LinearModelReporting.R

GlennTattersall

2019-04-22

# Summary of Regression / Linear Models as HTML Table  
  
# Source: https://strengejacke.github.io/sjPlot/articles/tab\_model\_estimates.html#a-simple-html-table-from-regression-results  
  
# tab\_model() is the pendant to plot\_model(), however, instead of creating   
# plots, tab\_model() creates HTML-tables that will be displayed either in your   
# IDE's viewer-pane, in a web browser or in a knitr-markdown-document   
  
# HTML is the only output-format, you can't (directly) create a LaTex or PDF   
# output from tab\_model() and related table-functions. However, it is possible  
# to easily export the tables into Microsoft Word or Libre Office Writer.  
  
# This vignette shows how to create table from regression models with tab\_model().   
  
# Note. Due to the custom CSS, the layout of the table inside a  
# knitr-document differs from the output in the viewer-pane and web browser.  
  
# Install packages in this order:  
# sjlabelled -> sjmisc -> sjstats -> ggeffects -> sjPlot  
  
  
# load packages  
library(sjPlot)  
library(sjmisc)  
library(sjlabelled)  
  
## sample data  
data(efc)  
efc <- as\_factor(efc, c161sex, c172code)  
  
# A simple HTML table from regression results  
# First, we fit two linear models to demonstrate the tab\_model()-function.  
  
m1 <- lm(barthtot ~ c160age + c12hour + c161sex + c172code, data = efc)  
m2 <- lm(neg\_c\_7 ~ c160age + c12hour + c161sex + e17age, data = efc)  
  
# The simplest way of producing the table output is by passing the fitted model  
# as parameter. By default, estimates, confidence intervals (CI) and p-values   
# (p) are reported. As summary, the numbers of observations as well as the   
# R-squared values are shown.  
  
summary(m1)

##   
## Call:  
## lm(formula = barthtot ~ c160age + c12hour + c161sex + c172code,   
## data = efc)  
##   
## Residuals:  
## Min 1Q Median 3Q Max   
## -75.144 -14.944 4.401 18.661 72.393   
##   
## Coefficients:  
## Estimate Std. Error t value Pr(>|t|)   
## (Intercept) 87.14994 4.68009 18.621 < 2e-16 \*\*\*  
## c160age -0.20716 0.07211 -2.873 0.00418 \*\*   
## c12hour -0.27883 0.01865 -14.950 < 2e-16 \*\*\*  
## c161sex2 -0.39402 2.08893 -0.189 0.85044   
## c172code2 1.36596 2.28440 0.598 0.55004   
## c172code3 -1.64045 2.84037 -0.578 0.56373   
## ---  
## Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1  
##   
## Residual standard error: 25.35 on 815 degrees of freedom  
## (87 observations deleted due to missingness)  
## Multiple R-squared: 0.2708, Adjusted R-squared: 0.2664   
## F-statistic: 60.54 on 5 and 815 DF, p-value: < 2.2e-16

# compare summary to tab\_model:  
tab\_model(m1)

Total score BARTHEL INDEX

Predictors

Estimates

CI

p

(Intercept)

87.15

77.98 – 96.32

<0.001

carer’age

-0.21

-0.35 – -0.07

0.004

average number of hoursof care per week

-0.28

-0.32 – -0.24

<0.001

Female

-0.39

-4.49 – 3.70

0.850

intermediate level ofeducation

1.37

-3.11 – 5.84

0.550

high level of education

-1.64

-7.21 – 3.93

0.564

Observations

821

R2 / adjusted R2

0.271 / 0.266

# Automatic labelling  
colnames(efc)

## [1] "c12hour" "e15relat" "e16sex" "e17age" "e42dep" "c82cop1"   
## [7] "c83cop2" "c84cop3" "c85cop4" "c86cop5" "c87cop6" "c88cop7"   
## [13] "c89cop8" "c90cop9" "c160age" "c161sex" "c172code" "c175empl"  
## [19] "barthtot" "neg\_c\_7" "pos\_v\_4" "quol\_5" "resttotn" "tot\_sc\_e"  
## [25] "n4pstu" "nur\_pst"

# columns look like quite unremarkable features, but look closely:  
str(efc$c160age)

## num [1:908] 56 54 80 69 47 56 61 67 59 49 ...  
## - attr(\*, "label")= chr "carer' age"

str(efc$c12hour)

## num [1:908] 16 148 70 168 168 16 161 110 28 40 ...  
## - attr(\*, "label")= chr "average number of hours of care per week"

# As the sjPlot-packages features labelled data, the coefficients in the table  
# are already labelled in this example. The name of the dependent variable(s)   
# is used as main column header for each model. For non-labelled data, the   
# coefficient names are shown.  
  
