

IMGS 2015 – Oral Presentations

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Crossing the border for dental care: Review of media reports on dental tourism industry development in northern Mexican border towns

Dental tourism is the practice of individuals traveling with the intention to access private dental care paid for out-of-pocket. Since the 1980's, dental tourism practices have increased in northern Mexican border towns, encouraged by the demand from American and Canadian patients for more affordable dental care within close proximity to their permanent or winter homes. The development of the dental tourism industry in northern Mexican border towns has occurred amidst increasing discussions both in the media and the literature on various medical tourism practices around the world, particularly in underdeveloped countries seeking to use the medical tourism industry as an economic development strategy. Support from governments via tax subsidies, policy changes, and infrastructure development have all been discussed in the literature as contributing to the growth of this industry. However, there is limited information in the literature about the reasons for and characteristics of the growing dental tourism industry in northern Mexican border towns. To better understand the current dental tourism industry and the actors, institutions, and ideas informing its development in this region, we undertook a review of media sources discussing dental tourism practices in northern Mexican border towns. This presentation will discuss the findings of this media review, highlighting reasons indicated in the media for this industry development and the voices providing this rationale, as well as identifying voices that may be absent from discussions and planning for dental tourism industry development.

Methods-Qualitative
Medical Tourism
Access to Health Care

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Extreme heat and heat-health vulnerability assessment: the case of Vancouver

As climate changes in British Columbia, the frequency and severity of extreme heat events are projected to increase (IPCC 2007), with associated negative effects on the health and well-being of people in BC. The most direct impact of extreme heat events is heat-related mortality and morbidity, as exemplified by the more than 100 people estimated to have died in the Lower Mainland as a direct result of an extreme heat event in late July/early August 2009 (Kosatsky et al. 2012).

The City of Vancouver has adopted a comprehensive climate change mitigation/adaptation strategy in 2012 (VCCAS 2012). One of the primary actions of the strategy is to support and expand extreme heat planning. Focusing on the City of Vancouver, in this study we a) identify local indicators of population sensitivity to extreme heat, b) identify the spatial distribution of air temperature on a typical hot day, and c) conduct a visual analysis to identify areas of high heat-health risk. In-depth qualitative case studies were then conducted for three high-risk neighbourhoods, defined using census dissemination area boundaries, to illustrate the specific factors contributing to high risk and suggest possible adaptation actions.

The findings of this paper will help urban planners, city officials and policymakers looking to further quantify the health and life-saving benefits of reducing summer extreme heat risks particularly for vulnerable populations such as elderly, those with chronic illness and homeless people with implementing potential cooling strategies such as cool surfaces and increased vegetation.

Heat Vulnerability

Extreme Heat Events

Spatial Analysis and Mapping

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An Ever-Breaking Wave: The Health in Life in Space-Time Revealing

Drawing on the principles, approaches and style of non-representational theory, this paper proposes how health constantly moves forwards along with, and in the fashion of, all life. With immediacy within the unravelling, moving, frontier of existence; the forward motion of space-time. Its aim is, in particular, to emphasize the nature and importance of rhythm, momentum, vitality, infectiousness, imminence and encounter of and in places, and as understood and experienced in their initial and most fundamental forms. It is argued that engaging with these qualities might play an important part in the emerging 'more-than-representational' research tradition in health geography and in health disciplines beyond. A tradition that whilst constituting a distinct health geography in its own right, by appreciating and reverberating the basic and initial taking-place of health and health care, articulates events that precede and underpin most, if not all, health geographies.

Critical Health Research
Methods -Qualitative
Mobilities

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Estimating water-related health risks in East African wetland ecosystems

Wetlands provide a range of services that are indispensable to human health. Their impact on human health can be either positive or negative. Loss of wetland components, disruptions to wetland functions and the degradation of ecosystem services due to the transformation of those ecosystems into agricultural areas have effects on the use, accessibility, quality and quantity of the wetlands' water resources. These changes may have implications on the health of wetland users, who are then possibly exposed to different water-related health risks than before. This relationship between water, ecology and health determinants can be observed from a Nexus perspective.

The aim of this study is to gain insights on those water-related health risks in wetlands and to generate an overall understanding of the correlation between wetlands and human health. The study will contribute to the development of a Health Impact Assessment (HIA) in wetlands.

This research explores health knowledge, health risks and health risk perception, as well as behaviour of wetland users in the case study area Ewaso Narok Swamp in Kenya. The focus of the study lies on a selection of water-related diseases such as malaria, schistosomiasis, onchocerciasis, diarrheal diseases and pesticide-related health risks. A mixed-methods approach is applied which is composed of a literature review, a quantitative cross-sectional household survey and qualitative research including in-depth interviews with the target population and experts as well as group discussions. Furthermore, the research entails participatory observation of the socio-economic, work, water supply, sanitation, hygiene and health conditions.

Wetlands

Water-Related Diseases

Risk Perception

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Estimating the Glasgow Effect: survival analysis of a representative sample of nurses in Scotland

Scotland has for some time been recognised as having a poor health record. People who live in West Central Scotland (WCS), a post-industrial region centred on Glasgow, experience especially poor health relative to the rest of the country. The causes of these health inequalities are unclear. One explanation posits that socio-economic composition explains this geographic disparity. Once socio-economic status is taken into account, it is argued, the disparities will largely disappear. Any remaining differences are simply an artefact of measures of socio-economic status. Conversely, others contend that differences reflect the traumatic psychosocial effects of residing in an area that has experienced rapid and substantial deindustrialisation. In this paper, we contribute to the debate by drawing on a representative sample of nurses with linked death data. Nurses represent a relatively homogenous population for analysis for whom there are no a priori reasons why geographical inequalities in health should exist. Few live in poverty, most will have a relatively high level of job (and thus income) security, all have a high level of tertiary education, and they have among the highest levels of health literacy of any occupational group. As such, analysis of nurses leaves few confounding compositional factors leaving only place of residence to explain any differences. We discuss findings and their implications for theoretical understanding of the Glasgow Effect and wider health inequalities.

Epidemiology

Health Inequalities

Population Health

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Emergent moral landscapes of new immortalities through managing and imagining the borders of bodies

The presentation contributes to the renewed dialogues between geographies of health and the medical humanities, a geohumanities and health, that expand the scope of our sub-discipline. The development of biomedical technologies for reproduction, reconstruction and regeneration combine with other contemporary processes easing travel and cross-border trade and generate new spaces, markets, rhetoric and imaginaries for medical care through use of cadaveric tissue at an international level. The possibilities for 'recycling' bodies after death through medical intervention confront multiple geographies of the body including concerns of borders and boundaries, ethics and inequalities, resource flows and the nature of care at a global scale. In particular, medical intervention that enables 'sharing' cadaveric and live donations of tissues, body parts, fluids or reproductive processes confronts and reworks traditions of nationalised and racialised identities to enable practices that both revalue and re-exploit other bodies. The concerns from global scale injustice to bodily scale intimacies constitute new landscapes of morality in which dreams and dangers are subtly interwoven. The presentation will draw on the expansive imaginary 'other' worlds of literature and film which can envision and examine possible futures and alternatives in negotiating such moral landscapes in terms of how various types of borders are dissolved, redrawn and policed as bodies are brought together in new immortalities.

Global Health
Geohumanities
Critical Health Research

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Spatial variation of cardiovascular disease risk in Australian Communities: an approach to better targeting preventive interventions

Introduction

Cardiovascular disease (CVD) continues to be a leading cause of morbidity and mortality among adults worldwide. The objective of this study was to calculate a CVD risk score from General Practice (GP) data and assess spatial variations of CVD risk in Australian communities.

Methods

We used GP data for 4,740 men and women aged 30 to 74 years with no history of CVD. A 10-year absolute CVD risk score was calculated based on the Framingham Risk Equations. The individual risk scores were aggregated within each Statistical Area Level One (SA1) to predict the level of CVD risk in that area. Finally the pattern of CVD risk was visualised to highlight communities with high and low risk of CVD.

