

International Journal of Population Data Science

Journal Website: www.ijpds.org



Linking Patient-Reported Outcomes and Housing Data to Inform Breathlessness Service Planning in Wales

Sally Cox¹, Alexander Shaw¹, Rory Prentice², Lloyd John², Nichola Thuvesholmen¹, Sarah Puntoni³, Jessica Scrimshire¹, and Sophie Franckel¹

¹Digital Health & Care Wales, Cardiff, United Kingdom

²Ordnance Survey, Cardiff, United Kingdom

³NHS Wales Performance & Improvement, Cardiff, United Kingdom

Breathlessness is common among individuals with chronic conditions and is influenced by clinical and environmental factors. Cold, damp and poorly insulated housing is linked to poorer health, especially among those with respiratory or circulatory disease. The OECD PaRIS survey provides patient-reported outcomes and experiences (PROMs and PREMs) for people with chronic conditions in primary care. Ordnance Survey's National Geographic Database (OS NGD) provides building attributes and Unique Property Reference Number (UPRN). These features are used to create a simple index, identifying "hard-to-heat" homes. Richer indices could incorporate UPRN-linked Energy Performance Certificates (EPC). Combining "hard-to-heat" homes with PROMs/PREMs, provides a novel approach to understanding environmental drivers of breathlessness in Wales. Objective: Demonstrate the feasibility of linking PaRIS data with housing quality indicators, identifying geographic areas of greatest need, supporting the

siting of breathlessness hubs in South Wales. Methods: Using the DHCW National Data Warehouse, PaRIS responses are linked with OS NGD Buildings data via UPRN. Spatial analysis and predictive modelling explore associations between patient-reported breathlessness, housing energy efficiency, and socioeconomic factors. Results: Preliminary analysis suggests areas with higher concentrations of "hard-to-heat" homes overlap with clusters of patients reporting breathlessness and poor health-related quality of life. Heat maps and risk models will inform optimal hub locations, supporting targeted interventions. Conclusion: This study illustrates the transformative potential of linking patient-reported outcomes with environmental determinants to inform policy and service planning. By integrating PaRIS data with housing indicators, NHS Wales can advance person-centred, value-based care and address health inequalities through evidence-driven decisions.

