

Hamish William Patten

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Profile

Statistician, physicist and data scientist with interdisciplinary experience spanning humanitarian sciences, disaster impact modelling, cardiology and nuclear fusion. Strong communicator with expertise in statistical programming, spatio-temporal modelling, and disaster risk. Practical experience in international research collaborations and software development, including with the United Nations and humanitarian sector applied to complex societal challenges.

Professional Experience

Statistician, Aktiia 2025–present

- Development of time-series Deep Learning models to estimate blood pressure from optical signals embedded in wearable devices
- General data science, including survival analysis-based predictive modelling of user-retention and performance analysis of interventions to decrease blood pressure
- Clinical trial principal statistician, working in trial design and analysis across 6 different trials
- Communication via technical reports and scientific articles on blood pressure-related topics.

Senior Disaster Analyst, United Nations Food and Agriculture Organization (FAO) 2025

- Estimate global disaster-related losses in crop yields, harvested areas, and livestock, using non-parametric Bayesian time-series methods for the flagship report *Impact of Disasters on Agriculture and Food Security*.

Disaster Statistics Expert, UN Economic & Social Commission for Asia and the Pacific (ESCAP) 2024–2025

- Investigating the intersection of Civil Registration and Vital Statistics (CRVS) systems and disaster-related statistics, including analysing population census versus register data for population demography and disaster-related direct and indirect excess mortality inference.

Senior Data Scientist, Int. Fed. of Red Cross and Red Crescent Societies (IFRC) 2023–2024

- Mapped global hazard events to corresponding impact datasets to uncover patterns in disaster occurrence and outcomes.
- Analysed trends to inform policy & publications, including the *World Disasters Report 2023*.
- Supported development of Forecast-based Financing models for climate and disaster resilience.

Solutions Architect, United Nations Office for Disaster Risk Reduction (UNDRR) 2021–2023

- Led a team of 9 (data analysts, DevOps, designers) for the design and development of the *Risk Information eXchange (RiX)* platform.
- Provided technical support for research and academic collaborations.

Postdoctoral Researcher, Department of Statistics, University of Oxford 2019–2022

- Multi-disciplinary research, covering the topics of epidemiology, ecology and disaster impacts
- Specialised in Bayesian models and Monte Carlo methods, including Markov Chain Monte Carlo and Approximate Bayesian Computation - Sequential Monte Carlo

Data Science Research Fellow, Internal Displacement Monitoring Centre (IDMC) 2019–2021

PhD Researcher in Nuclear Fusion, Ecole Polytechnique Fédérale de Lausanne (EPFL) 2014–2019

Education

Ecole Polytechnique Fédérale de Lausanne (EPFL), CH: *PhD Physics, 2014 – 2019*. Thesis: “[Development and optimisation of advanced auxiliary ion heating schemes for 3D fusion plasma devices](#)”

University of York, UK: *MSc Fusion Energy, 2013 – 2014*. Graduated with Distinction; awarded a £6000 scholarship. Top of class; recipient of best thesis prize (mark: 78%)

Loughborough University, UK: *BSc Mathematics and Physics, 2008 – 2012*. First Class Honours (final year grade: 84.5%). Top of class; awarded £1000 merit-based scholarship

Publications

1st & 2nd Author Scientific Articles—

- M. Anderson Loake, H. Patten, et al., ‘A Bayesian Approach for Earthquake Impact Modelling’, *Journal of the Royal Statistical Society Series C: Applied Statistics*, accepted manuscript (2026)
- R. Browning, H. Patten, et al., ‘Bayesian spatiotemporal modelling of political violence and conflict events using discrete-time Hawkes processes’, *Journal of the Royal Statistical Society Series A: Statistics in Society*, qnag039 (2026)
- H. Patten and Z. Bhaby, ‘Disasters, the Humanitarian Sector and Statistics’, *Annual Review of Statistics and Its Applications*, Invited Review, 13:51-73 (2026)
- D. Steinsaltz, H. Patten et al., ‘Short-term and Mid-term Blood Pressure Variability and Long-term Mortality’, *American Journal of Cardiology*, 234:71-78 (2024)
- H. Patten et al., ‘Data-Driven Earthquake Multi-Impact Modelling: A Comparison of Models’, *International Journal of Disaster Risk Science*, 15, pp. 421–433 (2024)
- Ya. Kolesnichenko, H. Patten et al., *Nuclear Fusion*, 61(4), 046014 (2021)
- F. Casson, H. Patten et al., *Nuclear Fusion*, 60, 066029 (2020)
- H. Patten et al., ‘Identification of an optimized heating and fast ion generation scheme for the Wendelstein 7-X stellarator’, *Physical Review Letters*, 124, 155001 (2020)
- H. Patten et al., *Plasma Physics and Controlled Fusion*, 60, 085009 (2018)

Thesis—

- H. Patten, ‘Development and optimisation of advanced auxiliary ion heating schemes for 3D fusion plasma devices’, *PhD Thesis 9167*, EPFL, 2019

