



National and Global Affairs



What Counts in Biostatistics

How can we get ahead of a rapidly developing situation when we just do not have all of the data that we need? In health, this may mean making decisions as a virus spreads. For statisticians, this can be about finding what is already known and formally amalgamating existing data sets. This doesn't give us certainty but it helps us to get organised about our 'uncertainty'.

This Bayesian approach characterises the work of Professor Cathal Walsh as a biostatistician. His work is about being part of the mechanism through which

data is generated, combined, challenged and ultimately translated into public health decisions.

His work with the National Centre for Pharmacoeconomics, the Irish Epidemiological Modelling Advisory Group during the COVID19 pandemic, and now working on the Global Heat Attribution Project to understand how human-generated global warming is affecting women's health in pregnancy and birth across the world: all of the involvements are shaping how we making decisions under health 'uncertainty'.

This work showcases how Trinity is changing public attitudes to a societal issue through multiple approaches, such as evidence-informed programmes, deliberative processes and media engagement.

Prepared by Trinity Civic Engagement for Societal Impact, September 2026

Professor Cathal Walsh

SCHOOL

Discipline of Public Health & Primary Care,
School of Medicine

PARTNER AGENCIES

Royal Statistical Society 
African Institute for
Mathematical Sciences 
Health Protection
Surveillance Centre 
National Centre for
Pharmacoeconomics

FUNDERS:

Health Research Board 
Wellcome Trust

SUBJECT AREAS

Bayesian Inference 
Bioinformatics 
Biostatistical methods 
Epidemiology 
Evidence Synthesis 
Latent Variables 
Meta-analysis 
Monte Carlo Methods 
Statistics



Pandemic Decision-Making

During the COVID-19 pandemic, Professor Walsh was part of the Irish Epidemiological Modelling Advisory Group, working with the Health Protection Surveillance Centre. At a time when policymakers urgently needed to make decisions in a rapidly developing situation, Professor Walsh had expertise in disease modelling and in public health decision-making.

Understanding the elements that can govern disease modelling, such as the reproduction rate of an infection, the level of immunity among the population, the types of contact patterns that were occurring and the efficacy of the interventions; all of these were helping policymakers to home in on a constantly moving target. Working with epidemiologists, clinicians, public-health specialists as a statistician, there was an opportunity to better understand how to combine their respective data sets.

Global Heat Attribution Project

This project, funded by the Wellcome Trust, plans to link climate information with approximately 45 million birth records across Africa, Europe and Latin America. Co-developed by Professor Walsh and Trinity colleague Professor Matthew Chersich, it will examine outcomes such as preterm birth, seeking to distinguish the effects of ordinary variation in weather from those associated with climate change.

The project uses statistical methods associated with climate change attribution and whether observed changes are consistent with natural variability or with the influence of human activity. As

climate, however, is not the only factor that can affect pregnancy, the work must also take account of the other factors.

The ambition of the project is to develop indicators that could eventually be incorporated into routine monitoring systems helping policymakers track climate-related health impacts and assess adaptation measures.

African Institute for Mathematical Sciences

Professor Walsh has been one of a number of statisticians involved in developing an MSc programme with a focus on statistics and data science with the African Institute for Mathematical Sciences. He has also taught on the programme. While this has an immediate benefit for its graduates, it is also an investment in potential international research teams in the future. Rather than extracting data from the Global South to another location where analytical expertise exists, this raises the prospect of data being analysed by people living within the cultural context in which it is gathered.

National Centre for Pharmacoeconomics

Professor Walsh spent over 15 years advising the National Centre for Pharmacoeconomics, the body that provides health technology assessments (HTAs) of medicines. These attempt to bring together different kinds of evidence. There may be clinical-trial data showing that a medicine improves an outcome but may not be sufficient to assure routine clinical practice. Economic modelling is also needed to estimate longer-term outcomes and costs.

Outputs



SPHeRE Network Seminar (2021)

Professor Walsh delivered a lecture to the SPHeRE (Structured Population health, Policy and Health-services Research Education) programme. The lecture was entitled: 'The purpose, value and limitations of mathematical models in the COVID-19 pandemic: Perspectives from an Irish Epidemiological Modelling Advisory Group member'.

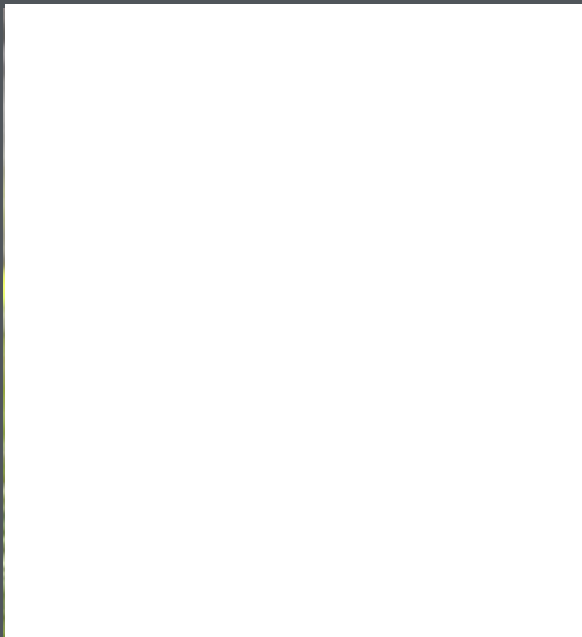
Insight centre scientists awarded for Covid response tool (2025)

This article celebrates the presenting of the Jay Wright Forrester Award to Professor Walsh and colleagues on the Irish Epidemiological Modelling Advisory Group (IEMAG) for the creation of computer models to simulate the spread of COVID19.



“We shouldn’t disagree about matters of fact, but we do disagree about we think is important and actually, you know, that’s okay, that’s allowed.”

*Professor Cathal Walsh
Trinity Inaugural Lecture
October 2024*



Professor Cathal Walsh is the Professor of Biostatistics in the School of Medicine at Trinity College Dublin. He has held visiting appointments in Bayesian groups in at Queensland University of Technology, Australia and in the Harvard School of Public Health in the United States. He is a Fellow of the Royal Statistical Society, and has helped to develop the African Institute for Mathematical Sciences M.Sc. in Statistics and Data Science. He has been the trial statistician for clinical trials in stroke, depression and activity interventions.

For More Information

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