GLORIA AMARIS

PhD, MSc. Engineering Sciences

Mathematical modelling of behaviour and decision making

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BRIEF BIO

Area: mathematical modelling of human behaviour and decision making

Education

- PhD degree in Engineering Sciences (2021) – Mathematical modelling of human behaviour.
- Master's in civil engineering – Major in Water Resources (2015)
- BSc Civil Engineer (2013)

External affiliations

- Choice Modelling Centre (CMC) University of Leeds
- Newcastle University - Water group
- Centro de Desarrollo Urbano Sustentable (CEDEUS) Pontificia Universidad Católica de Chile
- Transport Planning and Engineering group, University of Cape Town
- NTNU - Norwegian University of Science and Technology. Department of psychology
- UOB – University of Birmingham. School of History and Culture.

Languages: English – Full professional proficiency, Spanish – mother tongue

Relevant experience

13 years of experience in research with specialisation in choice modelling.

4 years of professional experience as a civil engineer/hydraulic engineer.

3.5 years of teaching experience.

7 years of collaboration with international groups

Extensive expertise in:

- Survey design, data collection, modelling, forecasting, analysis.
- Understanding and modelling individual's behaviour measuring the impact of qualitative and quantitative attributes.
- Mathematical and statistical analysis.
- Post-modelling evaluation of strategies and policies.

AREAS OF INTEREST

- Choice modelling
- Mathematical modelling
- Behavioural economics
- Sustainability, water management, transport and policies
- Nexus between social sciences, water and environment

LANGUAGE AND KEY SKILLS

- ✓ Excellent communication skills, both written and verbal (**English, Spanish**).
- ✓ Good planning, organisational and time management skills.
- ✓ Ability to present research to scientific community and/or industry, policy makers and general public.

KNOWLEDGE OF SPECIALISED PROGRAMS

APOLLO: package in R for choice modelling
Ngene: software for designing choice experiments
Qualtrics: survey processing
MINITAB: statistics and data analysis
SPSS: process improvement tools, statistics and data analysis
AutoCAD: computer-aided design software to create precise 2D and 3D drawings
ArcGis: mapping software

EDUCATION

2016 – 2021

PhD. in Engineering Sciences |Pontificia Universidad Católica de Chile

Final grade 6.6/7. Thesis: "*Understanding the potential demand for greywater reuse in urban settings: from behavioural modelling to policy design*".

Skills acquired: Advanced survey design, qualitative and quantitative modelling, latent variable modelling, prediction of behaviour/demand, behavioural analysis, statistical analysis, policy evaluation and scenario testing, and mapped (GIS).

2013 – 2015

Master's in Civil Engineering |Universidad Del Norte Colombia
Major in Water Resources

Final grade 3.91/5. Thesis: *"Analysis of the acceptance and willingness to pay for using sustainable drainage at home systems in urban areas – a case study for the city of Barranquilla".*

Skills acquired: Basic survey design, qualitative and quantitative modelling, statistical analysis, policy evaluation and scenario testing, hydrological modelling, and hydraulic modelling.

2007 – 2013

Bachelor's in Civil Engineering |Universidad Francisco de Paula Santander Ocaña, Colombia

Final grade 4.2/5. Thesis: "*Study of the drainage system of the Francisco de Paula Santander Ocaña University campus and design of hydro-economic structures through the uncertainty principle".*

Skills acquired*:* Statistical analysis, Hydrological modelling, Design of hydraulic structures and Mapped (AUTOCAD).

RESEARCH POSITIONS

May 2025 – to date

Researcher | NTNU: Norwegian University of Science and Technology
Department of Psychology

Project: Multifutures

Key responsibilities:
- design of stated choice surveys
- modelling (advanced choice models, regression, factor analysis)
- forecasting of future behaviour
- analysis of outputs and relevance to policy

Jan 2025 – to date

Researcher | University of Birmingham

Project: Historic Houses, Global Crossroads.

Key responsibilities:
- design of stated choice surveys
- modelling (advanced choice models, regression, factor analysis)
- forecasting of future behaviour
- analysis of outputs and relevance to policy

SEP 2021 – SEP 2024 **Postdoctoral researcher | NTNU: Norwegian University of Science and Technology Department of Psychology**

Participation in projects:

Project 1: "Consumer preferences for energy services and energy monitoring devices"
Study areas: United Kingdom, Spain, Germany (Four separate studies/three countries).