Results

The overall ten year risk of CVD in our sample population was 14.6% (95% CI 14.3 -14.9). Of the 4,740 patients in our study, 26.7% were at high risk, 29.8% were at moderate risk and 43.5% were at low risk for CVD over ten years. The proportion of individuals at high risk of CVD risk was significantly higher in the communities with lower socio-economic status.

Conclusion

The approach taken in this study provides an opportunity for researchers to further explore prevalence, location and correlates of CVD. This study illustrates a methodology which can be used as a tool to identify communities of high levels of unmet need for cardiovascular care and enable geographic targeting of effective preventing interventions for enhancing early and timely detection and management of cardiovascular diseases in those communities.

Spatial Epidemiology

Chronic Disease

Spatial Analysis

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Mixing health and geography: A study of risks associated with cardiovascular disease for the Punjabi Sikh population in the Regional Municipality of Peel, Canada

The emerging epidemic of cardiovascular disease is threatening the health and well-being of various communities around the world. The risk of cardiovascular disease is amplified for the Punjabi Sikh population originating from Punjab, India. According to Statistics Canada's National Household Survey, the Punjabi Sikh community represents approximately 115 000 or 9.3 percent of the total population within the Region of Peel, making it the second largest Punjabi Sikh community in Canada. Therefore, there is an urgent need to understand factors that contribute to the decline in cardiovascular health of this growing sub-population. The research focuses on Punjabi Sikhs who are 55 years of age or older, live in the Region of Peel and have been diagnosed with cardiovascular disease. This age group was selected given that cardiovascular disease diagnosis occurs earlier for Sikhs compared to their European counterparts. The Punjabi Sikh population also encompasses an important aging ethnic population in Canada. Health geography plays a vital role in connecting how factors associated with where Punjabi Sikhs live are linked to an increased risk of cardiovascular disease. Through a population health approach, semi-structured interviews were conducted using grounded theory with participants (n = 30) in the study. Analysis of the interviews suggests that factors such as genetics, lifestyle, the built-environment and influences of differing cultures all create the "perfect storm" for cardiovascular disease within the study population. Understanding cardiovascular disease risk through research provides insight into how to address health needs of an increasingly multi-ethnic population in Canada.

Chronic Disease
Immigrant/Immigration
Methods – Qualitative

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The divided land: exposure and susceptibility to brownfield land and health inequalities in England, UK

It is increasingly understood that the physical environment remains an important determinant of area-level health and spatial and socioeconomic health inequalities. Existing research has largely focused on the health effects of differential access to green space, the proximity of waste facilities, or air pollution. The role of brownfield “or previously developed” land has been largely overlooked. This is the case even in studies that utilise multiple measures of environmental deprivation. This talk presents the results of the first national-scale empirical examination of the association between brownfield land and morbidity and mortality, using data from England. Census Area Statistical ward-level data on the relative proportion of brownfield land (calculated from the 2009 National Land Use Database), standardised morbidity (2001 Census measures of ‘not good’ general health and limiting long-term illness), and premature (aged under 75 years) all-cause mortality ratios from 1998/99 to 2002/03 were examined using linear mixed modelling (adjusting for potential environmental, socioeconomic, and demographic confounders). A significant and strong, adjusted, area-level association was found between brownfield land and morbidity: people living in wards with a high proportion of brownfield land are significantly more likely to suffer from poorer health than those living in wards with a small proportion of brownfield land. This suggests that brownfield land could potentially be an important and previously overlooked independent environmental determinant of population health in England. This talk will also examine spatial inequalities in exposure and susceptibility to brownfield land health risk.

Environment and Health

Population Health

Methods – Quantitative

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Prevalence and socio-demographic predictors of tobacco-use among adolescents who reside in the UAE

Tobacco-use among adolescents is a public health concern due to the associated health effects, and the potential gateway for other substance abuse and the establishment of lifelong habits. The objectives of this study are (i) to determine the prevalence of tobacco usage among an ethnically-diverse adolescent population residing in the United Arab Emirates (UAE); (ii) to examine the profile of tobacco-use among these adolescents; and (iii) to assess demographic, socioeconomic, residential and behavioral predictors of tobacco-use. A cross-sectional survey collected data on tobacco smoking -including cigarettes, midwakh, shisha, and other tobacco-, as well as demographic, socioeconomic, residential, and behavioural data, for a sample of 6,363 adolescents aged 13 to 20 years. Data analysis consisted of univariate and bivariate analyses, as well as logistic regression modeling which was used to determine significant predictors of tobacco-use. Results suggest that in the past 30 days, 8.9% smoked cigarettes, 6.3% smoked midwakh, 7.4% smoked shisha, and 6.4% smoked any other form of tobacco. Overall, 12.8% were current smokers. For every age group and tobacco product, the prevalence of usage is higher among males than females. Among males, cigarette usage is the most popular whereas shisha is the most smoked tobacco among females. Predictors of tobacco smoking include being male, age, parents' marital status, ever using illegal drugs, exposure to smoking at home or with friends, ethnicity, and location of residence. Findings of this study point to a continued need for public health strategies and education campaigns to discourage at-risk adolescents from using tobacco products.

Tobacco use

Adolescents

Public health

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Walk Score® and Transit Score®: Are they associated with transit use and walking for transport?

Objectives: Walking for transport and using transit provide ideal opportunities for adults to achieve health-enhancing physical activity levels within their daily routines (utilitarian walking). Yet, local access to transit and neighbourhood walkability may determine how readily adults can engage in utilitarian walking and, ultimately, whether they will. We aimed to examine associations between Walk Score® and Transit Score® and transit use and transport walking among middle-aged and older adults, and determine whether age and retirement status moderate these relationships.

Methods: We linked data for Canadian Community Health Survey Healthy Aging Cycle respondents (aged ≥45 years) from British Columbia (N=3,860) to objectively-measured walkability (Street Smart Walk Score) and transit access (Transit Score). We used logistic regression to examine associations between these built environment measures and transport walking and using transit, adjusting for potential confounders. We tested whether age-group and retirement status were significant moderators.

Results: We noted that a 10-point higher Walk Score was associated with 34% higher odds of walking for transport and 28% higher odds of using transit ($p<0.0001$). A 10-point higher Transit Score was associated with 37% higher odds of walking for transport and 40% higher odds of transit use ($p<0.0001$). Furthermore, those in neighbourhoods characterised as having Excellent Transit or a Rider's Paradise were over six-times more likely to walk for transport and nearly five-times more likely to use transit than those in neighbourhoods with Minimal Transit ($p<0.005$). These associations were consistent across age-groups and retirement status.

Conclusions: Transit accessibility and walkability can support active travel behaviour.

Transit Access

Walkability

Active Transport

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Heart Disease, Mental Health, and Noise Complaint Density in Urban Areas

Exposure to noise and increased risk of heart disease and mental health issues is well documented. Even during sleep, exposure to noise can result in elevated cortisol levels. Internationally, there is also a strong correlation between exposure to excessive noise and socio-economic status. Using noise complaints as a proxy for noisiness, this pilot project examines the socio-spatial relationships between noise, heart disease, and mental health. Noise complaint data were obtained for Hamilton, New Zealand, and were geocoded using a Geographical Information System (GIS). Complaints were aggregated to the finest census tract level available within a 100m and 200m buffer. Heart disease and mental health data from the New Zealand Health Survey were obtained and logistic regression was employed to examine any trends. Demographic data from the New Zealand was used to control for deprivation and age. Preliminary results returned no significant correlation between noise complaint density and either heart disease or mental health, and effects were mild across all social strata. Socio-economic status was the greatest predictor of noise complaint density ($p < 0.001$), even when controlling for population density. A positive association between percentage of population under 25 years and complaints was also identified ($p < 0.001$). The authors suggest expanding this project to determine whether these findings are consistent within other major urban areas in New Zealand.

