MASSEY UNIVERSITY
TE KUNENGA KI PŪREHUROA
UNIVERSITY OF NEW ZEALAND

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Environmental Health Indicators New Zealand

In this newsletter:

Barry's Blurb

It is my pleasure to welcome you to the 10th issue of the EHI newsletter. As you will read elsewhere, we have been delighted to welcome Carolin, Sarah, Rosemary, Yuliya and Rashmi to our team. Congratulations also to Kylie Mason on the birth of her daughter Nadia. Our monitoring of the environmental health of NZ continues through regular updating of various factsheets, analysing data and disseminating information through our two websites. The team is finalising the epidemiological analysis for the Evaluation of the Pilot Bowel Screening Programme and also now carrying out the quantitative analysis for the Evaluation of the Healthy Families project.

We are also collaborating with our colleagues in the Ministry of Health, Fiji office of WHO-Western Pacific, and Universities of Queensland and Canberra, in hosting an EHI programme for Pacific countries.

I also encourage you to circulate to your colleagues the notice about Professor Allan Smith's excellent short course on Meta-analysis, on 26 October 2016.

B.Borman@massey.ac.nz

Highlights from the EHI factsheets

Topic	Highlights
Access to safe drinking-water	Around 79% of New Zealanders received drinking-water that met all the requirements of the drinking-water standards for New Zealand.
Airsheds that exceeded the PM_{10} National Standards on 2 or more days and Annual average PM_{10} concentration	- In 2013, 21 out of 37 monitored airsheds exceeded the PM_{10} standard on two or more days - New Zealand's annual average PM_{10} in 2013 was 16.0µg/m^3, a decrease of 8% since 2006
Annual average concentrations of carbon monoxide	There were no breaches of carbon monoxide in 2013.
Annual average nitrogen dioxide concentration in air	In 2013, the highest concentrations of NO_2 occurred in Auckland, Christchurch and Hamilton.
Average age of vehicle fleet and Number of motor vehicles	- In 2014, the average age of the light passenger vehicle fleet was 14.3 years. - In 2014, there were 3.7 million vehicles in New Zealand – the highest number ever
Deaths due to hazardous substances	Toxic effects of carbon monoxide caused the majority of deaths between 2006 and 2012.
Hazardous substances notifications	There were 63 hazardous substances notifications in 2013 and almost half were injuries that occurred at home.
Livestock in New Zealand, by type	Total livestock decreased by over 1 million between 2014 (41 million) and 2015 (40 million).
Total energy consumed in New Zealand, by fuel type	Oil was the predominant type of energy consumed in New Zealand from 2000 to 2014.
Total energy consumed in New Zealand, by sector	In 2014, New Zealand consumed 573PJ of energy, an increase of 4.4% from 2013.

Contact Carolin Haenfling (c.haenfling@massey.ac.nz) for more information on the EHI factsheets.

Publications

Xu F, Borman B, Read D. 2016. Easy option vs best option. *Safeguard* 157

Xu F, Marsters H. 2016. Hazards to health: e-notification to your Medical Officer of Health. *Best Practice Journal* 75: 38-39.

→ Read more here.

Mason K, Borman B. 2016. Burden of disease from secondhand smoke exposure in New Zealand. *The New Zealand Medical Journal* 129(1432): 16-25.

→ Read more here.

Welcome

Carolin Haenfling joined the Environmental Health Indicators (EHI) team at the Centre for Public Health Research, Massey University in 2016, working as an analyst. She has a background in Physical & Human Geography and recently completed her Master of Science in Physical Geography from Victoria University of Wellington.

Sarah Jefferies is a Public Health Registrar working with the EHI team on biosecurity and child environmental health. She is completing her specialist Public Health Physician training since graduating with a Masters of Public Health from Otago in 2014. She is a Scottish trained doctor, with a Physiology BSc and medical degree from Glasgow University. Sarah has a broad clinical background as well as research experience contributing towards a Doctor of Medicine research degree. She has particular interests in infectious diseases, environmental and global health, and has recently returned from working with the Pacific Community in New Caledonia.

