MANCHESTER 1824
The University of Manchester

Q-Step Data Fellows

2025

The logos indicate the types of places where our students spend their time as data fellows. They cover organisations in the public, private and voluntary sector.

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Q-Step Data Fellows 2025

The booklet tells the stories through a series of posters that each student is required to deliver at the end of their data fellowship.

Click on each name to navigate the booklet.

Q-Step Data Fellows 2025

Who am I?

I'm Jackie Carter, Professor of Statistical Literacy in the Department of Social Statistics at the University of Manchester. I started the Q-Step Data Fellowships programme in 2013 and have led it since, winning accolades and awards for it. These include One in Twenty Women in Data, Women in STEM, Advance HE National Teaching Fellow and Principal Teaching Fellow.

These awards recognise the innovative nature of the Data Fellowship programme. The programme has also been recognised through the University of Manchester's Making a Difference annual awards.

What's Q-Step?

Q-Step was an initiative set up and funded by the UK government in 2013 to address the shortage of quantitative data skills that were being taught in social sciences and humanities university courses. Nineteen universities won funding to address this skills shortage.

The University of Manchester set up its Q-Step Centre in October 2013. We introduced more data skills modules into social science and humanities courses and started the data fellows programme to give students practice in using those skills in the workplace.

What is the Data Fellows programme?

Starting in the summer of 2014 with just 19 students, we have now placed over 350 undergraduates in around 60 organisations. The students are studying courses including criminology, sociology, politics and international relations, social anthropology, philosophy, economics, English language and linguistics and data analytics. Having learned some statistics in their modules and used real world data to empirically explore complex social problems, they can apply to be a Data Fellow.

If successfully selected - it's a rigorous process which includes an interview with the organisation they will be placed with - they are paid for up to eight weeks in the summer at the end of their second year to join an organisation to do some data driven work, often in the form of a research project.

Where do Data Fellows go?

All over!

The data fellows are hosted in organisation from the public, private and voluntary sectors. A student might spend time working in a national government department (like The Home Office of the Department for Education), or in local government (perhaps one of the ten boroughs in Greater Manchester).

Or they might be placed in a polling organisation or a data consultancy. Some go to university departments either to conduct research, or to assist with data analytics related to, for instance, differential attainment in degree grades.

Others spend time with media organisations (such as The Times/Sunday Times) exploring data journalism, and others may work for charity organisations (such as Greater Manchester Poverty for Action). Many stay in the north-west but we also have students placed in London and other major cities, and increasingly the data fellowship adopt hybrid working.

Our host organisations are prestigious, and we select them carefully to ensure the students have a good experience and are well-supported. Data fellows are often supported by former Data Fellows!

What do they do?

What they do varies widely and the best way to get a sense of this is to read the posters in this booklet. They are each asked to reflect on their learning across the summer and are given an Analytical, Research and Professional skills framework that I have developed to help them. They all learn skills that are highly in demand in the graduate workplace.

What do they do next?

When they return from the data fellowship we celebrate their learning – and the posters provide a way of them evidencing what they have learned. Many go on to use their new-found skills – and confidence in data analysis – in their third-year research dissertations.

Some stay in touch with their host organisations – some even continue working there. Many apply to do a Master's or PhD which enables them to further explore their subject, including often using quantitative methods. The further information section below gives pointers to some former data fellows who have entered policy and research roles.

Who pays?

Initially the data fellows were paid for by the Q-Step grant. When this came to an end the University of Manchester agreed to continue funding the data fellowship programme. We also have a model where if an organisation wants to take more than one student, they pay for the additional one(s) and we highly encourage this. We have more students than we have placements!

Further information

- *70% of the data fellows have been female. 25% have been from historically under-represented groups.*
- *The majority of data fellows have not studied mathematics beyond high school level.*
- *The book "Work placements, internships and applied social research" (Carter, Sage 2021) draws on ten case studies of which 8 are former data fellows*
- *These two open access booklets include stories of former data fellows.*
  - *Pathways into Research: Social Science Alumni Stories (2023)*
  - *Pathways into Policy: Social Science Alumni Stories (2022)*

Angus Mayo | BASS Politics and Data Analytics
Natcen

Imogen Ellis | BSocSci (Hons) Sociology
Manchester City Council

Fred Smith | BASS Politics and Data Analytics
Manchester City Council

Hamida Razali | BA Politics, Philosophy and Economics
Greater Manchester Combined Authority (GMCA)

Hannah Bugeja | BA Hons Economics
HM Prison and Probation Service (HMPPS)

Isobel Solbé | BA (Hons) Politics, Philosophy, and Economics
Barnabus

Jasmine Barry | BA (Hons) Politics, Philosophy, and Economics
Centre for Local Economic Strategies (CLES)

Joseph Cronshaw | School of Social Science
Ditchley Foundation

Joshua Waterman | Ministry of Justice
HM Prison and Probation Service (HMPPS)

Katie Aldred | Social anthropology
CiVED CIC

Mufiyda Akhtar | BA Criminology
Greater Manchester Combined Authority (GMCA)

Grey Kingsley | BA Criminology
Respect

Niamh Duffy | BA Politics, Philosophy and Economics
Institute for Public Policy Research North (IPPR North)

Rida Doush | BSocSc Politics
International Relations

Saira Chowdhury | BA Politics
Voluntary, Community, Faith and Social Enterprise (VCFSE)

Saskia Perez-Cooke & Yufan Zhu | UNDP Istanbul Regional Hub Gender Team
United Nations Development Programme (UNDP)

Sofia Doherty Criscuolo | BSocSc (Hons) sociology
Resolve Poverty

Yichen Liu
BA (Hons) Social Sciences Criminology and Data Analytics
Voluntary, Community, Faith and Social Enterprise (VCFSE)

Zahra Sachikonye | BA Sociology and Data Analytuics with International Study
Ditchley Foundation

Brianna Murphy | BA Politics, Philosophy and Economics
Institute for Public Policy Research (IPPR)

REAL WORLD SAMPLING & WEIGHTING

Methodology in Social Surveys at NatCen

Angus Mayo | BASS Politics and Data Analytics

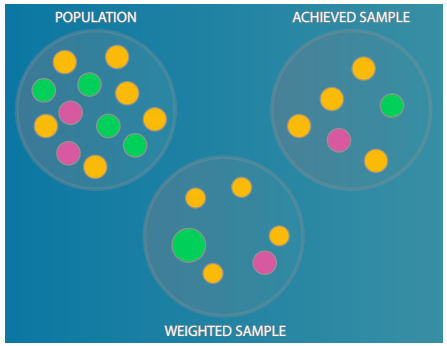
Overview of the Data Fellowship

As a Survey Statistician, my role at the National Centre for Social Research (NatCen) consisted of ensuring the integrity and representativeness of survey data. This work takes place across two stages of the social research process: sampling (before fieldwork is conducted) and weighting (after field data are collected).

All work was conducted across multiple programming languages, including R and the syntaxes of SPSS and Stata.

Approach to Sampling and Weighting

Representative sampling is crucial in social research, as it ensures findings are generalisable and equally reliable across all segments of the population. Within the sampling stage, my work included using historical response rates to calculate the optimal sizes of strata from which to draw survey samples.



A simplified representation of the survey weighting process

By distributing the sample this way, every demographic stratum can be measured with similar accuracy, so estimates inferred from survey responses have comparable margins of error for each group.

Even with precise sampling calculations, raw survey samples rarely mirror the population, so weights are used to correct these imbalances and reduce bias. At the weighting stage, I implemented automated variable selection through stepwise logistic regression to estimate non-response and compute adjustment factors. I also conducted calibration weighting, applying constrained optimisation algorithms to adjust survey weights so that the sample aligned with known population benchmarks (e.g., age, sex, region), while assessing where to trim extreme adjustments.

Examples in the news of British Social Attitudes data

Projects

- *Calculated sampling strata sizes for British Social Attitudes, NatCen's flagship survey, which will be used in the 2025 round.*
- *Explored the relationship between design effect and bias through alternative calibration weighting models for the NatCen Panel.*
- *Updated/translated legacy SPSS syntax into R for the Gambling Survey for Great Britain to be used in future rounds.*

Key Skills Developed

A highly technical placement, my Data Fellowship at NatCen built on a range of statistical, programming and professional skills, including:

- *Communicating with researchers and other statisticians to determine and write up sampling specifications;*
- *Manoeuvring and creating advanced functions across Excel spreadsheets, used for computing strata sizes, calculating population totals for calibration and checking bias;*
- *Logistic regression to model non-response, including stepwise methods for selection of predictors;*
- *Producing functional, replicable and updateable code within R and SPSS;*
- *Subjective judgement of extreme weights/adjustments for the purpose of trimming;*
- *Sharing ideas with team members and contributing to discussion, including chairing a team meeting.*

MANCHESTER CITY COUNCIL

Analysis of Education, Health and Social Care plans

Imogen Ellis | BSocSci (Hons) Sociology

Overview of the Data Fellowship

The main focus of my data fellowship at Manchester City Council was an investigation into the changes in data on Educational Health Care Plans (EHCPs) within the city.