Inequality

GIS

Quantitative

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Greenspace Exposure and Academic Achievement in Urban New Zealand Primary Schools

Research exploring the relationship between natural environments and health outcomes has demonstrated a positive link between 'greenspace' exposure and physical and mental wellbeing. A number of case studies have indicated that greenspaces can have a significant positive effect on concentration duration, behaviour in the classroom, and educational and social development for school-aged children. This paper seeks to add to the case study literature by applying Geographic Information Systems (GIS) techniques to examine the relationship between greenspace exposure surrounding schools in New Zealand, and academic achievement. Greenspace within a mean school zone buffer was calculated for all urban non-integrated primary schools. National Standards data was obtained from the Ministry of Education. Using linear regression modelling, we examined the association between greenspace exposure and the percentage of children achieving 'Above and 'Well below' National Standards, controlling for gender, ethnicity, and decile. As greenspace exposure increases, school achievement decreases almost uniformly across all strata investigated ($p > 0.05$), a trend that for most part relates to the fact that areas of low deprivation tend to have more greenspace. Decile is the most significant factor influencing school achievement, with our results varying little when modelling for other influences, such as gender or ethnicity. Further analysis at smaller scales that allows for the quality, composition, and 'viewsheds' of greenspace to be accounted for is required to expand on these findings.

GIS
Children
Quantitative

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Therapeutic landscapes through the life course: “my back garden beach”

Aims and objectives: This presentation will discuss the changing nature of people’s therapeutic landscapes through the life course, focusing specifically on their everyday use of local coastal spaces. In doing so, it will draw on the findings of a recently completed doctoral study, which explored how both structural factors and life course transitions influence people’s lifelong engagement with blue and green spaces.

Methods: Activity maps produced using accelerometer and Global Positioning System (GPS) data were used to guide in-depth geo-narrative interviews with 33 participants, recruited from two urban areas in Cornwall, UK. This was combined with a subset of case study go-along interviews in therapeutic places deemed important by participants, offering further insights into the lived experiences and relationships playing out within such places.

Conclusions: Following a phased, thematic analysis of the data, four overlapping dimensions of wellbeing-related green and blue space experience were identified in participants’ narratives. These incorporated symbolic, achieving, immersive/inspirational and social elements. Participants expressed particularly strong connections to the coast, with different stretches of the local coastline perceived to cater for diverse needs and interests. However, participants also noted shifts in their use of the coast over time. These were both temporary (e.g. adapting to avoid summer crowds) and longer lasting (e.g. seeking more child-friendly beaches to maximise family wellbeing in early parenthood). Four life transitions were identified as particularly influential in shaping individual green and blue space interactions: new relationships, relocation, income shifts, and changes associated with older age.

Environment and Health
Methods – Mixed
Therapeutic Landscapes

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Can we quantify climate change sensitivity? Modelling social determinants as effect modifiers for the relationship between weather and infectious disease in southwestern Uganda

The vulnerability approach is used widely within the climate change vulnerability and adaptation community to conceptualize how human systems will be affected by climate change. A key element of this approach is that vulnerability is determined not only by biophysical and climatic exposures, but also by socio-economic conditions (sensitivity) already influencing health outcomes. Climate impacts will therein manifest through existing health burden and social-economic gradients in health. There is limited research, however, to empirically and explicitly test the extent to which socio-economic conditions interact with climate impacts on health: that is to say, quantifying the interaction between exposures and sensitivities within a vulnerability framework. In this paper, we present two case studies designed to empirically model social determinants of health as hypothesized effect modifiers for the impact of meteorological conditions on two infectious disease outcomes in rural populations in southwestern Uganda: *P. falciparum* malaria and acute gastrointestinal illness (AGI). Data on incidence of *P. falciparum* malaria, and gastrointestinal illness, and demographic and risk factor variables were acquired for an Indigenous Batwa-pygmy population and a non-Indigenous Bakiga population. We constructed multivariable mixed-effects logistic regression to test social and demographic variables as effect modifiers on the coefficient of meteorological predictors. This research contributes to conceptual and methodological development in evidence-based research to empirically validate and characterize the interaction of social and climatic determinants of infectious disease in highly vulnerable populations.

Environmental health

Epidemiology

Global health

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Which features of children's home and neighborhood settings shape attitudes toward and engagement in active outdoor play in nature?

Benefits of active outdoor play in nature include motor skill development, improved problem-solving skills, and emotional well-being, in addition to benefits of physical activity, such as reduced likelihood of obesity and associated chronic diseases, including cancer. However, concern is growing that children are spending less time outdoors, perhaps due to barriers including limited access to natural areas, parental concerns about safety, and competing, sedentary activities. As benefits of outdoor activity become more apparent and concern rises that children are becoming disconnected from those benefits, identifying and overcoming barriers to children's outdoor play in nature become critical. We present results from a survey of 362 Milwaukee youth ages 9-13 to understand relationships between home and neighborhood settings and children's attitudes toward and engagement in outdoor play. Findings from multilevel regression models indicate that these settings have important implications for children's attitudes toward and engagement in outdoor play. Parental support for outdoor play and the frequency of visiting a natural area were associated with reduced fears and enhanced recognition of the benefits of outdoor play, as well as increased self-reported engagement in outdoor play. Knowing a place to play outside and having a yard at home including greenery were associated with reduced fears of outdoor play in nature, while higher frequencies of video game playing and TV watching were associated with reduced recognition of the benefits of outdoor play. More work is needed to engage with parents and policymakers to shape children's settings to enable and encourage healthy exposures and behaviors.

Nature

Outdoor play

Children

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Maternal and Child Health Services in Nepal: Analysis of Absolute and Relative Inequalities and Impacts of Current Efforts to Address Disparities

In light of the international literature on maternal and child health, this paper presents research on the level and trend of inequalities in the coverage of maternal and child health (MCH) services in Nepal and their relationship to the interventions aimed at improving MCH. In Nepal, despite the influx of interventions aimed at reaching the under-served population, high level of inequalities still persists in health services targeted to women and children, the most vulnerable groups of population. Socioeconomic status, educational status, ecological region (mountains, hills and terai) and place of residence (urban vs. poor) were the proxies for analysing inequalities. Change in inequalities over time was analysed using absolute and relative measures from four consecutive, nationally representative surveys: Nepal Demographic and Health Survey (1996, 2001, 2006 and 2011). A composite coverage index was computed considering eight interventions from four areas of care: family planning, maternal health, child immunisation and care for sick children. Inequalities were found widening on socioeconomic grounds and it varies by ecological divisions. Interventions requiring secondary or tertiary institutions and a trained health workforce were more inequitable compared to community based interventions such as child immunisation. The achievement made in reducing the mortality rates can so far be linked with the introduction of interventions in Nepal since 2000. Nevertheless, sustainability of the outcomes and further reduction of inequalities in MCH interventions will require the formulation and implementation of pro-poor or pro-equity interventions with special emphasis to increase access to the institution based services to wider communities possible.

Maternal and Child Health Services
Nepal
Composite Coverage Index

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Searching for rigour in mixed methods health research: A methodological review

The complex nature of health geography has led to debates regarding whether researchers should employ quantitative or qualitative methods. However, mixed methods approaches allow for the integration of quantitative and qualitative methods to explore both content and context. While criteria exist for establishing rigour in both quantitative and qualitative research, there is a lack of consensus regarding rigour in mixed methods research. Using the empirical example of school-based obesity interventions, this methodological review examines how rigour has been addressed in mixed methods population health research.

While schools provide an opportunity for daily obesity interventions, individual school characteristics influence both implementation and outcomes. Hence, mixed methods approaches allow for the consideration of place when evaluating these interventions. Twenty-three peer-reviewed mixed methods studies were identified through a systematic search of five databases. In general, greater attention to quantitative and qualitative rigour was needed in the articles, especially regarding replicability, validity, reliability, and confirmability. Using the guidelines for Good Reporting of a Mixed Methods Study (GRAMMS) as a proxy for mixed methods rigour, it was evident that more detail was needed regarding data collection and analysis, integration, inferences, and justifying the use of mixed methods.

