IMPERIAL UNIVERSITÉ CÔTE D'AZUR Utrecht University

Exposome Analytics

Short course, 23–27 September 2024
Nice, France

Format

Exposome Analytics will be held at Université Côte d'Azur from 23rd to 27th September 2024. Each day begins with lectures introducing theoretical concepts, followed by a seminar and a practical session to illustrate these concepts.

Learning outcomes

After **Exposome Analytics,** students will be:

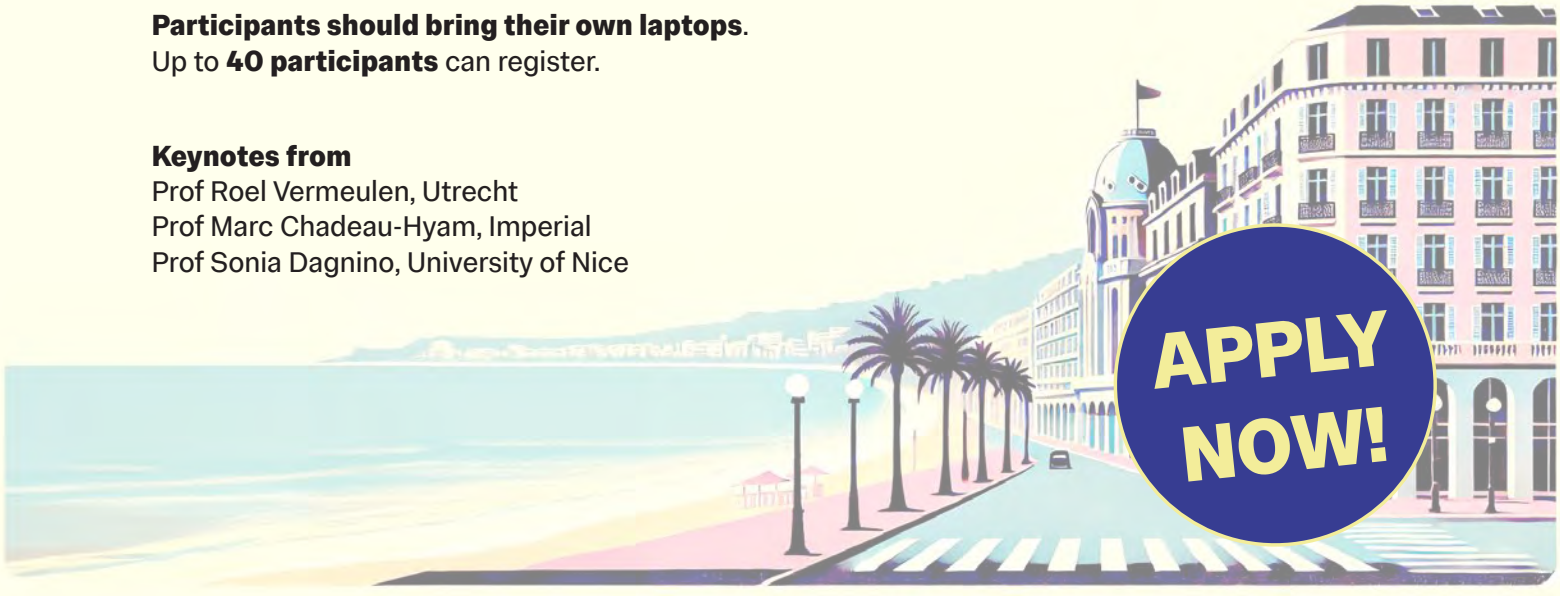
» familiar with the concepts and challenges of the analysis of both external and internal exposome data
» able to implement integrative analysis of high-dimensional (blocks of) exposome data
» able to develop rigorous and reproducible research in the field of exposome analytics
» able to produce and interpret visualisations of results
» able to adopt a causal approach to analyse exposome data and charcaterise potential embodiement of external exposures.

Who would benefit

Exposome Analytics is designed for academics (students and researchers) and industry scientists (pharmaceuticals, insurance, food industries) with experience in analysing large and complex data sets. Ideal candidates include researchers seeking to deepen their knowledge in data analysis and integration for exposome research. Proficiency in basic statistics and R statistical software is desirable.

Participants should bring their own laptops.
Up to **40 participants** can register.

Keynotes from
Prof Roel Vermeulen, Utrecht
Prof Marc Chadeau-Hyam, Imperial
Prof Sonia Dagnino, University of Nice