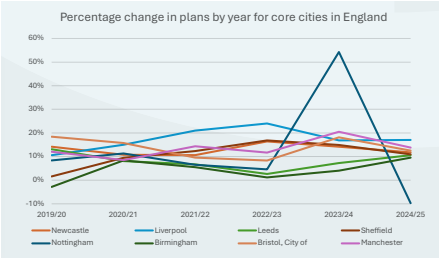
We were looking for trends in the data for example; who is getting them, where in the city are these plans going to most, how old are children when gaining plans, and when are they ceasing as well as the reason for plans ending etc. Also looking to discover what might be causing these changes by using comparable cities, countries and local authorities, to see if there are similar changes.

Data analysis

We first conducted a literature review, assessing qualitative data already published, to attempt to discover what information is out there already about predicted changes to children's special educational needs and disabilities (SEND), and reasons for these changes. For qualitative analysis we predominantly used Microsoft Excel and SPSS.

Collating data, cleansing it to contain only what we need using pivot tables and then creating graphs, such as radars, scatters, funnels etc, in order to visualise patterns and trends which we could then link to theories and findings from our literature review.

In order to make comparisons to Manchester's trends the other core cities in England were used, seen in the graph below.



Department of Education, UK

Additionally we were given a brief introduction to ArcMap GIS which allowed us to visualise what types of EHCPs were most prevalent across the 32 wards in Manchester.

Findings

One of the areas that we particularly focused on was deprivation in relation to the number of plans. Using the IDACI deciles to divide Manchester up on an LSOA level, finding that the most deprived deciles receive the most plans, however it is not a linear decline as LSOAs become more affluent, as the 10th decile had more plans than the 9th and 8th. Highlighting the system to apply for plans may be able to be influenced by those who are more wealthy. Notably Manchester had a much higher number of children in the most deprived decile compared to other local authorities.

Manchester saw a drastic increase in Speech Language and Communication Needs plans being requested and put in place. There was also a fall in Autism Spectrum Disorder (ASD) across all wards in Manchester. We looked into a potential correlation between these, as diagnosis time for ASD is very high in Manchester at the moment. Making sure to take into consideration that these all have a level of intersectionality that affects what causes trends in plans so did attempt to view them all together holistically.

Interestingly, post covid there has been a change in educational outcomes between girls and boys, from the 'Ages and Stages' to GCSE, looking into SEND support provided discrepancies were identified. This peaked my interest and I am planning on looking into this for my dissertation!

As all of the data I was working with is confidential, specific data sets are not presented on this poster.

Key skills learnt

Data analysis and visualisation- I became proficient at excel and all the skills I needed in order to present data in an easily comprehensible way. Also notably the short workshop on ArcMap GIS was very informative.

Teamwork- the projects I worked on were being carried out in a larger team so I became one of the moving parts developing communications and adaptability skills too, through meetings, group tasks and problem solving.

Data sensitivity and protection- having used individual pupil level data I learnt the importance of extracting only the necessary data and anonymising it when able to do so to keep confidentiality.

Additionally gained an in-depth knowledge of how Manchester City Council operates, getting the opportunity to meet with people from different sectors and learn about different roles across teams, and attending a full council meeting.

INVESTIGATING CHANGES IN EHCPS

My time with Manchester City Council

Fred Smith | BASS Politics and Data Analytics

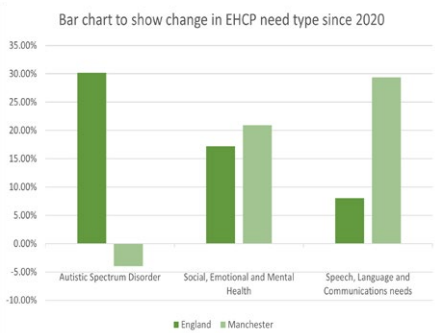
Overview of the Data Fellowship

After a rapid increase in the amount of Education Health and Care Plans in Manchester and stark change in the distribution of need types, Manchester City Council's Performance Research Intelligence department invited me and a peer to complete a deep dive into the reasons for these changes.

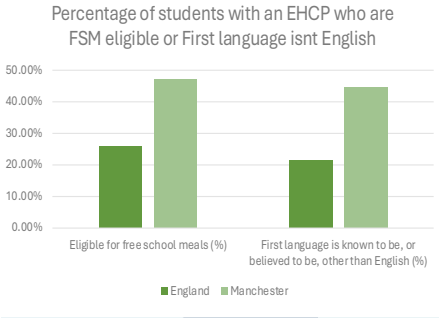
Over an 8-week fellowship we produced a literature review of existing research to understand the wider context of EHCP needs and how these are changing. Undertook quantitative analysis using Council data to evidence key lines of enquiry that have come out of the modelling work and gave a final presentation of findings to colleagues and service managers.

Data Analysis

Using excel, we investigated several lines of enquiry. We used our knowledge of descriptive analysis to compare the changes in EHCPs in Manchester against Manchester's statistically similar neighbours, the UK's core cities and even against other countries in order to evaluate Manchester's EHCP experience.



This analysis involved finding testable data on the topic before undertaking chi-square tests to measure the significances of the difference between Manchester's changing patterns and that of other cities and countries. Alongside this project, there was a minor side project in which we investigated the effectiveness of a new scheme on helping people improve their workplace skills with the goal of getting back to work. This involved a paired samples t-test, where a respondent's initial and exit scores of different work-related skills were tested to investigate if they had improved with the scheme.



Findings

- *Whilst much of the data used in this project is confidential, there were some key findings:*
- *Manchester's amount of EHCP's had grown faster than the rest of the UK*
- *Manchester's patterns of increased EHCP's were more extreme to that of both the core cities in the UK and Manchester's statistical neighbours. Most notably in large decreases year on year in the amount of ASD EHCPs issued and major increases in the amount of Speech Language and Communication Needs plans issued each year.*
- *Manchester was much more likely to have students on EHCPs that were from marginalised backgrounds, whether that be from lower income backgrounds (FSM eligible) or not having English as a first language.*

Key Skills Learnt

Over my 8 weeks at the council, I felt many of my workplace applicable skills improve, learning important communication skills between myself, colleagues, managers and stakeholders in my project.

Alongside this my ability to work to strict deadlines and my time-management skills were moluded into shape.

Most notable however, I saw a measurable improvement in my confidence, not just in professional setting, where I felt I contributed to a positive, healthy and enthusiastic workplace culture. But also outside of the council, such as my improved approach to organisation and writing skills within my studies since returning to university.

Greater Manchester Combined Authority
Data Exploration and Statistical Analysis for HealthMod Policy Modelling in Greater Manchester

HOW DO RETROFITS AFFECT HEALTH?

Hamida Razali | BA Politics, Philosophy and Economics

Overview of the Data Fellowship

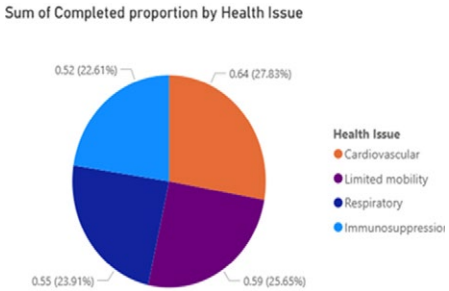
During my Data Fellowship, I analysed the effectiveness of home retrofit initiatives on health outcomes across Greater Manchester. The project aimed to identify which communities benefited most from retrofits and where future support should be prioritised. By integrating multiple datasets – retrofit applications, Energy Performance Certificates (EPCs), and synthetic population data – I explored links between housing quality, health, and socio-economic conditions.

Data Analysis

Using R and Excel, I cleaned, formatted, and merged datasets at the LSOA level to allow geographic and demographic comparisons. I used regression analysis, summary statistics, and geospatial mapping to explore retrofit uptake and health outcomes. Tableau and Power BI were used to visualise trends and create interactive maps that can be easily understood by non-technical audiences.

