

Sustainability in the Lancaster District

Beyond Imagination Life Survey
ImaginationLancaster

June 2022





Executive Summary

This report summarises the findings of the **Sustainability** case study, *which is composed of a transport focus proposed by ImaginationLancaster and a sustainability focus proposed by Lancaster City Council*. In the analysis of the data collected from over 1,600 people in Lancaster and Morecambe the following key findings were established:

Transport focus:

- Over 90% of respondents travel by car or van at least once a month, and over one third (532 / 1528) of those that do believe that nothing would help reduce their car/van use.
- However, there was also a strong preference for cheaper and more frequent public transport with better routes, and active travel can be encouraged with improved walking routes, pavements and cycle paths.

Sustainability focus:

- Engaging in sustainable practices (active and public travel in particular) is correlated with positive physical and mental health.
- Those that often eat sustainably are more likely to report (very) good general health, whilst those that often recycle green waste and food are more likely to report higher mental health and wellbeing.

Background

Lancaster University, Lancaster City Council and Blackburn with Darwen Council have come together to initiate the Beyond Imagination Life Survey. Commissioned by Lancaster University and undertaken by BMG Research the survey of just under 3,000 residents aims to gather a representative picture of views, attitudes and experiences, which will in turn inform strategy, activities and research opportunities for ImaginationLancaster, the local authorities and other local partners.

Lancaster City Council and Blackburn with Darwen Council priorities have formed a key part of the survey development throughout, resulting in a survey structure which combines the needs of different stakeholders, based on four themes:

- Health and Wellbeing
- Wealth and Opportunity
- Sustainability, Transport and Travel
- Connected Communities and Services

Bringing the data to life

Connected Places Catapult were commissioned to develop an interactive data dashboard solution to explore and visualise the Life Survey data, and to enable future interactive data analysis, research and visualisation. To this end, a series of case studies have been produced by Connected Places Catapult based on research themes developed with the project partners in Beyond Imagination workshops.



Introduction

This is the report for the Sustainability case study for the Beyond Imagination Life Survey created by Connected Places Catapult in collaboration with ImaginationLancaster and Lancaster City Council. The results and findings presented here were extracted from the analysis and visualisations produced in the Sustainability Dashboard. The case study was broken into two focus areas around transport and sustainability.

The requirements for a modal shift in transportation – Lancaster City Council (Transport Focus)

Lancaster City Council declared a Climate Emergency in 2019 to work with partners to reach a net zero district by 2030. A significant part of the District's CO₂-equivalent emissions are from transportation. Encouraging a modal shift away from the private car and towards active and sustainable travel is a way to reduce transport associated emissions. For residents who own a car or predominantly travel by car, an understanding of what different groups of people may need to make the shift is key.

The urban perception of wellbeing in Lancaster – ImaginationLancaster (Sustainability Focus)

As well as the Climate Emergency, there could be additional motivations to make the switch to more sustainable practices. For example, there are likely to be added health benefits to increasing the use of active travel methods, which are a form of exercise. A better understanding of how often residents engage in sustainable and low carbon practices, and evidence of positive physical and mental health outcomes will aid in encouraging these important shifts in behaviour and reaching net zero goals.

Methodology

The data in the Life Survey was collected by BMG Research who took measures to increase the representativeness of the participants of the survey. The data collection for the survey consisted of online surveys and (offline) in-person interviews. The anonymised data were securely transferred to Connected Places Catapult, where the data was verified, cleansed and processed using a Jupyter Python Data Science environment, which included the joining to geospatial data provided by Ordnance Survey and Office for National Statistics. The data was loaded into a PostgreSQL database and connected to Apache Superset. Here the dashboard solution was developed, the data analysis was carried out, the dashboards built, and the visualisations created. The Exploratory Dashboard was used to quickly and effortlessly discover relationships in the data, and only then were custom visualisations created for the case study dashboard.