Rosemary Mwipiko is an assistant analyst working for the EHI team at the Centre for Public Health. She has a Bachelor of Science in Environmental Science and Geography with a minor in Public Policy and is currently pursuing a Post-graduate diploma in Geographic information Science at Victoria University of Wellington. She has recently joined the team to assist with data visualisation.

Yuliya Evdokimova received a Dental degree from the Tashkent Medical Academy. In 2014, she completed a Master's degree in Public Health at the University of Eastern Finland, majoring in Epidemiology, Biostatistics and International Health. At present, Yuliya is a PhD student at the Centre for Public Health research who has joined the team working on the EHI Programme.

Read PhD details below.

Rashmi Salopal received her Computer Applications degree from India. She has completed her Master's degree in International Studies in 2014 in which her thesis was about 'Sustainable Housing in Palmerston North'. At present, Rashmi is a PhD student at the Centre for Public Health Research, who has joined the team working on the EHI programme. Rashmi's PhD is focussed on healthy housing services provided by local councils in New Zealand.

Read PhD details below.

PhD Projects

Composite index for monitoring environmental health in New Zealand

Yuliya Evdokimova

Principal Supervisor: Prof Barry Borman

Co-Supervisor: Dr Anna Matheson and Assoc Prof Deborah Read

The purpose of composite indices is to combine the most essential factors to capture and present a complex phenomenon in a simple way. In other words, an index presents a simple picture of a complex reality. This feature of an index is used for the establishment of efficient communications among researchers, policy makers, and the general public. In addition, a composite index assists in making prompt evidence- based decisions and is used to compare and monitor progress (e.g. Human Development Index).

Growing attention to climate change and the proven negative impact of environmental pollution on human health induced the need for environmental health indicators - a measure that describes the link between the environment and public health. However, indicators are able to only show a fragment of a complex picture, providing information within one area of interest. In addition, a large amount of indicators do not provide policy makers with robust evidence for policy development. Therefore, for many years there has been a need to construct a single composite environmental health index that will fill the existing gap in the knowledge exchange.

The aim of the current study is to explore the approaches for the Composite Environmental Health Index development. The research will include several important stages: elaboration of a conceptual framework that will be the guidance for index construction; construction of a composite index utilizing indicators generated within the Environmental Health Indicators Programme (CPHR); and conduction of an epidemiological study to explore the practical applicability of the composite index.

Barriers to improving health through healthy housing services.

Rashmi Salopal

Principal Supervisor: Prof Barry Borman

Co-Supervisor: Dr Anna Matheson

The aim of this research is to examine how availability and accessibility of healthy housing services can be improved so that people can use them more effectively to improve their

health. This research will focus on three regions in the Lower North Island of New Zealand: Wellington, Palmerston North and Wanganui. The researcher will find out the extent of healthy housing services available in these regions together with identifying if these services are accessible to people or not and what are the barriers faced by population when they try to access these services. Usually these services are provided in these three regions by their local council and other organizations such as Sustainability Trust and Regional Public Health. Some of the services which will be included in this study are: Eco-Design Advisor Service by Palmerston North, Kapiti Coast and Hutt City Council; Warm Fuzzies Wellington by Sustainability Trust and Housing Assessment and Advice Service (Well Homes) by Regional Public Health Wellington.

Vulnerable populations

We are currently developing a new indicator domain for vulnerable populations. Vulnerability is considered important in environmental health because:

> "those regions of the world where poor health status is met with limited capacity to adapt will be most severely affected (by environmental stresses)" (Berrang-Ford et al 2012)

Creating a profile for populations vulnerable to environmental hazards allows these groups to be located ahead of an event and their needs considered throughout the planning process. Rygel et al (2006) identified two perspectives on vulnerability:

- Potential for exposure to a hazard
- Coping ability (resistance and resilience in the face of a hazard)

The indicator domain is being designed to encompass both these perspectives and most crucially, identify groups for whom the two perspectives intersect.