Findings

- *Unequal Retrofit Uptake: Areas with the highest levels of health deprivation and least energy-efficient homes often had lower rates of retrofit applications, highlighting potential barriers to access.*



- *Health Links: A higher proportion of retrofit applicants reported health conditions compared to the wider population, suggesting that retrofits may be reaching some health-vulnerable groups, but not consistently across all localities.*

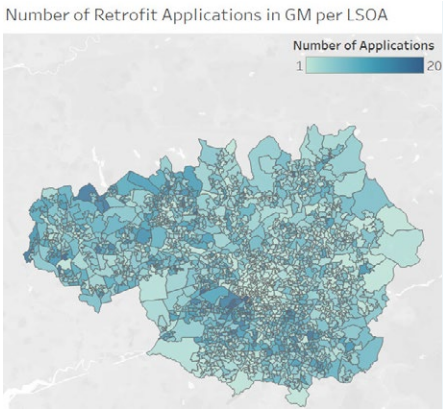


Figure 1: A map of completed retrofits per LSOA in Greater Manchester

- *Housing Insights: EPC data showed that homes receiving retrofits typically started with lower energy efficiency ratings, supporting the idea that schemes are addressing the most inefficient housing stock.*
- *Geographic Patterns: Mapping revealed clusters of high retrofit activity in certain boroughs, but also gaps where need and uptake did not align, providing evidence for more targeted interventions.*
- *Policy Impact: Findings were shared with GMCA's Environment and Policy teams to inform ongoing retrofit reform, ensuring future initiatives are more equitable and data-driven.*

Key Skills Learnt

- *Technical: Advanced skills in R, Excel, Tableau, and Power BI for data cleaning, analysis, and visual storytelling.*
- *Analytical: Applied regression and statistical methods from academic learning to real-world data.*
- *Professional: Improved presentation, communication, and teamwork skills through collaboration and reporting findings to the Research and Policy teams.*
- *Personal: Increased confidence in my analytical abilities and understanding of data-driven policymaking and confirmed my interest in pursuing a career in data analysis.*

ASSESSING THE LINK BETWEEN OFFENDER CHARACTERISTICS AND SUSTAINED PROGRAMME PARTICIPATION

Hannah Bugeja | BA Hons Economics

Overview of the Data Fellowship

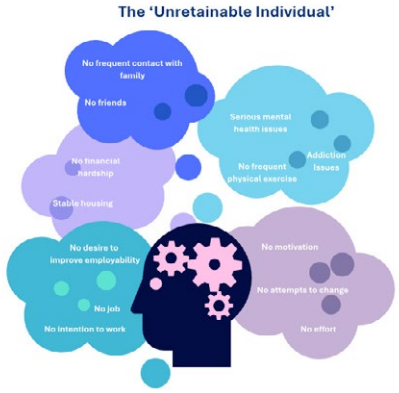
HMPPS CFO provides voluntary rehabilitation programmes within prisons and the wider community, with the overall aim of preventing re-offending and facilitating community involvement. My aim throughout this fellowship has been to assess whether there was a link between participant characteristics and whether they would be 'retained' on the programme.

The research was broken down into phases: outlining the question, conducting initial research, logistic modelling and forming conclusions. Using data from the CFO database, and with the help of the CFO research and statistics team, I was able to conduct my research, which allowed me the opportunity to make recommendations towards future CFO action.

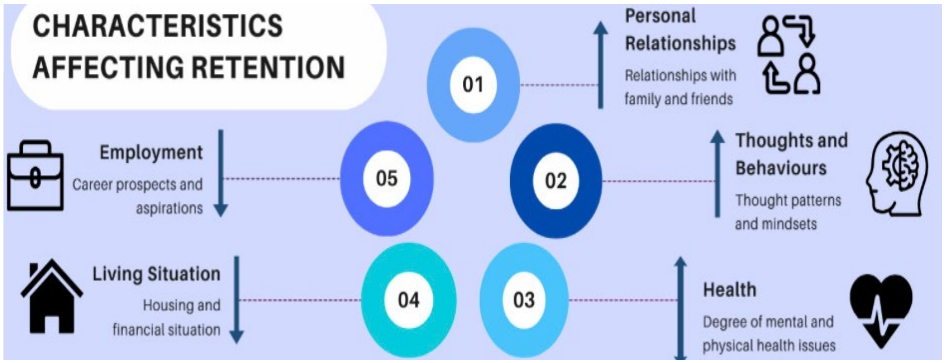
Data Analysis

The goal of my analysis was to identify characteristics associated with retention, using logistic regression modelling and other techniques. Initial steps included separating the data based on scenario, and then further dividing it randomly between a training dataset and a testing dataset to enable cross-validation.

Selecting which characteristics were included in the final model was mostly trial and error, backed by some initial analysis and prior research. Once this was complete, I created my logistic model, and tested the predictive power of the model using ROC curve analysis.



Characteristics describing those least likely to be retained



After finalising the model, the analysis then moved on to interpretation of the results. For each predictor in the model,confidence intervals, p-values, odds ratios, and Characteristics affecting retention

Findings

- *Those with better thoughts and behaviours were more likely to be retained*
- *Those with healthier personal relationships were more likely to be retained*
- *Those with worse living situations were more likely to be retained*
- *Those with worse employment situations were more likely to be retained*

Key Skills Learnt

Analytical skills

Over the course of the fellowship, my analysis skills have been repeatedly challenged. I spent lots of time meticulously looking through data and writing code with precision, as well as having to think creatively about potential relationships and correlations. Creating a logistic model with the amount of detail that was incorporated was tricky but rewarding.

Professional skills

My communication, time-management and organisational skills were all put to the test. Communication was a main one, working closely alongside other members of the team meant that clear and effective communication was essential. Time-management and organisational skills were also key, sorting through large amounts of data required an organised and thought-out process to facilitate smooth analysis.

Creativity and Adaptability

The nature of this analysis meant that sometimes I had to be adaptable, especially when there were constraints such as insufficient data or lack of wider resources. Creativity came into this too, as a main part of my work involved having to think outside the box, especially when the analysis produced an unexpected result. In the face of several error messages, constant ambiguous results and complex methods, creativity and adaptability were vital throughout the process.

Barnabus- Data Narrative Builder

ASSISTING THE JOURNEY OFF THE STREETS THROUGH DATA-DRIVEN INSIGHT

Isobel Solbé | BA (Hons) Politics, Philosophy, and Economics

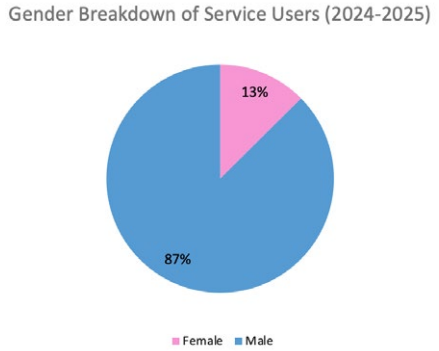
Overview of the Data Fellowship

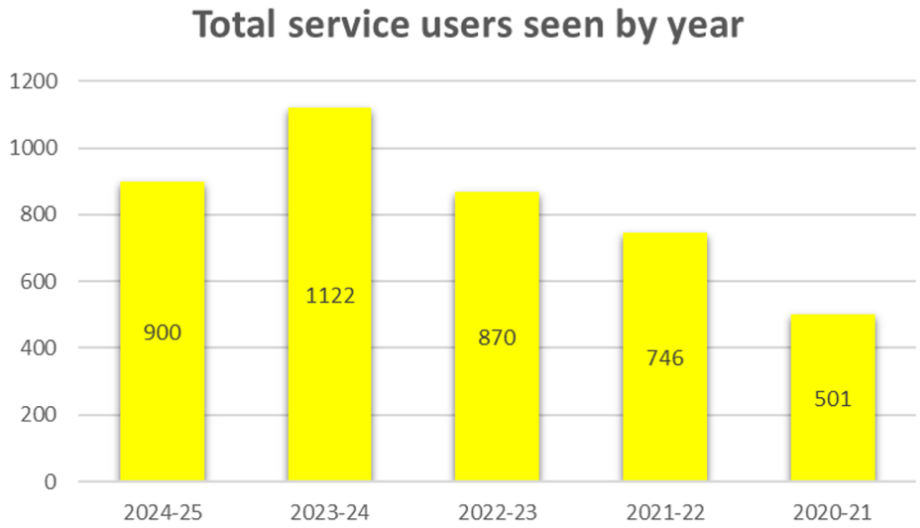
Over the summer, I worked as a Data Fellow at the homeless charity Barnabus, supporting their transition to a new client management system, Lamplight, which was introduced in October 2024. My role was twofold: firstly, to reconcile data between the previous system and Lamplight to ensure accuracy, completeness, and consistency; and secondly, to design a dashboard to track key operational and impact metrics more effectively.

Data Analysis

To establish the number of individuals seen across 2024- 25, I first removed duplicate entries from the dataset. Several client names appeared multiple times with additional notes such as "BARRED" or "NUT ALLERGY", which had been incorrectly recorded as separate individuals. After cleaning these duplicates, I identified a slight decrease in total service users compared to 2023-24, but an increase relative to the three preceding years.

In analysing causes of homelessness, breakdown of relationship emerged as the largest named cause in 2024-25 (37%), followed by immigration (27%). The prominence of relationship breakdowns reflect rising housing costs, insecure renting, and cuts to local welfare, which have increased housing vulnerability.





Findings

2024-25 stats

- *900 service users seen.*
- *417 accommodation referrals.*
- *Bank accounts opened for 137 service users. Service user gender split was 87% male & 13% female.*

Key Skills Learnt

I was honoured to be Barnabus's first Data Fellow, a role that strengthened my data analysis and Excel skills. I also enhanced my project management abilities by coordinating meetings, setting milestones, and delivering work to a fixed deadline.

Beyond data work, working in the Wednesday Music Sessions improved my communication skills and confidence. Across the Fellowship, I learned to adapt my approach for different audiences, from service users to senior leadership. I gained insight into how compassion, teamwork, and data-driven decision-making underpin Barnabus's mission to assist people in their journey off the streets.