# Turn off automatic labelling  
# To turn off automatic labelling, use auto.label = FALSE, or provide an empty  
# character vector for pred.labels and dv.labels.  
  
tab\_model(m1, auto.label = FALSE)

barthtot

Predictors

Estimates

CI

p

(Intercept)

87.15

77.98 – 96.32

<0.001

c160age

-0.21

-0.35 – -0.07

0.004

c12hour

-0.28

-0.32 – -0.24

<0.001

c161sex2

-0.39

-4.49 – 3.70

0.850

c172code2

1.37

-3.11 – 5.84

0.550

c172code3

-1.64

-7.21 – 3.93

0.564

Observations

821

R2 / adjusted R2

0.271 / 0.266

# some categorical data are already sufficient  
data(mtcars)  
m.mtcars <- lm(mpg ~ cyl + hp + wt, data = mtcars)  
tab\_model(m.mtcars)

mpg

Predictors

Estimates

CI

p

(Intercept)

38.75

35.25 – 42.25

<0.001

cyl

-0.94

-2.02 – 0.14

0.098

hp

-0.02

-0.04 – 0.01

0.140

wt

-3.17

-4.62 – -1.72

<0.001

Observations

32

R2 / adjusted R2

0.843 / 0.826

# but maybe you want to add details, you can do so manually. Note you need to   
# specify the intercept predictor as well in a linear model:  
tab\_model(m.mtcars,   
 pred.labels=c("(Intercept)", "Cylinders", "Horse Power", "Weight"))

mpg

Predictors

Estimates

CI

p

(Intercept)

38.75

35.25 – 42.25

<0.001

Cylinders

-0.94

-2.02 – 0.14

0.098

Horse Power

-0.02

-0.04 – 0.01

0.140

Weight

-3.17

-4.62 – -1.72

<0.001

Observations

32

R2 / adjusted R2

0.843 / 0.826

# What to do about model intercept?  
# You can forcibly remove the intercept, at which point, the intercept effect  
# simply becomes encapsulated into one of the main categorical variables.  
m1.0 <- lm(barthtot ~ c160age + c12hour + c161sex + c172code - 1, data = efc)  
tab\_model(m1)

Total score BARTHEL INDEX

Predictors

Estimates

CI

p

(Intercept)

87.15

77.98 – 96.32

<0.001

carer’age

-0.21

-0.35 – -0.07

0.004

average number of hoursof care per week

-0.28

-0.32 – -0.24

<0.001

Female

-0.39

-4.49 – 3.70

0.850

intermediate level ofeducation

1.37

-3.11 – 5.84

0.550

high level of education

-1.64

-7.21 – 3.93

0.564

Observations

821

R2 / adjusted R2

0.271 / 0.266

tab\_model(m1.0)

Total score BARTHEL INDEX

Predictors

Estimates

CI

p

carer’age

-0.21

-0.35 – -0.07

0.004

average number of hoursof care per week

-0.28

-0.32 – -0.24

<0.001

Male

87.15

77.98 – 96.32

<0.001

Female

86.76

78.00 – 95.51

<0.001

intermediate level ofeducation

1.37

-3.11 – 5.84

0.550

high level of education

-1.64

-7.21 – 3.93

0.564

Observations

821

R2 / adjusted R2

0.874 / 0.873

# More than one model  
# tab\_model() can print multiple models at once, which are then printed   
# side-by-side. Identical predictor coefficients are matched in a row.  
tab\_model(m1, m2)

Total score BARTHEL INDEX

Negative impact with 7items

Predictors

Estimates

CI

p

Estimates

CI

p

(Intercept)

