Chisq Df

Model18 17 1806.330072 1895.578806 -886.1650362 1772.330072

Model20 18 1807.015639 1901.514298 -885.5078193 1771.015639 1.31443 1

Pr(>Chisq)

Model18

Model20 0.25159

[[21]]

Data: mydata

Models:

Model18: AwarenessStat ~ (1 | Zone) + Sex + Agecat + MarStatus + EduLevele + Possition + AvilStatistician + ResearchPractice + WayDatAnalysis + AsField + workposition

Model21: AwarenessStat ~ (1 | Zone) + Sex + Agecat + MarStatus + EduLevele + Possition + AvilStatistician + ResearchPractice + WayDatAnalysis + AsField + workposition + NeededPlan

npar AIC BIC logLik deviance Chisq Df

Model18 17 1806.330072 1895.578806 -886.1650362 1772.330072

Model21 18 1805.068708 1899.567367 -884.5343537 1769.068708 3.26136 1

Pr(>Chisq)

Model18

Model21 0.07093 .

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

[[22]]

Data: mydata

Models:

Model18: AwarenessStat ~ (1 | Zone) + Sex + Agecat + MarStatus + EduLevele + Possition + AvilStatistician + ResearchPractice + WayDatAnalysis + AsField + workposition

Model22: AwarenessStat ~ (1 | Zone) + Sex + Agecat + MarStatus + EduLevele + Possition + AvilStatistician + ResearchPractice + WayDatAnalysis + AsField + workposition + Access

npar AIC BIC logLik deviance Chisq Df

Model18 17 1806.330072 1895.578806 -886.1650362 1772.330072

Model22 18 1802.206733 1896.705393 -883.1033665 1766.206733 6.12334 1

Pr(>Chisq)

Model18

Model22 0.013341 \*

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

[[23]]

Data: mydata

Models:

Model22: AwarenessStat ~ (1 | Zone) + Sex + Agecat + MarStatus + EduLevele + Possition + AvilStatistician + ResearchPractice + WayDatAnalysis + AsField + workposition + Access

Model23: AwarenessStat ~ (1 | Zone) + Sex + Agecat + MarStatus + EduLevele + Possition + AvilStatistician + ResearchPractice + WayDatAnalysis + AsField + workposition + Access + Apply

npar AIC BIC logLik deviance Chisq Df

Model22 18 1802.206733 1896.705393 -883.1033665 1766.206733

Model23 19 1803.018799 1902.767384 -882.5093994 1765.018799 1.18793 1

Pr(>Chisq)

Model22

Model23 0.27575

[[24]]

Data: mydata

Models:

Model22: AwarenessStat ~ (1 | Zone) + Sex + Agecat + MarStatus + EduLevele + Possition + AvilStatistician + ResearchPractice + WayDatAnalysis + AsField + workposition + Access

Model24: AwarenessStat ~ (1 | Zone) + Sex + Agecat + MarStatus + EduLevele + Possition + AvilStatistician + ResearchPractice + WayDatAnalysis + AsField + workposition + Access + TrianingNeed

npar AIC BIC logLik deviance Chisq Df

Model22 18 1802.206733 1896.705393 -883.1033665 1766.206733

Model24 19 1803.103204 1902.851789 -882.5516021 1765.103204 1.10353 1

Pr(>Chisq)

Model22

Model24 0.29349

[[25]]

Data: mydata

Models:

Model22: AwarenessStat ~ (1 | Zone) + Sex + Agecat + MarStatus + EduLevele + Possition + AvilStatistician + ResearchPractice + WayDatAnalysis + AsField + workposition + Access

Model25: AwarenessStat ~ (1 | Zone) + Sex + Agecat + MarStatus + EduLevele + Possition + AvilStatistician + ResearchPractice + WayDatAnalysis + AsField + workposition + Access + organization

npar AIC BIC logLik deviance Chisq Df

Model22 18 1802.206733 1896.705393 -883.1033665 1766.206733

Model25 29 1789.646614 1941.894455 -865.8233071 1731.646614 34.56012 11

Pr(>Chisq)

Model22

Model25 0.00029277 \*\*\*

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

[[26]]

Data: mydata

Models:

Model25: AwarenessStat ~ (1 | Zone) + Sex + Agecat + MarStatus + EduLevele + Possition + AvilStatistician + ResearchPractice + WayDatAnalysis + AsField + workposition + Access + organization

Model26: AwarenessStat ~ (1 | Zone) + Sex + Agecat + MarStatus + EduLevele + Possition + AvilStatistician + ResearchPractice + WayDatAnalysis + AsField + workposition + Access + organization + Encourage

npar AIC BIC logLik deviance Chisq Df

Model25 29 1789.646614 1941.894455 -865.8233071 1731.646614

Model26 30 1786.569187 1944.066953 -863.2845934 1726.569187 5.07743 1

Pr(>Chisq)

Model25

Model26 0.024239 \*

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

[[27]]

Data: mydata

Models:

Model26: AwarenessStat ~ (1 | Zone) + Sex + Agecat + MarStatus + EduLevele + Possition + AvilStatistician + ResearchPractice + WayDatAnalysis + AsField + workposition + Access + organization + Encourage

Model27: AwarenessStat ~ (1 | Zone) + Sex + Agecat + MarStatus + EduLevele + Possition + AvilStatistician + ResearchPractice + WayDatAnalysis + AsField + workposition + Access + organization + Encourage + Fieldcat

npar AIC BIC logLik deviance Chisq Df

Model26 30 1786.569187 1944.066953 -863.2845934 1726.569187

Model27 36 1772.079072 1961.076391 -850.0395360 1700.079072 26.49011 6

Pr(>Chisq)

Model26

Model27 0.00018038 \*\*\*

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

> #We now rename our final minimal adequate model, test whether it performs significantly better #than the minimal base-line model, and print the regression summary.

> # rename final minimal adequate model

> Model.glmer <- Model26

> # final model better than base-line model

>sigfit<- anova(Model.glmer, Model0, test = "Chi")

> # inspect

>sigfit

Data: mydata

Models:

Model0: AwarenessStat ~ 1 + (1 | Zone)

Model.glmer: AwarenessStat ~ (1 | Zone) + Sex + Agecat + MarStatus + EduLevele + Possition + AvilStatistician + ResearchPractice + WayDatAnalysis + AsField + workposition + Access + organization + Encourage

npar AIC BIC logLik deviance Chisq Df

Model0 2 1922.155231 1932.655082 -959.0776155 1918.155231

Model.glmer 30 1786.569187 1944.066953 -863.2845934 1726.569187 191.58604 28

Pr(>Chisq)

Model0

Model.glmer < 0.000000000000000222 \*\*\*

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

>print(Model.glmer, corr = F)

Generalized linear mixed model fit by maximum likelihood (Laplace

Approximation) [glmerMod]

Family: binomial ( logit )

Formula: AwarenessStat ~ (1 | Zone) + Sex + Agecat + MarStatus + EduLevele +

Possition + AvilStatistician + ResearchPractice + WayDatAnalysis +

AsField + workposition + Access + organization + Encourage

Data: mydata

AIC BIC logLik deviance df.resid

1786.5692 1944.0670 -863.2846 1726.5692 1378

Random effects:

Groups Name Std.Dev.

