

Joe Viana

RESEARCHER · OPERATIONAL RESEARCH

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Education

University of Southampton

UK

PHD OPERATIONAL RESEARCH

2006 - 2011

- Thesis: The Development of a Combined Simulation Approach in a Sexual Health Context: Combining Discrete Event and System Dynamics Simulation to Form a Composite Model
- Supervisors: Professor Sally Brailsford, Professor Paul Harper, Dr Veerakathy Harindra

University of Southampton

UK

MSC MANAGEMENT SCIENCE

2004 - 2006

- Thesis: Sizing A&E – Estimating the required size of the new A&E department using simulation modelling
- Supervisors: Professor Sally Brailsford, Professor Paul Harper, Mr Mike Davidge, Mr Criag Walker

University of Southampton

UK

BSc (HONS) SPORT AND HEALTH SCIENCE WITH PSYCHOLOGY

1999 - 2002

Professional Experience

- 2020-now **Researcher II**, Department of Accounting and Operations Management, BI Norwegian Business School, Norway
- 2023 **Associate Professor**, Department of Accounting and Operations Management, BI Norwegian Business School
- 2015-2020 **Researcher II**, HØKH, Akershus University Hospital, Norway
- 2010-2015 **Research Fellow**, Southampton Business School, University of Southampton, UK
- 2009-2010 **Lecturer**, Southampton Business School, University of Southampton, UK
- 2004-2015 **Graduate Research Assistant**, Southampton Business School, University of Southampton, UK

Publications

PIPELINE - IN PREP

Khadri, I., Baraldi, E., Callegari, S., **Viana, J.** and Årdal, C. Simulating Disruptions and Inventory Interventions in Antibiotics Supply Chains: A Single-Chain Model for Antibiotics in Sweden, **International Journal of Production Research**

Viana, J., Jahre, M., van Oorschot, K. and Årdal, C. Tailoring medicine shortage interventions to disruption risks profiles: cost-effectiveness analysis of medicine supply chain strategic stock shortage interventions, **European Journal of Operational Research**

Bø, E. and **Viana, J.** Collaboration and information sharing contributes to reducing logistics costs and increasing customer service level, **Journal of Marketing**

Boyle, L., Furian, N., Leeftink, G., Manzi, S., Rachuba, S., Reuter-Oppermann, M., Schäfer, F. Thielen, C., van de Vrugt, M. and **Viana, J.** Integrated emergency department and bed planning, **Target Journal: TBC**

Baigorri, M., Mallor, F. and **Viana, J.** A systematic review of healthcare agent based simulation modelling, **Target Journal: TBC**

PIPELINE - IN REVIEW

Penn, M. and **Viana, J.** Infant Care Transfers: Simulating Neonatal Infant Pathways and transfers across a Neonatal Network, **Journal of the Operational Research Society, R&R**

Brandt, T., Klein, T.L., Reuter-Oppermann, M., Schäfer, F., Thielen, C. van de Vrugt, M. and **Viana, J.** Integrated patient-to-room and nurse-to-patient assignment in hospital wards, **OR Spectrum, R&R**

- Harper, A., Mustafee, N. and **Viana, J.** Real-time Simulation in Urgent and Emergency Care: A Transformative Shift towards Responsive Decision-making, **European Journal of the Operational Research**, *R&R*
- Wang, Y., Liu, M., **Viana, J.** and Dube, N. How to improve the quality of emergency supplies? A tripartite evolutionary game model, **Kybernetes**, *Under review*
- Viana, J.**, Stylianou, N. and Vasilakis, C. Leveraging quality improvement initiatives to support development of decision support tools in healthcare, **Journal of the Operational Research Society**, *Under review*
- Gartner, D. and **Viana, J.** Hybrid Modelling for Planning a Reliable Hospital-Wide Cleaning Workforce, **Annals of Operations Research**, *Under review*
- Jambor, E., **Viana, J.**, Reuter-Oppermann, M. and Müller-Polyzou, R. Evaluating the impact of COVID-19 protection measures and staff absence on radiotherapy practice: A simulation study, **PLOS One**, *Under review*

PIPELINE - FORTHCOMING

- Kramer, M.P., **Viana, J.**, Mueller, R., Hanf, C-H. and Hanf, J.H. (2024) Towards a taxonomy of multi-agent simulation models to determine disruptive technology adoption behaviour in the wine industry. **Book chapter in: Agribusiness Innovation and Contextual Evolution, Volume I Strategic, Managerial and Marketing Advancements**