87.15

77.98 – 96.32

<0.001

9.83

7.34 – 12.33

<0.001

carer’age

-0.21

-0.35 – -0.07

0.004

0.01

-0.01 – 0.03

0.359

average number of hoursof care per week

-0.28

-0.32 – -0.24

<0.001

0.02

0.01 – 0.02

<0.001

Female

-0.39

-4.49 – 3.70

0.850

0.43

-0.15 – 1.01

0.147

intermediate level ofeducation

1.37

-3.11 – 5.84

0.550

high level of education

-1.64

-7.21 – 3.93

0.564

elder’age

0.01

-0.03 – 0.04

0.741

Observations

821

879

R2 / adjusted R2

0.271 / 0.266

0.067 / 0.063

# Generalized linear models  
# For generalized linear models, the ouput is slightly adapted.   
# Instead of Estimates, the column is named Odds Ratios, Incidence Rate Ratios  
# etc., depending on the model.   
# The coefficients are, by default, automatically  
# converted (exponentiated). Furthermore, pseudo R-squared statistics are   
# shown in the summary.  
  
m3 <- glm(  
 tot\_sc\_e ~ c160age + c12hour + c161sex + c172code,   
 data = efc, family = poisson(link = "log")  
)  
  
efc$neg\_c\_7d <- ifelse(efc$neg\_c\_7 < median(efc$neg\_c\_7, na.rm = TRUE), 0, 1)  
  
m4 <- glm(  
 neg\_c\_7d ~ c161sex + barthtot + c172code,  
 data = efc, family = binomial(link = "logit")  
)  
  
tab\_model(m3, m4)

Services for elderly

neg c 7 d

Predictors

Incidence Rate Ratios

CI

p

Odds Ratios

CI

p

(Intercept)

0.30

0.21 – 0.45

<0.001

6.54

3.62 – 11.81

<0.001

carer’age

1.01

1.01 – 1.02

<0.001

average number of hoursof care per week

1.00

1.00 – 1.00

<0.001

Female

1.01

0.86 – 1.19

0.867

1.87

1.30 – 2.68

0.001

intermediate level ofeducation

1.47

1.21 – 1.78

<0.001

1.23

0.84 – 1.82

0.288

high level of education

1.90

1.52 – 2.37

<0.001

1.37

0.84 – 2.23

0.204

Total score BARTHEL INDEX

0.97

0.96 – 0.97

<0.001

Observations

840

815

Cox & Snell’s R2 / Nagelkerke’s R2

0.083 / 0.106

0.184 / 0.247

# Untransformed estimates on the linear scale  
# To plot the estimates on the linear scale, use transform = NULL.  
tab\_model(m3, m4, transform = NULL, auto.label = T)

Services for elderly

neg c 7 d

Predictors

Log-Mean

CI

p

Log-Odds

CI

p

(Intercept)

-1.19

-1.58 – -0.80

<0.001

1.88

1.29 – 2.47

<0.001

carer’age

0.01

0.01 – 0.02

<0.001

average number of hoursof care per week

0.00

0.00 – 0.00

<0.001

Female

0.01

-0.15 – 0.17

0.867

0.63

0.26 – 0.99

0.001

intermediate level ofeducation

0.39

0.19 – 0.58

<0.001

0.21

-0.18 – 0.60

0.288

high level of education

0.64

0.42 – 0.86

<0.001

0.31

-0.17 – 0.80

0.204

Total score BARTHEL INDEX

-0.03

-0.04 – -0.03

<0.001

Observations

840

815

Cox & Snell’s R2 / Nagelkerke’s R2

0.083 / 0.106

0.184 / 0.247

# More complex models  
# Other models, like hurdle- or zero-inflated models, also work with tab\_model().  
# In this case, the zero inflation model is indicated in the table.  
# Use show.zeroinf = FALSE to hide this part from the table.  
  
library(pscl)

## Classes and Methods for R developed in the  
## Political Science Computational Laboratory  
## Department of Political Science  
## Stanford University  
## Simon Jackman  
## hurdle and zeroinfl functions by Achim Zeileis

data(bioChemists)  
  
m5 <- zeroinfl(art ~ . | ., data = bioChemists)  
tab\_model(m5)

Dependent variable

Predictors

Incidence Rate Ratios

CI

p

(Intercept)