Further discussion is required regarding practical techniques that mixed methods researchers can employ to establish rigour beyond those addressing quantitative and qualitative rigour criteria. Additionally, a guide for publishing mixed methods research in population health would be valuable to aid researchers writing mixed methods papers. Through improved reporting, mixed methods can provide strong evidence to inform health policy.

Methods – Mixed
Population Health
Adolescents/Children

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Associations between biogeoclimatic zones and acute gastrointestinal illness in British Columbia from 2000-2013 and potential implications given climate change

Introduction

Interactions between pathogens and the environment could influence rates of acute gastrointestinal illness (AGI) across space and time. Understanding the details of these associations would help inform policies that aim to reduce this burden of disease and increase our adaptive capacity to climate change. Here, we present findings of our study that investigates relationships of five AGIs with biogeoclimatic (BGC) zones in British Columbia in the context of a changing climate.

Methods

We included annual reported cases of campylobacteriosis, salmonellosis, verotoxin-producing *Escherichia coli* (VTEC), cryptosporidiosis and giardiasis from 2000-2013 throughout British Columbia. The home address for each case was used to calculate disease rates for five AGIs in every biogeoclimatic zone. To examine pathogen-specific climatic relationships, Poisson regression will be used with known climatic data for each BGC zone. Finally, existing projections of BGC zone distribution with climate change will be used to make crude estimates of future disease burden throughout the province.

Results

Unadjusted rates for five pathogens have been calculated for nine BGC zones using 14453 cases from 2009 to 2013. An additional 24522 cases from 2000 to 2009 are currently being added and statistical analysis is underway.

Conclusions

These preliminary results show that a range of disease rates occur across BGC zones among the five pathogens. Analysis will determine if the differences are significant and what portion of the variation, if any, can be associated with specific climatic variables.

Environment and Health
Epidemiology
GIS

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Smoking Cessation during Pregnancy – The Value of Incentives

Smoking is a primary cause of morbidity and premature death in England. Among pregnant women in Northamptonshire, the rate of smoking at the time of birth is higher (15.4%) in comparison the English average (12%). Such figures suggest the need to generate new knowledge and understandings on how to safely and effectively help women, particularly those living in the margins of society with nicotine addiction. This research explored outcomes for pregnant smokers who participated in an incentivized cessation intervention, where participants received vouchers for abstinence based on biochemical verification. Current evidence suggests that financial incentives are effective at improving recruitment to stop smoking services and short-term abstinence among pregnant women. Fifty women were recruited into the study and each completed pre/post questionnaire surveys and semi-structured interviews. Qualitative data were thematically analyzed and this presentation discusses the value of the incentives to participants quit attempts. Most participants had identified items for the baby following birth that they planned to use the vouchers for; providing short/long term goals for their quit attempt. These items then, in turn, became symbolic of their accomplishment of quitting smoking supporting their desired identity of being (and seen to be) a 'good' mother. Incentives were also indicated to have been critical in encouraging participants to regularly attend meetings with Stop Smoking Service advisor. Thus, the research revealed that incentives held both financial and symbolic value to participants; having a positive effect on their sense of esteem and worth in their attempts to quit smoking.

Public Health
Gender
Methods – Qualitative

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Painting a picture of trans-Tasman mortality

The determinants of health and mortality inequalities in New Zealand and Australia have been subjected to research, with the influence of a range of socio-economic and demographic influences (deprivation, social class, ethnicity) receiving notable attention. Both countries are considered privileged, positioned amongst the world leaders in rankings of mortality and life expectancy. This paper reports on observed rates of mortality and views how the countries have fared over time with respect to one another. This study derives comparable rates of mortality for both New Zealand and Australia, disaggregated by age and sex for the time period 1948-2008. The age-standardised rates are visualised using a Lexis map approach, showing the relative differences between the countries over time whilst simultaneously highlighting age, period and cohort effects. Relative to Australia, New Zealand had advantageous rates of mortality for many years but over time this has reversed. For some sub-populations the reversal is startling. The social and economic forces in both New Zealand and Australia which may have driven the divergence require further scrutiny. This study argues that the changing fortunes of the populations are also linked to the process of selective migration and the large-scale population movements between the countries facilitated by the Trans-Tasman Travel Arrangement. These findings have important implications for policy formation and service planning, if the inequality in mortality between the areas of study is to be addressed.

Methods – Quantitative
Population Health
Public Health

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Smart Cities and the Quantified Self: Steps forward, backward or sideways?

Imagine the opportunity to rebuild a city. Imagine the possibility of obtaining continuous flows of data about traffic or air pollution from technology built into the 'new' city. Then, link this data to an individual's health conditions. This is the Sensing City, Christchurch, a health pilot project. The Sensing City initiative was created in recognition of unique opportunities presented by the rebuild of Christchurch, New Zealand, following the devastating earthquakes in 2010 and 2011. As a large proportion of the CBD is redesigned and rebuilt, the opportunity to develop a 'smarter city' has presented itself via the incorporation of a range of sensors into the physical infrastructure of the area to collect 'big data'. This project seeks to demonstrate the cross-sector benefits arising from the inter-linking of seemingly disparate or previously unlinked data sets. In this instance the data are geospatially tagged environmental measurements, including particulate (PM10), ambient temperature and humidity, patient data relating to time and usage of medication obtained from Smartinhaler™ devices treating Chronic Obstructed Pulmonary Disease (COPD), and other health information including emergency medical care access. As part of the project we assess the acceptability of this approach to data gathering and sharing amongst the population of Christchurch by regularly surveying our study population and other interested parties. In other words, does privacy matter if it is beneficial to personal health?

GIS
Spatial Analysis
Environment and Health

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What do climate change, respiratory health, and the childhood obesity question have in common?

During the last half century, there has been a dramatic increase in the worldwide prevalence of allergic disease and asthma. In Ontario, prevalence of asthma increased by 70.5% from 1996 to 2005, likely due in part to increased rates in children. While the complete etiology of asthma is unknown, environmental factors (e.g., air quality) play a critical role, and climate change is anticipated to further exacerbate asthma symptoms. Asthma can present those diagnosed with a range of physical and social challenges, particularly with respect to quality of life (e.g., bullying and isolation), and participation in physical activity and sport; indeed, children with asthma are generally less active than their non-asthmatic peers. There is little evidence, however, of how asthma impacts the psychosocial health and relationships of children and youth affected, particularly during physical activity and sport, and further understanding of how asthma is perceived by children and their families, and providers of sport is necessary to ensure asthma is properly managed and physical activity maintained into adulthood. This research therefore aims to investigate the perceptions and lived experiences of youth team sport coaches and athletes with respect to the environment, physical activity, allergic disease and asthma. Specifically, semi-structured in-depth interviews (n=29) were conducted with youth team sport coaches (n=18) and athletes diagnosed with asthma (n=11) in southern Ontario, Canada. Preliminary results, including player- and coach- identified physical, social and emotional coping strategies, will be presented, and policy implications for youth sport organizations, coaches, and sport governing bodies will be discussed.

Adolescents/Children
Environment and Health
Methods - Qualitative

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Kahwa:tsire: Reflections on the emerging crisis between the Canadian Institutes of Health Research and the Indigenous health community, an allied perspective on the rebellion and why we must be idle no more

Indigenous peoples around the world have been subjected to colonial policies for generations and geographers have played a significant role in this enterprise. For example, as early as the 1820s, Indian Residential Schools began to appear across the landscape now known as Canada, run by missionaries and agents of the British Empire with the goal to assimilate Indigenous peoples into settler society. Fifty-odd years later, the Indian Act was established and attendance at these schools became mandatory. By the 1920s, the process was in full swing, and as noted by Duncan Campbell Scott, the Deputy Superintendent of Indian Affairs, “our objective is to continue until there is not a single Indian in Canada that has not been absorbed into the body politic”. Canada has not yet freed itself from this assumption and one need only look at the draconian reforms that have taken place over the past 18 months at the Canadian Institutes of Health Research (CIHR) to see that this is so.