PUBLISHED

PEER REVIEWED ARTICLES

- Gartner, D., **Viana, J.**, Rostami-Tabar, B., Edenharter, G. and Pfürringer, D. (2022) Challenging the Throwaway Culture in Hospitals: Scheduling the Mix of Reusable and Single-Use Bronchoscopes. **Journal of the Operational Research Society**, <https://doi.org/10.1080/01605682.2022.2129490>
- Ahlqvist, V., Dube, N., Jahre, M., Lee, J.S., Melaku, T., Farstad, A.M., Olivier, M., Selviaridis, K., **Viana, J.**, & Årdal, C.O. (2022) Supply chain risk management strategies in normal and abnormal times: policymakers' role in reducing generic medicine shortages, **International Journal of Physical Distribution & Logistics Management**, <https://doi.org/10.1108/IJPDLM-12-2021-0511>
- Viana, J.**, Simonsen, T.B., Faraas, H.E., Schmidt, N. Dahl, F.A. and Flo, K. (2020) Capacity and patient flow planning in post-term pregnancy outpatient clinics: a computer simulation modelling study, **BMC Health Services Research**, <https://doi.org/10.1186/s12913-020-4943-y>
- Rand, K., Dahl, F.A., **Viana, J.**, Rønning, O.M., Faiz, K.W. and Barra, M. (2019) Fewer ischemic strokes, despite an ageing population: stroke models from observed incidence in Norway 2010–2015, **BMC Health Services Research**, <https://doi.org/10.1186/s12913-019-4538-7>
- Willis, R., Channon, A.A., **Viana, J.**, LaValle, M.H. and Hutchinson, A. (2019) Resurrecting the interval of need concept to improve dialogue between researchers, policymakers, and social care practitioners, **Health & social care in the community**, <https://doi.org/10.1111/hsc.12769>
- Barra, M., Labberton, A.S., Faiz, K.W., Lindstrøm, J.C., Rønning, O.M., **Viana, J.**, Dahl, F.A. and Rand, K. (2019) Stroke incidence in the young: evidence from a Norwegian register study, **Journal of Neurology**, <https://doi.org/10.1007/s00415-018-9102-6>
- Viana, J.**, Brailsford, S.C., Harindra, V. and Harper, P.R. (2014) Combining discrete-event simulation and system dynamics in a healthcare setting: a composite model for Chlamydia infection, **European Journal of Operational Research**, <https://doi.org/10.1016/j.ejor.2014.02.052>

PEER REVIEWED BOOK CHAPTERS

- Brailsford, S.C., Evenden, D. and Viana, J. (2020) Hybrid Simulation Modeling in Population Health, Chapter in; **Complex Systems and Population Health**, Oxford University Press, <https://doi.org/10.1093/oso/9780190880743.003.0015>
- Sadsad, R., McDonnell, G., **Viana, J.**, Desai, S.M., Harper, P. and Brailsford, S. (2014) “Hybrid modelling case studies” chapter, in; **Discrete-event simulation and system dynamics for management decision making**, John Wiley & Sons, <https://doi.org/10.1002/9781118762745>

PEER REVIEWED INTERNATIONAL CONFERENCE PAPERS:

- Mustafee, N., Harper, A. and **Viana, J.** (2023) Hybrid Models with Real-Time Data in Healthcare: A Focus on Data Synchronization and Experimentation, **In: Proceedings of the 2023 Winter Simulation Conference**, <https://doi.org/10.1109/WSC60868.2023.10407687>

