



### EXPLORING CAPACITY BUILDING IN DATA SCIENCE WITH DEVELOPING NATIONS

Recently we have been expanding our collaborations with Paraguay and Mongolia. Although these nations are at opposite sides of the world, they share some common features. Both have low populations, dominated by their capital cities, which have high levels of poverty. Both nations are collecting substantial data from a wide-range of sources but do not have the capacity to analyse it and use it for decision-making. This is where our staff and students could prove invaluable.



#### Benefits of Machine Learning for Paraguay

The Paraguayan Minister of Planning, José Molinas, participated in ITT8 presenting a problem on distribution of social benefits. He was so impressed with the team he worked with that he invited them to Asunción to train his staff in data science and machine learning. The resulting workshop received fantastic feedback from participants and SAMBa student Kevin Olding commented: "The trip was a wonderful opportunity to assist a developing country with their work on poverty eradication. I applied my SAMBa training to a problem of real significance and experienced working directly with statistics for development." Another visit of SAMBa staff to Asunción explored applying data science to multiple applications

through meetings with ministries and academic institutions. We aim to return to deliver more workshops along with the Office of National Statistics, also ITT8 partners.

[Read Kevin's Blog](#)



#### Mitigating health effects of Mongolian air pollution

Air pollution during winter in Ulaanbaatar often reaches 100 times WHO recommended levels, leading to severe health problems. In September, SAMBa staff and students travelled to Ulaanbaatar to deliver training in statistics, stochastics, and probability, and meet stakeholders and policy makers. Modelling air pollution and its impact on health can help inform policy decisions and we are working with the Institute for Mathematics at the National University of Mongolia and the Institute for Policy Research (IPR) at the University of Bath to explore how statistical applied mathematics can impact on the health and well-being of citizens of Ulaanbaatar. Tsogzolmaa Saizmaa, a SAMBa student from Mongolia said: "I was excited to return to Ulaanbaatar with SAMBa to help train a future generation of mathematicians. The students on the course were very happy learning a lot and I enjoyed putting my SAMBa experience into practice. I see an optimistic future for the Mongolian mathematics community."





## Congratulations to...

**Marcus Kaiser** and **Matt Durey** from cohort 1 who have both passed their PhD vivas.

**Owen Pembery** from cohort 2, who was awarded a certificate of recognition from SIAM.

**Jack Betteridge** for a best contribution prize at the HPC symposium (second year running).

**Tim Rogers**, **Matt Roberts** and **Susie Douglas**, who, along with colleagues in Psychology, have been awarded EPSRC funding to address culture change in diversity and inclusion.

**Susie Douglas**, who was awarded the University of Bath's staff recognition award.

**Apala Majumdar** and colleagues, who have been awarded funding by Bath's International Office to explore collaborations with institutions in Chile and Mexico.

**Paul Milewski** and **Carlos Galeano Rios**, who have been awarded funding by the University of Bath International Office for exploring collaborations with institutions in Paraguay.

**Kate Powers** from cohort 2 for receiving sponsorship from Cummins for the final year of her PhD.

## Coming up ...

- 3<sup>rd</sup> & 10<sup>th</sup> Oct** MRes transfer days
- 13<sup>th</sup> Nov** Farewell conference for Rob Scheichl
- 10<sup>th</sup> Jan** Bath-RAL day
- 28<sup>th</sup> Jan - 1<sup>st</sup> Feb** ITT9
- 8<sup>th</sup> Feb** Seminar from Martin Hairer
- 24<sup>th</sup> - 26<sup>th</sup> Apr** British Applied Mathematics Colloquium
- 1<sup>st</sup> - 5<sup>th</sup> Jul** Random Structures summer school

## ITT8 tackles disease, policy, fitness, and loneliness

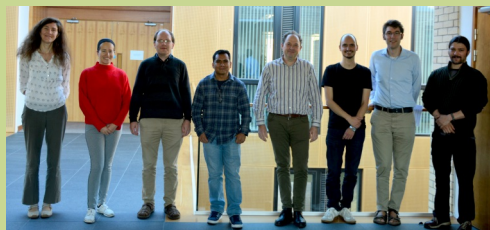
Our partners at our 8th Integrative Tank were the Office for National Statistics, the Department of Biology and Biochemistry, and 2 institutes from Paraguay – the Ministry for Planning and the Centre for Development of Scientific Research. Problems spanned the spectrum of statistical applied mathematics and included exploring the production and use of administrative records for evidence-based policymaking, the transmission of vector-borne diseases, how to measure loneliness, and analysing what factors encourage physical activity. We are already developing many of the ideas that arose at the ITT in collaboration with our partners.

Our second SAMBa conference, sponsored by Syngenta, took place in June organised by the irrepressible Camzabeth! (Otherwise known as cohort 3 students Cameron and Elizabeth). The two days were full of student and academic talks including invited speakers Prof. David Silvester (University of Manchester), Dr Kirsty Hassall and Dr Alice Milne (Rothamstead Research) and Dr Amanda Turner (Lancaster University). The conference



also comprised a join session with the CDT in Sustainable Chemical Technologies (and presentations on research projects between the two centres), 22 student presentations and 14 poster presentations, which showcased the range of research taking place in SAMBa.

After 21 years, during which time, he has moved from PhD student to Professor, from saddle point problems to stochastic uncertainty quantification, and from fresh-faced to foremost beard-wearer, Rob Scheichl has left Bath to join the University of Heidelberg. We often cite Rob as one of the inspirations for SAMBa, as he started his research in numerical analysis but in recent years has been incorporating statistical methods, meaning he had to learn the fundamental statistics he was not taught at University. SAMBa aims to give students the skills and knowledge at the start of their career that Rob had to learn later in his. The department will be very quiet without Rob, but we wish him well in his new position.



Welcome to our four Rutherford Fellows, funded by the Department for Business, Energy and Industrial Strategy, and joining SAMBa with the aim to strengthen research collaborations between the UK and future research leaders in Brazil and Mexico.



**We've been visiting:** Amsterdam · Asunción · Bergen · Brown University · CIMAT (Mexico) · Hausdorff Centre for Mathematics · Imperial College London · Isaac Newton Institute (Cambridge) · IST Austria National Institute of Informatics (Tokyo) · Rice University · Roche Pharmaceuticals (Basel) · Shanghai Jiao Tong University · Schlumberger Gould · Sichuan University · Ulaanbaatar · Umeå University · Università degli Studi dell'Insubria · Universität Zürich · University of Bonn · University of Edinburgh · University of Glasgow · University of Jyväskylä · University of Lisbon · University of Oxford · University of São Paulo

For more details on these stories and to see how you can get involved, visit the SAMBa website: [go.bath.ac.uk/samba](http://go.bath.ac.uk/samba)



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