

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

# How Do Retrofits Affect Health?

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## 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.

Sum of Completed proportion by Health Issue

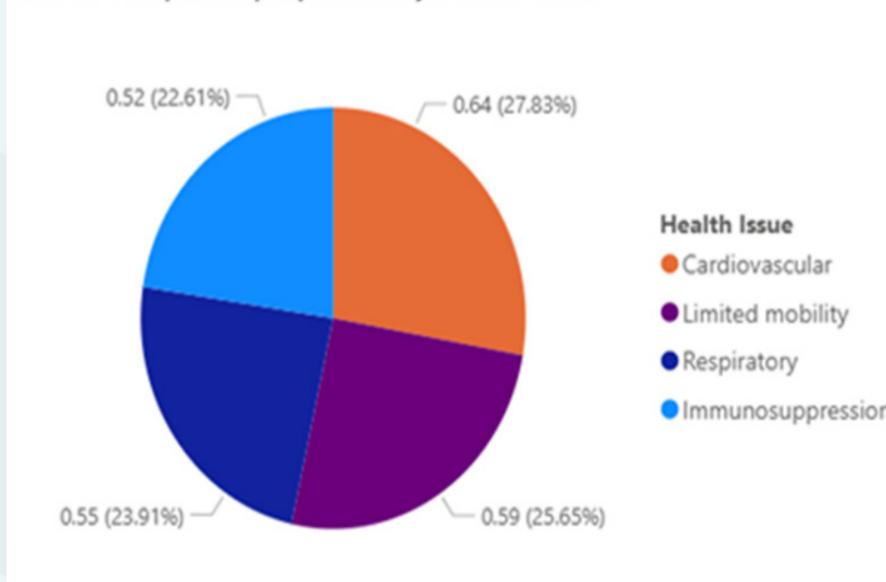


Figure 2: A pie chart that shows the sum of completed retrofits per health issue

Number of Retrofit Applications in GM per LSOA

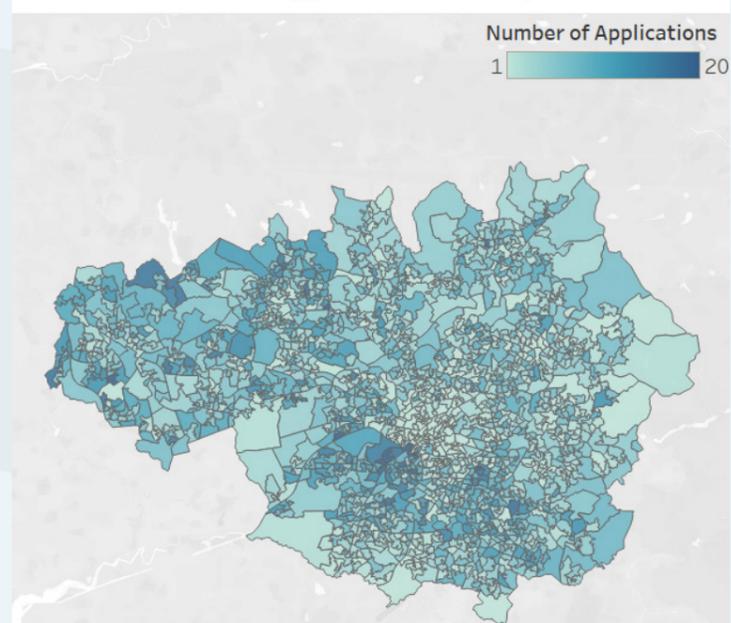


Figure 1: A map of completed retrofits per LSOA in Greater Manchester

- **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.