- Mustafee, N., Harper, A. and **Viana, J.** (2023) Hybrid Models with Real-time Data: Characterising Real-time Simulation and Digital Twins, **In: Proceedings of The Operational Research Society 11th Simulation Workshop (SW23), Operational Research Society**, <https://doi.org/10.36819/sw23.031>
- Khadri, I.J. and **Viana, J.** (2022) Simulation of IT Data Integration to Optimize and Antibiotics Supply Chain with System Dynamics, **In: Proceedings of the 2022 Winter Simulation Conference**, <https://doi.org/10.1109/WSC57314.2022.10015258>
- Viana, J.**, K. Van Oorschot, and C. Ardal. (2021) Assessing Resilience of Medicine Supply Chain Networks to Disruptions: A Proposed Hybrid Simulation Modeling Framework, **In: Proceedings of the 2021 Winter Simulation Conference**, <https://doi.org/10.1109/WSC52266.2021.9715466>
- Viana, J.**, Simonsen T.B., Dahl, F.A., and Flo, K. (2018) A hybrid discrete event agent based overdue pregnancy outpatient clinic simulation model, **In: Proceedings of the 2018 Winter Simulation Conference**, <https://doi.org/10.1109/WSC.2018.8632282>
- Viana, J.**, Ziener, V.M., Holhjem, M.S., Ponton, I.G., Thøgersen, L.J. and Simonsen, T.B. (2017) Optimizing home hospital health service delivery in Norway using a combined geographical information system, agent based, discrete event simulation model, **In: Proceedings of the 2017 Winter Simulation Conference**, <https://doi.org/10.1109/WSC.2017.8247905>
- Rand-Hendriksen, K., **Viana, J.** and Dahl, F. (2017) Combining bootstrap-based stroke incidence models with discrete event modeling of travel-time and stroke treatment: non-normal input and non-linear output, **In: Proceedings of the 2017 Winter Simulation Conference**, <https://doi.org/10.1109/WSC.2017.8247906>
- Viana, J.**, Rand-Hendriksen, K., Simonsen, T.B., Barra, M. and Dahl, F.A. (2016) Do hybrid simulation models always increase flexibility to handle parametric and structural changes? **In: Proceedings of the 2016 Winter Simulation Conference**, <https://doi.org/10.1109/WSC.2016.7822196>
- Rand-Hendriksen, K., **Viana, J.**, Barra, M. and Dahl, F.A. (2016) Conflicts or synergy when combining modeling approaches: perspectives from psychology, **In: Proceedings of the 2016 Winter Simulation Conference**, <https://doi.org/10.1109/WSC.2016.7822198>
- Viana, J.** (2014) Reflections on two approaches to hybrid simulation in healthcare, **In: Proceedings of the 2014 Winter Simulation Conference**, <https://doi.org/10.1109/WSC.2014.7020010>
- Brailsford, S.C., **Viana, J.**, Rossiter, S., Channon, A. and Lotery, A.J. (2013) Hybrid simulation for health and social care: The way forward, or more trouble than it's worth? **In: Proceedings of the 2013 Winter Simulation Conference**, <https://doi.org/10.1109/WSC.2013.6721425>
- Viana, J.**, Rossiter, S. P., Channon, A.A.R., Brailsford, S.C. and Lotery, A. (2012) A multi-paradigm, whole system view of health and social care for age-related macular degeneration, **In: Proceedings of the 2012 Winter Simulation Conference**, <https://doi.org/10.1109/WSC.2012.6465267>
- Brailsford, S.C., Evandrou, M., Luff, R., Shaw, R., **Viana, J.**, Vlachantoni, A. and Willis, R. (2012) Using system dynamics to model the social care system: simulation modeling as the catalyst in linking demography to care delivery, **In: Proceedings of the 2012 Winter Simulation Conference**, <https://doi.org/10.1109/WSC.2012.6465265>
- Brailsford, S., Silverman, E., Rossiter, S., Bijak, J., Shaw, R., **Viana, J.**, Noble, J., Efstathiou, S. and Vlachantoni, A. (2011) Complex systems modeling for supply and demand in health and social care, **In: Proceedings of the 2011 Winter Simulation Conference**, <https://doi.org/10.1109/WSC.2011.6147835>
- Brailsford, S.C., Desai, Mitul. S. and **Viana, J.** (2010) Towards the Holy Grail: combining system dynamics and discrete-event simulation in healthcare, **In: Proceedings of the 2010 Winter Simulation Conference**, <https://doi.org/10.1109/WSC.2010.5678927>

Awards, Fellowships, & Grants

2021	Outstanding Contribution in Reviewing , Health Systems Outstanding Contribution in Reviewing , Journal of Simulation	
2019	Reviewer recognition , Winter Simulation Conference	
2017	ORAHS 2018 conference support grant , The Research Council of Norway Steve Gallivan Award Honorary mention , Using a combined discrete event simulation agent based model to improve drug production at the Radium Hospital, ORAHS 2017	NOK 200,000
2011	Poster Award: Forecasting social care demand in Hampshire , ORAHS 2011	£100
2008	Travel grant , University of Southampton	£500
2007	Poster Award: Chlamydia management - The role of Operational Research , University of Southampton	£100
2006	Doctoral Training Award , Engineering and Physical Sciences Research Council (EPSRC) MSc thesis Award , University of Southampton	£72,000
2003	Highest foundation level aggregate marks in Hampshire , CIMA	
2000	Recognition for saving a woman's life , Hampshire Constabulary	