Zone (Intercept) 0.174230224

Number of obs: 1408, groups: Zone, 8

Fixed Effects:

(Intercept)

1.0100871148

SexFemale

-0.5280366741

Agecat31-40

0.0877893247

AgecatMore than or equal to 41

0.4166364872

MarStatusMarried

-0.4031965014

EduLeveleMSc Degree and above

0.8218590837

Possitionprofetional worker

-0.7745261952

AvilStatisticianNo

0.3009862148

ResearchPracticeUsually

0.1147199418

ResearchPracticeSometimes

0.3131623700

ResearchPracticeNever

-0.1556698398

WayDatAnalysison the interest of hiegher body

0.0383671846

WayDatAnalysisin scientific way with profetionals

0.0678357782

WayDatAnalysisother

0.5038317141

AsFieldNo

-0.6567899296

workpositionNo

-0.3654713019

AccessNo

-0.3182885869

organizationEducation

-0.4752516984

organizationAgriculture

-0.4693791310

organizationAnimal

-0.2156545428

organizationinterprize

-0.9200989456

organizationemployee

-0.8002556498

organizationPublic service

-1.2991776702

organizationTurizm

-1.2670577268

organizationFemales and Chiled

-0.8041254319

organizationwater and enerji

-0.5410683579

organizationDevelopment Association

-0.9633393580

organizationFactories

-0.7029013779

EncourageNo

0.3012251306

> #To extract the effect sizes of the significant fixed effects, we compare the model with that effect #to a model without that effect.

> Model2.Model0 <- anova(Model2, Model0, test = "Chi")

> Model2.Model0

Data: mydata

Models:

Model0: AwarenessStat ~ 1 + (1 | Zone)

Model2: AwarenessStat ~ (1 | Zone) + Sex

npar AIC BIC logLik deviance Chisq Df

Model0 2 1922.155231 1932.655082 -959.0776155 1918.155231

Model2 3 1890.256550 1906.006326 -942.1282748 1884.256550 33.89868 1

Pr(>Chisq)

Model0

Model2 0.0000000058058 \*\*\*---

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

> Model3.Model2<- anova(Model3, Model2, test = "Chi")

> Model3.Model2

Data: mydata

Models:

Model2: AwarenessStat ~ (1 | Zone) + Sex

Model3: AwarenessStat ~ (1 | Zone) + Sex + Agecat

npar AIC BIC logLik deviance Chisq Df

Model2 3 1890.256550 1906.006326 -942.1282748 1884.256550

Model3 5 1884.304709 1910.554336 -937.1523544 1874.304709 9.95184 2

Pr(>Chisq)

Model2

Model3 0.0069022 \*\*---

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

> Model4.Model3<-anova(Model4, Model3, test ="Chi")

> Model4.Model3

Data: mydata

Models:

Model3: AwarenessStat ~ (1 | Zone) + Sex + Agecat

Model4: AwarenessStat ~ (1 | Zone) + Sex + Agecat + MarStatus

npar AIC BIC logLik deviance Chisq Df

Model3 5 1884.304709 1910.554336 -937.1523544 1874.304709

Model4 6 1881.423913 1912.923466 -934.7119566 1869.423913 4.8808 1

Pr(>Chisq)

Model3

Model4 0.027157 \*---

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

> Model5.Model4<- anova(Model5, Model4, test ="Chi")

> Model5.Model4

Data: mydata

Models:

Model4: AwarenessStat ~ (1 | Zone) + Sex + Agecat + MarStatus

Model5: AwarenessStat ~ (1 | Zone) + Sex + Agecat + MarStatus + EduLevele

npar AIC BIC logLik deviance Chisq Df

Model4 6 1881.423913 1912.923466 -934.7119566 1869.423913

Model5 7 1831.786470 1868.535949 -908.8932352 1817.786470 51.63744 1

Pr(>Chisq)

Model4

Model5 0.00000000000066756 \*\*\*---

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

> Model8.Model5<- anova(Model8, Model5, test = "Chi")

> Model8.Model5

Data: mydata

Models:

Model5: AwarenessStat ~ (1 | Zone) + Sex + Agecat + MarStatus + EduLevele

Model8: AwarenessStat ~ (1 | Zone) + Sex + Agecat + MarStatus + EduLevele + Possition

npar AIC BIC logLik deviance Chisq Df

Model5 7 1831.786470 1868.535949 -908.8932352 1817.786470

Model8 8 1826.099058 1868.098463 -905.0495292 1810.099058 7.68741 1

Pr(>Chisq)

Model5

Model8 0.0055607 \*\*---

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

> Model19.Model8<-anova(Model9,Model8, test ="Chi")

> Model19.Model8

Data: mydata

Models:

Model8: AwarenessStat ~ (1 | Zone) + Sex + Agecat + MarStatus + EduLevele + Possition

Model9: AwarenessStat ~ (1 | Zone) + Sex + Agecat + MarStatus + EduLevele + Possition + AvilStatistician

npar AIC BIC logLik deviance Chisq Df

Model8 8 1826.099058 1868.098463 -905.0495292 1810.099058

Model9 9 1822.858288 1870.107618 -902.4291439 1804.858288 5.24077 1

Pr(>Chisq)

Model8

Model9 0.022064 \*

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

> Model110.Model9<-anova(Model10,Model9, test ="Chi")

> Model110.Model9

Data: mydata

Models:

Model9: AwarenessStat ~ (1 | Zone) + Sex + Agecat + MarStatus + EduLevele + Possition + AvilStatistician

Model10: AwarenessStat ~ (1 | Zone) + Sex + Agecat + MarStatus + EduLevele + Possition + AvilStatistician + ResearchPractice

npar AIC BIC logLik deviance Chisq Df

Model9 9 1822.858288 1870.107618 -902.4291439 1804.858288

Model10 12 1820.651753 1883.650860 -898.3258767 1796.651753 8.20653 3

Pr(>Chisq)

Model9

Model10 0.041931 \*

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

> Model13.Model10<- anova(Model13, Model10, test = "Chi")

> Model13.Model10

Data: mydata

Models:

Model10: AwarenessStat ~ (1 | Zone) + Sex + Agecat + MarStatus + EduLevele + Possition + AvilStatistician + ResearchPractice