The transport focus can be targeted with the Life Survey using question 26 (Q26) regarding modes of transport and Q27 on possible solutions to reduce car and van use. These included improvements to public transport and active travel. Additional variables were used to better understand the interplay of characteristics such as age (Q3), gender (Q2) and household income (Q67). The priorities and desired improvements for local spaces can be understood with Q12.

For the sustainability focus, Q29 gauged levels of concern about climate change and Q30 was used to measure how regularly respondents engaged in sustainable practices including: disposing of green waste; reduce, reuse and recycle practices; energy saving measures; active and public travel; reduced use of stoves, wood burners and open fires; eating more sustainably with plant-based and vegetarian diets. The links to physical and mental health used Q31 and Q35. The latter, is The Warwick Edinburgh Mental Wellbeing Scale ©University of Warwick, 2006, all rights reserved. WEMWBS was developed by the Universities of Warwick, Edinburgh and Leeds in conjunction with NHS Health Scotland. The combined WEMWBS numerical score can be categorised as low (<44), medium (45-59) and high (60-70). Low scores have been correlated with possible and probable depression.



Results & Discussion

The majority often travel by car or van and while some feel that nothing would help change this, others believe in improvements to public transport and active travel paths

Figure 1a shows that many of the respondents often travel by car and on foot, and a large group rarely travel by public transport or bicycle. Figure 1b shows that many (532 out of the 1528 that are at least monthly users) respondents believe that nothing would help reduce their car or van use. However, there was also a strong preference for cheaper and more frequent public transport with better routes. Respondents believe that active travel can be encouraged with improved walking routes and cycle paths.

Further insights were found from additional charts in the dashboard using age, gender and household income variables. Females expressed a higher interest in better street lighting and lit areas, which would improve their safety when using active and public transport at night. Younger age groups were more interested in public transport and active travel improvements, whilst older residents shared a more common view that nothing would help. Those on lower incomes believed in reducing public transport costs, suggesting they may be unaffordable. When ranking local priorities, public transport was high, but felt improvements related to car/van use such as road repairs were higher priority.

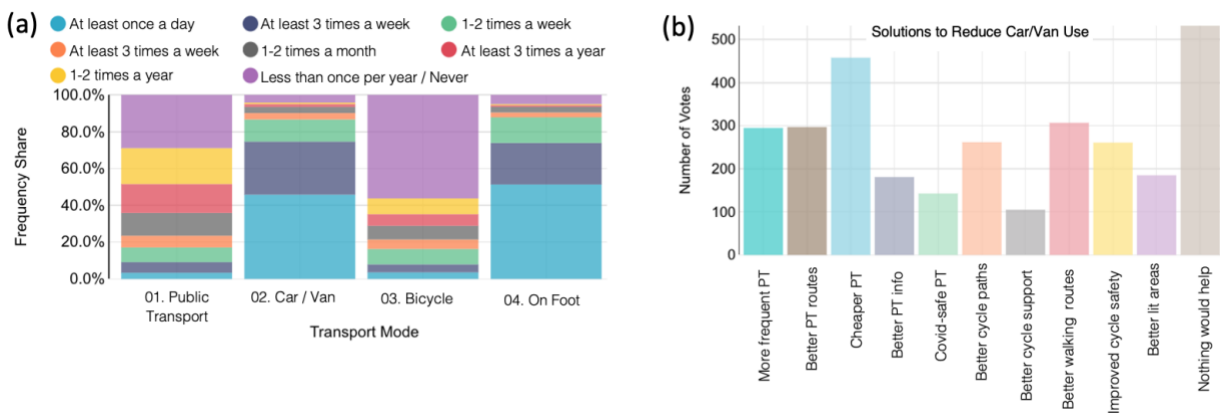


Figure 1: (a) The share of how often respondents use transport modes. (b) Number of votes for each proposed solution to reduce car/van including improvements to public transport (PT) and active travel.

Sustainable practices are correlated with improved mental and physical health.