Indigenous health in Canada, which is similar to the health status of Indigenous peoples in the United States, New Zealand, and Australia is, as Naomi Adelson, so aptly put it ten years ago, the embodiment of inequity. Thus, an injection of health research investment that aims to level the playing field makes sense. Instead, we are seeing an emerging crisis of absorption at CIHR—a crisis that has resulted in a rebellion among the most senior and well-respected members of the Indigenous health community (see <http://kahwatsire.com/>). This paper details this neo-colonial trajectory and the collective resistance that has taken place, from the perspective of an Indigenous health research ally and from an ethic of responsibility now that ‘all our fires are connected’.

Indigenous Health
Indigenous-settler Geographies
Institutionalized Racism

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Addressing chronic kidney disease disparities from morbidities to mortalities

According to the official health statistics, Taiwan has the highest prevalence of end stage renal disease (ESRD) in the world. Each year, around 60,000 ESRD patients in Taiwan consume 6% of the national insurance budget for dialysis treatment. The prevalence of chronic kidney disease (CKD) has been climbing during 2008-2012. At the same period, kidney-related mortality ranked as the 10th leading cause of death. It was the serious and increasing public health burden when the trend of aging population and the prevalence of metabolic syndromes went up. However, the spatial disparities and clustering of CKD at the public health level have rarely been discussed. The aims of this study are to explore the possible population level risk factors and identify any clusters of CKD, using the national health insurance database and cause-of-death database. The results show that the ESRD prevalence in females is higher than that in males. ESRD medical expenditure constitutes 87% of total CKD medical expenditure. Pre-CKD and pre-ESRD disease management effectively slowed the progression from CKD to ESRD. After applying ordinary least-squares regression, the percentages of high education status and the elderly in the townships are positively correlated with CKD prevalence. Geographically weighted regression and Local Moran's I are used for identifying the clusters in southern Taiwan. The findings can be important evidence for earlier and targeted community interventions and reducing the health disparities of CKD.

Chronic Disease
Health Inequalities
Spatial Analysis

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Spatial and temporal analysis of lyme disease risk at the local scale: A case study in Eastern Ontario, Canada

Lyme is an emerging disease in Canada. According to the Public Health Agency of Canada (PHAC), by the year of 2020, 80% of Canadians will live in Lyme endemic areas. There were reports on the rising number of ticks carrying Lyme disease in eastern Ontario, however, no detailed spatial evidence has been demonstrated. Through the application of GIS mapping methods and spatial analysis techniques, this study examines population dynamics of the black-legged tick and its primary host, the white-tailed deer, as well as their relationship with the climate condition over time in eastern Ontario. By using tick submission data collected from two public health units between 2006 and 2011, a series of maps were produced to illustrate the spatial and temporal distribution of tick populations in eastern Ontario. An evident northwards expansion of ticks into eastern Ontario was demonstrated in these maps, and a rapid increase in the number of submitted ticks carrying Lyme disease was also identified. A habitat suitability analysis was conducted to analyze the relationship between deer suitability map and endemic ticks in eastern Ontario and the results were compared with deer harvest data. The results suggest that a positive relationship could exist between them. These results are useful for developing management strategies which aim to prevent Lyme from becoming a threat to public health in Canada. Further studies are required to investigate how tick survival, behaviour and seasonal activity may change with projected climate change.

Spatial Epidemiology
Lyme Risk
GIS

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Realist synthesis of built environment interventions to promote active transportation: impact on physical activity and health

Purpose: Physical inactivity is a major avoidable risk factor for cardiovascular disease, diabetes, and hypertension. Active transportation policies can help to reduce sedentary behaviour at the population level through the promotion of walking and cycling. Previous efforts to synthesize the knowledge about the effectiveness of active transportation policies have not taken into account the varying contexts in which the interventions take place, how they function, and for whom interventions are effective. This information allows us to better plan and evaluate active transportation programmes.

Objective: We will investigate how environment-based active transportation interventions (e.g. bike share programs, improvements to sidewalks/bike lanes, etc.) impact the level of active transportation (e.g. walking and cycling) in adult and youth populations.

Methods: We will use the realist review method to evaluate a range of evidence including academic and grey literature on active transportation interventions that modify the built environment. The realist method is explanatory (i.e., how “x” works) rather than simply judgmental (i.e., how well did x work) because it combines both theoretical thinking and empirical evidence about program workings and context. In brief, it explains what works for whom, in what circumstances, in what respects and how.

Conclusions: The study will provide program theories of how interventions targeting the built environment might increase the level of active transportation for different groups by triggering specific mechanisms in specific contexts. The results will be used to develop recommendations to assist decisions makers in developing and implementing interventions targeting the built environment in specific populations.

Active Transportation
Urban Planning
Physical Activity

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New technologies, data practices, and the changing face of (public) health surveillance

Public health surveillance is a crucial component of an overall public health strategy, especially as data are increasingly recognized as the foundation of evidence-based health policy. With its positive influence on population health and society overall, public health surveillance is usually disassociated with the more negatively-conceived surveillances associated with the asymmetric monitoring of citizens by governments and corporations. The purpose of this paper, however, is to trace a growing convergence of the 'two surveillances'. A brief background on the history of surveillance studies is provided, beginning with Foucault's influential top-down conceptualization of surveillance as social control through to more contemporary characterizations that posit a much wider and more heterogeneous landscape of surveillance. As part of this 'surveillant assemblage', participatory and lateral (or peer-to-peer) forms of asymmetrical monitoring – driven by ICTs, citizen-generated data, GPS and locative technologies, and the mobile Web – are rewriting the place of the citizen in the ontology of surveillance. Against the backdrop of these sociotechnical ruptures, examples of lateral geospatial surveillance from the field of road safety and injury prevention are presented – including crowdsourcing platforms and mobile locative apps that enable citizens to monitor the safety habits and locations of family members or strangers – in which asymmetrical monitoring is enacted under the guise of safety and well-being. The paper concludes by exploring the consequences of this phenomenon in the context of neoliberal 'roll back' strategies, while making a call for a deeper consideration of the meaning of surveillance in a public health context.

Public Health
Critical Health Research
Neoliberalism

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Maternal residence in urban, rural and island communities and the risk of adverse pregnancy outcomes in Scotland

Adverse birth outcomes, which are important determinants of a number of later life outcomes, have been shown to be associated with both social and environmental characteristics of the mother's area of residence. However the degree to which pregnancy outcomes vary between urban, rural and island areas remains relatively understudied. Existing evidence from North America shows that rural areas have been associated with poorer outcomes at birth mostly due to the increased levels of poverty and poorer access to services in these areas. The few studies conducted in Europe on the other hand seem to show a protective rural effect for birth outcomes, perhaps via a reduced stress type pathway, while very few studies have looked at island communities specifically. In this study we use routinely collected maternity inpatient records linked to census data and other environmental datasets to examine whether birth weight varies between urban and rural and island and mainland communities in Scotland whilst adjusting for possible confounding by socio-economic status (SES) and characteristics of the physical environment. We highlight two main findings; firstly that maternal residence in an island community has a large and significant protective effect on birth weight independently of effects due to urban and rural environment and other factors and, secondly, that this effect appears to be related to the 'remoteness' of island communities. Potential explanations for the findings will be explored and discussed during the presentation.

