

Marcellin Martinie

Data scientist with a passion for analytics, modelling, automation, and data visualisation. I thrive on tackling challenging research questions and producing impactful data-driven insights. More broadly, I'm interested in improving the way we leverage data and analytics to communicate insights across all levels of the organisation.

Personal details

Date of Birth: 22 November 1993
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Education

2016 - 2020 PhD, The University of Melbourne [[Academic Transcript](#)]
Thesis: Contemporary Methods for Identifying and Leveraging Expertise in Collective Decision-Making. [[pdf](#)]
2012 - 2015 BSc. (Hons) in Psychology, The University of Melbourne (First Class Honours)

Certifications

- Machine Learning Course Certificate, Stanford University / Coursera, Jan 2022
This course provided a broad introduction to machine learning topics and best practices including supervised learning (parametric/non-parametric algorithms, neural networks) and unsupervised learning techniques (clustering, dimensionality reduction, deep learning).

Employment

Modelling and Analytical Epidemiology, Department of Health:

2022 - 2023 Senior Analyst
I led strategic initiatives to inform policy as part of the COVID response. I designed quantitative analyses to answer complex research questions, translating results from advanced analyses into data visualisations and relevant recommendations for policy.

Forethought Research:

2021 - 2022 Marketing Science Analyst
Key responsibilities included data cleaning, preparation, and validation of complex quantitative datasets, and interrogation and interpretation of analytical findings against clients' commercial objectives.

The University of Melbourne:

2016 - 2020 Tutor in Research Methods for Human Inquiry (PSYC30013)
Teaching fundamentals in data analysis and statistics in R, key topics included ETL principles, data processing, visualisation, regression and GLMs.

2019 - 2019	<u>Tutor in Advanced Design and Data Analysis (PSYC40005)</u>
2016 - 2017	<u>Tutor in Cognitive Psychology (PSYC20007)</u>

Technical skills

Advanced:

R (tidyverse, ggplot, shiny), MATLAB, Git, LaTeX, Qualtrics, SPSS, Microsoft Office

Basic:

Python, SQL, HTML, JavaScript, Markdown, Linux, Azure Cloud

Project Highlights

(1) Forecasting future waves of COVID (Apr 2023)

Using the publicly available international genomics sequencing data, I developed a bespoke threshold model for forecasting the onset of future COVID waves. I validated the model across data from multiple countries, demonstrating high out-of-sample accuracy and greater lead time than using existing surveillance signals. Findings were presented to senior stakeholders including the Victorian Chief Health Officer.

Key skills: R (tidyverse), timeseries forecasting, feature engineering, model cross validation

(2) Modelling population immunity against COVID (Mar 2022)

Using records of COVID vaccination and infection for each person in Victoria, I simulated the change in the population's level of immunity against infection and severe disease over time. My model forecasted future levels of immunity under different hypothetical scenarios by varying the estimated number of infections and new vaccinations in the population. Results quantified Victoria's susceptibility to future outbreaks as population immunity waned over time.

Key skills: R (tidyverse), ggplot, forecasting, model simulation

(3) Developing the Forethought Analytics platform (Jan 2022)

Leveraging my expertise in R shiny, I played a lead role in developing a platform that integrates Forethought's core analytic functions into a simple-to-use dashboard interface. My contributions included implementing ETL procedures involving SQL databases; developing data cleaning, visualisation, and modelling modules; and managing package development and testing (devtools), version control (git), and virtualisation (docker).

Key skills: R (tidyverse, shiny), SQL, Docker, Git

(4) Estimating the supply and demand for data scientists (Dec 2020)

Contracted by Keypath Education to investigate the supply and demand for Data Scientists in Australia, I used Selenium and Python to scrape thousands of publicly available job advertisements on job websites such as Seek and CareerOne, and used Natural Language Processing in R to analyse the content of those ads. I found a much greater demand for Data Scientists in the Australian job market compared to similar professions in the category.

Key skills: R, Python, NLP, RegEx, HTML

Research papers

1. Martinie, M., Wilkening, T., & Howe, P.D. (2020). Using meta-predictions to identify experts in the crowd when past performance is unknown. *Plos One*, 15(4), e0232058. [\[pdf\]](#)
2. Wilkening, T., Martinie, M., & Howe, P.D. (2021). Hidden experts in the crowd: using meta-predictions to leverage expertise in single-question prediction problems. *Management Science*. Advance online publication. doi.org/10.1287/mnsc.2020.3919 [\[pdf\]](#)
3. Martinie, M., Wilkening, T., & Howe, P.D. (2023). Using cross-domain expertise to aggregate forecasts when within-domain expertise is unknown. Manuscript under review. [\[pdf\]](#)

Conference presentations and invited talks

- Australian Mathematical Psychology Conference, Melbourne, Feb 2019
- Australian Experimental Psychology Conference, Hobart, Apr 2018
- Australian Experimental Psychology Conference, Newcastle, Apr 2017
- Australian Experimental Psychology Conference, Melbourne, Apr 2016
- Australian Mathematical Psychology Conference, Hobart, Feb 2016
- Centre of Excellence for Biosecurity Risk Analysis, University of Melbourne, May 2016

Awards

- Best Student Presentation Award - Australian Experimental Psychology Conference, 2018
- 1st Place Award - Melbourne Datathon Insights Competition, 2018

Myself and 3 teammates were awarded 1st place in the 2018 Melbourne Datathon Competition, a yearly data science competition. In 2018, contestants were tasked with drawing insights from several years of Victorian public transport Myki transaction data. Winners were selected after pitching their insights to a panel of industry judges at NAB Arena.

Referees

1. Indra Parta
Analytics Manager, Modelling & Analytical Epidemiology, Vic. Department of Health
Email: indra.parta@health.vic.gov.au
2. Daniel West
Director, Modelling & Analytical Epidemiology, Vic. Department of Health
Email: daniel.west@health.vic.gov.au
3. Jose Canevari
Principal Epidemiologist, Modelling & Analytical Epidemiology, Vic. Department of Health
Email: jose.canevari@health.vic.gov.au