ViCBiostat Summer School 2015

DAILY TIMETABLES

DAY 1: Causal inference: concepts and methods

Time	Topic	Lecturer / Demonstrator
09:00 - 10:00	***Lecture 1***: Causal concepts and causal diagrams	Andrew Forbes
10:00 - 10:30	Discussion exercises	
10:30 - 10:50	**Morning tea**	
10:50 - 12:00	***Lecture 2***: Propensity score / inverse probability weighting (IPW) methods for estimating the effect of a single-point treatment/exposure	Tibor Schuster
12:00 - 12:30	Propensity score / IPW practical demonstration	Tibor Schuster
12:30 - 01:30	**Lunch**	
01:30 - 02:30	***Lecture 3***: Marginal Structural Models to control for time-dependent confounders affected by prior treatment/exposure	Tibor Schuster
02:30 - 03:00	Marginal structural models practical demonstration	Tibor Schuster
03:00 - 03:20	**Afternoon tea**	
03:20 - 04:15	***Lecture 4***: G-computation and the Parametric G-Formula as a flexible simulation-based method	Lyle Gurrin
04:15 - 05:00	***Lecture 5***: Overview of further topics and discussion: Mediation, doubly robust estimation	Andrew Forbes, Tibor Schuster, Lyle Gurrin

DAY 2: Analysis of longitudinal and correlated data

Time	Topic	Lecturer/Demonstrator
09:00 - 09:45	***Lecture 1***: Introduction to longitudinal & correlated data: paired observations	John Carlin
09:45 - 10:30	***Lecture 2***: Between - and within - cluster comparisons; in simple cases: models and analysis	Andrew Forbes
10:30 - 10:50	**Morning tea**	
10:50 - 12:30	***Computer Lab 1***: Introduction to mixed models and GEEs for clustered data	
12:30 - 01:30	**Lunch**	
01:30 - 02:15	***Lecture 3:*** Exploratory and simple summary measures approaches. (John Carlin)	John Carlin
02:15 - 03:00	***Lecture 4:*** Generalised estimating equations (GEE) with continuous outcomes	Andrew Forbes
03:00 - 03:20	**Afternoon tea**	
03:20 - 04:45	***Computer Lab 2:*** Summary measures approach and marginal modelling	
04:45 - 05:00	Wrap-up	

DAY 3: Analysis of longitudinal and correlated data

Time	Topic	Lecturer/Demonstrator
09:00 - 10:00	***Lecture 5:*** Linear mixed models.	Andrew Forbes
10:00 - 10:30	***Computer Lab 3:*** Linear mixed models	
10:30 - 10:50	**Morning tea**	
10:50 - 11:20	***Computer Lab 3:*** **(continued)**	
11:20 - 12:30	***Lecture 6:*** Discrete outcomes: GEE methods and generalized linear mixed models (GLMMs)	John Carlin
12:30 - 01:30	**Lunch**	
01:30 - 03:00	***Computer Lab 4:*** GEEs and GLMMs for binary outcomes	
03:00 - 03:20	**Afternoon tea**	
03:20 - 04:30	***Lecture 7:*** Additional topics – count data, sample size, modelling strategy, life-course and causal modelling. (AF/JC)	Andrew Forbes/John Carlin
04:30 - 05:00	Problem-solving & wrap-up	

DAY 4: Multiple imputation for missing data

Time	Topic	Lecturer / Demonstrator
09:00 - 09:45	***Lecture 1:*** Introduction to multiple imputation	Julie Simpson
09:45 - 10:30	***Lecture 2***: Implementation of multiple imputation	Katherine Lee
10:30 - 10:50	**Morning tea**	
10:50 - 12:30	***Practical 1***: Multiple imputation for a single variable with missing data (Stata/R)	Cattram Nguyen **(Stata)** Alysha De Livera **(R)**
12:30 - 01:30	**Lunch**	
01:30 - 03.00	***Lecture 3***: Case Studies i) Melbourne Collaborative Cohort Study ii) The Victorian Infant Cohort Study	 Julie Simpson Katherine Lee
03:00 - 03:20	**Afternoon tea**	
03:20 - 04:30	***Practical 2***: Multiple imputation for a complex example (Stata/R)	Cattram Nguyen **(Stata)** Alysha De Livera **(R)**
04:30 - 05:00	***Lecture 4:*** Further topics i) When might multiple imputation offer benefits over a complete case analysis? ii) Sensitivity analyses within the multiple imputation framework: the pattern mixture method	 Katherine Lee Julie Simpson

Day 5: Prediction modelling

Time	Topic	Lecturer / Demonstrator
09:00 - 09:30	Introduction and overview	Rory Wolfe
09:30 - 10:30	Issues arising in regression modelling for prediction.	Rory Wolfe
10:30 - 10:50	**Morning tea**	
10:50 - 11:30	Stata workshop	
11:30 - 12:30	Machine learning approaches to prediction (Part A)	Damjan Vukcevic
12:30 - 01:30	**Lunch**	
01:30 - 02:00	Machine learning approaches to prediction (Part B)	Damjan Vukcevic
02:00 – 02:30	R workshop	Rory Wolfe
02:30 – 03:00	External validation, model implementation and updating (Part A)	Rory Wolfe
03:00 - 03:20	**Afternoon tea**	
03:20 - 04:20	External validation, model implementation and updating (Part B)	Rory Wolfe
04:20 - 05:00	Stata workshop	