Adverse Pregnancy Outcomes
Environment
Islands

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Placing the gym in geographies of physical activity: an exploration of men's and women's experiences working out

Geographies of physical activity have largely focused on the built environments of neighbourhoods, often to the neglect of our experiences within the distinct sites and facilities where we exercise. Recently, health geographers have called for greater geographical attention to everyday fitness places. Gyms are one such increasingly common place, yet—while they present opportunities to engage in physical activity—gyms can also reinforce problematic gender stereotypes and differences. Research shows that gyms can be divisive along gender lines, with weight rooms perceived as masculine and “cardio” areas as feminine. From a health equity standpoint this is concerning given that globally boys and men are more active than girls and women. In this paper, I explore a diversity of men's and women's experiences in gym environments with an aim to understand the role of gender in shaping barriers and facilitators of gym-based exercise participation. This study employs an in-depth qualitative research strategy comprising semi-structured interviews coupled with a drawing activity and journaling with a sub-sample of interviewees. Participants are men and women ages 25-64 who self-identify as regular gym users, are members of co-ed gyms, and whose exercise routines include use of individual training areas (i.e., weight and/or “cardio” rooms) in Kingston, Ontario, Canada. I argue that public health efforts to close the physical activity gender gap and increase overall population physical activity levels can benefit from attending to the socio-spatial processes that reproduce, as well as challenge, these dichotomies in an everyday exercise place such as the gym.

Critical Health Research
Gender
Health Inequalities

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Being with objects of meaning: reflections on the role of cherished possessions in maintaining aging-in-place on Waiheke Island, New Zealand

We consider how the cherished possessions that older adults keep at home inform the experience of aging-in-place in the context of Waiheke Island, New Zealand. We suggest that there has been an increasing amount of academic literature focused on the role that possessions play in daily life. However, the majority of studies to date have focused on how possessions assist individuals in 'looking back' and remembering important experiences, relationships and identities – a focus that illustrates being aged as being oriented to the past. Hence, we consider how possessions may play a role in overcoming biographical disruptions in the daily lives of older adults; thereby facilitating a 'looking forward' that assists the maintenance of aging-in-place. We find that older adults interact with cherished possessions in order to experience insularity and connection to the world during times of challenge and change. Further, cherished possessions may assist older adults in reproducing their preferred relationships with everyday places. We conclude that cherished possessions play a significant role in opportunities to maintain aging-in-place since they have the potential to facilitate older adults' opportunities to cope with biographical disruptions, (re)produce place-based relations, and look to the future to 'keep on with keeping on'.

Aging

Cherished Possessions

Place

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Experiencing place, being aged and being well

Drawing on a case study of aging-in-place on Waiheke Island, New Zealand, this presentation considers older adults' own accounts of wellbeing and their perceptions of the ways in which place may support or challenge wellbeing. Through critical consideration of narratives that were gathered during in-depth interviews, participatory photo-elicitation interviews, and participant journals, we consider the ways in which 'the island', 'islandness', 'the home' and 'the body' inform seniors' experiences of being aged, being well and being unwell. We explain that older adults articulate diverse understandings relating to wellbeing yet commonly report an emplaced sense of wellbeing. Ultimately, we argue that older adults draw on both the material and symbolic qualities of places to construct a sense of futurity that assists the maintenance of everyday life and preferred identities in order to facilitate wellbeing. Consequently, academic understandings related to aging-in-place must consider how aging occurs in and through the relationality of human and non-human elements, and the wider social and material contexts in which people live. We conclude that older adults (re)construct a sense of wellbeing through being securely placed, which involves continually responding to the symbolic and material dimensions of 'the island', 'islandness', 'the home' and 'the body'.

Place

Aging

Wellbeing

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Smoking Environments in Transition: The Experiences of Recent Chinese Migrants to Canada

International migrants may experience first-hand the differences that exist between countries in terms of the social meanings, spatial regulation and prevalence of smoking. This research centred on the smoking-related perceptions, experiences and behaviours of recent migrants from China to Canada. Focus groups were held in Edmonton, Alberta to explore migrants' understandings of the practices and meanings of smoking in both countries. There were 58 participants, including 21 current smokers. They emphasized that smoking remains almost ubiquitous in China, due to ineffective spatial restrictions and the social importance of smoking among men. By contrast, smoking bans in Canada were perceived as effective due to widespread compliance and expectations of enforcement. Participants were conscious that male smoking was both less prevalent and less socially valued in Canada; conversely, female smoking was perceived as more accepted in Canada than in China. There was broad agreement that smoking was tolerated in Canada, provided it occurred in appropriate places. Complying with widespread spatial restrictions brought about changes in smokers' behaviours: they smoked less often, and consumed fewer cigarettes. Because smoking was more difficult to perform, participants thought the Canadian context supported quitting – and two had quit since arriving. Nonsmokers were enthusiastic about smoke-free environments in Canada, and had become acculturated to air that did not smell of smoke. This research affirms the importance of comprehensive smoking bans, backed by enforcement, in contributing to the denormalization of smoking and the protection of non-smokers.

Smoking
Second-Hand Smoke
Migration

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How can geographical considerations improve the planning and outcomes of sports interventions?

Recent UK research has shown that levels of physical activity (PA) are geographically patterned with particularly low levels of activity exhibited by populations of more urban areas. Research into the spatial determinants of PA behaviours has tended to focus on how features of the built environment are associated with walking and cycling, yet a major recent focus of UK Government funding has been on the role of sport as a stimulant for exercise. Using a case-study of the 'Fun & Fit' programme in Norfolk, England, this paper examines how taking a geographical approach to the identification of at-need populations influences the level of programme uptake, adherence, and efficacy.

Fun & Fit is a regional PA intervention offering free 10-week courses of sport activities to inactive adults. The programme has used a marketing tool which combined data on adults' motivations, attitudes, behaviour and barriers to PA with their socio-demographic characteristics and consumer data in order to devise 19 participant profiles with defined activity needs and priorities which were mapped across the country using postcode-based socio-demographics. Using this tool, the Fun & Fit programme team identified key areas for targeting recruitment and delivery, as well as marketing tactics based on the profiles of the segments. By grouping programme participants according to the market segments this presentation will consider how taking a geographically segmented approach might improve both the outreach and ultimate impact of PA interventions targeted at whole populations and the implications for the wider planning of sports interventions.

Population Health
Methods-Quantitative
Community Health

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How do traditional definitions of the home neighbourhood correspond with where adolescents go to be physically active?

Environmental characteristics of home neighbourhoods are hypothesised to be associated with residents' physical activity levels, yet many studies report only weak associations. We propose this is in part a result of inappropriate definitions of what constitutes a neighbourhood. We objectively measured the distance that adolescents roamed from home to undertake physical activity and examined how this corresponded to traditionally defined measures of home neighbourhood supportiveness.

Data were analysed from 953 UK adolescents in the PEAR project. Each participant wore an accelerometer and a GPS device for seven days. These data were integrated into a Geographical Information System containing information on participants' home neighbourhoods and measures of environmental supportiveness. We then identified the distance from home that adolescents undertook different intensities of physical activity and examined how this related to home neighbourhood supportiveness.

We found that being in a less supportive neighbourhood did not negatively impact adolescents' physical activity levels, indeed these participants recorded more minutes of physical activity, at all intensities, than those in more supportive neighbourhoods. However, adolescents from less supportive neighbourhoods roamed further from home to undertake light, moderate, and vigorous activity than those from more supportive neighbourhoods. These findings suggest that traditional definitions of the home neighbourhood may be more relevant for those living in more supportive local environments.

Given that the relevance of this exposure appears associated with its value, this has important methodological implications for researchers seeking to understand the role of the home environment in supporting physical activity.

