



Trinity College Dublin
Coláiste na Tríonóide, Baile Átha Cliath
The University of Dublin

Two Structured PhD Positions in Statistics (4-years full-time) in Infectious Disease Modelling

Project supervisors: [Dr. James Sweeney](#) (University of Limerick), [Dr. Jason Wyse](#) (Trinity College Dublin)

Project locations: [Department of Mathematics and Statistics, University of Limerick](#) (1 PhD) & [Discipline of Statistics and Information Systems, School of Computer Science and Statistics, Trinity College Dublin](#) (1 PhD)

Application deadline: Friday 14th April 2023

Start date: September 2023

PhD structure: This project is for two full-time 4-year structured PhD projects, one based in the Department of Mathematics and Statistics at [University of Limerick](#) and the other based in the Discipline of Statistics and Information Systems at [Trinity College Dublin](#). The funding for both projects includes a tax-free stipend along with expenses for computing equipment, conference travel and materials. Fees are provided for in the funding.

PhD topics: Infectious disease experts and immunologists warn that COVID-19 will not be the last disease X we experience. These PhD projects will develop state-of-the-art modelling tools to prepare for the eventuality of the next disease X. Current models will be enriched to better incorporate important aspects of infectious diseases, such as how age and social interactions impact on disease spread. This will involve the use of **differential equations** for modelling of **population health**, assimilating data from multiple sources through **Bayesian statistical modelling**. Our models will allow researchers to react to emerging diseases, and process information in real-time. This will involve developing **dynamic** disease models and using **Bayesian sequential analysis** through **sequential Monte Carlo**. The projects will also create educational tools for the public, to help people learn about how diseases are modelled and how forecasts are made, through platforms such as **RShiny**. These projects will build upon preliminary results in our previous work: <https://doi.org/10.1371/journal.pone.0260632>.

Requirements: Applicants should have (or expect to attain prior to project start) at least a 2.1 honours degree or equivalent in the areas of mathematics, applied mathematics or statistics. Applicants must demonstrate proficiency in statistical modelling and have some experience with statistical computing through **R**, **python** or **C**. Applicants for whom English is a second language will

be required to demonstrate their competence in the English language in line with [University of Limerick](#) or [Trinity College Dublin](#) requirements as appropriate.

Funding notes: Stipend of €19,000 per year for four years, with budget for travel and laptop. Fees for Home/EU students will be covered automatically, while non-EU students will receive a fee waiver from the respective university.

Application: Applicants should email Dr. Jason Wyse (wyseja@tcd.ie) on or before Friday 14th April 2023 to apply. The application should include a 2-page CV and a short cover letter/statement of purpose (2-pages max) indicating how their skills align with the project and their motivation for applying. Please include “PhD Application” followed by your name in the subject line. The application CV should, at minimum, include the applicant’s name, educational institution, qualification stating overall grade/percentage (predicted grades are acceptable for those still studying) and contact details of two academic referees.

Informal queries can be made to: james.a.sweeney@ul.ie or wyseja@tcd.ie. Please include “PhD Query” followed by your name in the subject line.