Model13: AwarenessStat ~ (1 | Zone) + Sex + Agecat + MarStatus + EduLevele + Possition + AvilStatistician + ResearchPractice + WayDatAnalysis

npar AIC BIC logLik deviance Chisq Df

Model10 12 1820.651753 1883.650860 -898.3258767 1796.651753

Model13 15 1817.296185 1896.045068 -893.6480923 1787.296185 9.35557 3

Pr(>Chisq)

Model10

Model13 0.024919 \*

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

> Model14.Model13<- anova(Model14, Model13, test = "Chi")

> Model14.Model13

Data: mydata

Models:

Model13: AwarenessStat ~ (1 | Zone) + Sex + Agecat + MarStatus + EduLevele + Possition + AvilStatistician + ResearchPractice + WayDatAnalysis

Model14: AwarenessStat ~ (1 | Zone) + Sex + Agecat + MarStatus + EduLevele + Possition + AvilStatistician + ResearchPractice + WayDatAnalysis + AsField

npar AIC BIC logLik deviance Chisq Df

Model13 15 1817.296185 1896.045068 -893.6480923 1787.296185

Model14 16 1810.496756 1894.495565 -889.2483783 1778.496756 8.79943 1

Pr(>Chisq)

Model13

Model14 0.0030132 \*\*

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

> Model18.Model14<- anova(Model18, Model14, test = "Chi")

> Model18.Model14

Data: mydata

Models:

Model14: AwarenessStat ~ (1 | Zone) + Sex + Agecat + MarStatus + EduLevele + Possition + AvilStatistician + ResearchPractice + WayDatAnalysis + AsField

Model18: AwarenessStat ~ (1 | Zone) + Sex + Agecat + MarStatus + EduLevele + Possition + AvilStatistician + ResearchPractice + WayDatAnalysis + AsField + workposition

npar AIC BIC logLik deviance Chisq Df

Model14 16 1810.496756 1894.495565 -889.2483783 1778.496756

Model18 17 1806.330072 1895.578806 -886.1650362 1772.330072 6.16668 1

Pr(>Chisq)

Model14

Model18 0.013018 \*

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

> Model22.Model18<- anova(Model22, Model18, test = "Chi")

> Model22.Model18

Data: mydata

Models:

Model18: AwarenessStat ~ (1 | Zone) + Sex + Agecat + MarStatus + EduLevele + Possition + AvilStatistician + ResearchPractice + WayDatAnalysis + AsField + workposition

Model22: AwarenessStat ~ (1 | Zone) + Sex + Agecat + MarStatus + EduLevele + Possition + AvilStatistician + ResearchPractice + WayDatAnalysis + AsField + workposition + Access

npar AIC BIC logLik deviance Chisq Df

Model18 17 1806.330072 1895.578806 -886.1650362 1772.330072

Model22 18 1802.206733 1896.705393 -883.1033665 1766.206733 6.12334 1

Pr(>Chisq)

Model18

Model22 0.013341 \*

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

> Model25.Model22<- anova(Model25, Model22, test = "Chi")

> Model25.Model22

Data: mydata

Models:

Model22: AwarenessStat ~ (1 | Zone) + Sex + Agecat + MarStatus + EduLevele + Possition + AvilStatistician + ResearchPractice + WayDatAnalysis + AsField + workposition + Access

Model25: AwarenessStat ~ (1 | Zone) + Sex + Agecat + MarStatus + EduLevele + Possition + AvilStatistician + ResearchPractice + WayDatAnalysis + AsField + workposition + Access + organization

npar AIC BIC logLik deviance Chisq Df

Model22 18 1802.206733 1896.705393 -883.1033665 1766.206733

Model25 29 1789.646614 1941.894455 -865.8233071 1731.646614 34.56012 11

Pr(>Chisq)

Model22

Model25 0.00029277 \*\*\*

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

> Model26.Model25<- anova(Model26, Model25, test = "Chi")

> Model26.Model25

Data: mydata

Models:

Model25: AwarenessStat ~ (1 | Zone) + Sex + Agecat + MarStatus + EduLevele + Possition + AvilStatistician + ResearchPractice + WayDatAnalysis + AsField + workposition + Access + organization

Model26: AwarenessStat ~ (1 | Zone) + Sex + Agecat + MarStatus + EduLevele + Possition + AvilStatistician + ResearchPractice + WayDatAnalysis + AsField + workposition + Access + organization + Encourage

npar AIC BIC logLik deviance Chisq Df

Model25 29 1789.646614 1941.894455 -865.8233071 1731.646614

Model26 30 1786.569187 1944.066953 -863.2845934 1726.569187 5.07743 1

Pr(>Chisq)

Model25

Model26 0.024239 \*

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

**#The R output for multilevel binary logistic regression Random slop model**

Data: mydata

Models:

Model0: AwarenessStat ~ Sex + EduLevele + AsField + (Sex + EduLevele + AsField | Zone)

Model1: AwarenessStat ~ Sex + EduLevele + AsField + (Sex + EduLevele + AsField | Zone) + OrgType

npar AIC BIC logLik deviance Chisq Df

Model0 14 1841.974050 1915.473007 -906.9870248 1813.974050

Model1 15 1843.396029 1922.144912 -906.6980145 1813.396029 0.57802 1

Pr(>Chisq)

Model0

Model1 0.44709

[[2]]

Data: mydata

Models:

Model0: AwarenessStat ~ Sex + EduLevele + AsField + (Sex + EduLevele + AsField | Zone)

Model2: AwarenessStat ~ Sex + EduLevele + AsField + (Sex + EduLevele + AsField | Zone) + Agecat

npar AIC BIC logLik deviance Chisq Df

Model0 14 1841.974050 1915.473007 -906.9870248 1813.974050

Model2 16 1837.878271 1921.877079 -902.9391354 1805.878271 8.09578 2

Pr(>Chisq)

Model0

Model2 0.017459 \*

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

[[3]]

Data: mydata

Models:

Model2: AwarenessStat ~ Sex + EduLevele + AsField + (Sex + EduLevele + AsField | Zone) + Agecat

Model3: AwarenessStat ~ Sex + EduLevele + AsField + (Sex + EduLevele + AsField | Zone) + Agecat + MarStatus

npar AIC BIC logLik deviance Chisq Df

Model2 16 1837.878271 1921.877079 -902.9391354 1805.878271

Model3 17 1833.551195 1922.799929 -899.7755974 1799.551195 6.32708 1

Pr(>Chisq)

Model2

Model3 0.011891 \*

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

[[4]]

Data: mydata

Models:

Model3: AwarenessStat ~ Sex + EduLevele + AsField + (Sex + EduLevele + AsField | Zone) + Agecat + MarStatus

Model4: AwarenessStat ~ Sex + EduLevele + AsField + (Sex + EduLevele + AsField | Zone) + Agecat + MarStatus + Fieldcat

npar AIC BIC logLik deviance Chisq Df

Model3 17 1833.551195 1922.799929 -899.7755974 1799.551195

Model4 23 1818.170460 1938.918748 -886.0852301 1772.170460 27.38073 6

Pr(>Chisq)