Reports & Policy Publications—

- Hilo by Aktiia, ‘A nation under pressure: UK blood pressure report 2025’ (2025). Access: [Aktiia](#)
- H. Patten & N. Richards, ‘Disaster-related Statistics and Civil Registration and Vital Statistics systems : working paper on the nexus between disaster-related statistics and civil registration and vital statistics (CRVS)’, *UN ESCAP - SD/WP/17/March2025*, (2025). Access: [ESCAP](#)
- H. Patten et al., ‘COP28: The Climate and Environmental Crisis is the IFRC’s Top Global Challenge’, *Red Cross Red Crescent Climate Centre*, published 30.11.2023. Access: [IFRC](#)
- *World Disasters Report 2023*, IFRC, published 30.11.2023. Access: [IFRC](#)
- H. Patten, ‘Rethinking Predictive Analytics for Disaster Resource Allocation’, *IDMC GRID Background Paper*, 20.05.2021. Access: [IDMC](#)
- *Global Report on Internal Displacement (GRID) 2021*, IDMC, published 20.05.2021. Access: [IDMC](#)
- *Global Report on Internal Displacement (GRID) 2020*, IDMC, published 20.05.2020. Access: [IDMC](#)
- *Women and Girls in Internal Displacement*, IDMC, published 05.03.2020. Access: [IDMC](#)

Research Interests

- Bayesian methods for spatio-temporal climate & disaster risk modelling
- Computational social science and the use of statistics in humanitarian contexts
- Statistical learning for disaster risk reduction and resilience planning
- Alternative data sources: Earth Observation data, population registers, mobile positioning data
- Methodological development for Forecast-based Financing and Early Warning Systems
- Cross-disciplinary applications of data science in the digital and environmental humanities

Skills

Programming: R, Python, LaTeX, RMarkdown, RShiny, Leaflet, ArcGIS, Fortran, C++.

Languages: fluent in English & French, B2 in Italian & Portuguese.

Other: High Performance Computing, GIS, SQL and data visualisation.

Conferences and Presentations 2024–2025

- ‘Dose-dependent associations between systolic blood pressure and user engagement with a wearable cuffless monitor’, European Society of Hypertension (ESH), European Meeting on Hypertension and Cardiovascular Protection, Gdansk (2026)
- ‘Hilo Exposure Effect: BP Reduction Interventions’, British and Irish Hypertension Conference 2025, Cambridge (2025)
- ‘Applying AI to Classify Hazards from Text’, European Geosciences Union (EGU) Conference, April 2025, Austria.
- ‘Disaster & Conflict Modelling with Bayesian Methods’, University of Zurich, Department of Mathematics, January 2025, Switzerland.
- ‘Disaster-related Statistics and Civil Registration and Vital Statistics systems’, 4th Global Expert Forum for Producers and Users of Disaster-Related Statistics, United Nations Economic Commission for Africa, October 2024, Ethiopia.
- ‘Geopolitical Analyses of Disaster Impacts: Bias, Modelling and Decision Making’, invited session at Royal Statistical Society Conference - September 2024, United Kingdom.
- ‘The use of AI in Disaster Risk’, contributed presentation, Humanitarian Networks and Partnerships Weeks (HNPW) May 2024, Switzerland.
- ‘Monty: Combining Global Disaster Impact Databases’, invited presentation, Regional EM-DAT Annual Workshop, February 2024, South Africa.

Teaching Experience

- Teacher: **Data Science with Python**, PowerCoders *2024-Present*
- Lead Tutor: **Foundations of Statistical Methods**, University of Oxford *2021-2022*
- Assistant: **Statistical Programming in R**, University of Oxford *2019-2021*
- Assistant: **Computational Statistics and Monte Carlo Methods**, University of Oxford *2021-2022*
- Assistant: **Numerical Physics I & II**, Ecole Polytechnique Fédérale de Lausanne (EPFL), *2015-2018*
- Assistant: **Solid State Physics**, York University, *2013-2014*
- Assistant: **Laboratory Physics**, York University, *2013-2014*

Grants and Awards

- ‘Leveraging the Global Crisis Data Bank to enhance risk analysis and impact forecasts at country level’, United Nations Disaster Risk Reduction, 2024, 60,000CHF.
- ‘Meta Unrestricted Research Award’, Meta, 2022, \$25,000.
- ‘EPSRC Impact Acceleration Account (IAA)’, UK Research and Innovation, 2022, £75,000.
- Computational Resources Award, Swiss National Supercomputing Centre, 2018, 250,000 CPU hours.

Scientific Committees & Memberships

- Fellow of Royal Statistical Society, UK.
- Member of the EM-DAT Scientific Committee, University of Louvain, BE.
- Member of the Risk Data Library Standard Scientific Committee, World Bank - GFDRR.
- Member of the Social Equity and Risk Assessment Working Group, University of Michigan, US.
- Member of the Institute of Physics, UK.

Extra-curricular

- La Soupe Populaire: volunteering weekly with a soup kitchen in Lausanne.
- Pottery: specialising in wheel-thrown ceramics.
- Long-distance running: competing in marathons, 100kms and infinity trails.

- Freediving: training & competing with ‘Immersion Profonde’ club, Lausanne.
- Salsa: following weekly courses from AliaSalsa, Lausanne, since April 2024

References

- **Dr. Josep Solà**
Aktiia Sarl, Neuchatël
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- **Prof. David Steinsaltz**
Department of Statistics, University of Oxford
david.steinsaltz@stats.ox.ac.uk
- **Mr. Justin Ginnetti**
International Federation of Red Cross and Red Crescent Societies (IFRC)
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