UNDERSTANDING EXTRACTIVE TOURISM IN RURAL WALES

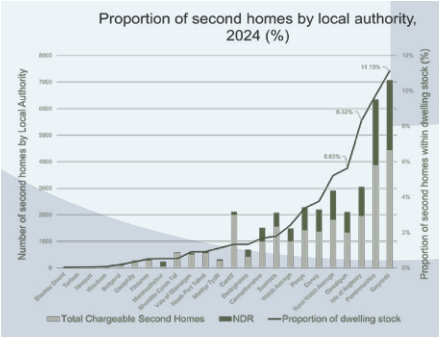
Jasmine Barry | BA (Hons) Politics, Philosophy, and Economics

Overview of the Data Fellowship

Whilst at the Centre for Local Economic Strategies (CLES) I conducted a research project on 'Extractive tourism in rural Wales'. I focused on this topic due to the evolving policy context of the recently implemented Welsh Visitor Levy. I identified key tourism sub-sectors of the food and beverage and accommodation industries, and analysed the impact of increasing numbers of holiday homes decreasing housing affordability for first-time buyers, leading to stagnant wages, tourism-dependent businesses and harming local service provision. I also identified pat-terns of wealth extraction in the hospitality industry through owner-ship data and the distribution of profits versus wages.

Data Analysis

With no official count of holiday homes in Wales, I reviewed literature and combined data on second homes paying council tax premiums and non-domestic rate registrations for self-catering properties to establish an updated



Second homes as a % of the dwelling stock in Welsh local authorities, 2024

estimate of holiday homes as a % of dwelling stock. From this, I considered the affordability ratio at LSOA level to compare the disparity between household incomes and house prices.

For hospitality ownership and profit extraction, I used Datacity to gather a comprehensive list of firms trading in three tourism- dependent rural local authorities. This captured larger companies which traded in rural Wales, but registered elsewhere, some in known tax havens, such as Burger King. I merged and cleaned datasets with Python, managed naming inconsistencies, and cross-referenced firms by SIC code, name, and parent company name and country to identify ownership patterns and wealth extraction across rural Wales.

Tourism-related industry	Hourly pay - Excluding overtime (£)
55: Accommodation	**11.23**
Full-Time	12.5
Part-Time	10.69
56: Food and beverage service activities	**10.5**
Full-Time	11.09
Part-Time	10.42
Average for all Welsh industry	**14.85**
Full-Time	16.33
Part-Time	11.96

Date from	Age Under 18	18-20	21 and over
Apr-25	£7.55	£10	£12.21
Apr-24	£6.40	£8.60	£11.44

Comparison of average earnings from tourism with the Living Wage, 2024

Findings

- *Although 96% of rural hospitality firms are micro businesses, a small number of large, externally owned companies capture most profits. Of the 18 large firms operating in the three rural areas studied, 11 have parent companies registered in tax havens, collectively averaging £34.9 million in annual profits.*
- *Hospitality work in rural Wales remains dominated by low-wage, part-time roles, with 56% of tourism jobs being part-time (59% in hospitality) compared to 35% in other industries.*
- *Growing tourism demand increases pressure on the local housing market, driving up prices and reducing availability for first-time buyers and renters. As housing affordability declines, local services lose demand and close, reinforcing community dependence on low-paid, tourism-based employment.*

Key Skills Learnt

During my time at CLES, I strengthened my technical skills in Excel and Python through cleaning and analysing datasets to a professional standard, working to understand data at the most granular level available. This process deepened my understanding of Welsh policy and understanding how local trends fit within wider economic narratives.

Regular feedback and opportunities to engage with other projects encouraged my professional growth. Attending the Community Wealth Building Summit expanded my network and engagement with place-based policy and local economic development.

My time at CLES culminated in presenting my research to the organisation, developing my communication skills, where I gained confidence in articulating complex ideas clearly.

NEO4J, NATURAL LANGUAGE PROCESSING AND OPEN AI AT THE DITCHLEY FOUNDATION

Joseph Cronshaw | School of Social Science

Overview of the Data Fellowship

At my Data Fellowship with the Ditchley Foundation I worked on three separate projects in three separate teams. The first project was researching people given to us who were important to the Ditchley Foundation and adding them to the database. This was done in a team but was largely independent work unless someone got stuck.

The second was finding important organizations and people within the education sector for Ditchley's partnership with the Lumina foundation which focused on educational reform in the UK and US.

This the most team centred project, our team looked specifically at AI in education and how the curriculum needs to adapt. Finally, my favourite project was the quantitative work we did, it began with learning the required software, Neo4j, and then we were given free rein to find or do something interesting with the foundations graph database. We were in a team, but again it was mostly for troubleshooting.

A NeoDash dashboard I created while learning the software.

Data Analysis

In my Quantitative strand of work, I began by learning Cypher the coding language of Neo4j. We then went on to work with mock datasets, as seen below, where we learnt NeoDash and Bloom tools used to present findings in graph databases more clearly.

After that my team were given the task of analysing the recommendation nodes within Ditchley's actual graph database. This involved more complex coding and culminated to another dashboard. Finally, we were given free rein to research what we like so I used Open AI and Natural Language Processing to generate new subthemes for the database to more accurately categorize people, as many people's subthemes were defined as "other."

A picture of all the interns at Ditchley for the celebration event

Findings

In my group project where we researched the recommendation nodes in the Ditchley database we had three key findings. Ditchley events with a higher proportion of recommended individuals tend to be more successful. Recommendations within certain sectors were more reliable than others. Finally, cross gender recommendations, i.e. a man recommending a woman or vica versa were the most prevalent in successful events.

My Natural Language Processing project aimed to create new subthemes to better categorize individuals withing the graph database. I achieved this by first using natural language processing and Open AI and found strong evidence that Public Policy and International Relations should be subthemes and that Agriculture, Political figure/association, Women's rights, Drugs/Narcotics and addiction and AI could also be useful additions.

Key Skills Learnt

Throughout my time at Ditchley I did just under 20 presentations which culminated with me presenting my work in person at a Ditchley event. For me presentation is the best skills I have developed, I'm by no means an excellent public speaker now but I'm now comfortable and confident presenting. There was of course lots of teamwork and time management involved and sharpening those skills is always good.

The more technical skills I developed were centred around coding,

I used Python and Cypher throughout my projects and of course learnt a lot about graph databases (Neo4j). Unexpectedly I learnt a lot about Open AI's features and a lot about Natural language processors which proved to be fascinating and will likely feature in my dissertation. We also did a lot of open-source research which is an invaluable skill for university.

ENGAGEMENT AS A PREDICTOR OF RETENTION - CREATING FUTURE OPPORTUNITIES (CFO)

Joshua Waterman | Ministry of Justice

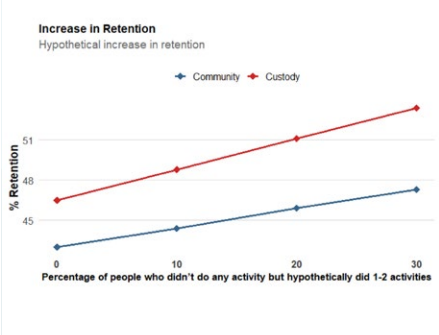
Overview of the Data Fellowship

The HMPPS Creating Future Opportunities (CFO) programme is a voluntary initiative for offenders with complex needs. It aims to break the cycle of re-offending by supporting participants in custody and the community, developing their skills, and promoting personal growth. Activities available include practical support, such as obtaining ID, and group-based sessions like sport.

During my fellowship, I explored the relationship between participant engagement and retention. With guidance from the CFO Research and Statistics team, I completed a data-driven analysis and presented my findings and recommendations to the team.

Data Analysis

I used data collected by CFO support workers, which included information on the timing and type of activities completed by participants. After initial exploration in Excel, I conducted a full analysis in R, developing my coding and statistical modelling skills. The data were first organised into different 'scenarios,' and potential predictors of retention were identified. These were then incorporated into a logistic regression model, trained on one dataset and validated on another to prevent overfitting. Model performance was assessed using metrics such as the Area Under the Curve (AUC) from ROC analysis.

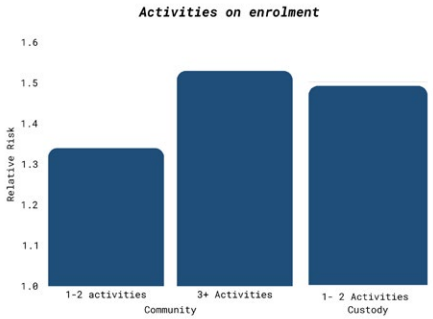


Increase in retention if a greater proportion of people did an activity

Each variable's contribution was interpreted using odds ratios, relative risks, confidence intervals, and p-values. The final report translated these statistical findings into clear, accessible language suitable for non-specialist audiences.

Findings

- *47% of enrolled participants completed an activity within 30 days.*
- *Of those, 61% completed another activity within the following 30 days*
- *In the community, participants engaging in 1–2 activities or 3+ activities at enrolment were 34% and 53% more likely, respectively, to return for further engagement.*
- *If 20% of participants in the 'Through the Gate' (TTG) scenario completed an activity within seven days before release, overall retention would have increased from 5.5% to 6.8%.*
- *Participants who completed Personal Journal as their first activity in custody were 56% more likely to be retained.*



Impact on retention when participants do an activity on enrolment.