1.90

1.50 – 2.41

<0.001

femWomen

0.81

0.72 – 0.92

0.001

marMarried

1.11

0.97 – 1.28

0.145

kid5

0.87

0.79 – 0.95

0.003

phd

0.99

0.94 – 1.06

0.842

ment

1.02

1.01 – 1.02

<0.001

Zero-Inflated Model

(Intercept)

0.56

0.21 – 1.52

0.257

femWomen

1.12

0.64 – 1.93

0.695

marMarried

0.70

0.38 – 1.31

0.265

kid5

1.24

0.85 – 1.83

0.269

phd

1.00

0.75 – 1.33

0.993

ment

0.87

0.80 – 0.96

0.003

tab\_model(m5, show.zeroinf = F)

Dependent variable

Predictors

Incidence Rate Ratios

CI

p

(Intercept)

1.90

1.50 – 2.41

<0.001

femWomen

0.81

0.72 – 0.92

0.001

marMarried

1.11

0.97 – 1.28

0.145

kid5

0.87

0.79 – 0.95

0.003

phd

0.99

0.94 – 1.06

0.842

ment

1.02

1.01 – 1.02

<0.001

# You can combine any model in one table.  
  
tab\_model(m1, m3, auto.label = FALSE)

barthtot

tot\_sc\_e

Predictors

Estimates

CI

p

Incidence Rate Ratios

CI

p

(Intercept)

87.15

77.98 – 96.32

<0.001

0.30

0.21 – 0.45

<0.001

c160age

-0.21

-0.35 – -0.07

0.004

1.01

1.01 – 1.02

<0.001

c12hour

-0.28

-0.32 – -0.24

<0.001

1.00

1.00 – 1.00

<0.001

c161sex2

-0.39

-4.49 – 3.70

0.850

1.01

0.86 – 1.19

0.867

c172code2

1.37

-3.11 – 5.84

0.550

1.47

1.21 – 1.78

<0.001

c172code3

-1.64

-7.21 – 3.93

0.564

1.90

1.52 – 2.37

<0.001

Observations

821

840

R2 / adjusted R2

0.271 / 0.266

0.083 / 0.106

# Show or hide further columns  
# tab\_model() has some argument that allow to show or hide specific columns   
# from the output:  
  
# show.est to show/hide the column with model estimates.  
tab\_model(m1, m3, auto.label = FALSE, show.est=FALSE)

barthtot

tot\_sc\_e

Predictors

p

p

(Intercept)

<0.001

<0.001

c160age

0.004

<0.001

c12hour

<0.001

<0.001

c161sex2

0.850

0.867

c172code2

0.550

<0.001

c172code3

0.564

<0.001

Observations

821

840

R2 / adjusted R2

0.271 / 0.266

0.083 / 0.106

# show.ci to show/hide the column with confidence intervals.  
tab\_model(m1, m3, auto.label = FALSE, show.ci=FALSE)

barthtot

tot\_sc\_e

Predictors

Estimates

p

Incidence Rate Ratios

p

(Intercept)

87.15

<0.001

0.30

<0.001

c160age

-0.21

0.004

1.01

<0.001

c12hour

-0.28

<0.001

1.00

<0.001

c161sex2

-0.39

0.850

1.01

0.867

c172code2

1.37

0.550

1.47

<0.001

c172code3

-1.64

0.564

1.90

<0.001

Observations

821

840

R2 / adjusted R2

0.271 / 0.266

0.083 / 0.106

# show.se to show/hide the column with standard errors.  
tab\_model(m1, m3, auto.label = FALSE, show.se=FALSE)

barthtot

tot\_sc\_e

Predictors

Estimates

CI

p

Incidence Rate Ratios

CI

p

(Intercept)

87.15

77.98 – 96.32

<0.001

0.30

0.21 – 0.45

<0.001

c160age

-0.21

-0.35 – -0.07

0.004

1.01

1.01 – 1.02

<0.001

c12hour

-0.28

-0.32 – -0.24

<0.001

1.00

1.00 – 1.00

<0.001

c161sex2

-0.39

-4.49 – 3.70

0.850

1.01

0.86 – 1.19

0.867

c172code2

1.37

-3.11 – 5.84

0.550

1.47

1.21 – 1.78

<0.001

c172code3

-1.64

-7.21 – 3.93

0.564

1.90

1.52 – 2.37

<0.001

Observations

821

840

R2 / adjusted R2

0.271 / 0.266

0.083 / 0.106

# show.std to show/hide the column with standardized estimates   
# (and their standard errors).  
tab\_model(m1, m3, auto.label = FALSE, show.std=T, show.ci=F)

barthtot

tot\_sc\_e

Predictors

Estimates

std. Beta

p

Incidence Rate Ratios

p

(Intercept)