Teaching Experience

2024	MARFAR4300 Development & Manufacturing of Medicinal Products (Undergrad) , OsloMet, Lecturer
2023	One day AnyLogic simulation training course , The Public University of Navarre, Spain
2023	GRA6714 Supply Chain Management (Postgrad) , BI, Lecturer
2023	MAN5164 Business Analytics (Executive) , BI, Lecturer
2023	GRA4138 Business Simulation Analysis (Postgrad) , BI, Course responsible
2021	GRA6848 Crisis Management Preparedness & Response (Postgrad) , BI, Lecturer
2021	GRA4135 Decision Theory and System Dynamics (Postgrad) , BI, Lecturer
2020-Now	GRA4138 Business Simulation Analysis (Postgrad) , BI, Lecturer
2017	Health Informatics (Postgradu) , University of Oslo, Guest lecture
2006-2015	MSc Business & Mathematics Schools , University of Southampton, Simulation support
2006-2015	MANG6059 Healthcare Modelling (Postgrad) , University of Southampton, Teaching Assistant
2004-2015	MANG2002 Business Simulation (Undergrad) , University of Southampton, Lecturer
2004-2015	MANG6122 Simulation (Postgrad) , University of Southampton, Teaching Assistant

Mentoring

2019-2023	PhD: Ane S Zeziaga , Systemic and Temporal Analysis of the Relationship between HR Practices, Employee Well-being, and Organisational Performance: a System Dynamics Study, Mondragon University, Faculty of Engineering
2006-2015	MSc simulation project support , For 25-50 students, University of Southampton

Research Experience

Quantitative methods for Uplifting the Performance of Health Services (q-UPHS)

Public University of Navarre, ES

COLLABORATORS: PROFESSOR FERMIN MALLOR, DR MARTA CILDOZ, MR MIGUEL BAIGORRI

2024 - Present

- Project: A systematic analysis of agent based simulation health models
- Project: Development and Integration of Matheuristic Optimization Algorithms and Hybrid Simulation Models in Digital Twins

BI Norwegian Business School, Accounting and Operations Management

Oslo, NO

COLLABORATOR: PROFESSOR EIRILL BO

2023 - Present

- Project: Investigate collaboration and information sharing effect on logistics costs and customer service level

PLATINEA

Sweden

COLLABORATORS: PROFESSOR ENIRCO BARALDI, DR SIMONE CALLEGARI, MS INES KHADRI

2021 - Present

- Project: Simulating Disruptions and Inventory Interventions in Antibiotics Supply Chains: A Single-Chain Model for Antibiotics
- Project: Network and policy to promote value creation for antibiotics

University of Southampton - Southampton Business School

Southampton, UK

COLLABORATOR: DR. MARION PENN

2021 - Present

- Project: Simulating Neonatal Infant Pathways and transfers across a Neonatal Network

Center for Simulation Analytics and Modelling (CSAM)

University of Exeter, UK

COLLABORATORS: PROFESSOR NAVONIL MUSTAFEE, DR ALISON HARPER

2021 - Present

- Project: Real-time Simulation in Urgent and Emergency Care
- Project: Hybrid simulation, real time simulations and digital twins in Healthcare

Centre for Healthcare Innovation and Improvement (CHI²)

University of Bath, UK

COLLABORATORS: PROFESSOR CHRISTOS VASILAKIS, DR NEOPHYTOS STYLIANOU

2021 - Present

- Project: Quality improvement simulation study of atrial fibrillation stroke treatment

Cardiff University - School of Mathematics

Southampton, UK

COLLABORATOR: PROFESSOR DANIEL GARTNER

2021 - Present

- Project: Scheduling the cleaning of bronchoscopes
- Project: Flexible staff scheduling of resources with location constraints

Measures for improved Availability of medicines and vaccines (MIA)

International

COLLABORATORS: MIA PARTNERS (FUNDING: RESEARCH COUNCIL OF NORWAY)