Key Skills Learnt

- *Data Analysis: Strengthened my ability to clean, analyse, and interpret data using R and Excel.*
- *Statistical Modelling: Applied logistic regression and cross-validation to real-world policy data.*
- *Communication: Produced a clear, evidence-based report and delivered an oral presentation to the CFO managers.*
- *Professional Experience: Gained insight into the application of data analysis to criminal justice policy and programme evaluation.*
- *Team Collaboration: I attended the office gaining experience in professional communication and workplace dynamics.*

Measuring local heritage skills demand | CivED CIC

SOUTHPORT HERITAGE SKILLS AND EDUCATION STRATEGY

Katie Aldred | Social anthropology

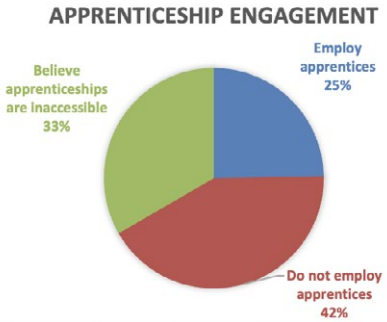


Figure 1- Historic England data

Overview of the Data Fellowship

This project examined the state of heritage skills and education in Southport, conducted in partnership with CivED CIC. Drawing on data from Historic England, the ONS, and CITB, it analysed workforce trends, apprenticeship uptake, and training opportunities in the heritage and construction sectors. The project aimed to assess how local patterns in Southport align with national challenges of skills shortages and ageing workforces. Through this fellowship, I gained experience in data analysis, visualisation, and interpretation using Python, Excel, and QGIS, alongside an understanding of how data informs local policy and community engagement.

Data Analysis

The data revealed that Southport's heritage workforce is older than the national average, with limited entry routes for young people. Apprenticeship participation remains low, particularly among SMEs, who often cite cost and administrative complexity as barriers. Heritage businesses in Southport are primarily focused on maintenance and conservation rather than new restoration work, mirroring national funding constraints.

Endangered crafts such as stonemasonry and decorative plasterwork continue to decline locally, with few training options available. Approximately 40% of heritage employers are disengaged from apprenticeship schemes, and 33% find them inaccessible. Local education providers offer few heritage-specific qualifications, contributing to a disconnect between education and industry needs.

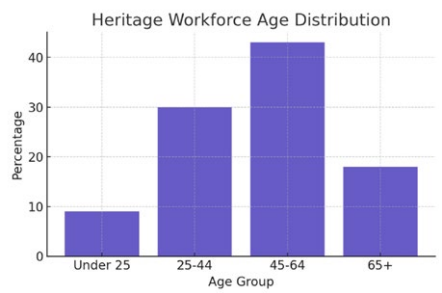
Findings

The findings point to a growing skills gap in traditional and retrofit construction roles. Without increased engagement in apprenticeships and better training access, Southport risks a long-term shortage of conservation skills. Strengthening partnerships between heritage organisations, training providers, and local authorities could bridge this divide, making heritage careers more accessible and sustainable.

Using data from Historic England, the ONS, and CITB, it analysed workforce trends, training access, and apprenticeship engagement within heritage and construction. The study identified local skills gaps and ageing workforces, aligning with national challenges. The fellowship also built skills in data analysis, visualisation, and policy insight using Python, Excel, and QGIS.

Key skills Learnt:

- *Conducting quantitative and qualitative data analysis*
- *Using Python and Excel.*
- *Creating data visualisations and maps with QGIS to show local and national patterns.*
- *Interpreting workforce and apprenticeship data to identify skills gaps.*
- *Applying social research methods to real-world policy challenges.*
- *Communicating findings clearly for*
- *Both academic and community audiences.*
- *Collaborating with CivED CIC to produce actionable local insights.*
- *Developing project management, teamwork, and presentation skills.*
- *Linking data evidence to heritage education and skills policy recommendations.*



HISTORIC ENGLAND (2023) HERITAGE AND THE WORKFORCE: UNDERSTANDING THE AGE PROFILE.

EXPLORING THE RELATIONSHIP BETWEEN ASPECTS OF JOB QUALITY AND WELLBEING ACROSS DEMOGRAPHIC GROUPS IN GREATER MANCHESTER

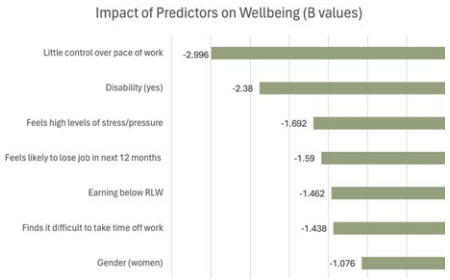
Mufiyda | BA Criminology

Overview of the Data Fellowship

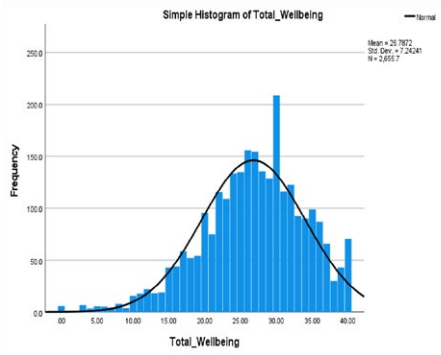
During my time at the Greater Manchester Combined Authority as a Q-Step Research & Data Analyst Intern, I worked within the Work & Skills sub-team, focusing on job quality and wellbeing across the region. My main project analysed how factors such as pay, contract type, gender and disability affected people's experiences of work using the GM Residents' Survey. I conducted statistical analysis in Excel and SPSS, developed Tableau dashboards, and presented insights to support policy discussions around employment inequality and improving labour market standards.

Data Analysis

I led a project analysing the relationship between job quality and wellbeing across demographic groups in Greater Manchester, using the GM Residents' Survey. I began with univariate analysis on Excel to profile key indicators such as stress, job security, pay, and control over work. I then conducted bivariate analysis on Excel, using pivot tables to compare ethnicity and perceptions of unemployment, gender and use of skills and employment industries and stress levels. To deepen this, I ran a multiple regression model to examine how a range of demographic and job quality factors simultaneously influence overall well-being. I explored the relationship between ethnicity and well-being further using crosstabulations in SPSS.



Ranked predictors of wellbeing



Distribution of total wellbeing scores in sample

Findings

A large proportion of workers in GM face strain, with 40% reporting work-related stress and over a third struggling to take time off.

Pay and security inequalities were evident, with 80% earning at or below the Real Living Wage and Mixed/Asian groups reporting the highest risk of job loss.

Men were more likely than women to feel their skills were fully utilised, highlighting gender differences in job quality perceptions.

Low control over work pace had the strongest negative impact on wellbeing, while ethnicity showed no direct effect when other factors were controlled, although minority groups still faced significant disadvantages in pay and job security.

Key Skills Learnt

Data Analysis: Applied structured statistical techniques, including univariate summaries, cross-tabulations and regression modelling, to explore relationships between job quality and wellbeing across demographic groups.

Excel Proficiency: Used advanced Excel tools for data cleaning, recoding variables, running regression models and generating comparative tables to ensure accuracy and reliability in findings.

Data Visualisation: Designed clear and interactive Tableau dashboards to visually communicate trends in stress, pay, job security and wellbeing, making insights accessible to non-technical audiences.

Insight Communication: Presented findings to the Work & Skills sub-team, translating complex statistical evidence into practical, policy-focused insights to support discussions on employment inequality and fair work.

INVESTIGATING TRENDS ACROSS RESPECT'S DOMESTIC ABUSE HELPLINES FOR PERPETRATORS AND MALE VICTIMS

Grey Kingsley | BA Criminology | School of Social Sciences

Overview of the Data Fellowship

During my placement as a Q-Step Data Fellow, I collaborated with Respect, a UK-based domestic abuse charity that provides three confidential helplines: the Men's Advice Line for male victims, the Respect Phoneline for perpetrators, and the Scottish Domestic Abuse and Forced Marriage Helpline, supporting Scottish male victims.

- *My role focused on the analysis of service data with the aim of producing internal reports that could inform decision-making and support the charity's annual review processes. The primary objectives were to identify themes and trends within helpline usage, evaluate caller experiences, make informed recommendations for service improvement, and support Respect's commitment to evidence-based practice.*

Data Analysis

The analysis combined quantitative and qualitative methods using data from three sources: Call Handling logs (telephony), Salesforce (webchats and demographics), and Microsoft Forms (feedback and satisfaction). Conducted entirely in Microsoft Excel, the process required extensive data cleaning and organisation.

Univariate and bivariate analyses examined variables such as call volume, missed call rates, demographics, abuse types, and referrals to external agencies, with longitudinal comparisons identifying trends over time.