Project 2: "Mediators and moderators of environmental behaviour spillover: A comprehensive approach. **Study areas:** Norway (4 separate studies)

Key responsibilities:

- review of existing survey designs
- design of stated choice surveys
- modelling (advanced choice models, regression, factor analysis)
- hypotheses testing
- forecasting of future behaviour
- analysis of outputs and relevance to policy

FEB 2021 – JUL 2021 **Visiting postdoctoral researcher**
Choice modelling Centre (CMC) University of Leeds.

FEB 2020 – NOV 2020 **PhD internship Choice modelling Centre (CMC) University of Leeds**
Supervisor: Stephane Hess

MAR 2019 – NOV 2019 **PhD internship Newcastle university**
Supervisor: Richard Dawson

TEACHING EXPERIENCE

MAR 2023 **Guest lecturer |CIV5127Z**
UNIVERSITY OF CAPE TOWN
Master's course in Choice Modelling & Stated Choice Survey Design

SEP 2021 **Guest lecturer |CIV5127Z**
UNIVERSITY OF CAPE TOWN
Master's course in choice modelling & stated choice survey design

MAR 2021 **Teaching assistant | Apollo course**
UNIVERSITY OF LEEDS
Teaching assistant for Continuing Professional Development course in choice modelling

OCT 2020 & NOV 2020 **Teaching assistant | Apollo course**
UNIVERSITY OF LEEDS
Teaching assistant for Continuing Professional Development courses in choice modelling

MAR 2018 – JUL 2018 **Teaching assistant | Hydrology course**
PONTIFICIA UNIVERSIDAD CATOLICA DE CHILE
Duties: guidance and supervision of other teaching assistants, coordination of reinforcement activities for students, assisting evaluations and uploading student grades report to the web platform.

AUG 2016 – JUL 2018 **Teaching assistant | Environmental engineering course**
PONTIFICIA UNIVERSIDAD CATOLICA DE CHILE
Duties: guidance and supervision of field and laboratory work carried out by students in the following areas: Sampling and measurement of (1) water quality parameters particularly pH, DQO, DBO, temperature and electrical conductivity; (2) copper concentration in domestic water; (3) alkalinity; and (4) sediment transport.

FEB 2014 – JUN 2014. **Teaching assistant | Statistics**
UNIVERSIDAD DEL NORTE COL
Duties: Reinforcement activities for students for Statistics course at the undergraduate level

PROJECT MANAGEMENT EXPERIENCE

2022 – PRESENT

Co-investigator

Project "Climate change mitigation policies and their perceived justice: A psychological perspective", 390,000 NOK received from NTNU in 2022 under the Strong Research Groups program

CONFERENCE AND JOURNAL ROLES

2022 PRESENT — Peer reviewer of International Choice Modelling Conference

PRESENT — Reviewer for the journal of environmental management

PRESENT — Reviewer for the Sustainable Cities and Society

PRESENT — Reviewer for the Journal of Choice Modelling

PRESENT — Desalination and water treatment

REAL-WORLD EXPERTISE

JUN 2019 – OCT 2019

Hydraulic Engineer | UNIVERSIDAD DEL NORTE

- Advice on the hydrology component of the Magdalena River APP project between Bocas de Ceniza and Barrancabermeja
- Review of the hydrological conditions of the study sector using expert criteria as the technical-scientific basis
- To propose monitoring activities that should be considered for the PPP related to hydrological measurements.

JAN 2015 - DEC 2016

- Modelling using Winriver II
- Calibration of sediment transport concentration in suspension models
- Estimation of the concentration of transport in suspension (SSC) and total transport of suspended sediment (Qst) from ADCP/USP-61
- Hydro-sedimentological conditions analysis.
- Determination of the distribution of flows and speed patterns, using ADCP in the Magdalena River.

JUL 2015 - NOV 2015

Civil Engineer | UNIVERSIDAD DEL NORTE

Preparation of master plan for drinking water, sanitary sewage and pluvial drainage for the urban development of the Pavas and Pajonal zone (Barranquilla- Colombia)

FEB 2015 – AUG 2015

Research assistant | UNIVERSIDAD DEL NORTE

Analysis of the key competitiveness factors for building a new model of intelligent territory in the Caribbean and Santanderes Regions of Colombia. "Caribbean diamond and Santanderes project".