Scientific programme

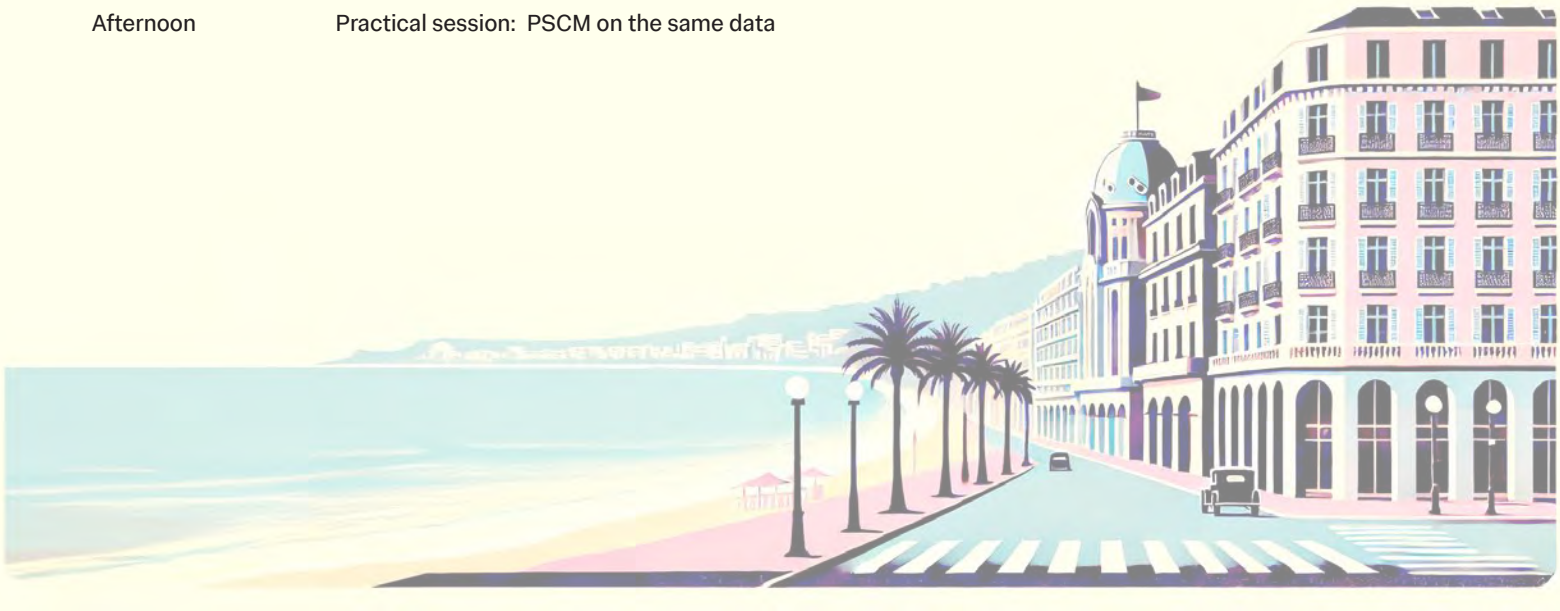
Monday	Warm up	
Morning	Introduction to Exposome analytics in practice	Marc Chadeau-Hyam
Morning	Refresher on data analysis: Univariate, Dimensionality reduction, Feature selection	Marc Chadeau-Hyam
	Keynote: An integrative approach to lung cancer risk	Sonia Dagnino
Afternoon	Practical session: explore a real data set	ICL Team

Tuesday	Stability selection	
Morning	Concept of stability selection: application to regression models (with/ without interaction)	Ruben Colindres
Morning	Other applications of stability selection: PLS; graphical models	Ruben Colindres, Rin Wada
	Keynote: Exposome analytics vs environmental epi – what's new?	Roel Vermeulen
Afternoon	Practical session: Stability selection on real data	ICL Team

Wednesday	Clustering	
Morning	Definitions, algorithms, calibration	Thomas Wright, Rin Wada
Morning	Consensus clustering and stability calibration: theory and applications	Ruben Colindres, Rin Wada
	Keynote: Expotypes: exposome profiling in large populations	Marc Chadeau-Hyam/ Ruben Colindres
Afternoon	Practical session: worked examples of multiple clustering algorithms on simulated and real data; introduction to sparse clustering	ICL team

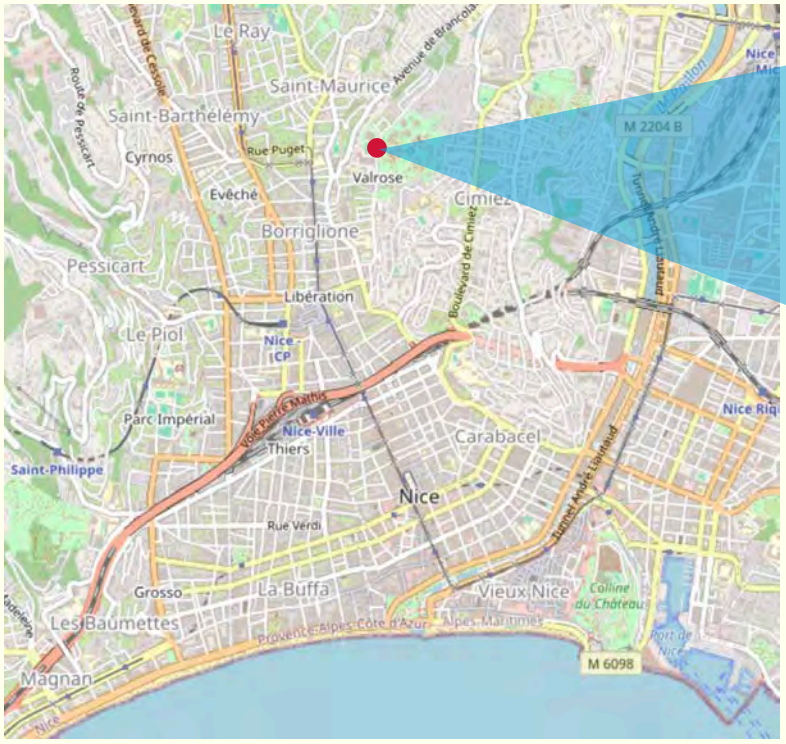
Thursday	Causal modelling 1	
Morning	Introduction to causal framework and mediation analyses	Ruben Colindres, Helene Colineaux
	Seminar: Causal modelling in practice	Helene Colineaux
Afternoon	Practical session: worked examples on real data G computation	ICL team