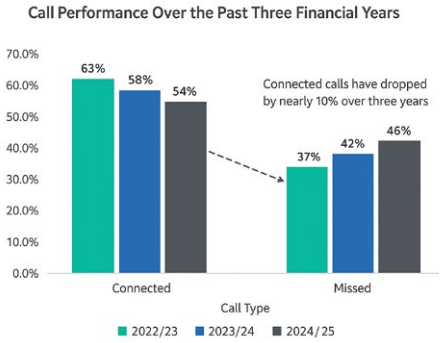


Figure 1

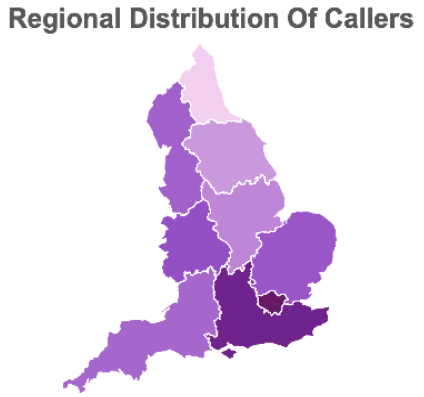


Figure 2

Qualitative content analysis of feedback assessed service quality and areas for improvement, while data visualisation ensured clear communication of insights.

Findings

- *Rising Demand: All Respect helplines saw increased call volumes in 2023/24, alongside a sharp rise in missed calls, highlighting a growing gap between demand and capacity.*
- *Call Patterns: Mondays and 10:00 AM emerged as peak times, prompting rota adjustments to better match demand.*
- *Demographic Shifts: Certain ethnic groups and regions are increasingly over-represented, suggesting opportunities for targeted outreach.*
- *Emerging Abuse Trends: Coercive control is rising among both victim and perpetrator contacts, indicating changing patterns in domestic abuse.*
- *Feedback: Respect Phoneline users reported high satisfaction, while feedback for the Men's Advice Line declined due to concerns about staff training, awareness, and wait times.*

Key Skills Learnt

- *Data Analysis: Gained confidence and skill in using Excel for data cleaning, analysis, and visualisation.*
- *Research & Communication: Designed research questions aligned with Respect's priorities and presented findings to helpline advisors, strengthening analytical and presentation skills.*
- *Ethical Awareness: Deepened understanding of ethical issues in handling sensitive domestic abuse data.*
- *Collaboration: Worked across departments, enhancing communication and teamwork.*
- *Data Management: Managed large datasets under tight deadlines, improving time and workflow management.*
- *Analytical Sensitivity: Developed awareness of how data interpretation influences service delivery on complex issues.*

#11 IPPR North - The State of The North 2026

UNDERSTANDING THE DRIVERS OF POLITICAL DISCONTENT IN THE NORTH

Niamh Duffy | BA Politics, Philosophy and Economics

An Overview...

During my time at IPPR North, I was responsible for gathering and analysing data for the organisation's flagship publication, the State of the North report. Every year, this report emphasises the impact of regional inequality on the North of England and underscores the importance of devolution in shaping the region's future prosperity.

The theme for the 2026 edition was political discontent - exploring its causes, its geography and the ways in which it can be addressed. Over 10 weeks, my research examined how well the government was delivering its promises to the North, identifying which places have been left behind and considering how this relates to varying levels of political trust and satisfaction.

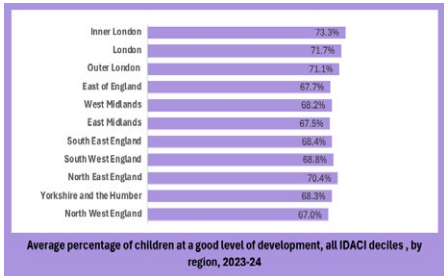
Alongside my research, I also attended meetings with local community groups, regional stakeholders and those with key roles in policymaking. These meetings gave me valuable insight into how evidence informs policy design and what 'good policy' looks like when it's put into practice.

My little visit to IPPR in London.

Data Analysis...

My data analysis drew upon a range of datasets - though I mainly sourced data from government departments such as the Office for National Statistics (ONS) and the Ministry for Housing, Communities and Local Government (MHCLG) - I also utilised external sources such as YouGov polling and similar independent research.

Much of my work involved locating and reconciling data at a deep level of granularity, and I often found myself problem-solving around gaps or geographical inconsistencies. As part of this process, I developed methods for presenting the large amounts of data I had gathered in a clear and intuitive way – ensuring that the meaningful stories within it could be easily interpreted.



Source: DfE

Key Skills Developed...

Throughout the fellowship, I strengthened both my quantitative and professional skills. After each completed stage of research, I gradually developed my communication and presentation skills - producing and delivering a series of briefs that brought together all of the quantitative insights across each individual policy area and locality. This process not only enhanced my persuasiveness, but it also taught me the importance of understanding your audience and tailoring your approach for maximum impact.

Overall, I gained confidence and proficiency in:

- *Data collection and analysis*
- *Problem-solving and reconciling complex data structures*
- *Communication and presentation of quantitative insights*
- *Stakeholder engagement, persuasion and collaboration*
- *Critical thinking and policy awareness*

A Reflection...

Reflecting upon my experience, I've not only advanced my analytical skills, but I left IPPR North with a deeper understanding of how evidence-based research shapes fairer, more effective policy. Having been part of a project that directly contributes to national policy discussions - and seeing how data translates into valuable insight - has only strengthened my desire to pursue a career at the intersection of data, research, and public policy.

RESOLVE POVERTY –THE ROLE OF THE PRIVATE SECTOR IN THE MISSION TO END POVERTY

Rida Doush | BSocSc Politics and International Relations

Overview of the Data Fellowship

During my fellowship at Resolve Poverty, I worked as part of a re-search team with Q-step colleague on a study exploring the ways in which private sector initiatives can cause improved outcomes for socio-economically disadvantaged individuals. The project was inspired by Resolve Poverty's flagship initiative, Money Matters, in collaboration with Kellogg's, providing debt and benefit advice in schools in the area of Greater Manchester.

Data Analysis

Our data analysis began with comprehensive desk-based research into existing literature on the role of the private sector in anti-poverty efforts which we used to critically examine open-source impact reports about ongoing initiatives by the private sector in the UK and worldwide. Building on this foundation, we contacted various representatives from the organisations and their partners to arrange interviews. We conducted semi-structured interviews with 6 different organisations, with a number of interviews scheduled to be done after the end of our fellowship. This was an impressive outcome given the scheduling difficulties associated with annual leave coinciding with the duration of our fellowship. The interviews were conducted with careful consideration of ethical standards, and we analysed the transcripts thematically, identifying central themes shared across all the data and sub-themes unique to each individual organisation.

Fig1. Is a map that indicates the scope of our case study research. The lighter blue represents studied areas of impact but not separate case studies

Findings

Our preliminary findings highlight the significant yet underutilized role of the private sector in anti-poverty initiatives.

The findings are still being shaped as the paper continues to develop with more interviews to support the case studies, however major findings include:

- *Cross-sectoral collaboration and the pooling of resources and skills result in more effective anti-poverty action. This was especially clear in an Australian case study which demonstrated deeply rooted long-term collaboration between the private, VCSE, and public sectors resulting in a highly successful financial inclusion program aimed at low-income families.*
- *Interview analysis furthermore expanded the presumed financial role of the private sector in anti-poverty initiatives, concluding that structural/ targeted forms of funding increased the effectiveness and spread of anti-poverty action.*
- *A large proportion of successful case studies of private sector partnership in anti-poverty initiatives adopted an approach that provides individuals with long-term tools to achieve economic independence, such as the financial inclusion approach.*

Key Skills Learnt

Through this fellowship, I developed strong qualitative research skills, including the ability to identify and critically assess open-source case studies in a field with limited existing research. I also gained greater proficiency in Excel and Word.

Fig2. Is an image from Resolve Poverty's 2025 Annual Conference.

Conducting interviews and performing thematic analysis enhanced my analytical and communication skills, while managing outreach to organisations improved my confidence in professional engagement.

Overall, this experience strengthened my research capabilities and inspired me to pursue a future career in third sector research and anti-poverty action.

ASSESSING THE IMPACT OF THE PLAY LEARN GROW (PLG) PROGRAMME IN GREATER MANCHESTER

Saira Chowdhury | BA Politics

Overview of the Data Fellowship

During my Q-Step Data Fellowship with Home-Start HOST, I evaluated the Play Learn Grow (PLG) programme, which supports children's early development and parental confidence across Oldham and Tameside. The project explored attendance, demographics, learning outcomes, and the relationship between parental confidence and child development. Findings fed into a live performance dashboard and final evaluation report for Greater Manchester Combined Authority (GMCA).

Data Analysis

I analysed multi-sheet datasets from the PLG 2024-25 evaluation, covering child outcomes, parental confidence, and demographics.