Evaluation of Healthy Families NZ

The EHI team, have recently joined the National Evaluation of the Healthy Families NZ initiative to provide quantitative expertise in the use and integration of health outcome data. Healthy Families NZ is a policy initiative being carried out in 10 locations around NZ. The main goals are to prevent chronic disease (associated with poor nutrition, lack of exercise, tobacco use and alcohol-related harms), and to challenge communities to think differently about the underlying causes of poor health, and to make changes in schools, workplaces,

sports clubs, marae and other key community settings – that will help people make healthier choices.

The initiative itself is based on a complex systems thinking approach to achieving social change. The Evaluation of the initiative also takes this perspective, and deploys an innovative mixed-method, case comparison design to help answer what works, for whom, where and why? Dr Anna Matheson and Dr Mat Walton from the School of Public Health, Massey University are jointly leading the Evaluation which is funded by the Ministry of Health.

National hazardous substances and lead report for 2014

Earlier this year we released the second national report using data from the Hazardous Substances Disease and Injury Reporting Tool (HSDIRT) which is available on our website. Read the report here.

Below are some key findings from the report:

- In 2014, there were a total of 229 notifications that included 130 lead absorption and 99 hazardous substances notifications. In comparison, in 2013, there were 238 notifications that included 180 lead absorption and 58 hazardous substances notifications.
- Painters were the most exposed to lead.
- Lead-based paint was the most common source of non-occupational lead exposure for both children and adults.
- Household chemicals were the most common cause of injury for children less than five years old in 2014. These included Ajax, drain unblocker, Crew Smart Dose Cleaner, dishwasher tablet, and organoil (furniture oil).
- Over 60 percent of all hazardous substances notifications were from injuries that occurred in the home.

HSDIRT update

Last month, we provided each public health unit with their own HSDIRT report and raw data for 2015. The next national report will be released in the next few months so keep an eye out.

For more information regarding HSDIRT, contact Fei Xu (f.xu@massey.ac.nz) or Helene Marsters (t.h.marsters@massey.ac.nz)

Changes afoot for CPHROnline

With Rosemary now part of the team, we have completed updating the Atlases on CPHROnline (where new data is available). We are currently working on some new Atlases as well as a new format for our profile pages. In the near future the home page and landing pages will be updated – so watch this space.

Interested in postgraduate study?

The School of Public Health teaches a range of postgraduate papers and programmes in public health. These include:

- Postgraduate study in environmental health and epidemiology
- Postgraduate Diploma in Public Health
- Master of Public Health
- PhD.

For more information, visit our Training page.

Upcoming short-course

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Short Course

THE USE OF META-ANALYSIS FOR CAUSAL INFERENCE IN EPIDEMIOLOGY

Wednesday 26th October 2016
9am – 5pm
4D08, Wellington Campus

Meta-analysis has become a major tool in medical and public health research. There are over 30 journal publications every day with "meta-analysis" in the abstract or as a keyword.

We can rarely make a causal conclusion from just one study. So we need ways to assess causal evidence integrating evidence from several or many studies. Meta-analysis can help us do this.

The purpose of this workshop is to present the role meta-analysis can play in causal inference from epidemiological studies. Excel spreadsheets will be used by students with laptops to conduct a meta-analysis of epidemiological studies using both the fixed effects and random effects models, using data from a set of epidemiological studies. Heterogeneity will be assessed and the overall evidence addressed using criteria for causal inference.