Friday	Causal modelling 2	
Morning	Penalised structural causal modelling	Ruben Colindres
	Seminar: Causal discovery using deep learning and AI	Salome Kakhaia
Afternoon	Practical session: PSCM on the same data	



Information

Course venue: le Domaine de Valrose



Domaine de Valrose is a historic French estate on the Riviera, set in a large landscaped park around the grand chateau.

Getting there

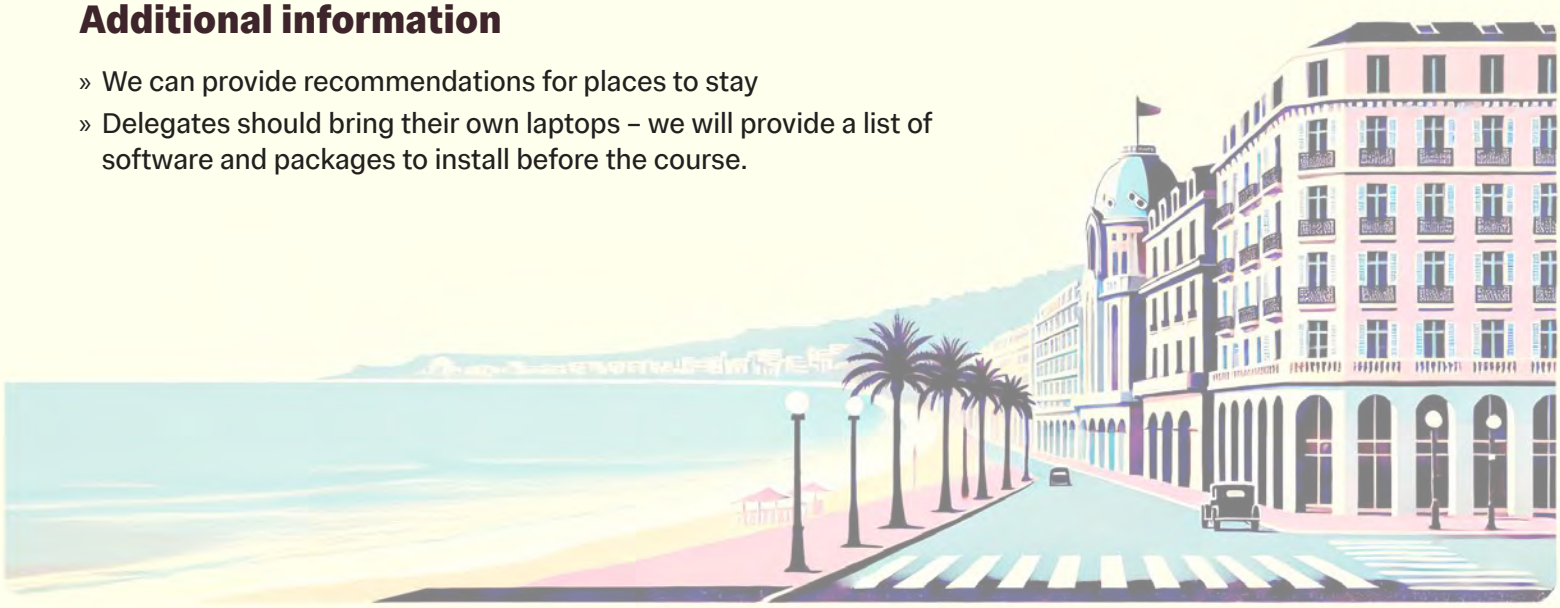
» 30 minutes walk from city center
» Numerous buses to reach the campus
» Walking distance to the beach

Organisation

» Mornings lectures from 10am
» Regular tea and coffee breaks
» Lunch will be provided each day
» Teaching day finishes around 5pm
» Social/networking event(s) will be organised during the week
» A gala dinner will be organised on the Thursday evening

Additional information

» We can provide recommendations for places to stay
» Delegates should bring their own laptops – we will provide a list of software and packages to install before the course.



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Exposome analytics

Course fees (incl. lunch, group dinner event, and social events)

» Academics: GBP £1,800
» Industry: GBP £2,500
» Discount of £500 for EXPANSE and LongITools partners

Payment can be made by credit card or purchase order.

Questions?

If you have additional questions you can email
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