87.15

<0.001

0.30

<0.001

c160age

-0.21

-0.09

0.004

1.01

<0.001

c12hour

-0.28

-0.48

<0.001

1.00

<0.001

c161sex2

-0.39

-0.01

0.850

1.01

0.867

c172code2

1.37

0.02

0.550

1.47

<0.001

c172code3

-1.64

-0.02

0.564

1.90

<0.001

Observations

821

840

R2 / adjusted R2

0.271 / 0.266

0.083 / 0.106

# show.p to show/hide the column with p-values.  
tab\_model(m1, m3, auto.label = FALSE, show.p=FALSE, show.ci=F)

barthtot

tot\_sc\_e

Predictors

Estimates

Incidence Rate Ratios

(Intercept)

87.15

0.30

c160age

-0.21

1.01

c12hour

-0.28

1.00

c161sex2

-0.39

1.01

c172code2

1.37

1.47

c172code3

-1.64

1.90

Observations

821

840

R2 / adjusted R2

0.271 / 0.266

0.083 / 0.106

# show.stat to show/hide the column with the coefficients' test statistics.  
tab\_model(m1, m3, auto.label = FALSE, show.stat=T, show.ci=F)

barthtot

tot\_sc\_e

Predictors

Estimates

Statistic

p

Incidence Rate Ratios

Statistic

p

(Intercept)

87.15

18.62

<0.001

0.30

-5.97

<0.001

c160age

-0.21

-2.87

0.004

1.01

4.41

<0.001

c12hour

-0.28

-14.95

<0.001

1.00

3.72

<0.001

c161sex2

-0.39

-0.19

0.850

1.01

0.17

0.867

c172code2

1.37

0.60

0.550

1.47

3.89

<0.001

c172code3

-1.64

-0.58

0.564

1.90

5.65

<0.001

Observations

821

840

R2 / adjusted R2

0.271 / 0.266

0.083 / 0.106

tab\_model(m1, m3, auto.label = FALSE, show.stat=F, show.ci=F)

barthtot

tot\_sc\_e

Predictors

Estimates

p

Incidence Rate Ratios

p

(Intercept)

87.15

<0.001

0.30

<0.001

c160age

-0.21

0.004

1.01

<0.001

c12hour

-0.28

<0.001

1.00

<0.001

c161sex2

-0.39

0.850

1.01

0.867

c172code2

1.37

0.550

1.47

<0.001

c172code3

-1.64

0.564

1.90

<0.001

Observations

821

840

R2 / adjusted R2

0.271 / 0.266

0.083 / 0.106

# show.df for linear mixed models, when p-values are based on degrees of  
# freedom with Kenward-Rogers approximation, these degrees of freedom are shown.  
# p.val needs to be set to "kr"  
  
library(lme4)

## Loading required package: Matrix

data(sleepstudy)  
str(sleepstudy)

## 'data.frame': 180 obs. of 3 variables:  
## $ Reaction: num 250 259 251 321 357 ...  
## $ Days : num 0 1 2 3 4 5 6 7 8 9 ...  
## $ Subject : Factor w/ 18 levels "308","309","310",..: 1 1 1 1 1 1 1 1 1 1 ...

me1<-lmer(Reaction ~ Days + (1|Subject), data=sleepstudy)  
tab\_model(me1, auto.label = FALSE, show.stat=T, show.se=T, show.df=T,   
 p.val="kr")

Reaction

Predictors

Estimates

std. Error

CI

Statistic

p

df

(Intercept)

251.41

9.75

232.30 – 270.51

25.79

<0.001

23.00

Days

10.47

0.80

8.89 – 12.04

13.02

<0.001

161.00

Random Effects

σ2

960.46

τ00 Subject

1378.18

ICC Subject

0.59

Observations

180

Marginal R2 / Conditional R2

0.280 / 0.704

# Adding columns  
# In the following example, standard errors, standardized coefficients   
# and test statistics are also shown.  
  