Model3

Model4 0.00012285 \*\*\*

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

[[5]]

Data: mydata

Models:

Model3: AwarenessStat ~ Sex + EduLevele + AsField + (Sex + EduLevele + AsField | Zone) + Agecat + MarStatus

Model5: AwarenessStat ~ Sex + EduLevele + AsField + (Sex + EduLevele + AsField | Zone) + Agecat + MarStatus + Expcat

npar AIC BIC logLik deviance Chisq Df

Model3 17 1833.551195 1922.799929 -899.7755974 1799.551195

Model5 20 1836.866050 1941.864561 -898.4330252 1796.866050 2.68514 3

Pr(>Chisq)

Model3

Model5 0.44276

[[6]]

Data: mydata

Models:

Model3: AwarenessStat ~ Sex + EduLevele + AsField + (Sex + EduLevele + AsField | Zone) + Agecat + MarStatus

Model6: AwarenessStat ~ Sex + EduLevele + AsField + (Sex + EduLevele + AsField | Zone) + Agecat + MarStatus + Possition

npar AIC BIC logLik deviance Chisq Df

Model3 17 1833.551195 1922.799929 -899.7755974 1799.551195

Model6 18 1827.879997 1922.378656 -895.9399983 1791.879997 7.6712 1

Pr(>Chisq)

Model3

Model6 0.0056109 \*\*

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

[[7]]

Data: mydata

Models:

Model6: AwarenessStat ~ Sex + EduLevele + AsField + (Sex + EduLevele + AsField | Zone) + Agecat + MarStatus + Possition

Model7: AwarenessStat ~ Sex + EduLevele + AsField + (Sex + EduLevele + AsField | Zone) + Agecat + MarStatus + Possition + AvilStatistician

npar AIC BIC logLik deviance Chisq Df

Model6 18 1827.879997 1922.378656 -895.9399983 1791.879997

Model7 19 1823.828436 1923.577021 -892.9142178 1785.828436 6.05156 1

Pr(>Chisq)

Model6

Model7 0.013894 \*

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

[[8]]

Data: mydata

Models:

Model7: AwarenessStat ~ Sex + EduLevele + AsField + (Sex + EduLevele + AsField | Zone) + Agecat + MarStatus + Possition + AvilStatistician

Model8: AwarenessStat ~ Sex + EduLevele + AsField + (Sex + EduLevele + AsField | Zone) + Agecat + MarStatus + Possition + AvilStatistician + ResearchPractice

npar AIC BIC logLik deviance Chisq Df

Model7 19 1823.828436 1923.577021 -892.9142178 1785.828436

Model8 22 1820.393983 1935.892345 -888.1969914 1776.393983 9.43445 3

Pr(>Chisq)

Model7

Model8 0.024039 \*

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

[[9]]

Data: mydata

Models:

Model8: AwarenessStat ~ Sex + EduLevele + AsField + (Sex + EduLevele + AsField | Zone) + Agecat + MarStatus + Possition + AvilStatistician + ResearchPractice

Model9: AwarenessStat ~ Sex + EduLevele + AsField + (Sex + EduLevele + AsField | Zone) + Agecat + MarStatus + Possition + AvilStatistician + ResearchPractice + statisticalprocedures

npar AIC BIC logLik deviance Chisq Df

Model8 22 1820.393983 1935.892345 -888.1969914 1776.393983

Model9 23 1822.249153 1942.997440 -888.1245766 1776.249153 0.14483 1

Pr(>Chisq)

Model8

Model9 0.70353

[[10]]

Data: mydata

Models:

Model8: AwarenessStat ~ Sex + EduLevele + AsField + (Sex + EduLevele + AsField | Zone) + Agecat + MarStatus + Possition + AvilStatistician + ResearchPractice

Model10: AwarenessStat ~ Sex + EduLevele + AsField + (Sex + EduLevele + AsField | Zone) + Agecat + MarStatus + Possition + AvilStatistician + ResearchPractice + DataHandling

npar AIC BIC logLik deviance Chisq Df

Model8 22 1820.393983 1935.892345 -888.1969914 1776.393983

Model10 25 1823.579861 1954.827999 -886.7899303 1773.579861 2.81412 3

Pr(>Chisq)

Model8

Model10 0.42118

[[11]]

Data: mydata

Models:

Model8: AwarenessStat ~ Sex + EduLevele + AsField + (Sex + EduLevele + AsField | Zone) + Agecat + MarStatus + Possition + AvilStatistician + ResearchPractice

Model11: AwarenessStat ~ Sex + EduLevele + AsField + (Sex + EduLevele + AsField | Zone) + Agecat + MarStatus + Possition + AvilStatistician + ResearchPractice + WayDatAnalysis

npar AIC BIC logLik deviance Chisq Df

Model8 22 1820.393983 1935.892345 -888.1969914 1776.393983

Model11 25 1817.748135 1948.996273 -883.8740676 1767.748135 8.64585 3

Pr(>Chisq)

Model8

Model11 0.03439 \*

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

[[12]]

Data: mydata

Models:

Model11: AwarenessStat ~ Sex + EduLevele + AsField + (Sex + EduLevele + AsField | Zone) + Agecat + MarStatus + Possition + AvilStatistician + ResearchPractice + WayDatAnalysis

Model12: AwarenessStat ~ Sex + EduLevele + AsField + (Sex + EduLevele + AsField | Zone) + Agecat + MarStatus + Possition + AvilStatistician + ResearchPractice + WayDatAnalysis + InstStatician

npar AIC BIC logLik deviance Chisq Df

Model11 25 1817.748135 1948.996273 -883.8740676 1767.748135

Model12 26 1819.019667 1955.517731 -883.5098336 1767.019667 0.72847 1

Pr(>Chisq)

Model11

Model12 0.39338

[[13]]

Data: mydata

Models:

Model11: AwarenessStat ~ Sex + EduLevele + AsField + (Sex + EduLevele + AsField | Zone) + Agecat + MarStatus + Possition + AvilStatistician + ResearchPractice + WayDatAnalysis

Model13: AwarenessStat ~ Sex + EduLevele + AsField + (Sex + EduLevele + AsField | Zone) + Agecat + MarStatus + Possition + AvilStatistician + ResearchPractice + WayDatAnalysis + Attention

npar AIC BIC logLik deviance Chisq Df

Model11 25 1817.748135 1948.996273 -883.8740676 1767.748135

Model13 27 1815.092370 1956.840360 -880.5461852 1761.092370 6.65576 2

Pr(>Chisq)

Model11

Model13 0.035869 \*

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

[[14]]

Data: mydata

Models:

Model13: AwarenessStat ~ Sex + EduLevele + AsField + (Sex + EduLevele + AsField | Zone) + Agecat + MarStatus + Possition + AvilStatistician + ResearchPractice + WayDatAnalysis + Attention

Model14: AwarenessStat ~ Sex + EduLevele + AsField + (Sex + EduLevele + AsField | Zone) + Agecat + MarStatus + Possition + AvilStatistician + ResearchPractice + WayDatAnalysis + Attention + SuportResearch

npar AIC BIC logLik deviance Chisq Df

Model13 27 1815.092370 1956.840360 -880.5461852 1761.092370

Model14 28 1816.997187 1963.995102 -880.4985935 1760.997187 0.09518 1

Pr(>Chisq)

Model13

Model14 0.75769

[[15]]

Data: mydata

Models:

Model13: AwarenessStat ~ Sex + EduLevele + AsField + (Sex + EduLevele + AsField | Zone) + Agecat + MarStatus + Possition + AvilStatistician + ResearchPractice + WayDatAnalysis + Attention

Model15: AwarenessStat ~ Sex + EduLevele + AsField + (Sex + EduLevele + AsField | Zone) + Agecat + MarStatus + Possition + AvilStatistician + ResearchPractice + WayDatAnalysis + Attention + workposition

npar AIC BIC logLik deviance Chisq Df

Model13 27 1815.092370 1956.840360 -880.5461852 1761.092370

Model15 28 1812.714683 1959.712598 -878.3573417 1756.714683 4.37769 1

Pr(>Chisq)

Model13

Model15 0.036412 \*

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

[[16]]

Data: mydata

Models:

Model15: AwarenessStat ~ Sex + EduLevele + AsField + (Sex + EduLevele + AsField | Zone) + Agecat + MarStatus + Possition + AvilStatistician + ResearchPractice + WayDatAnalysis + Attention + workposition

Model16: AwarenessStat ~ Sex + EduLevele + AsField + (Sex + EduLevele + AsField | Zone) + Agecat + MarStatus + Possition + AvilStatistician + ResearchPractice + WayDatAnalysis + Attention + workposition + understood

npar AIC BIC logLik deviance Chisq Df

Model15 28 1812.714683 1959.712598 -878.3573417 1756.714683

Model16 29 1813.864645 1966.112485 -877.9323224 1755.864645 0.85004 1

Pr(>Chisq)

Model15

Model16 0.35654

[[17]]

Data: mydata

Models:

Model15: AwarenessStat ~ Sex + EduLevele + AsField + (Sex + EduLevele + AsField | Zone) + Agecat + MarStatus + Possition + AvilStatistician + ResearchPractice + WayDatAnalysis + Attention + workposition

Model17: AwarenessStat ~ Sex + EduLevele + AsField + (Sex + EduLevele + AsField | Zone) + Agecat + MarStatus + Possition + AvilStatistician + ResearchPractice + WayDatAnalysis + Attention + workposition + DegreeLevel

npar AIC BIC logLik deviance Chisq Df

Model15 28 1812.714683 1959.712598 -878.3573417 1756.714683

Model17 29 1813.546332 1965.794172 -877.7731658 1755.546332 1.16835 1

Pr(>Chisq)

Model15

Model17 0.27974

[[18]]

Data: mydata

Models:

Model15: AwarenessStat ~ Sex + EduLevele + AsField + (Sex + EduLevele + AsField | Zone) + Agecat + MarStatus + Possition + AvilStatistician + ResearchPractice + WayDatAnalysis + Attention + workposition

Model18: AwarenessStat ~ Sex + EduLevele + AsField + (Sex + EduLevele + AsField | Zone) + Agecat + MarStatus + Possition + AvilStatistician + ResearchPractice + WayDatAnalysis + Attention + workposition + NeededPlan

npar AIC BIC logLik deviance Chisq Df

Model15 28 1812.714683 1959.712598 -878.3573417 1756.714683

Model18 29 1812.348620 1964.596461 -877.1743100 1754.348620 2.36606 1

Pr(>Chisq)

Model15

Model18 0.124

[[19]]

Data: mydata

Models:

Model15: AwarenessStat ~ Sex + EduLevele + AsField + (Sex + EduLevele + AsField | Zone) + Agecat + MarStatus + Possition + AvilStatistician + ResearchPractice + WayDatAnalysis + Attention + workposition

Model19: AwarenessStat ~ Sex + EduLevele + AsField + (Sex + EduLevele + AsField | Zone) + Agecat + MarStatus + Possition + AvilStatistician + ResearchPractice + WayDatAnalysis + Attention + workposition + Access

npar AIC BIC logLik deviance Chisq Df

Model15 28 1812.714683 1959.712598 -878.3573417 1756.714683

Model19 29 1808.310794 1960.558634 -875.1553968 1750.310794 6.40389 1

Pr(>Chisq)

Model15

Model19 0.011387 \*

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

[[20]]

Data: mydata

Models:

Model19: AwarenessStat ~ Sex + EduLevele + AsField + (Sex + EduLevele + AsField | Zone) + Agecat + MarStatus + Possition + AvilStatistician + ResearchPractice + WayDatAnalysis + Attention + workposition + Access

Model20: AwarenessStat ~ Sex + EduLevele + AsField + (Sex + EduLevele + AsField | Zone) + Agecat + MarStatus + Possition + AvilStatistician + ResearchPractice + WayDatAnalysis + Attention + workposition + Access + Apply

npar AIC BIC logLik deviance Chisq Df

Model19 29 1808.310794 1960.558634 -875.1553968 1750.310794

Model20 30 1809.553694 1967.051461 -874.7768472 1749.553694 0.7571 1

Pr(>Chisq)

Model19

Model20 0.38424

[[21]]

Data: mydata

Models:

Model19: AwarenessStat ~ Sex + EduLevele + AsField + (Sex + EduLevele + AsField | Zone) + Agecat + MarStatus + Possition + AvilStatistician + ResearchPractice + WayDatAnalysis + Attention + workposition + Access

Model21: AwarenessStat ~ Sex + EduLevele + AsField + (Sex + EduLevele + AsField | Zone) + Agecat + MarStatus + Possition + AvilStatistician + ResearchPractice + WayDatAnalysis + Attention + workposition + Access + TrianingNeed

npar AIC BIC logLik deviance Chisq Df

Model19 29 1808.310794 1960.558634 -875.1553968 1750.310794

Model21 30 1809.253742 1966.751508 -874.6268710 1749.253742 1.05705 1

Pr(>Chisq)

Model19

Model21 0.30389

[[22]]

Data: mydata

Models:

Model19: AwarenessStat ~ Sex + EduLevele + AsField + (Sex + EduLevele + AsField | Zone) + Agecat + MarStatus + Possition + AvilStatistician + ResearchPractice + WayDatAnalysis + Attention + workposition + Access

