The University of Liverpool use digital interface to fight against food poverty and insecurity

BACKGROUND

Between April 2020 and March 2021, the Trussell Trust recorded a high of 2.5m food bank parcels being given to people across the UK, struggling for essentials during the COVID-19 pandemic. This is a huge increase of over 6,633% compared to 1st April to 30th September 2019 where a total of 37,126 emergency parcels were distributed across 87 food banks operating in Merseyside.

Food insecurity describes the state of being without reliable access to a sufficient quantity of affordable and nutritious food as the UK is considered one of the worst-performing nations in Europe. During the first three weeks of the first UK lockdown, food insecurity across Great Britain occurred at an estimated four times the typical rate, with increased prevalence coinciding with typical risk factors such as low income and the extra complexities of movement restrictions and food shortages (Loopstra 2020).

The COVID-19 pandemic has multiplied the number of people suffering from food insecurity – disrupting opening times of stores, available transport and monetary costs associated with food access in ways that will likely persist for many months beyond government restrictions. This restrictive access to healthy foods could lead to long-term poor health outcomes, limiting child development, putting additional pressure on NHS resources, and reducing economic output.

The University of Liverpool's Centre of Excellence for Sustainable Food Systems have investigated the rate of access to healthy foods across the Liverpool City Region, to identify how the distribution of a range of different food stores contributes to potential access barriers for residents.

The University of Liverpool aims to present these research findings to food providers and local authorities, to encourage change and the reassessment of existing policies that could lead to better access to foods for disadvantaged and vulnerable groups, developing a resilient, sustainable regional food economy.

THE CHALLENGE

This research discovered supermarkets and discount stores, that provide the widest range of staple foods, are already disproportionately circulated across areas of lower and higher neighbourhood deprivation and significantly vary within opening times across the Liverpool City Region.

The data found certain areas already facing a higher level of food insecurity, face further barriers such as a lack of easy access to supermarkets, that provide a wider range of foods, including healthier items. The findings also highlighted how stores open nearby to their homes offer unsocial opening hours, further restricting access for those families within these communities and districts.

With such a high number of variables contributing to the levels of food insecurity across the region, the University of Liverpool wanted to display the data clearly and concisely for communicating to local and regional decision-makers, highlighting how all variables can play an impactful role in the levels of deprivation.

THE SOLUTION

The Centre of Excellence for Sustainable Food Systems approached the Virtual Engineering Centre (VEC) to support collating and displaying complex data regarding food insecurity in the Liverpool City Region.

The results would then demonstrate the barriers to an array of stakeholders and policy decision-makers. The VEC developed an interactive digital interface using filters to simultaneously highlight variables across a map of Liverpool, including different geographical locations of sub-regions and neighbourhoods, deprivation levels within, distribution levels of supermarkets and smaller stores, type of store and their offering of healthy food types, opening times throughout the week and operational times each day, pricing of certain staple items and access routes including walking distance to stores, public transport including bus routes and car ownership levels across different regions.

This map then uses different colours to identify and demonstrate areas for suggestive improvement based on their access to healthy food, using these filters to better understand the underlying reasons for any area having poor access to healthy food. The interface also incorporates a "sand-box" to explore relationships between key variables, such as store distribution and public transport accessibility.

The variables are tracked on a map of the region and highlight differing measurements including types of stores, availability of key items and specific characteristics such as level of deprivation within each region highlighting correlations and themes.

THE IMPACT

The research results discovered that whilst larger supermarkets have longer opening times and better stock of healthier staple items, they were unfortunately unevenly distributed across the region. in addition to this, whilst discount stores were found to be more evenly distributed, they offer shorter operational hours and therefore were not considered to be easily accessible. This highlights how working people or shift workers, for example, are further disadvantaged through a lack of personal or private transportation and only have access to limited operating hours.

The Centre of Excellence for Sustainable Food Systems believes the digital dashboard tool will play a key role in communicating issues found to decision-makers across the Liverpool City Region including store owners,

community food providers and local councils. These stakeholders can positively impact change in the region to ensure these barriers are limited and lifted where possible.

The digital dashboard highlights specific metrics whilst indicating possible solutions for improved food access within smaller regions. This includes additional bus routes and stores for increased access in addition to identifying which specific areas require extra support from innovative food access measures such as mobile produce vans.

The team hopes the outcome will encourage dramatic change across the Liverpool City Region with enhanced access to foods and healthier foods. Long term impacts can include a reduction in obesity, stress and anxiety related to food insecurity and even reducing costs on the NHS through a drop-in disease related to poor health and diet. The team believes this project can also serve as a backbone for future research collaborations to identify the impact of interventions and policies to improve food access in the region and beyond.

Following on from demonstrations of the digital dashboard and recent data, local charity groups and CIC (Community interest companies) have already displayed a passion to improve the access to high quality, affordable food, for more people within the Liverpool City Region. This access can be achieved by adapting hours for people to visit community food pantries, improving the current produce offerings at key local food hubs and increasing the levels of convenient access to existing healthy food sources for a wider range of local residents.

"

The collaboration between previously unrelated University research centres (like VEC and CESFS) stimulates new ways of thinking and new possibilities for research outputs, which will hopefully lead to real impact in the city. It was exciting to move beyond our typical research techniques and capabilities to develop an interface for the exploration of food access in Liverpool.

There are so many creative and passionate people in Liverpool working to improve our good food access, and I hope this tool can spark new ideas and action among people working across different sectors of influence. "

- Grace Patterson, School of Health Sciences, University of Liverpool