GeoHealth Laboratory

Te tai whenua o te hau ora

GeoHealth Laboratory Annual Report 2009-10

June 2010

Health & Disability Intelligence

GIS Expertise & High Quality Research for Public Health

Dept. of Geography

Table 1. Current GeoHealth Research Laboratory Personnel

Post	Location	Name
Directors	Dept of Geog Uni of Edinburgh	Assoc Prof Simon Kingham Assoc Prof Jamie Pearce[1]

2.3 Facilities

The Laboratory is located in a dedicated room situated within the Department of Geography. The Laboratory room is fitted out with six partitioned workstations, bench space for a further four workstations and two additional computer carrels. In addition there is a large meeting table and white board. The laboratory is locked and has swipe-card protected entry. The Laboratory layout was carefully considered to provide a conducive working and research environment with extra capacity beyond initial requirements to allow for growth.

2.4 Equipment

The GeoHealth Laboratory has been refurbished to provide desk space and computer terminals for up to twelve people. At present there are nine networked PCs each with 19 inch screens. There is also a dedicated GeoHealth network drive for the storage of data files which are regularly backed up.

[1] Jamie Pearce was previously on the permanent staff at the University of Canterbury. He is now an Adjunct Associate Professor, and remains actively involved in the GeoHealth laboratory.

Each PC has ArcGIS software, together with a number of statistics applications as well as standard PC word processing and numerical software tools. These applications are updated and maintained through University of Canterbury site licenses. Technical support is provided by Department of Geography GIS specialists and manager, and University of Canterbury central IT services.

2.5 Management

The directorship and management of the Laboratory is undertaken primarily by Simon Kingham of the Department of Geography. Additional research guidance and support is provided by Jamie Pearce. Simon and Jamie are in regular phone and email contact. In addition Jamie visited the Laboratory for a month in February 2010. The two directors are responsible for the work activities of the Laboratory.

Oversight and governance are provided by Yvonne Galloway and Stephen Manning at the Ministry of Health. The Directors and they are responsible for generating and agreeing the Laboratory work plan.

- Miller L, Pearce J, Barnett R , Willis J, Darlow B, Scott R, 2009. Is population mixing associated with childhood Type 1 diabetes in Canterbury, New Zealand? *Social Science and Medicine* 68, 625-630.
- Pearce J , Dorling D, 2009. Tackling global health inequalities: closing the health gap in a generation. *Environment and Planning A* 41, 1-6.
- Pearce J, Hiscock R , Blakely T, Witten K, 2009. A national study of the association between neighbourhood access to fast food outlets and the diet and weight of local residents. *Health and Pla*ce 15, 193-197.
- Pearce J, Hiscock R , Moon G, Barnett R , 2009. The neighbourhood effects of geographical access to tobacco retailers on individual smoking behaviour. *Journal of Epidemiology and Community Health* 63, 69-77.
- Stevenson A, Pearce J , Blakely T, Ivory V, Witten K, 2009. Neighbourhoods and health: a review of the New Zealand literature. *New Zealand Geographer* 65, 211–221.
- Thompson L, Barnett R, Pearce J , 2009. Scared straight?: Fear-appeal anti-smoking campaigns, risk, self-efficacy and addiction. *Health, Risk and Society* 11, 181–196.
- Thompson L, Pearce J, Barnett R , 2009. Smoking: compliant and nomadic identities. *Social and Cu*

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- Fukuda, K, Hider P, Epton M, Jennings L and Kingham S , 2010. Simulating

areas, as well as all New Zealanders. There are therefore policy implications for this research theme surrounding urban/rural status and health outcome inequalities in New Zealand that we have observed. This research has enabled us to monitor and explain differentials in health between urban and rural areas and the health needs of these areas.

4. Green space and health

This research examined whether there is a socio-economic gradient in usable and non-usable green space exposure and whether green space exposure was associated with cause-specific mortality (lung cancer and cardio-vascular disease) in the New Zealand context. The study found no evidence of green space influence on cardiovascular mortality and that variation in green space availability may have less relevance for the health of New Zealanders given its abundance and less variable social and spatial availability than in other settings. Milestones achieved in this research theme include the completion of analysis on green space availability and neighbourhood socio-economic level, creation of appropriate regression models, and drafting and submitting an academic paper after incorporating reviewers‟ comments. The paper has recently been published in BMC Public Health (a top journal in this field) (Richardson et al, 2010).