Model22: AwarenessStat ~ Sex + EduLevele + AsField + (Sex + EduLevele + AsField | Zone) + Agecat + MarStatus + Possition + AvilStatistician + ResearchPractice + WayDatAnalysis + Attention + workposition + Access + organization

npar AIC BIC logLik deviance Chisq Df

Model19 29 1808.310794 1960.558634 -875.1553968 1750.310794

Model22 40 1796.259674 2006.256695 -858.1298369 1716.259674 34.05112 11

Pr(>Chisq)

Model19

Model22 0.00035479 \*\*\*

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

[[23]]

Data: mydata

Models:

Model22: AwarenessStat ~ Sex + EduLevele + AsField + (Sex + EduLevele + AsField | Zone) + Agecat + MarStatus + Possition + AvilStatistician + ResearchPractice + WayDatAnalysis + Attention + workposition + Access + organization

Model23: AwarenessStat ~ Sex + EduLevele + AsField + (Sex + EduLevele + AsField | Zone) + Agecat + MarStatus + Possition + AvilStatistician + ResearchPractice + WayDatAnalysis + Attention + workposition + Access + organization + Encourage

npar AIC BIC logLik deviance Chisq Df

Model22 40 1796.259674 2006.256695 -858.1298369 1716.259674

Model23 41 1794.697229 2009.944176 -856.3486146 1712.697229 3.56244 1

Pr(>Chisq)

Model22

Model23 0.059101 .

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

[[24]]

Data: mydata

Models:

Model22: AwarenessStat ~ Sex + EduLevele + AsField + (Sex + EduLevele + AsField | Zone) + Agecat + MarStatus + Possition + AvilStatistician + ResearchPractice + WayDatAnalysis + Attention + workposition + Access + organization

Model24: AwarenessStat ~ Sex + EduLevele + AsField + (Sex + EduLevele + AsField | Zone) + Agecat + MarStatus + Possition + AvilStatistician + ResearchPractice + WayDatAnalysis + Attention + workposition + Access + organization + Fieldcat

npar AIC BIC logLik deviance Chisq Df

Model22 40 1796.259674 2006.256695 -858.1298369 1716.259674

Model24 46 1780.460389 2021.956964 -844.2301944 1688.460389 27.79929 6

Pr(>Chisq)

Model22

Model24 0.0001025 \*\*\*

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

> # summary table for model fitting

> Modelft <- Modelft.fttng.swsu(ModelComp)

Error in Modelft.fttng.swsu(ModelComp) :

could not find function "Modelft.fttng.swsu"

> Modelft <- Modelft [,-2]

Error: object 'Modelft' not found

> #We now rename our final minimal adequate model, test whether it performs significantly better #than the minimal base-line model, and print the regression summary.

> # rename final minimal adequate model

> Model.glmer <- Model22

> # final model better than base-line model

>sigfit<- anova(Model.glmer, Model0, test = "Chi")

> # inspect

>sigfit

Data: mydata

Models:

Model0: AwarenessStat ~ Sex + EduLevele + AsField + (Sex + EduLevele + AsField | Zone)

Model.glmer: AwarenessStat ~ Sex + EduLevele + AsField + (Sex + EduLevele + AsField | Zone) + Agecat + MarStatus + Possition + AvilStatistician + ResearchPractice + WayDatAnalysis + Attention + workposition + Access + organization

npar AIC BIC logLik deviance Chisq Df

Model0 14 1841.974050 1915.473007 -906.9870248 1813.974050

Model.glmer 40 1796.259674 2006.256695 -858.1298369 1716.259674 97.71438 26

Pr(>Chisq)

Model0

Model.glmer 0.00000000030706 \*\*\*

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

>print(Model.glmer, corr = F)

Generalized linear mixed model fit by maximum likelihood (Laplace

Approximation) [glmerMod]

Family: binomial ( logit )

Formula: AwarenessStat ~ Sex + EduLevele + AsField + (Sex + EduLevele +

AsField | Zone) + Agecat + MarStatus + Possition + AvilStatistician +

ResearchPractice + WayDatAnalysis + Attention + workposition +

Access + organization

Data: mydata

AIC BIC logLik deviance df.resid

1796.2597 2006.2567 -858.1298 1716.2597 1368

Random effects:

Groups Name Std.Dev. Corr

Zone (Intercept) 0.153204973

SexFemale 0.366469081 -0.3885362

EduLeveleMSc Degree and above 0.450136031 0.5345056 -0.9864380

AsFieldNo 0.216202218 0.1604349 0.8471629

-0.7484637

Number of obs: 1408, groups: Zone, 8

Fixed Effects:

(Intercept)

1.14044182965

SexFemale

-0.60530817034

EduLeveleMSc Degree and above

1.00734239695

AsFieldNo

-0.70977093599

Agecat31-40

0.10009622475

AgecatMore than or equal to 41

0.42892357683

MarStatusMarried

-0.44741522700

Possitionprofetional worker

-0.77539750286

AvilStatisticianNo

0.37175140638

ResearchPracticeUsually

0.17430088189

ResearchPracticeSometimes

0.44078719622

ResearchPracticeNever

-0.09418246514

WayDatAnalysison the interest of hiegher body

0.06061697944

WayDatAnalysisin scientific way with profetionals

0.03671966060

WayDatAnalysisother

0.52083344255

Attentionsome level agree

-0.33975174180

AttentionAgree

-0.00786973416

workpositionNo

-0.26904322417

AccessNo

-0.31206766910

organizationEducation

-0.37053514950

organizationAgriculture

-0.37063442656

organizationAnimal

-0.13314228785

organizationinterprize

-0.80966153621

organizationemployee

-0.72492483928

organizationPublic service

-1.19804229352

organizationTurizm

-1.19901497697

organizationFemales and Chiled

-0.74366916400

organizationwater and enerji

-0.43791616904

organizationDevelopment Association

-0.89520522495

organizationFactories

-0.69138604283

optimizer (bobyqa) convergence code: 0 (OK) ; 1 optimizer warnings; 1 lme4 warnings

> #To extract the effect sizes of the significant fixed effects, we compare the model with that effect #to a model without that effect. This #can be problematic when checking the effect of main effects #that are involved in significant interactions though (Field, Miles, and #Field 2012, 622).

