



# Can data science help us achieve a stronger start and brighter future for children?

# NESTA

**Dr Rachel Wilcock**, Data Science Lead at **Nesta**, explains how data science can be a powerful tool for social good

Data scientists use scientific methods and computer algorithms to extract knowledge and information from large datasets. This is useful in a huge range of applications, from monitoring global finances to improving medical imaging techniques. Thanks to data science algorithms, when you use a search engine, such as Google, to look for anything online, the most relevant results appear first. And have you noticed that after searching for something online, your social media accounts are then full of adverts for that very same thing? This is because data science algorithms track your online activity to discover your likes and interests.

The ability to uncover information hidden within data is extremely useful. Data scientists use their skills to reveal the patterns in data, which can then be used to identify and help solve the many challenges facing our society. We spoke to Dr Rachel Wilcock, Data Science Lead at Nesta, to discover what a career in data science for social good involves.

## What is data science?

Data science is a multidisciplinary field which uses a range of methods, from descriptive statistics to machine learning, to gain insights from datasets. This involves everything from scraping websites to create new datasets, to communicating findings by producing interactive visualisations of the data.

## How does Nesta use data science for social good?

Nesta is an innovation foundation for social good. We focus on three missions, each with its own goal: 'A Healthy Life' aims to increase the number of healthy years lived in the UK, while narrowing health inequalities; 'A Fairer Start' aims to narrow the outcome gap between children growing up in disadvantage and the national average; and 'A Sustainable Future' aims to reduce household emissions by 30% from 2019 levels by 2030.

We use data science for social good by using innovative data sources, methods and

visualisations to solve problems and find new insights to social issues. To do this, the data analytics team contains people with a range of skills, from data scientists and data engineers to those specialised in data discovery and data visualisation.

## What does your role at Nesta involve?

My job is really varied. I lead a small team of data scientists and quantitative analysts and I am the lead data scientist in Nesta's Fairer Start mission. This involves managing the workload of projects, suggesting potential avenues for new research, finding ways to tackle social challenges with data science methods and establishing which outputs will be most useful for our stakeholders.

In one project, as part of the A Fairer Start Local partnership, we worked with the City of York Council to help them make data-driven decisions related to the uptake of health checks for two-year-old children. I was involved throughout the entire project lifecycle, from helping to devise the research questions, to cleaning and pre-processing their data, to developing the final product. This was a prototype dashboard that allows the council to see the uptake of health checks across the city, and how it varies between different demographics.

## How do the skills you learnt during your PhD help you now as a data scientist?

I did a PhD in volcano seismicity, during which I developed a new algorithm to separate volcanic earthquakes from tectonic earthquakes in areas where they often co-exist. I now apply the techniques and methods I used to analyse



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earthquake data to analyse childhood data from local authorities across England. My earthquake algorithm and all my PhD data analyses were conducted in Python, which I taught myself how to use through online courses. As well as knowledge of Python programming, I learnt many transferrable data skills in my PhD: cleaning and pre-processing data, ensuring algorithms are efficient, creating data visualisations to communicate my results...

### What do you most enjoy about being a data scientist?

I love the variety of projects I work on and the real-world impact I have. For example, the City of York Council is now using the dashboard we created to develop new methods to encourage parents to bring their two-year-old for their health check.

From a data science perspective, I enjoy all aspects of the role – even the data cleaning! I especially like the creativity of trying to come up with new ways to solve a problem. This is often a real challenge when studying early childhood data, as different local

authority services keep their data separate. At the other end of the project lifecycle, I love producing the data visualisations. There is something really rewarding about providing new insights to someone and presenting their data in a way that helps them understand their own work more.

### What advice can you give young people interested in a career in data science?

Even if you've only used coding languages a little bit, you're off to a good start. There are lots of online courses that can supplement your coding and programming skills, so you don't need to have a university degree explicitly related to data science. A lot of the skill in data science is thinking about how you could tackle problems and what research questions you need to ask of the data.

For me, where I worked was more important than just doing data science, and Nesta have given me

the opportunity to shape the role I'm in. Jobs such as a data analyst or quantitative analyst have a lot of overlap with a data scientist, so you could start in these roles and then transfer to data science. It may be that you become a data analyst at a company you're interested in, and as you develop your skills you could then move towards a role more focused on data science.

### Find out more

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**A LOT OF THE SKILL IN DATA SCIENCE IS THINKING ABOUT HOW YOU COULD TACKLE PROBLEMS AND WHAT RESEARCH QUESTIONS YOU NEED TO ASK OF THE DATA.**  
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