5. Assessing the impact of smoking cessation services: a geographical analysis of Quitline data

Smoking is the leading preventable cause of premature death worldwide. Smoking cessation dramatically reduces the risk of tobacco related illnesses - therefore cessation services offer good value for money in terms of decreasing long term costs to health systems.

In New Zealand the Quit Group, funded by the Ministry of Health, has been providing a quit smoking telephone service (Quitline) for smokers since 1999. This research used Quitline data between 2005 and 2009 and 2006 census smoking data to provide an assessment of the geodemographic coverage of Quitline. The project then

obesity promoting foods that may negatively impact on student diet and contribute to inequalities in health. The academic paper of this study has been submitted and is currently under review (Day and Pearce, 2010).

3.1.3 Ad-hoc Tasks Completed for the Health Sector in 200 9/10

GIS is gaining prominence across the health sector, however GIS capability varies greatly among DHBs. In addition to the research outlined above GIS technicians and GeoHealth Laboratory staff in the Department of Geography and the Ministry of Health, continue to play a hugely important role in providing GIS ad-hoc services for the Ministry of Health (Table 2). These range in sophistication from email and telephone advice, simple geocoding and mapping tasks to more advanced analytical support.

Table 2. Ad-hoc services provided 2009/10

No	Title	Client
1	Taranaki DHB map of Maori population.	Ministry of Health
2	Travel times to the nearest hospital calculated and mapped for the Mid-Central DHB.	Ministry of Health
3	Maps of urban/rural classification areas for Northland, Waikato, Tairawhiti and West Coast DHBs, and the North and South Islands.	

4 Work plan Core Activity: Scholarships

4.1 Introduction

A core driver of the Laboratory is to ensure that the New Zealand health sector has access to a pool of young and talented individuals that are amongst the „best and the brightest" in the emerging areas of geo-health research. To meet this aim the Laboratory provides two Masters Degree scholarships per year, and one PhD scholarship. The scholarships have two aims, firstly for undertaking multidisciplinary research of practical benefit to the New Zealand health sector; and secondly providing a gateway to the health sector that is of direct benefit to the student and health sector employers.

The Laboratory welcomes innovative scholarship research proposals from recipients from wide background across a broad spectrum of geo-health, environmental and public health areas including:

- Neighbourhoods and health
- Built environment and health
- National inequalities in health outcomes
- Air pollution and health
- Social inequality and smoking
- Hospital admissions and access to primary care
- Social dimensions of cancer incidence
- Spatio-temporal modelling of road traffic accidents
- Crime and health
- Environmental health indicators
- Healthy resilient populations
- Hospital admissions prediction
- Environmental determinants of overweight and obesity
- Alcohol related behaviours and harms.

Each Masters scholarship covers domestic tuition fees and provides a $10,000 living allowance. For PhD scholarships this covers tuition fees and provides a $20,000 living allowance. The GeoHealth Laboratory has also endeavoured to cover research costs associated with the student"s research and, for example, is contributing towards the cost of attending conferences or other associated training.

4.1.1 Masters Students

1. Anj eela Kumar (completed June 2009) (GeoHealth scholarship)

Title: The effect of the neighbourhood built environment on obesity in Christchurch.

Anjeela is now working at the Christchurch School of Medicine.

2. Chris Bowie (commenced March 2010) (GeoHealth scholarship)

4.1.2 PhD Students

1. Francis Ayuka Owuor (to be completed in 2010) (GeoHealth scholarship)

Title: Examining place influence on alcohol-related behaviour and health outcomes New Zealand.

2. Frances Graham (on -going 2010) (self-funded)

Title: An assessment of the potential human health effects of Legionellosis and

5 GeoHealth Laboratory Promotion

During the past year we have adopted a number of strategies to raise the profile of the Laboratory particularly within Australasia but also overseas. These are listed below.

5.1 Conferences and other presentations

The work of GeoHealth Laboratory staff has been presented at a range of international conferences since the last 2008 report.