APR 2014 – JAN 2015

Civil Engineer | WSP INC SUCURSAL COLOMBIA S.A.S

Design of six non-conventional drinking water supply systems (wells) and basic sanitation and analysis of risk and/or threats involved in projects for drinking water for two municipalities of the Bolívar and Cesar Departments in Colombia.

PUBLICATIONS

✓ Amaris, G., Vesely, S., & Klöckner, C. A (2025). Smart thermostats, washing machines, and electric vehicle charging: Determinants of preferences among German and Spanish consumers. https://doi.org/10.1016/j.erss.2025.104344

✓ Vesely, S., & Amaris, G. (2025). AI-driven income inequality and preferences for redistribution. Economic Analysis and Policy. https://doi.org/10.1016/j.eap.2025.06.019

✓ Vesely, S., Amaris, G., & Klöckner, C. A. (2024). The effect of brief in-survey product experience on preferences for smart energy technologies. Smart Energy, 16, 100155. https://doi.org/10.1016/j.segy.2024.100155

✓ Amaris, G., Hess, S., & Vesely, S., (2025). Disentangling the role of attitudes and behavioural spillover: an application of choice models to the study of environmental decision-making. (Under review).

✓ Amaris, G., Vesely, S., & Hess, S., (2025) A new approach for detecting preference spillovers: application of choice models to the analysis of CO_2 reducing behaviour and environmental donations. (Under review). Environment & Behavior

✓ Amaris, G., Vesely, S., Hess, S., & Klöckner, C. (2024) Can Competing Demands Affect Pro-Environmental Behaviour: A Study of the Impact of Exposure to Partly Related Sequential Experiments. Ecological Economics, 216, 108023. https://doi.org/10.1016/j.ecolecon.2023.108023

✓ Amaris, G., Arellana, J., Beck, M., Behrens, R., Calastri, C., Hess, S., ... & Zuidgeest, M. (2024). A multi-country panel study of behaviour, perceptions and expectations during different stages of the COVID-19 pandemic. Travel Behaviour and Society, 34, 100676. https://doi.org/10.1016/j.tbs.2023.100676

✓ Hess, S., Lancsar, E., Mariel, P., Meyerhoff, J., Song, F., Van den Broek-Altenburg, E., Olufunke A. Alaba, **Amaris,G.,** Arellana J., Leonardo J. Basso J, ... & Zuidgeest, M. H. (2022). The path towards herd immunity: Predicting COVID-19 vaccination uptake through results from a stated choice study across six continents. Social science & medicine, 298, 114800. https://doi.org/10.1016/j.socscimed.2022.114800

✓Amaris, G., Dawson, R., Gironás, J., Hess, S., & Ortúzar, J. de D. (2021). From mathematical models to policy design: Predicting greywater reuse scheme effectiveness and water reclamation benefits based on individuals' preferences. Sustainable Cities and Society, 74, 103132. https://doi.org/10.1016/j.scs.2021.103132

✓Amaris, G., Hess, S., Gironás, J. & Ortúzar, J. de D. (2021). Using hybrid choice models to capture the impact of attitudes on residential greywater reuse preferences. Conserv. Recy. 164, 10517. https://doi.org/10.1016/j.resconrec.2020.105171

✓ Amaris, G., Gironás, J., Hess, S., & Ortúzar, J. de D. (2020). Capturing and analysing heterogeneity in residential greywater reuse preferences using a latent class model. Journal of Environmental Management, 279, 111673. https://doi.org/10.1016/j.jenvman.2020.111673

✓ Amaris, G., Dawson, R., Gironás, J., Hess, S. & Ortúzar, J. de D. (2020). Understanding the preferences for different types of urban greywater uses and the impact of qualitative attributes. Water Res., 116007. https://doi.org/10.1016/j.watres.2020.116007

✓ Amaris, G., Ávila, H. & Guerrero, T. (2017). Aplicación de modelo ARIMA para el análisis de series de volúmenes anuales en el río Magdalena. *Tecnura*, 21(52), 88-101. (http://revistas.udistrital.edu.co/ojs/index.php/Tecnura/article/view/12025/0).