> Model2.Model0 <- anova(Model2, Model0, test = "Chi")

> Model2.Model0

Data: mydata

Models:

Model0: AwarenessStat ~ Sex + EduLevele + AsField + (Sex + EduLevele + AsField | Zone)

Model2: AwarenessStat ~ Sex + EduLevele + AsField + (Sex + EduLevele + AsField | Zone) + Agecat

npar AIC BIC logLik deviance Chisq Df

Model0 14 1841.974050 1915.473007 -906.9870248 1813.974050

Model2 16 1837.878271 1921.877079 -902.9391354 1805.878271 8.09578 2

Pr(>Chisq)

Model0

Model2 0.017459 \*

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

> Model3.Model2<- anova(Model3, Model2, test = "Chi")

> Model3.Model2

Data: mydata

Models:

Model2: AwarenessStat ~ Sex + EduLevele + AsField + (Sex + EduLevele + AsField | Zone) + Agecat

Model3: AwarenessStat ~ Sex + EduLevele + AsField + (Sex + EduLevele + AsField | Zone) + Agecat + MarStatus

npar AIC BIC logLik deviance Chisq Df

Model2 16 1837.878271 1921.877079 -902.9391354 1805.878271

Model3 17 1833.551195 1922.799929 -899.7755974 1799.551195 6.32708 1

Pr(>Chisq)

Model2

Model3 0.011891 \*

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

> Model6.Model3<- anova(Model6, Model3, test = "Chi")

> Model6.Model3

Data: mydata

Models:

Model3: AwarenessStat ~ Sex + EduLevele + AsField + (Sex + EduLevele + AsField | Zone) + Agecat + MarStatus

Model6: AwarenessStat ~ Sex + EduLevele + AsField + (Sex + EduLevele + AsField | Zone) + Agecat + MarStatus + Possition

npar AIC BIC logLik deviance Chisq Df

Model3 17 1833.551195 1922.799929 -899.7755974 1799.551195

Model6 18 1827.879997 1922.378656 -895.9399983 1791.879997 7.6712 1

Pr(>Chisq)

Model3

Model6 0.0056109 \*\*

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

> Model17.Model6<-anova(Model7,Model6, test ="Chi")

> Model17.Model6

Data: mydata

Models:

Model6: AwarenessStat ~ Sex + EduLevele + AsField + (Sex + EduLevele + AsField | Zone) + Agecat + MarStatus + Possition

Model7: AwarenessStat ~ Sex + EduLevele + AsField + (Sex + EduLevele + AsField | Zone) + Agecat + MarStatus + Possition + AvilStatistician

npar AIC BIC logLik deviance Chisq Df

Model6 18 1827.879997 1922.378656 -895.9399983 1791.879997

Model7 19 1823.828436 1923.577021 -892.9142178 1785.828436 6.05156 1

Pr(>Chisq)

Model6

Model7 0.013894 \*

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

> Model18.Model7<-anova(Model8,Model7, test ="Chi")

> Model18.Model7

Data: mydata

Models:

Model7: AwarenessStat ~ Sex + EduLevele + AsField + (Sex + EduLevele + AsField | Zone) + Agecat + MarStatus + Possition + AvilStatistician

Model8: AwarenessStat ~ Sex + EduLevele + AsField + (Sex + EduLevele + AsField | Zone) + Agecat + MarStatus + Possition + AvilStatistician + ResearchPractice

npar AIC BIC logLik deviance Chisq Df

Model7 19 1823.828436 1923.577021 -892.9142178 1785.828436

Model8 22 1820.393983 1935.892345 -888.1969914 1776.393983 9.43445 3

Pr(>Chisq)

Model7

Model8 0.024039 \*

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

> Model11.Model8<- anova(Model11, Model8, test = "Chi")

> Model11.Model8

Data: mydata

Models:

Model8: AwarenessStat ~ Sex + EduLevele + AsField + (Sex + EduLevele + AsField | Zone) + Agecat + MarStatus + Possition + AvilStatistician + ResearchPractice

Model11: AwarenessStat ~ Sex + EduLevele + AsField + (Sex + EduLevele + AsField | Zone) + Agecat + MarStatus + Possition + AvilStatistician + ResearchPractice + WayDatAnalysis

npar AIC BIC logLik deviance Chisq Df

Model8 22 1820.393983 1935.892345 -888.1969914 1776.393983

Model11 25 1817.748135 1948.996273 -883.8740676 1767.748135 8.64585 3

Pr(>Chisq)

Model8

Model11 0.03439 \*

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

> Model13.Model11<- anova(Model13, Model11, test = "Chi")

> Model13.Model11

Data: mydata

Models:

Model11: AwarenessStat ~ Sex + EduLevele + AsField + (Sex + EduLevele + AsField | Zone) + Agecat + MarStatus + Possition + AvilStatistician + ResearchPractice + WayDatAnalysis

Model13: AwarenessStat ~ Sex + EduLevele + AsField + (Sex + EduLevele + AsField | Zone) + Agecat + MarStatus + Possition + AvilStatistician + ResearchPractice + WayDatAnalysis + Attention

npar AIC BIC logLik deviance Chisq Df

Model11 25 1817.748135 1948.996273 -883.8740676 1767.748135

Model13 27 1815.092370 1956.840360 -880.5461852 1761.092370 6.65576 2

Pr(>Chisq)

Model11

Model13 0.035869 \*

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

> Model15.Model13<- anova(Model15, Model13, test = "Chi")

> Model15.Model13

Data: mydata

Models:

Model13: AwarenessStat ~ Sex + EduLevele + AsField + (Sex + EduLevele + AsField | Zone) + Agecat + MarStatus + Possition + AvilStatistician + ResearchPractice + WayDatAnalysis + Attention

Model15: AwarenessStat ~ Sex + EduLevele + AsField + (Sex + EduLevele + AsField | Zone) + Agecat + MarStatus + Possition + AvilStatistician + ResearchPractice + WayDatAnalysis + Attention + workposition

npar AIC BIC logLik deviance Chisq Df

Model13 27 1815.092370 1956.840360 -880.5461852 1761.092370

Model15 28 1812.714683 1959.712598 -878.3573417 1756.714683 4.37769 1

Pr(>Chisq)

Model13

Model15 0.036412 \*

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

> Model19.Model15<- anova(Model19, Model15, test = "Chi")

> Model19.Model15

Data: mydata

Models:

Model15: AwarenessStat ~ Sex + EduLevele + AsField + (Sex + EduLevele + AsField | Zone) + Agecat + MarStatus + Possition + AvilStatistician + ResearchPractice + WayDatAnalysis + Attention + workposition

Model19: AwarenessStat ~ Sex + EduLevele + AsField + (Sex + EduLevele + AsField | Zone) + Agecat + MarStatus + Possition + AvilStatistician + ResearchPractice + WayDatAnalysis + Attention + workposition + Access

npar AIC BIC logLik deviance Chisq Df

Model15 28 1812.714683 1959.712598 -878.3573417 1756.714683

Model19 29 1808.310794 1960.558634 -875.1553968 1750.310794 6.40389 1

Pr(>Chisq)

Model15

Model19 0.011387 \*

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Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

> Model22.Model19<- anova(Model22, Model19, test = "Chi")

> Model22.Model19

Data: mydata

Models:

Model19: AwarenessStat ~ Sex + EduLevele + AsField + (Sex + EduLevele + AsField | Zone) + Agecat + MarStatus + Possition + AvilStatistician + ResearchPractice + WayDatAnalysis + Attention + workposition + Access

Model22: AwarenessStat ~ Sex + EduLevele + AsField + (Sex + EduLevele + AsField | Zone) + Agecat + MarStatus + Possition + AvilStatistician + ResearchPractice + WayDatAnalysis + Attention + workposition + Access + organization

npar AIC BIC logLik deviance Chisq Df

Model19 29 1808.310794 1960.558634 -875.1553968 1750.310794

Model22 40 1796.259674 2006.256695 -858.1298369 1716.259674 34.05112 11

Pr(>Chisq)

Model19

Model22 0.00035479 \*\*\*

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

> Model24.Model22<- anova(Model24, Model22, test = "Chi")

> Model24.Model22

Data: mydata

Models:

Model22: AwarenessStat ~ Sex + EduLevele + AsField + (Sex + EduLevele + AsField | Zone) + Agecat + MarStatus + Possition + AvilStatistician + ResearchPractice + WayDatAnalysis + Attention + workposition + Access + organization

Model24: AwarenessStat ~ Sex + EduLevele + AsField + (Sex + EduLevele + AsField | Zone) + Agecat + MarStatus + Possition + AvilStatistician + ResearchPractice + WayDatAnalysis + Attention + workposition + Access + organization + Fieldcat

npar AIC BIC logLik deviance Chisq Df

Model22 40 1796.259674 2006.256695 -858.1298369 1716.259674

Model24 46 1780.460389 2021.956964 -844.2301944 1688.460389 27.79929 6

Pr(>Chisq)

Model22

Model24 0.0001025 \*\*\*

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

summary(Model.glmer)

Generalized linear mixed model fit by maximum likelihood (Laplace

Approximation) [glmerMod]

Family: binomial ( logit )

Formula: AwarenessStat ~ Sex + EduLevele + AsField + (Sex + EduLevele +

AsField | Zone) + Agecat + MarStatus + Possition + AvilStatistician +

ResearchPractice + WayDatAnalysis + Attention + workposition +

Access + organization

Data: mydata

Control: glmerControl(optimizer = "bobyqa")

AIC BIC logLik deviance df.resid

1796.3 2006.3 -858.1 1716.3 1368

Scaled residuals:

Min 1Q Median 3Q Max

-2.473472878 -0.779548235 -0.465698693 0.913450824 3.248037550

Random effects:

Groups Name Variance Std.Dev. Corr

Zone (Intercept) 0.0234717636 0.153204973

SexFemale 0.1342995877 0.366469081 -0.3885362

EduLeveleMSc Degree and above 0.2026224467 0.450136031 0.5345056

AsFieldNo 0.0467433992 0.216202218 0.1604349

-0.9864380

0.8471629 -0.7484637

Number of obs: 1408, groups: Zone, 8

Fixed effects:

Estimate Std. Error

(Intercept) 1.14044182965 0.41058785012

SexFemale -0.60530817034 0.19498870231

EduLeveleMSc Degree and above 1.00734239695 0.23788575348

AsFieldNo -0.70977093599 0.26240496756

Agecat31-40 0.10009622475 0.15048361412

AgecatMore than or equal to 41 0.42892357683 0.17789188894

MarStatusMarried -0.44741522700 0.15893065381

Possitionprofetional worker -0.77539750286 0.25147541569

AvilStatisticianNo 0.37175140638 0.13587515934

ResearchPracticeUsually 0.17430088189 0.19279269420

ResearchPracticeSometimes 0.44078719622 0.20991858341

ResearchPracticeNever -0.09418246514 0.20590570065

WayDatAnalysison the interest of hiegher body 0.06061697944 0.16702866967

WayDatAnalysisin scientific way with profetionals 0.03671966060 0.16309718345

WayDatAnalysisother 0.52083344255 0.21078786465

Attentionsome level agree -0.33975174180 0.13063826198

AttentionAgree -0.00786973416 0.20521569257

workpositionNo -0.26904322417 0.14976768797

AccessNo -0.31206766910 0.14163863312

organizationEducation -0.37053514950 0.29108482409

organizationAgriculture -0.37063442656 0.24490571458

organizationAnimal -0.13314228785 0.28766307615

organizationinterprize -0.80966153621 0.24859568168

organizationemployee -0.72492483928 0.30542285211

organizationPublic service -1.19804229352 0.34304974468

organizationTurizm -1.19901497697 0.30060993469

organizationFemales and Chiled -0.74366916400 0.29379733116

organizationwater and enerji -0.43791616904 0.26474491620

organizationDevelopment Association -0.89520522495 0.33769272813

organizationFactories -0.69138604283 0.35383200959

z value Pr(>|z|)

(Intercept) 2.77758 0.00547649 \*\*

SexFemale -3.10432 0.00190714 \*\*

EduLeveleMSc Degree and above 4.23456 0.000022900 \*\*\*

AsFieldNo -2.70487 0.00683314 \*\*

Agecat31-40 0.66516 0.50594585

AgecatMore than or equal to 41 2.41115 0.01590242 \*

MarStatusMarried -2.81516 0.00487529 \*\*

Possitionprofetional worker -3.08339 0.00204655 \*\*

AvilStatisticianNo 2.73598 0.00621952 \*\*

ResearchPracticeUsually 0.90408 0.36595061

ResearchPracticeSometimes 2.09980 0.03574637 \*

ResearchPracticeNever -0.45741 0.64737938

WayDatAnalysison the interest of hiegher body 0.36291 0.71666941

WayDatAnalysisin scientific way with profetionals 0.22514 0.82187055

WayDatAnalysisother 2.47089 0.01347776 \*

Attentionsome level agree -2.60071 0.00930321 \*\*

AttentionAgree -0.03835 0.96940974

workpositionNo -1.79640 0.07243034 .

AccessNo -2.20327 0.02757596 \*

organizationEducation -1.27295 0.20303734

organizationAgriculture -1.51338 0.13018418

organizationAnimal -0.46284 0.64347829

organizationinterprize -3.25694 0.00112620 \*\*

organizationemployee -2.37351 0.01761982 \*

organizationPublic service -3.49233 0.00047883 \*\*\*

organizationTurizm -3.98861 0.000066462 \*\*\*

organizationFemales and Chiled -2.53123 0.01136627 \*

organizationwater and enerji -1.65411 0.09810597 .

organizationDevelopment Association -2.65095 0.00802666 \*\*

organizationFactories -1.95400 0.05070179 .

Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Correlation matrix not shown by default, as p = 30 > 12.

Use print(x, correlation=TRUE) or

vcov(x) if you need it

optimizer (bobyqa) convergence code: 0 (OK)

boundary (singular) fit: see help('isSingular')

maxfun< 10 \* length(par)^2 is not recommended.