

# Sophie Breitbart

DATA SCIENTIST

Toronto, Canada

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## Current employment

### Nectric

DATA SCIENTIST

Melbourne, Australia

Jan. 2019 - Present

- Data science consulting projects including spatio-temporal modelling, and large scale forecasting.
- Hosting workshops improving data literacy, development, analysis and modelling capabilities.

### Monash University

RESEARCH ASSISTANT

Clayton, Australia

Oct. 2015 - Present

- Involved in many internal and external data projects of varying size and complexity.
- Projects typically feature large scale time series modelling or analysis, cross-sectional modelling and creating tools for improving workflows.
- Consulting project clients include: COVID-19 Doherty Institute, Huawei, Monash University, R Consortium, and the NSW Chief Scientist office.
- Developer for The R Journal, producing software for managing submitted articles and publishing them in both interactive HTML and static PDF.

### Monash University

TEACHING ASSOCIATE

Clayton, Australia

Mar. 2016 - Present

- Sessional teaching of university students undertaking Bachelor's and Master's degrees. Specific classes are listed in 'Teaching experience'.

## Education

### Monash University

BCom (Hons) in Econometrics

Clayton, Australia

Mar. 2017 - Nov. 2017

- Recipient of the Econometrics Honours Memorial Scholarship, Dean's Honour, Dean's Commendation, and best in class for 5 units.
- Honours research project was to develop a state space model for quickly forecasting time series with multiple seasonalities.
- Studied units include Bayesian and frequentist econometrics, advanced statistical modelling and computational science.

### Monash University

BCom in Econometrics, BSc in Mathematical Statistics and Computational Science

Clayton, Australia

Mar. 2013 - Nov. 2016

- Recipient of the Monash Community Leaders Scholarship, International Institute of Forecasters Award, and best in class for 4 units.
- Mentor for the Access Monash Ambassador Program (2015 and 2016)
- Participant of the Vice-Chancellor's Ancora Imparo Student Leadership Program (2014)
- Studied a broad range of units covering many aspects of data science. The three disciplines I majored in explored different perspectives for working with data.

## Teaching experience

### UNIVERSITY TUTORING

- 2022 S1 **ETC3550/ETC5550**: Applied forecasting (Monash Clayton)
- 2021 S2 **ETC5523**: Communicating with Data (Monash Clayton)
- 2021 S1 **ETC3550/ETC5550**: Applied forecasting (Monash Clayton)
- 2020 S2 **ETC5523**: Communicating with Data (Monash Clayton)
- 2020 S1 **ETC3550/ETC5550**: Applied forecasting (Monash Clayton)
- 2019 S2 **ETC3580**: Advanced statistical modelling (Monash Clayton)
- 2019 S2 **ETC1010**: Data modelling and computing (Monash Clayton)
- 2019 S1 **ETC1010**: Data modelling and computing (Monash Clayton)
- 2019 S1 **ETC3550/ETC5550**: Applied forecasting for business and economics (Monash Clayton)
- 2018 S2 **ETC1010**: Data modelling and computing (Monash Clayton)
- 2018 S2 **ETC3580**: Advanced statistical modelling (Monash Clayton)
- 2018 S1 **ETF3231/ETF5231**: Business forecasting (Monash Caulfield)
- 2017 S2 **ETC1010**: Data modelling and computing (Monash Clayton)
- 2017 S1 **ETF3231/ETF5231**: Business forecasting (Monash Caulfield)
- 2016 S2 **ETF2700**: Mathematics for business (Monash Caulfield)
- 2016 S1 **ETF3231/ETF5231**: Business forecasting (Monash Caulfield)

## INDUSTRY WORKSHOPS

- Jan. 2020 **Tidy Time Series and Forecasting in R**: Teaching assistant (rstudio::conf, USA)  
Two day workshop with Rob Hyndman on forecasting using tidyverse workflows.
- Nov. 2019 **Interactive documents with Shiny**: Instructor (CSIRO, Australia)  
Two day intermediate workshop on developing of shiny applications.
- Sep. 2019 **Data Wrangling**: Instructor (Monash University, Australia)  
A short workshop in the 'R Workshops for Beginners' series on using tidyr and dplyr to wrangle data.
- Jul. 2019 **Tidyverse developer day**: Helper (RStudio, France)  
A one day developer day where I helped R users resolve issues on tidyverse packages.
- Aug. 2019 **High-dimensional time series analysis**: Teaching assistant (ISI WSC, Malaysia)  
One day short course with Rob Hyndman for analysing and forecasting large collections of time series.
- Mar. 2019 **The grammar of animation**: Instructor (Monash University, Australia)  
A short workshop for NUMBAT group on creating animated graphics in R with the gganimate package.
- Dec. 2016 **Master R Developer Workshop**: Teaching assistant (RStudio, Australia)  
A two day workshop with Hadley Wicham on programming with R and developing R packages.