✓ Castro, G.E.A., Barbosa, T.E.G. & Ortiz, E.A.S. (2015). Comportamiento de las ecuaciones de Saint-Venant en 1D y aproximaciones para diferentes condiciones en régimen permanente y variable. *Tecnura,* **19** (45), 75-87. (http://revistas.udistrital.edu.co/ojs/index.php/Tecnura/issue/view/680).

✓ Guerrero-Barbosa, T. E., & **Amarís-Castro, G. E**. (2014). Application of Bayesian techniques for the identification of accident-prone road sections. Dyna, 81(187), 209-214.

✓ Book (Spanish). Thomas Edison Guerrero Barbosa, **Gloria Amaris**, Andrea Stefannia Arevalo Tamara "Accidentalidad vial: determinación de sitios críticos y factores que la afectan". Road accidents: determination of important sites and factors that affect them. Country: Colombia 2020. ed:ECOE EDICIONES ISBN: 978-958-771-948-2.

PRESENTATIONS IN CONFERENCES AND INTERNATIONAL WORKSHOPS

✓ Detecting preference spillover: application of choice models to the analysis of CO_2 reducing behaviour and environmental donations, International Choice Modelling Conference (ICMC) (Puerto Varas, Chile, April 2024).

✓ International workshop on behavioural modelling: A multi-country panel study of behaviour, attitudes and expectations during the COVID-19 pandemic (Hiroshima university, July 2022).

✓ A choice modelling analysis of pro-environmental behaviour spillover, International Choice Modelling Conference (ICMC), (Reykjavik, Iceland, May 2022).

✓Amaris, G. (2020), The role of qualitative attributes in preferences for greywater reuse, invited seminar, workshop on "Qualitative attributes in stated choice surveys: presentation, modelling and interpretation", University of the Basque Country, January 2020.

✓Amaris, G. (2019), Influence of qualitative attributes in urban grey water reuse choices, invited seminar, Future Water Group, University of Cape Town, September 2019.

✓ Amaris G, Gironás J & Ortúzar J.D. Influence of qualitative attributes in urban greywater reuse choices, International Choice Modelling Conference (ICMC) (Kobe, Japan 2019).

✓ Avila, H, Gutierrez, R. R., Otero, L., & AMARIS, G. (2019). Navigability of the Magdalena River: opportunities and challenges based on scientific evidence. In E-proceedings of the 38th IAHR World Congress September (pp. 1-6).

✓ Amaris G & Avila H. Applying Discrete Choice Models for determining the acceptability of Low Impact Development practices in consolidated urban watersheds, World environmental & water resources congress (Florida 2016).

✓ Avila H & Amaris G. Identifying potential areas for SUDS application in consolidated urban watersheds based on GIS. World environmental & water resources congress (Florida 2016).

✓ Ávila H, Ávila L, Amaris G, Riesgo de inundación en poblaciones vulnerables: perspectiva y reflexiones de la inundación en el sector del delta del rio Magdalena/Flood risk invulnerable populations: perspective and reflections of the flood in delta Magdalena river sector. Congreso Nacional de Ríos y humedales (Honda Tolima,2015)

✓ Amaris G & Avila H. Estimación de modelo ARIMA para el análisis de series de volúmenes anuales en el río Magdalena/ Estimation of the ARIMA model for the analysis of series of annual volumes in the Magdalena River. II encuentro internacional de innovación tecnológica (11 de noviembre 2015 Ocaña Norte de Santander).

✓ Amaris G. Comportamiento de las Ecuaciones de Saint Venant en 1d y sus diferentes aproximaciones para diferentes Condiciones en Régimen Permanente Y Variable/ Behavior of the Saint Venant equations in 1d and their different approaches for different conditions in permanent and variable regime. Simposio Internacional de Investigación e Innovación en Ciencia y Tecnología. Ocaña, Norte de Santander. (15 de octubre 2012).

✓ Amaris G & Guerrero T. Identificación de las zonas de accidentalidad en la ciudad de Ocaña/ Identification of accident zones in Ocaña city. XV Encuentro Nacional e Internacional de Semilleros de Investigación, Bucaramanga, Santander. (octubre de 2012). Integrante del grupo de investigación en geotecnia y medio ambiente "GIGMA" de la universidad Francisco de Paula Santander - Ocaña, inscrito en GRUPLAC de COLCIENCIAS.