

Modelling and inference for pandemic preparedness (MIP)

This 4-week programme took place at the INI in August 2024. It followed on from the Infectious Dynamics of Pandemics (IDP) virtual programme that took place online from May to December 2020, during the Covid-19 pandemic. MIP brought together researchers from different backgrounds, continents and career stages, most of whom had not worked together before, enabling many to meet face-to-face for the first time.

Two themes were selected from the many challenges for pandemic preparedness relating to infectious disease dynamics that were identified during IDP: Modelling and analysis for policy and decision support, oriented toward applications; Model-based inference and prediction, oriented towards methodology. Within these themes, the programme succeeded in its aims of solidifying and expanding intra- and inter-disciplinary links, setting an agenda for future work, and initiating new collaborations to address it.

The first week of the programme comprised a broad-ranging discussion meeting with around 100 participants covering both themes. In week 2, an oversubscribed and successful Gateway Open for Business Day focussed on modelling for policy advice, with lectures, viewpoints, experiences, and panel discussions. In week 3, within the inference theme, external experts joined programme participants for a day of lectures and discussion on probabilistic programming languages.

After four weeks of intensive discussions and collaborative efforts, there are now thirteen specific new scientific projects on which work is ongoing. The projects are a mix of exciting new research areas across model development, inference and public health policy, preparation of reviews and opinion pieces, and initiatives (on the establishment of an international society for the field of infectious disease dynamics, and on EDI).

A two-week follow-on meeting at the INI has just been approved for December 2025, to further develop, condense and disseminate the research and ideas from MIP, reviewing progress on these projects, and building on the partnerships and collaborations started there.