It was found that the majority are concerned with climate change, and those with higher levels of concern engaged in sustainable practices more often. Of the sustainable practices, reduce, reuse and recycle, and energy saving are practiced the most often. The majority favour active travel or public transport for short journeys, at least some of the time. High proportions will never eat sustainably (plant-based/vegetarian diet), but over half of respondents do at least some of the time. Charts supporting these findings can be found in the dashboard.

Figure 2 presents some of the relationships of sustainable practices to physical and mental health. Figure 2a shows that those that often use active and public travel, are more likely to report good or very good health. This was also found for sustainable eating. Figure 2b indicates recycling green waste and food often increases the likelihood of medium or high WEMWBS scores. This was also the case for active and public travel. There is a wealth of evidence supporting the positive health benefits of exercise, which explains the correlations between health and active travel.

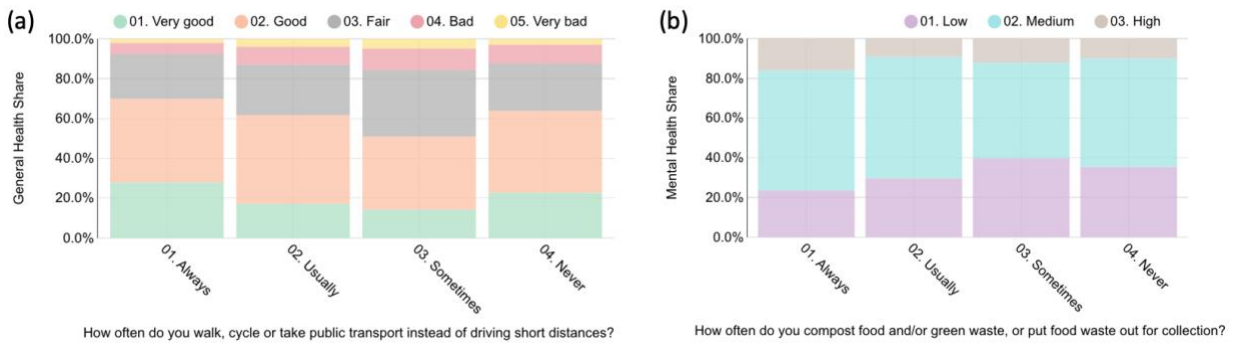


Figure 2: (a) The distribution of general health for groups that engage with active travel with varying frequency. (b) The distribution of mental health according to the WEMWBS categorisations for groups that sustainably dispose of green and food waste with varying frequency.

Outlook

This case study used the Life Survey to investigate some of the requirements for a modal shift in transportation to aid in the transition to net zero, and to explore the aspects of sustainable practices and their relationship to mental and physical health. In summary, respondents believed that improvements to active and public travel could help reduce their car and van use, and it was found that active and public travel should be encouraged due to their relationship to improved physical and mental health. The key results have been presented here, but further exploration and analysis of the data is possible with the accompanying dashboard. In the future it would be valuable to explore these questions geospatially to better understand the needs of urban and rural communities. It would also be instructive to disentangle personal and work-related/commercial car and van use, which will provide insights to help with a reduction in use.



Partners & Funding

ImaginationLancaster

Imagination is Lancaster University's cross-disciplinary design research lab. In 2019 ImaginationLancaster was awarded £13.2m for a multi-year project titled Beyond Imagination. Funded by UKRI Research England and led by Professor Leon Cruickshank, Director of Research at ImaginationLancaster, Beyond Imagination explores and demonstrates how cutting-edge design research can create a healthier, more prosperous and sustainable world.

<http://imagination.lancaster.ac.uk>

Data Science Institute

Lancaster University's Data Science Institute (DSI) supports interdisciplinary data intensive research across the University, with core themes of: foundations, health, environment, society. It has 155 academic members from 19 depts and works with business, government and third sector partners. Current member activities include work understanding the needs of looked after children, links between the quality of the urban environment and health as well as projects in cyber security.

