Dear students,
open the data „preexam.sav" and complete following tasks. Good luck!:)

1. Run the logistic regression model (analyse-logistic-binary logistic) explaining work satisfaction (SAT=dependent variable) with gender (SEX=independent variable, women as a reference group)

a) What is the average **sample** difference in odds of being satisfied among men compared to women? (2 p.)

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.fo Lower
Step 1a	Sex of Respondent(1)	,098	,024	16,507	1	,000	1,103	1,052
	Constant	-,260	,017	229,455	1	,000	,771	

a. Variable(s) entered on step 1: Sex of Respondent.

A: Sample difference in odds of being satisfied among men compared to women is 1,103. Men have 1,103 times higher odds of being satisfied compared to females. Men have about 10 percent higher odds of being satisfied compared to females.

b) What is the average **population** difference in odds of being satisfied among men compared to women? (2 p.)

95% C.I.for EXP(B)	
Lower	Upper
1,052	1,156

A: Population difference in odds of being satisfied among men compared to women is from 1,052 to 1,156 with 95 percent probability. With 95 percent probability, in population, men have from 1,052 to 1,156 times higher odds of being satisfied compared to females. With 95 percent probability, men have from about 5 to 15 percent higher odds of being satisfied compared to females.

c) How good is this model (including SEX) compared to empty model (excluding SEX) based on LL comparison? (2 p.)

Solution:

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	16,513	1	,000
	Block	16,513	1	,000
	Model	16,513	1	,000

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	38510,444[a]	,001	,001

a. Estimation terminated at iteration number 3 because para-
meter estimates changed by less than ,001.

LL1: 38510,444[a]

Diff.: 16,513
LL0: 38510,444[a] + 16,513 = 38526,96

A: Model with SEX as the only independent variable is 16,513 better compared to empty model.

1. Add the education variable (EDUC) as the second independent variable to the model („no education" category as a reference group).
   d) What is the average **sample** difference in odds of being satisfied among people with highest education compared to people with no education? (2 p.)

Variables in the Equation

	B	S.E.	Wald	df	Sig.	Exp(B)	95% Lowe
Step 1[a] Sex of Respondent(1)	,109	,024	19,996	1	,000	1,115	1
Highest completed education level: Categories for international comparison			141,202	6	,000		
Highest completed education level: Categories for international comparison(1)	,374	,094	15,903	1	,000	1,454	1
Highest completed education level: Categories for international comparison(2)	,174	,077	5,117	1	,024	1,190	1
Highest completed education level: Categories for international comparison(3)	-,080	,076	1,110	1	,292	,923	
Highest completed education level: Categories for international comparison(4)	,234	,078	9,007	1	,003	1,264	1
Highest completed education level: Categories for international comparison(5)	,210	,076	7,578	1	,006	1,233	1

Highest completed education level: Categories for international comparison(6)	,309	,079	15,413	1	,000	1,363	1
Constant	-,415	,073	32,402	1	,000	,661	

a. Variable(s) entered on step 1: Highest completed education level: Categories for international comparison.

A: *The average **sample** difference in odds of being satisfied among people with highest education compared to people with no education is 1,363. In particular, people with highest education have 1,363 times higher odds of being satisfied compared to no educated people. In other words, people with highest education have about 36 percent higher odds of being satisfied compared to no educated people.*

e) How good is this model (including SEX and EDUC) compared to previous model (with SEX only) based on LL comparison? (2 p.)

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	142,413	6	,000
	Block	142,413	6	,000
	Model	159,115	7	,000

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	38000,160ª	,006	,008

a. Estimation terminated at iteration number 3 because para-meter estimates changed by less than ,001.

LL2 (sex+educ) = 38000
LL1 (sex) = 38000 + 142,413 = 38142,413
Diff: 142,413

A: *Model with SEX and EDUC is 142,413 better compared to model with SEX only.*