HIRP Neighbourhoods & Health. Community Resource Accessibility: An Overview.

Aims

The overall aims of this aspect of the Neighbourhoods and Health project were to:

1. use Geographic Information System (GIS) methods to measure access to a range of community resources (food stores, health care provision, recreational opportunities etc.) for all neighbourhoods across New Zealand.
2. determine the association of neighbourhood community resource access and various biologically-plausible health outcomes and health-related behaviours.

The research was carried out in three stages:

Stage 1: Measuring Neighbourhood Access to Community Resources (1)

- Geographical information systems (GIS) were applied to develop indices of community resource accessibility for small neighbourhoods at the national scale.
- Using GIS, locational access to shopping, education, recreation, and health facilities was established for all 38,350 meshblocks (neighbourhoods) across New Zealand. Distance measures were calculated from the population weighted centroid of each neighbourhood to 16 specific types of facilities theorised as potentially health related.

Stage 2: Exploring the Geography of Community (2-5)

- The distribution of the 16 measures of community resources by neighbourhood socioeconomic deprivation (NZDep) was determined.
- For 15 out of 16 measures of community resources, access was clearly better in more deprived neighbourhoods. For example, the travel time to large supermarkets was ~80% greater in the least deprived quintile of neighbourhoods compared with the most deprived quintile.
- In separate analysis we found there to also be a strong association between neighborhood deprivation and geographic access to fast food outlets
- Many of these relationships are context specific.
- In urban areas access is better in more deprived neighbourhoods and the same is true of intermediate urban/rural areas although the gradient is considerably more pronounced.
- For rural areas, the relationship is more mixed with access to the majority of resources being worse in more deprived areas.
- Similarly, there are regional variations in the relationship between deprivation and community resource access.

Stage 3. Evaluating health effects (6-9)

The analysis of health effects was carried out in four stages:

Access to food stores

- Examined the association between neighbourhood accessibility to supermarkets and convenience stores and individuals' consumption of fruit and vegetables in New Zealand.
- Found little evidence that poor locational access to food retail provision is associated with lower fruit and vegetable consumption.

Access to primary health care provision

- Examined association between neighbourhood accessibility to GP surgeries and pharmacies and five health service outcomes: GP consultation, blood pressure test; cholesterol test; visit to pharmacy; satisfaction with latest GP consultation
- Locational access to GP surgeries and pharmacies appears to sometimes be associated with health service use but not satisfaction.

Access to parks and beaches

- Examined association between neighbourhood accessibility access to parks and beaches and BMI, levels of physical activity and sedentary behaviour
- Neighbourhood access to parks was not associated with BMI, sedentary behaviour or physical activity. There was some evidence of a relationship between beach access and BMI and physical activity.

Access to fast food outlets

- Examined whether neighbourhood access to fast food outlets is associated with individual diet-related health outcomes
- Residents in neighbourhoods with the furthest access to a multinational fast food outlet were more likely to eat the recommended intake of vegetables but were also more likely to be overweight. There was no association with fruit consumption. Access to locally operated fast food outlets was not associated with the consumption of the recommended fruit and vegetables or being overweight.

Summary

An index of community resource access across all of New Zealand was successfully developed. Interestingly, access (in travel time) to all but one of the 16 community resources was better in more deprived areas. However, for most of instances where we hypothesized that an aspect of community resource access would be associated with a particular health outcome, we found no convincing associations.

It must be noted that we have not measured the quality of the community resources.

The key implications from this research for policy makers with a focus on reducing inequalities in health is that community resources are not the explanation for small area deprivation (NZDep) differences in health. However, it is possible that inequalities in health by NZDep might be even worse were it not for the pro equity distribution of community resources.

References

1. Pearce J, Witten K, Bartie P. Neighbourhoods and health: a GIS approach to measuring community resource accessibility. *Journal of Epidemiology and Community Health* 2006; **60**:389-395.
2. Pearce J, Witten K, Hiscock R, Blakely T. Are socially disadvantaged neighbourhoods deprived of health-related community resources? *International Journal of Epidemiology* 2007; **36**:348-55.
3. Pearce J, Witten K, Hiscock R, Blakely T. Regional and urban-rural variations in the association of neighbourhood deprivation with community resource access: a national study. *Environment and Planning A* 2008; **In Press**.

4. Pearce J, Day P, Witten K. Neighbourhood provision of food and alcohol retailing and social deprivation in urban New Zealand *Urban Policy and Research* 2008; **26**:1-15.
5. Pearce J, Blakely T, Witten K, Bartie P. Neighborhood deprivation and access to fast food retailing: a national study. *American Journal of Preventive Medicine* 2007; **32**:375-82.
6. Pearce J, Hiscock R, Blakely T, Witten K. The contextual effects of neighbourhood access to supermarkets and convenience stores on individual fruit and vegetable consumption. *Journal of Epidemiology Community Health* 2008; **62**:198-201.
7. Witten K, Hiscock R, Pearce J, Blakely T. Neighbourhood access to public open space and the physical activity of residents: a national study. Under Review.
8. Pearce J, Hiscock R, Blakely T, Witten K. A national study of the association between neighbourhood access to fast food outlets and the diet and weight of local residents. Under Review.
9. Hiscock R, Pearce J, Blakely T, Witten K. Is neighbourhood access to health care provision associated with individual-level utilisation and satisfaction? . Under Review.