<https://www.lancaster.ac.uk/dsi/>

Blackburn with Darwen Council

Blackburn with Darwen is a semi-rural unitary borough located in the south east of Lancashire. It has compact urban areas predominately located around the towns of Blackburn and Darwen, surrounded by countryside. These contrasting areas include some of most and least deprived in England. The current corporate plan has the aim of enabling borough residents to achieve a good quality of life in a vibrant and thriving place, with strong community values, in an inclusive society.

<https://blackburn.gov.uk>

Lancaster City Council

The Lancaster district includes diverse and attractive city, coast and countryside locales. Lancaster City Council's vision is for the district to thrive as a vibrant regional centre in the north west of England. In December 2021 the council set out its four priorities for 2030, along with strategies for how these can be achieved: A Sustainable District, An Inclusive and Prosperous Local Economy, Healthy and Happy Communities and A Co-operative, Kind and Responsible Council.

<https://www.lancaster.gov.uk>

Connected Places Catapult

Connected Places Catapult is the UK's Innovation Accelerator for cities, transport and places. We provide impartial 'innovation as a service' for mobility and built environment businesses, infrastructure providers and public institutions to catalyse step-change improvements in the way people live, work and travel. We help develop, implement and commercialise the latest technology and innovation for existing markets, as well as create demand and grow new markets in the UK and globally.

<https://cp.catapult.org.uk>

BMG Research

Established since 1988, we have more than 30 years' experience of working with our clients to build and deepen our understanding of changing and ever more complex markets, people and society. We work with our clients to fully understand the challenges faced by their organisations, identify priorities for action, and evaluate the impact of change.

<https://www.bmgresearch.co.uk/>

Research England

We are responsible for funding and engaging with English higher education providers to create and sustain the conditions for a healthy and dynamic research and knowledge exchange system in the higher education sector.

<https://www.ukri.org/councils/research-england/>



Appendix

Data sets used

Data Set	Source
Life Survey	Imagination Lancaster
Ordnance Survey / Office for National Statistics Census and Administrative boundaries and lookups	Open Geography Portal

Life Survey questions used

No.	Description	No.	Description	No.	Description
35	WEMWBS mental health score	18	Local Engagement	13	Council Decision Making
70	Employment Status	31	General Health	12	Local Priorities
69	Education Levels	19	Engagement Barriers	74	Work From Home

Further details

Respondents that did not respond to a question (answered don't know, prefer not to say, etc) were not included in the analysis. To calculate the WEMWBS score, the responses to each of the 14 survey questions are converted into a 5-point scale that reflect the frequency of occurrence, starting with 1 (None of the time) through to 5 (All of the time). The scores from each question are summed, resulting in an overall WEMWBS score in the range 14-70. These scores can be categorised as low (<44), medium (45-59) and high (60-70).

Data Access Statement

Beyond Imagination Life Survey Dataset

Due to ethical issues, data underpinning this publication cannot be made openly available. Access to the Beyond Imagination Life Survey dataset is restricted to Lancaster University researchers and officers within Lancaster City Council and Blackburn with Darwen Council. Further information about the data and conditions for access are available from Lancaster University's Institutional Repository at: <https://doi.org/10.17635/lancaster/researchdata/540>

Beyond Imagination Life Survey: Topline Reports and Case Studies

Topline Reports of the Life Survey findings and six case studies created in collaboration with Connected Places Catapult are openly available from Lancaster University's Institutional Repository at: <https://doi.org/10.17635/lancaster/researchdata/542>

Beyond Imagination Life Survey: Data Dashboard

Due to participant consent obtained for the Life Survey access to the data dashboard is restricted to Lancaster University researchers, officers in Lancaster City Council and Blackburn with Darwen Council. Lancaster University host and manage the data dashboard with access granted on a role-based basis. A password protected log on to the Life Survey data dashboard can be requested by emailing imagination@lancaster.ac.uk

Acknowledgements

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imagination.lancaster.ac.uk

ImaginationLancaster

LICA Building

Lancaster University

Lancaster

Lancashire

United Kingdom

LA1 4YW

Email: imagination@lancaster.ac.uk

Twitter: [@ImaginationLanc](https://twitter.com/ImaginationLanc)

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