Course program - Linear and Logistic Regression Modelling in R

Daily schedule

Time	Activity
09:00-10:40	Lectures (with short break)
10:40-11:00	Coffee break (20 min)
11:00-12:30	Exercises
12:30-13:30	Lunch break
13:30-15:00	Lectures (with short break)
15:00-15:20	Coffee break (20 min)
15:20-17:00	Exercises

Program overview

Day	Time	Topic
Mon	AM	Simple linear regression
	PM	Multiple linear regression
Tue	AM	Introduction to logistic regression
	PM	Model building considerations and strategies
Wed	AM	Models for stratified designs and categorical outcomes
	PM	Exercises, QA, wrap-up

Detailed content

Day	Time	Content
Mon	**AM**	**Simple linear regression**
		Refresher: p-values, confidence intervals, correlation, two sample t-test, ANOVA
		Fitting the simple linear regression model (least squares estimation)
		Assessing model (fit, R^2)
	PM	**Multiple linear regression**
		The linear model (assumptions and misconceptions)
		Tests and model fit (F-test, adjusted R^2)
		Multicollinearity (variance inflation factor)
		Residual analysis (Residual plots, leverage, QQ-plot)
Tue	**AM**	**Introduction to logistic regression**
		Generalising the linear model (link functions, maximum likelihood estimation)
		The logistic model (logistic link, binomial distribution)
		Interpretating of coefficients (logits, odds ratios)
		Interactions
	PM	**Model building considerations and strategies**
		Testing (Wald and likelihood ratio tests)
		Assessing linearity of association
		Purposeful variable selection
		Special issues in prediction modelling (calibration, discrimination, overfitting)
Wed	**AM**	**Models for stratified designs and categorical outcomes**
		Conditional logistic regression
		Ordered logistic regression
		Multinomial logistic regression