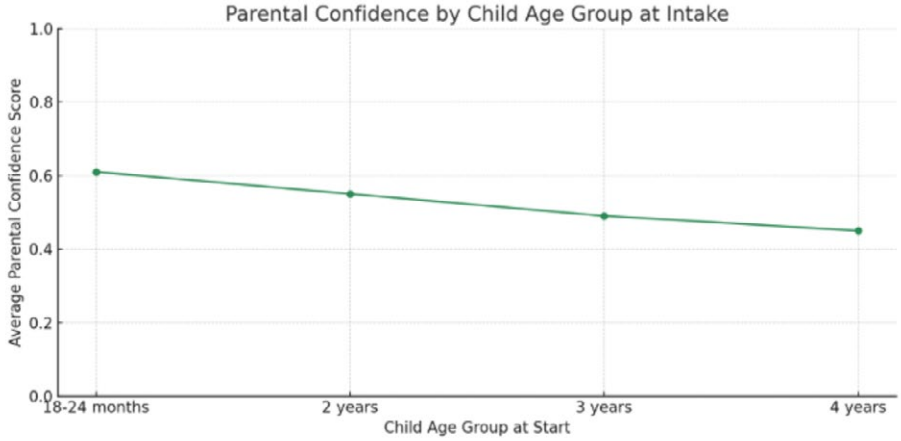
Key methods included:

- *Cleaning and standardising participant data.*
- *Calculating pre-post improvements (1-9 scale for children; 1-5 for parents).*
- *Comparing results to EYFSP Good Level of Development (GLD) benchmarks.*
- *Mapping reach by ward and deprivation level using Free School Meals (FSM) and child poverty indicators.*

Findings

Children's Development:

- *Children made measurable progress across all early learning domains.*
- *Oldham showed the largest gains in Early Writing and Environmental Print.*



- *Children starting from lower baselines improved the most — evidence of PLG's impact in closing gaps.*

Parental Confidence:

- *Consistent increase in parental confidence after sessions in all quarters (2024-25).*
- *Highest confidence gains seen for parents joining before their child's 2nd birthday.*
- *Parents reported feeling more engaged and better equipped to support learning at home. Correlation: Confidence & Development:*
- *Boroughs showing the highest growth in parental confidence (Oldham) also showed stronger improvement in GLD (Good Level of Development) outcomes.*
- *Suggests that parental confidence is a key lever for children's early learning success.*

Key Skills Learnt

Data Analysis & Visualisation- Cleaned and merged multi-sheet datasets, analysed outcomes, and created Tableau dashboards.

Parental Confidence by child Age Group at Intake

- *Communication & Collaboration-*

Presented findings to HOST and GMCA, turning data into accessible visuals.

Policy Insight- Linked evidence to GMCA's school readiness and early years strategies.

Average Parental Confidence Score

- *Adaptability & Problem Solving-*

Managed incomplete data and variable session frequency across

HOW CAN EUROPE AND CENTRAL ASIA ACHIEVE A GREEN TRANSITION THROUGH GENDER EQUALITY?

Saskia Perez-Cooke & Yufan Zhu
UNDP Istanbul Regional Hub Gender Team

Overview of the Data Fellowship

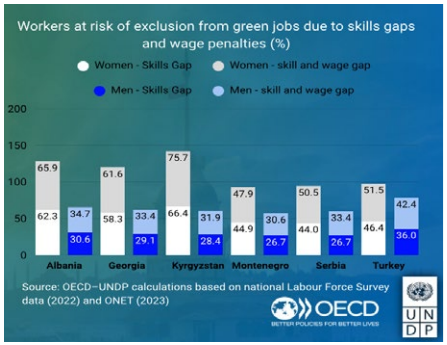
Over the summer at the UNDP Istanbul Regional Hub, we contributed to a regional study on women and jobs to address the under-representation of women in STEM and green jobs pathways.

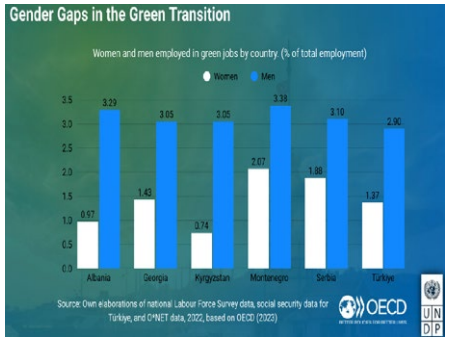
The UNDP and OECD carried out in-depth research using a mixed-methods approach combining Labour Force Survey microdata with survey, focus group and key informant interview data, to understand how the Europe and Central Asia region can achieve a green transition through gender equality - focusing on the role of STEM and green jobs.

Data Analysis

Our main responsibilities involved cleaning, analysing and reporting survey and key informant interview data from multiple countries and stakeholders to inform the regional report.

Given the diversity in the data due to various stakeholders, our methods of cleaning and analysis had to be adapted accordingly, hence we gained strong proficiency in various advanced Excel-based analysis. Once the data had been cleaned, analysed and the key insights had been synthesised we worked closely with a graphic designer to determine the most effective ways to visualise and present the findings for the regional report, for example, as stacked bar charts and complex tables.





Findings

- *Green occupations represent on average less than 3% of the overall employment across the countries analysed.*
- *The service sector generates the largest share of green jobs and acts as the main employer of both women and men in green occupations.*
- *Women employed in polluting industries face a risk of up to 2x as high of being left behind in the green transition than men.*
- *2/3rds of green occupations are held by men in this region.*

Key Skills Learnt

- *Data analytical skills: Above all, this experienced greatly strengthened our data analysis skills. Excel was our main tool for cleaning and analysis, so our understanding and efficiency of advanced functions improved significantly. As we would receive data from Country Offices in such varied formats and styles, we also developed confidence working with confusing, messy and large datasets, or even data in different languages.*
- *Management and communication skills: Besides our main data analysis work for the regional study, we contributed to several other data-driven campaigns. These involved collecting, organising and interpreting data, as well as designing social media infographics and drafting accompanying copy's and summaries for publication across digital platforms*
- *Soft skills: We developed key soft skills, such as confidence in the workplace, critical thinking and adaptability. As this fellowship was fully remote, we strengthened our communication skills - vital for maintaining efficiency, collaboration and professional relationships when working virtually in an international setting.*

RESOLVE POVERTY

THE ROLE OF THE PRIVATE SECTOR IN THE MISSION TO END POVERTY

Sofia Doherty Criscuolo | BSocSc (Hons) sociology

Overview of the Data Fellowship

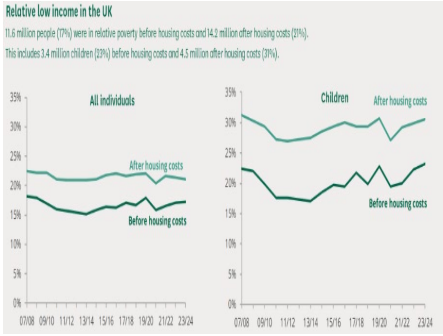
My time at Resolve Poverty was spent working on a project with my fellow Q-step colleague Rida. We were looking at private sector organisations researching their anti-poverty initiatives that are making a real difference on people's lives and improving their outcomes. The project was based off the Money Matters programme which Resolve Poverty has put out partnering with Kellogg's helping families maximise their incomes and manage debts. With the growing rates of poverty in the UK the research report is there to show the difference that the private sector can make on peoples lives as they have the resources and ability to do so.

Data Analysis

The research I conducted was mostly qualitative; this consisted of initial scoping task of desk-based research aiming to find companies that had initiatives that were improving the outcomes of people's lives.

Once this had been done the relevant people within the companies/organisation were contacted to undergo interviews, interviewing 5 organisation in total. Ethical consideration was taken into account throughout the process, making sure that the whole research process was done in an ethical manner.

The interviews were recorded and transcribed, each transcript was carefully analysed using thematic analysis, making themes and codes to gather the relevant information. This was then written up in a case study consisting of the findings of the desk-based research along with the interview findings. The findings from initiatives in the UK were compared to global ones in countries such as Australia and Brazil.



Poverty rates in the UK 23/24 used in the research report

Findings

- *The research found that partnerships with VCSE and public sector were key to making initiatives have a real impact on people's lives. This was due to the private sector having the resources*
- *Such as funding and the VCSE having the knowledge of how it worked as well as having the reputation of helping people in the communities that need help.*
- *Funding provided by the private sector that went towards initiatives with positive outcomes on people's lives tended to be structural funding where they funded it the initiative that was carried out by the VCSE sector and the private sector helped to make happen. Findings also showed that some private sectors had more targeted funding aimed at certain people that went in line with what their business mission was.*

Key Skills Learnt

I became more confident in working independently doing task by my-self and working on individual sections of the research as well as my teamwork skills improving.

Communication skills were key, making sure my colleague and I were up to date with what point of the research we were both at communicating daily made sure we knew exactly what to complete.

The research skills I learnt on this fellowship were extremely valuable, conducting research first hand gave me the skills I need to take forward into my dissertation.

Time management was key in making sure each deadline was met, as this was a fast past project.

ANALYSING EARLY-YEARS SUPPORT ACROSS GREATER MANCHESTER

Yichen Liu | BA (Hons) Social Sciences Criminology and Data Analytics

Overview of the Data Fellowship

Over the summer, I worked as a Q-Step Data Fellow with the Great-er Manchester Combined Authority and the charity Home-Start HOST, within its Baby Bank programme. The project aimed to integrate local Baby Bank referral data (covering over 1,700 families) with wider sources, including the Greater Manchester Baby Bank Impact Info dataset and the Department for Work and Pensions (DWP) 0–4 child-poverty statistics, to build a clearer picture of who accesses early-years support, what kind of items are most in demand, and how service reach is distributed across Greater Manchester.