Association of American Geographers conference, Washington DC, USA. April 2010.

- Pearson A , Environmental and Social Conditions of Health: Placing Development in a Ugandan Context.

IPENZ Transportation Conference. Christchurch, New Zealand, March 2010.

- Kingham S , Longley I, Salmond J, Shrestha K, Pattinson W, Liu, H, The impact of choice of transport mode on personal pollution exposure.

Legionella 2009, Paris, France, October 2009.

- Graham F, Kingham S , Harte D and White P, Changing Epidemiologic Trends of Legionellosis in New Zealand, 1979 – 2008.

CASANZ 2009: 19th International Clean Air and Environment Conference. Perth, Australia, September 2009.

- Kingham S , Longley I, Salmond J, Shrestha K, Pattinson W, Determination of personal exposure to traffic pollution while travelling by different modes.

18th Australasian Epidemiological Association Annual Scientific Meeting, Dunedin, New Zealand, August 2009.

- Day P, Kingham S, B rown M and Pearce J, Assessing the health effects of pollution exposure in a small town: the case of Reefton, New Zealand.
- Day P, & Pearce J , The local food environment around schools Is there variation by school socio-demographic characteristics?

International Symposium in Medical Geography, Hamilton, Ontario, Canada. July 2009.

- Barnett R , Practice and ethnic variations in hospital discharge rates in Christchurch, New Zealand.
- Moon G, Hiscock R, Pearce R and Barnett R , The impact of smoking cessation on health inequalities: a New Zealand case study.
- Day, and Pearce J , The proximity of fast-food outlets and convenience stores around schools: Is there a spatial variation by school socio-demographic characteristics?
- Richardson E, Mitchell R, Shortt N, Pearce J and Dawson T, Measuring small area multiple environmental deprivation as a tool for health inequalities research.
- Pearce J and Dorling D, The influence of selective migration patterns among smokers and non-smokers on geographical inequalities in health.

Plans for 2010/11

The Laboratory will continue with the three stream core work programme that underpins the Laboratory. The Directors will also aim to further increase their network of contacts and raise awareness of the Laboratory particularly across the health sector.

5.3 Research

The following research projects listed in section 2 will be continued:

1. Public h ealth and alcohol related crime
2. Urban/rural status and health outcomes in New Zealand
3. Green space and hea lth
4. Assessing the impact of smoking cessation services: a geographical analysis of the Quitline data .

Additional research projects include:

5. Spaces of resilience: identifying and understanding the paradox of good health despite high social and en vironmenta l deprivation in New Z ealand

Area-level social deprivation has proved to be an important predictor of a variety of health outcomes and risky behaviours in the UK, USA, and New Zealand. In New Zealand, social deprivation has been characteri

Appendix A: Previous GeoHealth Laboratory Students

Masters students

Catherine Tisch (completed September 2006) (GeoHealth scholarship)

Title: Has mortality become geographically polarised in New Zealand? A case study: 1981-2000.

On completion of her Masters Catherine worked at the Institute of Environmental Science and Research (ESR) as a Health Information Analyst in the Population and Environmental Health team. Catherine has recently joined the GeoHealth Laboratory working on the MoH Environmental Health Indicators project.

Katrina McPherson (completed December 2006) (GeoHealth scholarship)

Title: Food insecurity and the food bank industry: A geographical analysis of food bank use in Christchurch.

On completion of her Masters Katrina joined the Christchurch City Council as a Research Assistant.

Erin Holmes (completed March 2007) (GeoHealth scholarship)

Mandatory disease notification and under-ascertainment: A geographical perspective.

On completion of her Masters Erin joined the Ministry of Health as a full time Research Analyst and is now an Advisor in Epidemiology.

Esther Rhind (completed June 2007) (GeoHealth scholarship)

Title: Investigating the spatial distribution of campylobacteriosis in New Zealand.

Esther began her PhD at the University of Norwich, UK.

Paul Moth (completed July 2008) (GeoHealth scholarship)

Title: Examining the environmental justice of sea-level rise and storm tides.

Paul completed a four month internship with the MoH and is now teaching at a High School in the US.

Michael Brown (completed February 2009)