Presented by Professor Allan Smith

School of Public Health, University of California, Berkeley

Allan Smith was born in New Zealand and completed a BSc at the Victoria University of Wellington (1964) followed by MB,ChB (1971) and a PhD in epidemiology at the University of Otago (1975). He has been Professor of Epidemiology at the School of Public Health in the University of California, Berkeley, since 1983, where he currently teaches courses in occupational and environmental epidemiology, causal inference and meta-analysis. He directs the Arsenic Health Effects Research Program involving studies of many different health effects of arsenic in drinking water including studies in Argentina, Chile, India, Bangladesh and the United States. As well as cancer studies, he has directed studies of chronic respiratory disease, pregnancy outcomes, cognitive function in children, arsenic skin lesions, cardiovascular disease, interactions of arsenic with diet and micronutrients, studies of arsenic metabolism, molecular epidemiology studies, and studies of adult diseases following early life exposure. Study designs employed in this work include ecological studies, cross-sectional population studies, case-control studies and cohort studies. Further information is available at http://sph.berkeley.edu/allan-smith

Course numbers are limited. Registration costs $250 (including morning and afternoon tea)

Contact Vicki McNaught v.n.mcnaught@massey.ac.nz for registration details

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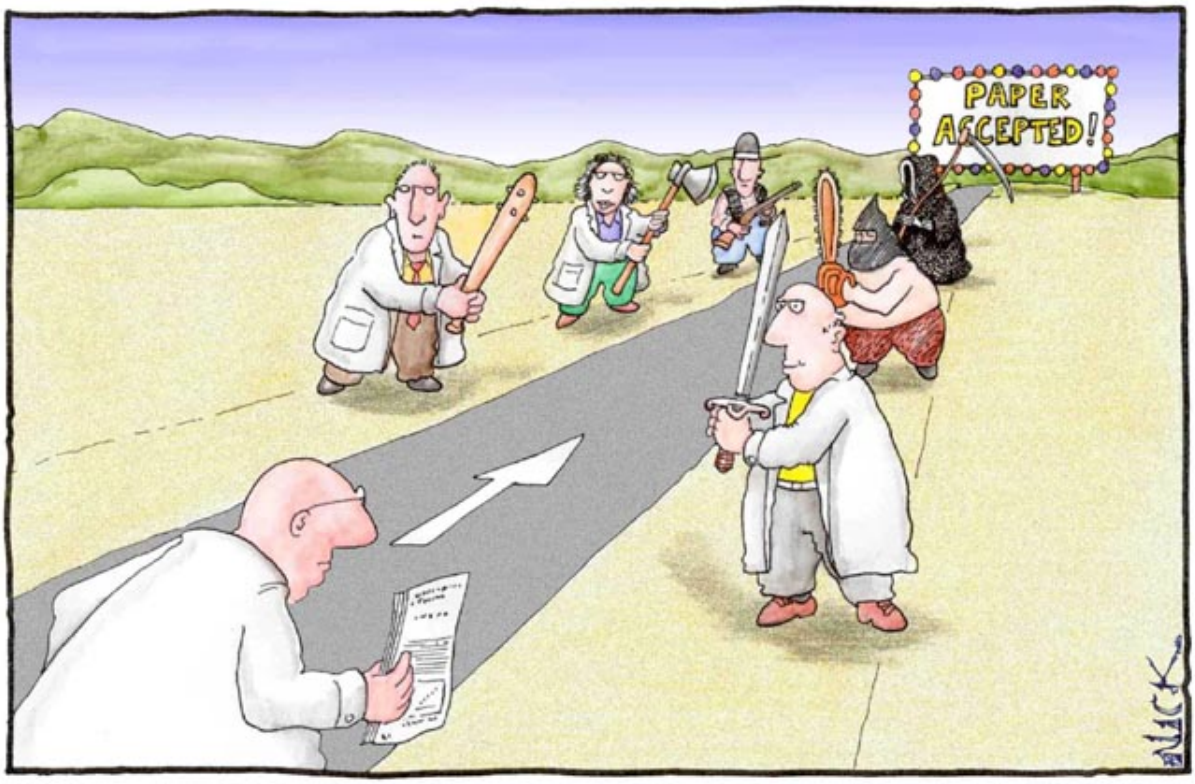

Most scientists regarded the new streamlined peer-review process as 'quite an improvement.'

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