tab\_model(m1, show.se = TRUE, show.std = TRUE, show.stat = TRUE)

Total score BARTHEL INDEX

Predictors

Estimates

std. Error

std. Beta

standardized std. Error

CI

standardized CI

Statistic

p

(Intercept)

87.15

4.68

77.98 – 96.32

18.62

<0.001

carer’age

-0.21

0.07

-0.09

0.03

-0.35 – -0.07

-0.16 – -0.03

-2.87

0.004

average number of hoursof care per week

-0.28

0.02

-0.48

0.03

-0.32 – -0.24

-0.54 – -0.42

-14.95

<0.001

Female

-0.39

2.09

-0.01

0.03

-4.49 – 3.70

-0.06 – 0.05

-0.19

0.850

intermediate level ofeducation

1.37

2.28

0.02

0.04

-3.11 – 5.84

-0.05 – 0.10

0.60

0.550

high level of education

-1.64

2.84

-0.02

0.04

-7.21 – 3.93

-0.09 – 0.05

-0.58

0.564

Observations

821

R2 / adjusted R2

0.271 / 0.266

# Removing columns  
# In the following example, default columns are removed.  
  
tab\_model(m3, m4, show.ci = FALSE, show.p = FALSE, auto.label = FALSE)

tot\_sc\_e

neg\_c\_7d

Predictors

Incidence Rate Ratios

Odds Ratios

(Intercept)

0.30

6.54

c160age

1.01

c12hour

1.00

c161sex2

1.01

1.87

c172code2

1.47

1.23

c172code3

1.90

1.37

barthtot

0.97

Observations

840

815

Cox & Snell’s R2 / Nagelkerke’s R2

0.083 / 0.106

0.184 / 0.247

# Removing and sorting columns  
# Another way to remove columns, which also allows to reorder the columns,   
# is the col.order-argument. This is a character vector, where each element  
# indicates a column in the output. The value est, for instance,   
# indicates the estimates, while std.est is the column for standardized  
# estimates and so on.  
  
# By default, col.order contains all possible columns. All columns that  
# should shown (see previous tables, for example using show.se = TRUE to   
# show standard errors, or show.st = TRUE to show standardized estimates) are   
# then printed by default. Colums that are excluded from col.order are not   
# shown, no matter if the show-arguments are TRUE or FALSE.   
# So if show.se = TRUE, but col.order does not contain the element "se",   
# standard errors are not shown. On the other hand, if show.est = FALSE,  
# but col.order does include the element "est", the columns with estimates   
# are not shown.  
# In summary, col.order can be used to exclude columns from the table and   
# to change the order of colums.  
  
  
tab\_model(  
 m1, show.se = TRUE, show.std = TRUE, show.stat = TRUE,  
 col.order = c("p", "stat", "est", "std.se", "se", "std.est")  
)

Total score BARTHEL INDEX

Predictors

p

Statistic

Estimates

standardized std. Error

std. Error

std. Beta

(Intercept)

<0.001

18.62

87.15

4.68

carer’age

0.004

-2.87

-0.21

0.03

0.07

-0.09

average number of hoursof care per week

<0.001

-14.95

-0.28

0.03

0.02

-0.48

Female

0.850

-0.19

-0.39

0.03

2.09

-0.01

intermediate level ofeducation

0.550

0.60

1.37

0.04

2.28

0.02

high level of education

0.564

-0.58

-1.64

0.04

2.84

-0.02

Observations

821

R2 / adjusted R2

0.271 / 0.266

# Collapsing columns  
# With collapse.ci and collapse.se, the columns for confidence intervals   
# and standard errors can be collapsed into one column together with the  
# estimates. Sometimes this table layout is required.  
  
tab\_model(m1, collapse.ci = TRUE)

Total score BARTHEL INDEX

Predictors

Estimates

p

(Intercept)

87.15(77.98 – 96.32)

<0.001

carer’age

-0.21(-0.35 – -0.07)

0.004

average number of hoursof care per week

-0.28(-0.32 – -0.24)

<0.001

Female

-0.39(-4.49 – 3.70)

