



# Bethany Cartwright

## Junior Statistician

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Statistics graduate from Lancaster University with summer placement experience at the Office for National Statistics. Contributed to Labour Force Survey publications processing datasets of 80,000+ records. Proficient in R (dplyr, ggplot2, forecast, lme4), SAS, and SPSS. Part time experience supporting clinical trial data analysis at Lancaster Medical School.

## Experience

### Summer Placement Statistician, Office for National Statistics, Newport

Jun 2024 – Sep 2024

16 week placement in the Labour Market Statistics division, supporting production of monthly employment and unemployment estimates.

- Cleaned and validated Labour Force Survey datasets with **80,000+ quarterly records** using SAS and R
- Ran seasonal adjustment models (X-13ARIMA-SEATS) on **12 labour market time series** for the monthly statistical bulletin
- Built 8 automated quality assurance checks in R that flagged **23 data anomalies** before publication
- Contributed charts and commentary to **2 published ONS statistical bulletins**

### Part Time Data Assistant, Lancaster University, Division of Health Research, Lancaster

Oct 2023 – Jun 2025

Supported researchers in the Biostatistics and Epidemiology group with data management and analysis tasks.

- Cleaned and coded patient level data for **3 clinical trial datasets** totalling 1,200 participants
- Ran descriptive statistics and produced **45 summary tables** in SPSS for research reports
- Created 12 data visualisations in R for a publication on **cardiovascular risk factors** in primary care

## Education

### BSc (Hons) in Statistics, Lancaster University, Lancaster

Sep 2022 – Jun 2025

First Class Honours. Modules include Bayesian statistics, time series analysis, generalised linear models, survey sampling, and statistical computing with R. Dissertation on seasonal mortality modelling using ONS data.

## Skills

R (dplyr, ggplot2, forecast, lme4, shiny) • SAS (Base SAS, SAS/STAT) • SPSS (survey analysis, descriptive statistics) • Python (pandas, statsmodels) • SQL (PostgreSQL) • Bayesian Hierarchical Models • Time Series Analysis (ARIMA, seasonal adjustment) • Survey Sampling & Weighting • Statistical Disclosure Control • LaTeX & R Markdown

## Certifications

### Royal Statistical Society (GradStat), Royal Statistical Society

Sep 2024

### ONS Statistical Disclosure Control Training, Office for National Statistics

Jun 2024

## Languages

English (native)

## Projects

### Dissertation: Bayesian Hierarchical Modelling of Seasonal Mortality in England and Wales

Oct 2024 – Apr 2025

Modelled seasonal patterns in all cause mortality using 10 years of ONS death registration data.

- Processed **5.2 million death records** (2014 to 2024) and fitted Bayesian hierarchical models with age, sex, and region random effects
- Identified a **statistically significant shift** in the timing of winter excess mortality peak from late January to early February over the study period
- Awarded a mark of 82% and nominated for the Lancaster Statistics Prize

## References

**James Thornton**, Senior Statistician, Labour Market Division, Office for National Statistics, james.thornton@ons.gov.uk, +44 7700 900 287

**Dr. Rebecca Lawton**, Senior Lecturer in Medical Statistics, Lancaster University, r.lawton@lancaster.ac.uk, +44 7700 900 493

## Extra Curricular Activity

### Workshop Leader, Lancaster Data Science Society

Sep 2023 – Jun 2025

Delivered 6 introductory R workshops for non statistics students, covering data wrangling, visualisation, and basic regression. Average attendance of 25 students per session.