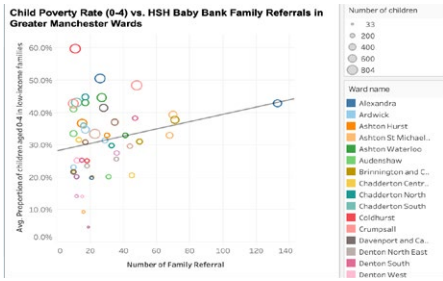
This analysis also contributed to the UK Government's early-years mission to ensure that 75% of five-year-olds achieve a good level of development in the Early Years Foundation Stage (EYFS) assessment by 2028, providing an evidence base for service planning and out-reach that better supports families and communities.

Through its Baby Bank programme, Home-Start HOST help families meet essential needs during the early years.

Data Analysis

I began by cleaning and standardising the referral data in Excel so it could be mapped and compared reliably. The cleaned data were combined with 0–4 child-poverty indicators to explore relationships between local deprivation and referral patterns across Greater Manchester.

To visualise these relationships, I used Tableau to build interactive dashboards that showed where families were referred from, which organisations made the most referrals, and which items were in the highest demand. I also created a Sankey diagram to visualise referral flows and a scatterplot com-paring the 0–4 child-poverty rate with the number of referrals across wards. In this chart, each bubble represents a ward, scaled by the number of children in low-income families.



To mitigate challenges in raw and in-consistently formatted data, I proposed practical steps such as introducing postcode-based lookup tables to en-sure consistency in organisation names, standardising data-entry formats, and adding a dedicated column for notes to meet value type consistency. These improvements would make future datasets more accurate and easier to analyse, supporting better planning for early-years services.

Findings

The analysis revealed clear spatial and demographic patterns in early-years support across Greater Manchester. Most of the children supported were aged 0–2, demonstrating the Baby Bank's strong focus on early-year fami-lies. Referral patterns revealed both high engagement in many communities and opportunities to strengthen outreach elsewhere. Item-level data showed strong demand for infant essentials, highlighting Baby Banks' vital role in supporting family well-being.

Key Skills Learnt

This was my first formal work experi-ence and a key moment in building my confidence. I learned to communicate and collaborate professionally, adapt my analysis to real-world needs, and work with data that was often imperfect but meaningful. Learning Tableau inde-pendently helped me develop the ability to master new tools quickly and present complex data in a clear and accessible way.

Having seen that behind every number is a real family, and how insights pro-duced could better inform organisations in extending service outreach, this experience confirmed my desire to con-tinue using data analysis in addressing societal challenges.

DITCHLEY FOUNDATION - BRIDGING DIVIDES WITH GRAPH NETWORKS

Zahra Sachikonye | BA (Social Sciences) Sociology and Data Analytics with International Study

Overview of the Data Fellowship

My Data Fellowship at Ditchley Foundation was divided into three key strands:

- *Network Analysis: This task involved researching existing members of Ditchley's global network to understand their professional backgrounds and areas of expertise*
- *Quantitative Data Analysis: I learned to use Neo4j and Cypher query language to explore patterns and insights within Ditchley's extensive graph database*
- *Open-Source Research: I conducted targeted research to identify potential new members, focusing on key thematic areas*

Together, these projects combined qualitative research, data analysis, and strategic thinking, allowing me to contribute to Ditchley's mission of strengthening dialogue and understanding on global issues.

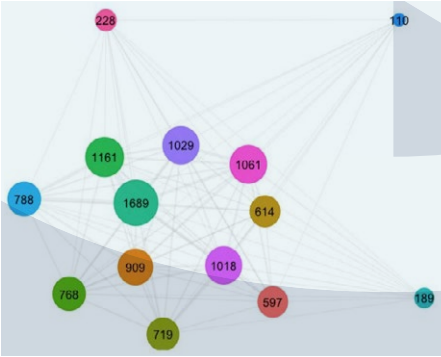


Fig 1. Shows thematic co-occurrence across themes and contacts. Each node represents a theme and the lines demonstrate their connection.

Data Analysis

For the quantitative strand of my fellowship I decided to explore thematic structure and event alignment within Ditchley's network. Using Neo4j and Cypher query language, I analysed how participants and events were connected through shared themes.

My analysis was guided by three areas of enquiry: How can themes be assigned systematically to events? Are events mono-thematic or multi-thematic in nature? To what extent do themes co-occur across events?

These three areas of enquiry aimed to uncover Ditchley's thematic landscape and patterns of engagement.

Findings

- *Preliminary analysis revealed that Ditchley's events tend to span multiple, overlapping themes rather than fitting neatly within single categories, highlighting the interdisciplinary nature of the discussions.*
- *The analysis also showed that some themes were significantly more common than others, indicating a skew in the network's focus areas.*
- *Patterns of thematic co-occurrence demonstrated that participants often engage with topics that intersect across multiple domains, such as defence, technology, and governance.*
- *Overall, these findings provide insight into how Ditchley's network aligns with its mission of fostering dialogue on complex, interconnected global issues.*

Key Skills Learnt

Research, Analysis and Technical Skills : I strengthened my ability to conduct both qualitative and quantitative research, synthesising open-source information on complex global issues and learning data skills.

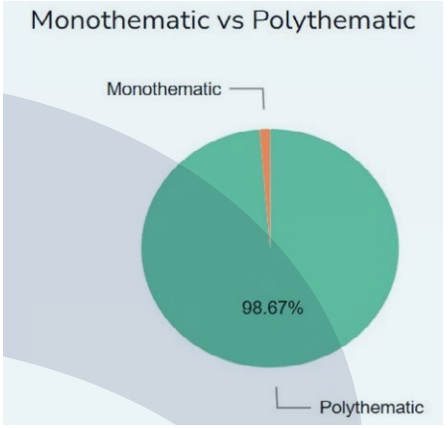


Fig 2. Is an example of an outcome of the analysis I was able to do of event themes after I derived these from existing contact themes.

Communication, Networking and Professional Engagement: Presenting weekly findings to colleagues and participating in discussions and remote networking opportunities enhanced my ability to communicate insights clearly and work effectively.

Confidence: Above all, the fellowship built my self-assurance — in my knowledge, research abilities, and capacity to contribute meaningfully in a professional and international context.

ALLEVIATING CHILD POVERTY

Insights from Policy, the Cost-of-Living crisis, and Enrichment opportunities

Brianna Murphy | BA (Hons) Politics, Philosophy, and Economics

Overview of the Data Fellowship

During my data fellowship, I undertook three major projects. The first was a quantitative analysis, using IPPR's Tax-Benefit microsimulation, of the efficacy of different policy options for reducing child poverty. I modelled how changes to social security (such as removing the two-child limit or increasing the amount of Universal Credit that individuals receive) affects poverty rates across groups and the income distribution across households.

This required a complex understanding of how poverty is measured and how the social security system functions. The results of my modelling were sent to Senior Advisors in government to support the ongoing work of the Child Poverty Taskforce. The second project was a comparison of different measures of inflation (Producer Price Index, Services Producer Price Index, Consumer Price Index) to assess the consistency of inflation across supply chains.

The results of my analysis ended up being brought to the Data Science team at 10 Downing Street to investigate the sectors which I highlighted. The final project was completely different, as I was tasked with writing a blog-style piece proposing and defending a policy of individual enrichment accounts for children in households receiving Universal Credit.

This policy proposal is available to read at IPPR's online research library. All of these projects provided me with a holistic understanding of both the causes and impacts of poverty and how nuanced policies which aim to alleviate poverty must be.

Data Analysis

My first two projects were the most quantitatively intensive, allowing me to apply the skills I developed at university in a professional setting.

Project 1: Child Poverty Modelling

I used IPPR's Tax-Benefit Microsimulation model, combining survey data from the Family Resources Survey with stochastic simulations, to evaluate alternative social security policies. Policy changes were implemented in Excel, with Python sampling the population to simulate effects.

I analysed outcomes across all children, those in lone-parent households, and those in deep poverty, generating efficiency rankings and graphs in Excel to assess which policies were most effective at reducing poverty.

Project 2: Inflationary Analysis

I worked with the Cost-of-Living team at IPPR to analyse inflation across UK supply chains using the Producer Price Index (PPI), Services Producer Price Index (SPPI), and Consumer Price Index (CPI). I compiled and cleaned over 50 ONS datasets, creating a comparator table to show changes to the price level over time as percentage changes and as relative to an economy-wide baseline.

This allowed me to identify sectors with unusually fast or slow inflation and assess claims of "greedflation." I produced detailed graphs comparing inflation imported from overseas, inflation within domestic manufacturing costs, and inflation experienced by consumers to understand how costs are being transmitted through supply chains.

Key Skills Learnt

Research: Learnt to recognise when to step back from imperfect data and make reasoned assumptions to provide clear, actionable insights. Developed resilience in navigating limited or misleading information while still producing strong policy recommendations.

Analytical: Applied university skills in sampling, hypothesis testing, and data cleaning to real-world policy problems. Learnt the importance of balancing statistical rigour with political pragmatics and government priorities.

Professional: Developed flexibility and a proactive attitude by saying yes to varied tasks. Gained valuable networking experience through talks by Ed Davey & James Cleverly, policy workshops with experts, and a visit to the incredibly welcoming team at IPPR North.