Adolescents/Children

Methods – Quantitative

Neighbourhood

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Laying the groundwork for best practice in Canada on prenatal environmental health education

There is strong and growing evidence that low-level exposures to common toxicants in our day-to-day environments negatively impact the health of fetuses and young children. The prenatal period is the most vulnerable time as exposures can interfere with healthy growth and lead to developmental defects that may have lifelong consequences. Though health care providers commonly discuss risks associated with smoking, diet and alcohol consumption with pregnant patients, they seldom broach the topic of exposure to second hand smoke, lead or mercury, let alone phthalates, BPA or flame retardants, despite the significant risks they present to the developing fetus. This is a reflection of limited environmental health training, limited access to reliable, evidence-based reference materials and other competing concerns. With the ultimate goal of reducing early exposures and improving children's health, the PEHE Forum (pehe-forum.com) brought approximately one hundred national and U.S. prenatal health practitioners and environmental health experts together over a two day period to: (1) share knowledge around priority environmental health issues, education practices, opportunities and barriers, and existing educational resources; and, (2) create a dialogue, identify common interests and goals, and build partnerships associated with environmental health education at the prenatal care level. This presentation will discuss the outcomes of the PEHE Forum and outline recommendations that emerged for better integrating prenatal environmental health education into prenatal care.

Health and Environment

Prenatal

Education

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Inbound medical tourism to Barbados: A qualitative examination of local lawyers' prospective legal and regulatory concerns

Medical tourism is a practice that involves patients' intentional travel to privately obtain medical services in another country. Our objective was to consult with diverse lawyers from across Barbados to explore their views on the prospective legal and regulatory implications of the country's developing medical tourism industry. After recruiting participants through local legal societies and local networks, we held a focus group in February 2014 in Bridgetown with nine lawyers with diverse legal backgrounds. Focus group moderators summarized the study objective and engaged participants in identifying the local implications of medical tourism and the anticipated legal and regulatory concerns. The focus group was transcribed verbatim and analyzed thematically. Five dominant legal and regulatory themes were identified: (1) liability; (2) immigration law; (3) physician licensing; (4) corporate ownership; and (5) reputational protection. Two predominant ethico-legal concerns raised by participants are also heavily reflected in the existing literature: the ability of medical tourists to recover medical malpractice from physicians practicing in Barbados for adverse events; and the effects of medical tourism on local citizens' access to health care in the destination country. Overall this analysis reveals that lawyers in Barbados have an important role to play in the medical tourism sector beyond litigation particularly in transactional and gatekeeper capacities. It remains to be seen whether these findings are specific to Barbados or can be extrapolated to other medical tourism destination countries in the Anglophone Caribbean and beyond.

Global Health
Health Services
Qualitative

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Methods of using of physico-geographical factors and therapeutic landscapes in prophylaxis of certain medical conditions. Case study - The upper basin of Bistrita river, Romania

The medical use of balneary and climatic resources is increasing in all European countries, which is mainly determined by the body's needs associated with the increase of wear character disease (cardiovascular, metabolic, rheumatic, degenerative, respiratory disease, etc.) or the so called "material comfort" disease, often also requiring natural remedies of prevention, control and treatment. Given the conditions, the special balneary cures become, on one hand, valuable remedies with prophylactic, therapeutic and recovery effects, and on the other hand an alternative to the therapy based on medication (most of the time at high costs, limited effects or side effects.) The article refers to the identification and quantification of the different ways for the utilization of natural and anthropogenic factors of therapeutic treatment (therapeutic climatic factors, minerals, hydrominerals, pedological, pits, aerosols, chrenotherapy, health infrastructure, health services, the social, political, economic, cultural context) in the upper basin of the Moldavian Bistrita river, used in the prevention and treatment of certain medical affections, chronic and infectious. The upper basin of the Moldavian Bistrita river includes, from the administrative point of view, a municipality (Vatra Dornei) and nine villages (Carlibaba, Ciocanesti, Iacobeni, Poiana Stampei, Cosna, Dorna Candrenilor, Saru Dornei, Panaci and Dorna Arini) and from the physical/geographical point of view, contains a mountain depression (Dorna Depression) and some surrounding mountains (Rodnei, Suhard, Obcina Mestecanisului, Rarau Giumalau mountains, Bistritei, Bargaului and Calimani Mountains).

Physico-geographical factors

Therapeutic landscapes

Medical practices and procedures

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Mental health among school children in northern England and its relation to material and social conditions in their neighbourhoods

We explored how mental health and wellbeing among school children relates to the material and social conditions in their residential neighbourhoods. We drew up a conceptual model of theoretically relevant associations, based on a review of the literature conducted by one of the authors, which we tested empirically in the MOVE research project on 'Physical Activity and Wellbeing in Schools' (funded by the ESRC UK), involving over 60 schools, yielding survey information on a large sample of children aged 11-12 years. We compiled small area indicators for the places where these children were living, drawn from the latest (2011) population census and other sources, including indicators constructed by the authors to be relevant for this study. We report findings from analysis of the relationship between individual psychological health and wellbeing and neighbourhood variables.

Adolescents/Children

Mental health

Social determinants of health

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Climate change and future impact of extreme weather events on health care systems: how significant is human adaptation?

I present reflections arising from a review, commissioned by the UKRC Living with Environmental Change programme, of findings from recent research regarding the impact of extreme weather events and climate change for health and social care systems in the UK. This raised issues somewhat different from reviews focused on population health, since not all health impacts in the population currently result in measurable impacts on health care systems. Also health care impacts arise from processes involving the physical, institutional and social infrastructures supporting health care, and not only from variation in demand for care due to changes in population health. While a considerable body of evidence is now building in this field there are many remaining uncertainties and most projections for the future do not consider potential future adaptation in human populations. Adaptation strategies for climate change need to be framed within a 'system-of-systems' approach to address the connections between built, social and institutional infrastructures which need to adapt. A National Adaptation Programme has been established and NHS and Public Health England have begun to operationalise surveillance and warning systems during extreme weather events, designed to improve responses and outcomes. However effective collective adaptation calls for greater collaboration and cooperation, including partners in the wider social infrastructure as well as among the formal institutional sectors of health and social care, and brings into question issues of social inclusion and equity in the collective response to climate change. I comment on how health geography is contributing to the ongoing agenda.

Environmental Risk
Health Services and climate change
Socioecological Systems and policy

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Spatial clustering of non-medical exemptions for vaccination in schoolchildren and herd immunity: A case study of California, 2005-2014

Modern childhood vaccination programs can be argued as being one of the most beneficial public health programs in history. All 50 US states require proof of immunization for a child to attend school or day care, yet 48 states also provide an option for parents to exempt their children from immunization for personal or religious (non-medical) reasons. Recently, non-medical exemptions (NMEs) have garnered increased attention and scrutiny in the popular press and academic literature, as well as in policy forums due to rising rates and possible links to communicable disease outbreaks.

High immunization rates for a population within a region provide that population herd immunity from contagious diseases via a decreased likelihood of a transmission occurring between infectious and susceptible individuals. Herd immunity, therefore, may become threatened as NME rates increase in a region, escalating the risk of disease outbreak. Especially concerning are potential scenarios in which a large number of non-vaccinated people are located within relatively small geographic regions (spatial clusters).

This work examines NMEs and herd immunity in the context of spatial clustering and interaction potential. Our study focuses on NMEs in the state of California over the previous 10 years. The main goal is to identify local- or regional-scale areas/communities in which herd immunity may be compromised, given the current spatial distribution of NMEs. The secondary purpose is to explore the temporal changes of NME distribution to better understand the spatio-temporal nature of this phenomenon and potential effects on future herd immunity throughout the state.

Vaccination
Spatial analysis
Clustering

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Household dog ownership and physical activity amongst children aged 6-7: a nationally representative prospective cohort study using the UK Millennium Cohort Study (MCS).

A reasonably large number of studies have provided evidence that dog ownership is associated with physical activity amongst working age adults. There have been far fewer studies of the physical activity of children in households that own a dog. Those that have been carried out frequently use self-reported PA, a method known to be inaccurate, particularly when measuring walking. In this study we used a sub-set of 6,675 members (67%) of the MCS (aged then between 6-7) from who detailed physical activity and accelerometer data had been collected and household dog ownership was known. This group were contacted between May 2008 and August 2009 and asked to wear an accelerometer for 7 consecutive days, during waking hours. Children in households with dogs have a higher daily step count, they are less likely to be entirely sedentary but are no more likely to be engaged in vigorous activity. There is also evidence that for children doing little sport, owning a dog may mitigate somewhat this impact on amount of daily steps taken. In the absence of parks or green space (that promote physical activity), dog ownership may militate against this negative effect on physical activity. It seems likely that the children are not always as involved in the physical activity associated with a dog (walking and playing), as the adult but still as a household there is a greater amount of activity.

