Epi-on-the-Island An Introduction to Causal Inference 7–11 July 2025

This course will provide a conceptual and applied introduction to causal inference in epidemiology, moving from foundations in causal inference through to ensuring that participants have the skills to construct directed acyclic graphs and guide data collection and analyses when aiming to answer causal questions using observational data Participants will engage in lectures, group discussions, practical work, and presentations.

Tentative Schedule

Time		Session
8:30 - 10:00	AOC	Causal questions & inference – the Potential Outcomes
		framework
10:30 - 12:00	VB	Directed Acyclic Graphs (DAGs) - terminology, rules, and
		tools
1:00 - 2:30	AOC	DAGGitty tutorial
3:00 - 4:30	VB	Using DAGs to identify confounding

Day 1 – Foundations of Causal Inference and DAGs

Day 2 – DAGs, Bias, and Implementation

Time		Session
8:30 - 10:00	VB	Using DAGs to identify selection bias
10:30 - 12:00	AOC	Building a DAG – practical approaches
1:00 - 2:30	PRAC 1	Quartets: align your data analysis with your causal thinking
3:00 - 5:00	PRAC 1	Quartets: Participants present their analyses

Day 3 – DAGs	and Causal	Frameworks	in Action
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Time		Session
8:30 - 10:00	AOC	Information bias and DAGs
10:30 - 12:00	AOC	CAFOs – causal attribution from observational studies
1:00 - 2:30	PRAC 2	The CAFOs Practical
3:00 - 5:00	PRAC 3	Build a DAG (for a given causal question)

Time		Session
8:30 - 10:00	PRAC 3	Participants present and compare DAGs
10:30 - 12:00	AOC/VB	'Famous' points: Table 2 Fallacy, Simpson's paradox, M- bias
1:00 - 2:30	VB/ID	Quantitative Bias Analysis (QBA) and Mark Stevenson's Shiny app
3:00 - 5:00	PRAC 4	Participants work on own DAGs

Day 4 – Integration and Practice

Day 5 – Synthesis and Next Steps

Time		Session
8:30 - 10:00	PRAC 4	Participants work on own DAGs
10:30 - 12:00	AOC/VB	Important points recap, including statistical vs causal associations, results tables, DAG challenges and limitations
1:00 - 2:30	PRAC 4	Participants' final presentations
3:00 - 5:00	PRAC 4	Participants' final presentations

Course Information

Course Materials

Participants will be provided with all lecture notes and a library of papers and useful websites relevant to the course.

Software

Participants should download DAGGitty (<u>https://www.dagitty.net/</u>) prior to the course. We will also use R for some practicals – we recommend R version 4.1.0 or later, with libraries ggplot2, epiR, and dplyr installed.

Course Preparation

To get the maximum value out of the course, we encourage participants to bring their own causal question to the course because we will work on these on Days 4—5.