HEALTH DATA TO SUPPORT LOCAL COMMUNITIES

The **Robert Emmet Community Development Project** and **Oliver Bond House** case study within *Optimizing Data to Integrate Health and Social Care in Dublin 8*

A **SMART D8** PROJECT

SMART D8
A Smart Dublin District

Trinity College Dublin
Coláiste na Tríonóide, Baile Átha Cliath
The University of Dublin

Robert Emmet
Community Development Project

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Summary

The Robert Emmet Community Development Project (CDP) highlighted community concerns with health problems among residents of Oliver Bond House, work done to describe building issues, and difficulties in having these issues addressed. Health data, to accompany other data and community concern was identified as potentially useful in advocating for action. A group including CDP, TCD and health service staff scoped options to address this gap.

The group worked with the main local general practice to facilitate the practice in summarising data on asthma by area of residence and sharing this with the community, and reviewed literature to identify links between the local housing conditions and health.

Among residents of Oliver Bond House, 18% had evidence for asthma in their GP record compared to 8% among those not living at Oliver Bond House. Literature review identified evidence that reversing housing conditions described by Oliver Bond House residents can decrease respiratory illness.

These data and evidence from published literature were shared with the local community through the Robert Emmet CDP and used for advocacy. The project shows how collaborations between local communities and health service providers can identify environmental determinants of health and the presence of marked health disparities even within local communities.

Project origin and aim

This project was undertaken within a collaboration to explore enhanced use of data across organisations and the community to improve health in Dublin 8. Projects were generated at a participatory workshop[1]. This project grew from discussion of inputs by the Robert Emmet Community Development Project (CDP). These highlighted community concerns regarding health problems among residents of Oliver Bond House. A 2021 structured environmental survey distributed by the Robert Emmet CDP to all 395 households in the complex on 11 March 2021 with 186 responses (47%) from residents[2] identified problems and their scale. The survey results included identification by 82.8% of respondents of mould and damp, by 73.7% of drafts or poor insulation in the building complex, and 45% reported that a medical practitioner had advised that housing conditions (damp, mould or sewage problems) contributed to poor health. The community and Robert Emmet CDP had been advocating for actions to address these housing issues. Discussion during and after the workshop identified that health data and evidence linking environment to health problems, would complement these environmental survey data and community concerns in supporting advocacy for housing interventions. This gave rise to the project's substantive aim: to explore whether local health data and research evidence might support community action. This project contributed one case study of the Smart D8 collaborative project- the Robert Emmet CDP and Oliver Bond case study.

The case study objectives were to:

1. Scope what local data and wider evidence could be useful and could be shared in a partnership between the community and healthcare organisations;
2. Facilitate collaboration across the community, university and health service partners to provide useful health data and evidence to the community;
3. Identify learning or systems to support similar work.

Approach

This was undertaken by:

1. Scoping available national and local data sources for health data;
2. Working with data holders to share summary output data where available;
3. Identifying and reviewing literature to identify evidence linking the described conditions and health.

1. The initiation workshop scoped a range of potential projects with local community, health service and public health colleagues supported by national and international expertise in data supported population health management approaches. A report on the workshop and its evaluation is available at: https://www.tcd.ie/media/tcd/medicine/public-health-primary-care/pdfs/smart-d8-workshop-report2.pdf

2. Robert Emmet CDP (2021) Environmental Conditions of Oliver Bond Flats, Report on Survey, March 30 2021. https://files.spazioweb.it/62/5d/625d5cb0-bc43-4cbf-bf4f-83082840db3e.pdf

Scoping available data

The HSE Health Intelligence Unit provided access to HSE held data to support health needs assessment including the Health Atlas. This provided an overview of health based on extrapolation from national disease estimates, including local social deprivation measures. It didn't allow direct estimates of disparity affecting the Oliver Bond House residents compared to others. No hospital or other HSE provided health service data was identified to serve the objective of comparing health status by residence.

One local general practice served a large patient population in both Oliver Bond House and in the adjacent area, allowing the potential for comparable measures of health status within the practice dataset.

Working with data holders

Trinity academics provided expertise allowing identification of evidence for asthma from across the GP data system, and analysis to allow summary measures of differences between the patient population resident in Oliver Bond House and the rest of the practice population and for analysis of associations on the summary data[3].

Reviewing literature

Informed by the 2022 Area Director of Public Health Leadership Group Rapid Report on Energy Poverty[4] being undertaken at the time, and a review undertaken by a visiting academic from Aberdeen, Dr Kusum Singal, a brief review was edited to provide a summary of evidence on the association of poor physical infrastructure, respiratory health and evidence and impacts of housing interventions.

3. A fuller description is given in the appendix. An approach already developed by Trinity researchers to query GP data systems was applied within the practice identifying likely asthma based on codes, text in consultation notes, and medicines prescribed. Holding a medical card and residence (Oliver Bond House or elsewhere) were also captured and data summarised across these categories. Analysis evaluated the association of residence in Oliver Bond House and asthma, including with adjustment for medical card status.

4. Lenus. The Irish Health Repository. http://hdl.handle.net/10147/634784

Findings

Local data

There was a strong association of living in Oliver Bond House with a GP recorded diagnosis of asthma. Evidence for this diagnosis was present in 18% of Oliver Bond House residents compared with 8% of other members of the practice population (Table 1).