## Research output

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### SOFTWARE

My primary research output is the translation of academic research into open source software packages.

- 2022 **gghdr**: Author  
Extends ggplot2 with plot types for visualising highest density regions.
- 2020 **distributional**: Lead developer  
Vectorised distribution objects with methods for manipulating and computing on probability distributions.
- 2019 **fable**: Lead developer  
A collection of time series models for use in a tidyverse workflow.
- 2019 **fable.prophet**: Lead developer  
Extension package implementing the prophet forecasting procedure for fable.
- 2019 **feasts**: Lead developer  
A collection of features, decompositions, statistics and graphics tools for the analysing tidy time series data.
- 2019 **fabletools**: Lead developer  
Provides common utilities for the fable forecasting framework, allows users to extend fable with new models.
- 2019 **tsibbledata**: Lead developer  
Diverse datasets in a tidy time series data structure (tsibble). Useful in examples of tidy time series analysis.
- 2019 **tsfeatures**: Author  
Various methods for extracting features from time series data.
- 2018 **tsibble**: Contributor  
Tidy temporal data structures and tools. The data for the tidy time series collection of packages.
- 2018 **vitae**: Lead developer  
Dynamically generate a Résumé or CV using R Markdown. This CV is created using code with that package!
- 2018 **cransays**: Author  
Provides a dashboard and historical data for R packages being reviewed by CRAN.
- 2017 **fasster**: Lead developer  
Implementation of the FASSTER model for forecasting complex multiple seasonal patterns.
- 2017 **icons**: Lead developer  
Embed SVG icons in R documents such as slides, reports and apps.
- 2018 **taipan**: Lead developer  
Generates shiny apps for annotating image data, which is useful for training machine learning models.
- 2017 **ggquiver**: Lead developer  
Extends ggplot2 for displaying vector fields on plots.
- 2015 **forecast**: Author  
Methods and tools analysing univariate time series data and producing model-based forecasts.

## PRESENTATIONS

- 2020 **Forecasting with multiple seasonality:** Methods and techniques to multiple seasonal forecasting in R  
<https://slides.mitchelloharawild.com/nhs2020/>
- 2020 **Probabilistic cross-temporal hierarchies:** Recent developments of temporal reconciliation in fable.  
<https://slides.mitchelloharawild.com/isf2020/>
- 2019 **Flexible futures for fable functionality:** Gradual introduction to tidy forecasting with fable. Flexibility is demonstrated with combination modelling and package extensibility.  
<https://slides.mitchelloharawild.com/fable-tfeam/>
- 2019 **Flexible futures for fable functionality:** Reconciled forecasting of many time series with model combinations.  
<https://slides.mitchelloharawild.com/isf2019/>
- 2018 **Tidy forecasting in R:** Discussion of recent developments to the fable framework.  
<https://slides.mitchelloharawild.com/fable-tfeam/>
- 2018 **Forecasting multiple seasonality with state switching:** The FASSTER model with the fable framework.  
<https://slides.mitchelloharawild.com/user2018>
- 2017 **Models for forecasting multiple seasonality:** An introduction to the FASSTER model.  
<https://slides.mitchelloharawild.com/melburn17/>

## PUBLICATIONS

## Awards & Achievements

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### AWARDS

2021	Dean's Citation for Outstanding Contribution to Student Learning as a Teaching Associate	Monash
2017	Commerce Dean's Honour	Monash
2016	Commerce Dean's Commendation	Monash
2014-2016	Science Dean's List	Monash
2014	International Institute of Forecasters Award	IIF
2013	Rotary Youth Leadership Award	Rotary

### SCHOLARSHIPS

2017	Econometrics Honours Memorial Scholarship	Monash
2015 & 2016	Monash Community Leaders Scholarship	Monash
2011 & 2012	Mitcham Rotary Scholarship	Rotary

### COMPETITIONS

2018	User! 2018 Datathon Champion	User!
2017	RMIT SBITL Analytics Competition Champion	RMIT
2016	RMIT SBITL Analytics Competition Champion	RMIT