2020 - Present

- Aim: Investigates the supply chain factors influencing the supply of medicine and vaccines
- Project: Medicine supply chains hybrid simulation modeling framework
- Project: Analyse cost-effectiveness of supply chain interventions to disruptions
- Project: Game theoretical analysis of emergency supply production

Mondragon University, Faculty of Engineering

Arrasate, ES

COLLABORATORS: DR ANE ZEZIAGA, DR MYRIAM SOTO, UNAI ELORZA

2019 - Present

- Project: System Dynamics analysis of effects of Strategic Human Resource Management

Integrated Planning in Hospitals: Complexity, Analytics, Reorganization Efficiency

International

COLLABORATORS: INPLAN: CARE NETWORK (FUNDING: THE GERMAN RESEARCH FOUNDATION)

2018 - Present

- Project: Integrated patient-to-room and nurse-to-patient assignment in hospital wards
- Project: Integrated emergency department and bed planning
- Project: Transition from inpatient-based to outpatient-based care
- Project: The impact of risk attitudes of ICU coordinators on upstream and downstream units
- Project: Ambulance 'ramping' outside emergency departments

Centre for Connected Care (C3)

COLLABORATORS: C3 PARTNERS (FUNDING: RESEARCH COUNCIL OF NORWAY)

Norway

2015-2020

- Aim: To accelerate the adoption of integrated patient-centric services
- Partners: Public and private. AHUS = Akershus University Hospital, OUS = Oslo University Hospital
- Project: Hybrid simulation model to improve patient flow in obstetrics and gynaecology department, AHUS
- Project: Hybrid simulation model to improve the delivery of home hospital services for children in AHUS and OUS
- Project: Hybrid simulation model to improve patient flow within and between the medical observation, intensive care and post-operative recovery units, AHUS
- Project: Hybrid simulation model to improve the production of chemotherapy drugs, Radium Hospital

Care Life Cycle Project (CLC)

COLLABORATORS: CLC PARTNERS (FUNDING: EPSRC)

UK

2010-2015

- Aim: Investigate the factors affecting both the supply and demand of health and social care in the UK
- Project: Hybrid simulation of age-related macular degeneration to investigate the interactions between health and social care
- Project: System dynamics simulation to forecast Hampshire's social care needs, known and unknown.

Outreach & Professional Development

SERVICE AND OUTREACH

- 2018-now **Operational Research Applied to Health Services**, International board member, Oslo, NO
- 2018 **Operational Research Applied to Health Services Conference**, Co-chair, Oslo, NO
- 2017 **Winter Simulation Conference**, Hybrid simulation stream committee member, Las Vegas
- 2010-Now **ORAHs social network channels**, Co-moderator
- 2010-2015 **University and College Union executive committee**, Post-doc representative
- 2010-2015 **University Level Athena SWAN Self-Assessment Team**, Post-doc representative
- 2010-2015 **Career Development of Researchers Working Group**, Post-doc representative
- 2010 **Student Conference on Operational Research**, Organising committee member, UK
- 2009 **Young Operational Research Conference**, Healthcare stream co-organiser, Warwick, UK
- 2006-2010 **Concordat advisory group (researcher career development)**, PhD student representative
- 2006-2010 **Faculty staff student liaison committee**, PhD student representative
- 2006-2010 **Graduate School Board**, PhD student representative
- 2006-2015 **Grandmother's care**, She had Alzheimer's. Liaised with bodies. provided personal care

Conference and workshops. Presented at 50+ international conferences and workshops. I frequently attend the Operational Research Applied to Health Services conference and Winter Simulation Conference. A full list is available upon request

Peer reviewing. European Journal of Operational Research, Journal of the Operational Research Society, Hawaii International Conference on System Sciences, INFORMS Journal on Computing, Winter Simulation Conference, Health Care Management Science, Simulation, Socio-Economic Planning Sciences, Flexible Services and Manufacturing Journal, Journal of Simulation, Operations Research for Health Care, Simultech, Health Systems, World Congress on Social Simulation

Professional Memberships. The Norwegian Operations Research Society

LANGUAGES

English - Native

Norwegian (B2)

UNIVERSITY OF OSLO

Norway

2016-2017

- Mellomkurs i norsk, trinn 3
- Intermediate Norwegian Level 2
- Intensive Elementary Norwegian Level 1; Elementary Norwegian Level 1
- Norwegian History