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A Bespoke Mapping Tool for Pharmaceutical Needs Assessment: Enhancing Efficiency Through Data Science

Overview

Pharmaceutical Needs Assessment (PNA) is a statutory responsibility undertaken every three years by Local Authority Health and Wellbeing Boards to ensure residents have appropriate access to pharmacy services. While traditional methods have supported this process effectively, they offered limited scope for testing different scenarios when service changes occurred.

To enhance adaptability and responsiveness, a bespoke mapping tool was developed. This solution uses data science techniques to provide an interactive, streamlined approach to spatial analysis, enabling timely and repeatable assessments.

Tool Design

The tool was developed with analysts and public health professionals to ensure it is usable and relevance for purpose.

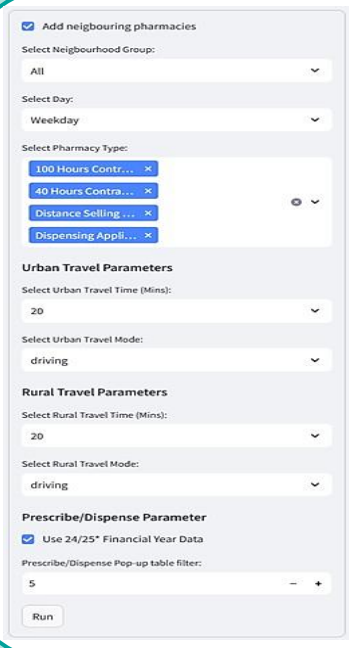
It was developed using Free Open-Source Software (FOSS); including Python, Pandas, Folium, and Streamlit. It integrates isochrone mapping via the MapBox API to visualize accessibility by travel mode and time.

It was then securely deployed and hosted on Microsoft Azure ensuring broad access and scalability.

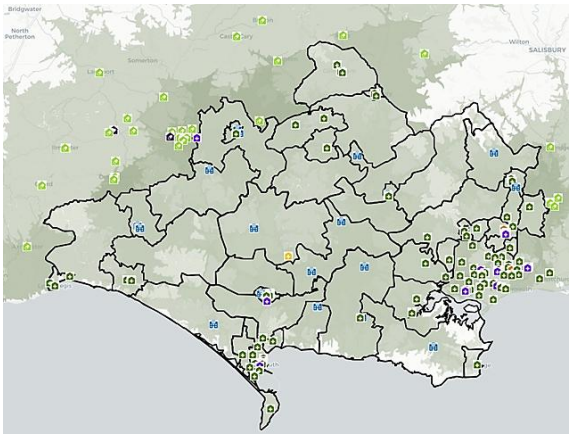
python™ Folium pandas Streamlit mapbox

Features

- **Interactive Mapping:** The tool has allowed the replacement of static GIS maps with a single, adaptable visualization, reducing the time spent on mapping and analysis.
- **Real-Time Adjustments:** Allows adjustment of various parameters such as rural/urban spilt, pharmacy types, opening times and travel times to model different scenarios.
- **Scenario Testing:** Supports impact analysis for potential service changes.



Rural/Urban Dorset isochrone map using a 20 minutes' drive-time.



Looking Ahead

Future enhancements will focus on:

Automated Reporting: Generating standardized locality profiles in PDF format.
Scalability: Adapting the tool for other needs assessments, such as sexual health needs.
Open Sharing: Making the source code available to foster innovation and transparency.
Customizability: Ensuring the tool can be tailored to diverse local contexts and evolving policy needs.