This translates into an odds of having asthma that was 2.4 times higher among residents of Oliver Bond House than among other in the practice population (Table 2). Oliver Bond House residents were more likely to hold a medical card with 71% of residents having a medical card compared to 40% across the rest of the practice population (Table 1). Holding a medical card was also associated with an increased risk of asthma (odds ratio 2.6, Table 2). Analysis that considered residence in Oliver Bond House and holding a medical card in parallel showed that both continued to have a substantial and significant association with asthma (Table 2). Even adjusting for holding a medical card, living in Oliver Bond House was associated with a 1.9 fold increase in odds of asthma.

Table 1. General practice population by evidence of asthma, residence, and medical card status

	Residence					
	Oliver Bond House			Not Oliver Bond House		
Asthma	**GMS**	**No GMS**	**Total**	**GMS**	**No GMS**	**Total**
Yes	40	14	54 (18%)	579	367	946 (8%)
No	168	70	238 (82%)	3,864	6,347	10,211 (92%)
	208 (71%)	84 (29%)	292 (100%)	4,443 (40%)	6,714 (60%)	11,157 (100%)

Table 2. Association of asthma with residence in Oliver Bond House and holding a medical card

Odds ratio [95% Confidence Interval] for asthma		
Predictive characteristic	**Multivariate**	**Univariate**
Oliver Bond House residence	1.9 [1.4-2.6]	2.4 [1.8-3.3]
GMS card	2.5 [2.20-2.9]	2.6 [2.3-3.0]

Literature review evidence

The relationship between housing and health can be considered across the dimensions of 1) physical characteristics of the home, 2) neighbourhood characteristics, and 3) security of tenure. Physical characteristics of the home are associated with respiratory health with recognised pathways related to temperature, humidity, and ventilation. Reviews summarise evidence for the association (Shaw, 2004) and potential mechanisms including through dampness and mould (Dales et al., 1991) and low temperature (Evans et al., 2000). The association of poor self-reported respiratory health in association with such poor housing conditions has been reported in many countries and age groups (Butler et al., 2003; Gunnbjornsdottir et al., 2003; Kilpelainen et al., 2001). Medically diagnosed asthma in adults (Williamson et al., 1997) and airway reactivity in adolescents (Nicolai et al., 1998) were also associated with damp housing conditions. Data from the United States National Health and Nutrition Examination Surveys, 2005–2006, showed that people who reported indoor mildew odour or musty smell also reported higher levels of asthma attack and chronic bronchitis and other complaints (Shiue, 2015). They also tended to reside in older housing that were built 20 years earlier. A recent European-wide population survey of 18 countries (the European Community Respiratory Health Survey showed that reporting of mould exposure in homes was associated with current asthma symptoms and airway reactivity in young adults. The effect was consistent across countries (Zock et al., 2002). Those experiencing poor housing conditions may also have other exposures affecting respiratory health, so that associations may not all be direct causal effects. However, alongside plausible pathways for a direct biological effect, some trials have shown that specific interventions such as improved heating (Howden-Chapman et al., 2008) and insulation (Howden-Chapman et al., 2007) can improve respiratory health. These intervention studies are strong evidence for direct effects of poor housing on reduced respiratory health, and that interventions may be effective in decreasing this.

Conclusion

Surveys within Oliver Bond House identify the types of housing conditions that may increase the risk of poor respiratory health. Residents in Oliver Bond House have an increased risk of asthma compared to other patients attending the same general practice, even adjusted for economic deprivation as measured by medical card status. There is evidence from published literature that poor housing conditions can contribute to poor respiratory health, and that interventions can reduce this effect. Taken together this offers additional arguments for work to improve the condition of Oliver Bond House.

This work also shows the potential usefulness of routinely collected health data and collaborations of community groups, health services and universities in identifying populations health needs and potential interventions to improve health and reduce health disparities at a local level. This example of local work may also guide more general approaches to develop systems to allow health needs assessment and health service planning incorporating similarly granular data characterising small subpopulation health issues often hidden in large national datasets.

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Appendix - More detailed approach and methods

Data management within general practice

Practice Management Software was used to list age, address, and General Medical Services card status to form a patient register and identify any recorded evidence for asthma.

A data cleaning tool, *Tableau Prep Builder* was used to automatically process the Patient Register in order to generate a unique identifier for each patient and

1. De-identify the data
2. Process the address to determine whether an OBH resident or not– i.e. address contained 'Oliver Bond House' or minor variations of that.
3. Generate a GMS status (True/False)

The clinical data was then automatically processed to identify any recording of asthma and an asthma status indicator (True/False) applied to this and linked to the same patient identifier. The register and clinical data on evidence for asthma were combined to generate a single, de-identified list containing age group (child or adult), sex, GMS status, OBH status and asthma status for each unique patient identifier. All data preparation work was undertaken on-site on the practice's own computing system, ensuring that only fully anonymised data was used for analysis externally.

It allowed production of summary data describing the patient population across the dimensions of recorded evidence for asthma, residence in Oliver Bond House, General Medical Services card status.

Analysis of these data produced used logistic regression to estimate the odds ratio for asthma according to residence (OBH or not), GMS card status in univariate and multivariate analyses.

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