0.850

intermediate level ofeducation

1.37(-3.11 – 5.84)

0.550

high level of education

-1.64(-7.21 – 3.93)

0.564

Observations

821

R2 / adjusted R2

0.271 / 0.266

# Defining own labels  
# There are different options to change the labels of the column headers  
# or coefficients, e.g. with:  
  
# pred.labels to change the names of the coefficients in the Predictors column.   
# Note that the length of pred.labels must exactly match the amount of predictors   
# in the Predictor column.  
# dv.labels to change the names of the model columns, which are labelled with   
# the variable labels / names from the dependent variables.  
# Furthermore, there are various string-arguments, to change the name of   
# column headings.  
  
tab\_model(  
 m1, m2,   
 pred.labels = c("Intercept", "Age (Carer)", "Hours per Week", "Gender (Carer)",  
 "Education: middle (Carer)", "Education: high (Carer)",   
 "Age (Older Person)"),  
 dv.labels = c("First Model", "M2"),  
 string.pred = "Coefficient",  
 string.ci = "Conf. Int (95%)",  
 string.p = "P-Value"  
)

First Model

M2

Coefficient

Estimates

Conf. Int (95%)

P-Value

Estimates

Conf. Int (95%)

P-Value

Intercept

87.15

77.98 – 96.32

<0.001

9.83

7.34 – 12.33

<0.001

Age (Carer)

-0.21

-0.35 – -0.07

0.004

0.01

-0.01 – 0.03

0.359

Hours per Week

-0.28

-0.32 – -0.24

<0.001

0.02

0.01 – 0.02

<0.001

Gender (Carer)

-0.39

-4.49 – 3.70

0.850

0.43

-0.15 – 1.01

0.147

Education: middle (Carer)

1.37

-3.11 – 5.84

0.550

Education: high (Carer)

-1.64

-7.21 – 3.93

0.564

Age (Older Person)

0.01

-0.03 – 0.04

0.741

Observations

821

879

R2 / adjusted R2

0.271 / 0.266

0.067 / 0.063

# I don't think there is a way to change the title of the "Estimates" column?  
  
# First Model M2  
# Show asterisks instead of numeric p-values  
# You can change the style of how p-values are displayed with the argument  
# p.style. With p.style = "asterisk", the p-values are indicated as \* in   
# the table.  
  
tab\_model(m1, m2, p.style = "a")

Total score BARTHEL INDEX

Negative impact with 7items

Predictors

Estimates

CI

Estimates

CI

(Intercept)

87.15 \*\*\*

77.98 – 96.32

9.83 \*\*\*

7.34 – 12.33

carer’age

-0.21 \*\*

-0.35 – -0.07

0.01

-0.01 – 0.03

average number of hoursof care per week

-0.28 \*\*\*

-0.32 – -0.24

0.02 \*\*\*

0.01 – 0.02

Female

-0.39

-4.49 – 3.70

0.43

-0.15 – 1.01

intermediate level ofeducation

1.37

-3.11 – 5.84

high level of education

-1.64

-7.21 – 3.93

elder’age

0.01

-0.03 – 0.04

Observations

821

879

R2 / adjusted R2

0.271 / 0.266

0.067 / 0.063

* p<0.05   \*\* p<0.01   \*\*\* p<0.001

# Note: I personally find this annoying as it does not show p values at all but  
# gives an impression of importance that may not be warranted. I.e. when   
# do you normally care about the significance of the intercept term? Or does  
# your field really care about p values, so why use \*\*\* to inflate or guide  
# the reader toward emphasising something that they should discern themselves.  
  
# Automatic matching for named vectors  
# Another way to easily assign labels are named vectors. In this case,  
# it doesn't matter if pred.labels has more labels than coefficients in the   
# model(s), or in which order the labels are passed to tab\_model(). The only  
# requirement is that the labels' names equal the coefficients names as they  
# appear in the summary()-output.  
  
# example, coefficients are "c161sex2" or "c172code3"  
summary(m1)

##   
## Call:  
## lm(formula = barthtot ~ c160age + c12hour + c161sex + c172code,   
## data = efc)  
##   
## Residuals:  
## Min 1Q Median 3Q Max   
## -75.144 -14.944 4.401 18.661 72.393   
##   
## Coefficients:  
## Estimate Std. Error t value Pr(>|t|)   
## (Intercept) 87.14994 4.68009 18.621 < 2e-16 \*\*\*  
## c160age -0.20716 0.07211 -2.873 0.00418 \*\*   
## c12hour -0.27883 0.01865 -14.950 < 2e-16 \*\*\*  
## c161sex2 -0.39402 2.08893 -0.189 0.85044   
## c172code2 1.36596 2.28440 0.598 0.55004   
## c172code3 -1.64045 2.84037 -0.578 0.56373   
## ---  
## Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1  
##   
## Residual standard error: 25.35 on 815 degrees of freedom  
## (87 observations deleted due to missingness)  
## Multiple R-squared: 0.2708, Adjusted R-squared: 0.2664   
## F-statistic: 60.54 on 5 and 815 DF, p-value: < 2.2e-16

# create a named vector, pl:  
pl <- c(  
 `(Intercept)` = "Intercept",  
 e17age = "Age (Older Person)",  
 c160age = "Age (Carer)",  
 c12hour = "Hours per Week",  
 barthtot = "Barthel-Index",  
 c161sex2 = "Gender (Carer)",  
 c172code2 = "Education: middle (Carer)",  
 c172code3 = "Education: high (Carer)",  
 a\_non\_used\_label = "We don't care"  
)  
  
cbind(pl)

## pl   
## (Intercept) "Intercept"   
## e17age "Age (Older Person)"   
## c160age "Age (Carer)"   
## c12hour "Hours per Week"   
## barthtot "Barthel-Index"   
## c161sex2 "Gender (Carer)"   
## c172code2 "Education: middle (Carer)"  
## c172code3 "Education: high (Carer)"   
## a\_non\_used\_label "We don't care"

# see how pl is actually named, so you can still use the column names in the  
# model call but the pl variable holds more informative information that  
# includes words, spaces, capital letters etc..  
  
tab\_model(  
 m1, m2, m3, m4,  
 pred.labels = pl,  
 dv.labels = c("Model1", "Model2", "Model3", "Model4"),  
 show.ci = FALSE,  
 show.p = FALSE,  
 transform = NULL  
)

Model1

Model2

Model3

Model4

Predictors

Estimates

Estimates

Log-Mean

Log-Odds

Intercept

87.15

9.83

-1.19

1.88

Age (Carer)

-0.21

0.01

0.01

Hours per Week

-0.28

0.02

0.00

Gender (Carer)

-0.39

0.43

0.01

0.63

Education: middle (Carer)

1.37

0.39

0.21

Education: high (Carer)

-1.64

0.64

0.31

Age (Older Person)

0.01

Barthel-Index

-0.03

Observations

821

879

840

815

R2 / adjusted R2

0.271 / 0.266

0.067 / 0.063

0.083 / 0.106

0.184 / 0.247

# Keep or remove coefficients from the table  
# Using the terms- or rm.terms-argument allows us to explicitly show or   
# remove specific coefficients from the table output.  
  
tab\_model(m1, terms = c("c160age", "c12hour"))

Total score BARTHEL INDEX

Predictors

Estimates

CI

p

carer’age

-0.21

-0.35 – -0.07

0.004

average number of hoursof care per week

-0.28

-0.32 – -0.24

<0.001

Observations

821

R2 / adjusted R2

0.271 / 0.266

# Note that the names of terms to keep or remove should match the coefficients  
# names.   
  
# For categorical predictors, one example would be, which will remove the  
# terms c172code2 and c161sex2 from the summary, even though those two  
# terms were still used to fit the final model:  
  
tab\_model(m1, rm.terms = c("c172code2", "c161sex2"))

Total score BARTHEL INDEX

Predictors

Estimates

CI

p

(Intercept)

87.15

77.98 – 96.32

<0.001

carer’age

-0.21

-0.35 – -0.07

0.004

average number of hoursof care per week

-0.28

-0.32 – -0.24

<0.001

high level of education

-1.64

-7.21 – 3.93

0.564

Observations

821

R2 / adjusted R2

0.271 / 0.266

# For How to format an Anova table output see:  
  
# http://www.understandingdata.net/2017/05/11/anova-tables-in-r/