Physical activity
Dog ownership
Prospective cohort study

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What is this think called Knowledge Translation? Part II: What about the end-users

Many have noted the gap between “what we know” (health researchers) and “what we do” (actions of end-users). That is, the knowledge being transferred was not appropriate or applicable to the end-users, and it is never known if it requires any follow up. This paper reports the preliminary findings of an “integrated Knowledge Translation” approach, in which knowledge is gathered collaboratively between researchers and end-users, to a large biomedical (clinical and laboratory based research) health study on food allergies in Canada. As a novel and innovative approach to Knowledge Translation, this is a ‘study of a study’ exploring the use of Steering Committee of end-users who collaborate with research scientists and help shape the research agenda. This paper presents research conducted with members of the Steering Committee of end-users (representing advocacy, and regional/provincial/federal policy) in Winter 2015 (n=12). We broadly asked end-users: What role do you think that you as end-users have in shaping (this) health research and is this important? Preliminary findings show there are challenges in confronting traditional power relations between experts and non-scientists, but indicate both willingness from and need for end-users to contribute to the food allergy research agenda. Implications to both food allergy research and other biomedical studies will be explored.

Knowledge translation
Methods – Qualitative
Environment and Health

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What's next for built environment and public health research and policy?

There is great enthusiasm among public health researchers, urban planners and urban livability advocates for policy reform on built environments could create meaningful change in physical activity patterns, obesity rates and diabetes prevalence. Around the world currently, there are numerous research groups producing more refined studies of the basic relationship between built environment and health, there are policy groups developing new initiatives, and advocacy groups lobbying for public transit and complete streets/communities. Although these activities are all moving in promising directions, it is necessary to re-focus our research agendas to resolve important unanswered questions. Policy development activities also need to be re-focused to better reflect the strength of the evidence and the opportunities and constraints of other policy sectors. With a focus on the case of Ontario, this presentation will provide an overview of the primary research needs for this area and the best policy development opportunities going forward.

Built environment
Physical activity
Public health policy

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Promoting 'breast awareness' in Black women in East London: responses to a DVD as a health promotion tool

It is known that breast cancer awareness is lower amongst ethnic minorities and exacerbates their lower utilisation of hospital and cancer screening services. Associated delayed diagnosis and late presentation affects survival rates. While it is known that sociocultural and economic factors impact on breast awareness and help-seeking behaviour in black and ethnic minority women there is little investigation of the effectiveness of interventions aimed to raise breast awareness. This paper reports findings from a study using quantitative and qualitative methods to explore responses to a DVD specifically created to raise awareness among black women in East London. The focus is on the qualitative arm of the study, which employed interviewing, focus groups and an action workshop. In addition to evaluating the DVD content and methods of distribution, other issues emerged from discussion with black women and health professionals concerning the complex relations between place, ethnic identities, social networks and the body. The paper traces some of this complexity through the concept of embodiment and assesses how such a focus can shape public health intervention. An important dimension of the findings was the notion of the construction of a 'community at risk' and its challenge by the black women study participants.

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Exploring the space of the primary care waiting room: a place of homelessness

Patients who experience social and economic marginalisation may experience the physician waiting room as a place of further marginalisation. This study, part of a larger study on reception processes and primary care acceptability, has qualitatively explored the experiences and views of these patients regarding waiting spaces in general practice. Individual interviews (n=13) were undertaken in a regional centre in Northland, New Zealand, about participants' experiences in appointment-making, engaging with receptionists, and waiting for clinical appointments. During the interview participants were asked to draw an idealised representation of these three stages. A participatory visual methodology was used, and thematic analysis employed. We find that participants experience a sense of homelessness, which arises from feeling othered, within the primary care waiting room. This paper will explore power and privilege within the waiting space, from the perspective of already marginalised people. We argue that the waiting space is like a dressing room where participants act out the role of the ideal patient in preparation to see the doctor. We conclude that improving the cultural responsiveness of waiting rooms and communication skills of receptionists may improve the overall acceptability of primary care.

Access to health care

Vulnerable populations

Aboriginal/indigenous health

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Measuring what matters on a global scale: developing a global index of wellbeing (GLOWING)

For many years, developed countries have used GDP (Gross Domestic Product) as the key indicator of health, or rather economic 'health'. Recent concern regarding the inability of such macroeconomic indicators to adequately portray the true state of a population's wellbeing have led several countries to develop "beyond GDP" initiatives. One of these is the Canadian Index of Well-Being (CIW) that has reported – for the past three years – a composite index of population wellbeing that can be mapped against GDP in order to discern gains/losses in wellbeing as GDP shifts. Our neighbours in LMICs (low to middle income countries) who are on the cusp of targeted economic growth have not yet ventured into this realm. Recognizing the timeliness of applying the rubric of a wellbeing index concomitant with planned, targeted economic growth, this presentation explores the transferability of the CIW to a LMIC context, using the East Africa Region as an empirical example. We start with a comprehensive review of existing measures to discern cultural and geographical relevance to LMICs, and the applicability of the CIW to the East Africa Region. Given the importance of key indicators of wellbeing (e.g., access to social services, sustainable environmental conditions and governance) to informed policy development and evaluation, we propose that transferability is possible at the level of domain, but that substantial work must be undertaken in order to develop socially, culturally and geographically relevant indicators for specific regions. We describe the protocol and initial steps of undertaking this seemingly herculean task.

Global health

Population health

Social Determinants of Health

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Incorporating geographic context into cholera and malaria vaccine trials

Generally we think of clinical trials as being well-controlled and completely randomized experimental studies; however, rarely is spatial distribution of trial subjects considered important to the randomization procedure. As a result, disease risk may not be homogeneously distributed across study subjects, and inference about the efficacy of a particular treatment regime may be confounded. Individuals are randomized according to treatment allocation, not infection risk. So, despite treatment being randomly and uniformly distributed across study subjects, the risk of infection for individuals randomly allocated to placebo treatment will not be uniformly distributed, as these risk factors were not accounted for during the randomization procedure. Additionally, other exogenous and endogenous factors could contribute to heterogeneous disease risk across a target population. The goal of this study is to determine how geographic factors including environmental context can influence vaccine efficacy. Two case studies illustrating the value of adding geographic context into trials will be presented for the oral cholera and RTS,S malaria vaccines. One important geographic contextual variable that influences oral cholera vaccine effectiveness is proportion of neighborhood vaccination particularly in women 15 and older. Several contextual variables that may influence RTS,S efficacy include individual and neighborhood bed net use and travel to malarious areas. This paper concludes that geographic context is essential for properly evaluating the effectiveness of some interventions.

Spatial context
Infectious disease
Intervention

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Exploring the impact of the built environment on older adults' quality of life

Background: The built environment (BE) is increasingly recognized as being associated with older adults' quality of life (QoL). However, this relationship has remained unexplored in the area of Metro Vancouver.

Objective: To investigate the association between aspects of the BE (perceived and objective) and QoL in community-dwelling older adults from Metro Vancouver.

Methods: Correlation and multiple regression analyses were conducted using cross-sectional data acquired from the Walk-the-Talk study. The EQ-5D-5L was used to assess health-related QoL (HRQoL) and the ICECAP-O to measure capability wellbeing. The NEWS-A was applied to assess perceived physical aspects of the BE and the SC-5PT to estimate perceived social aspects. Street Smart Walk Scores were obtained for objective features of the BE.

Results: We included 161 individuals (male n=59, female n=102) aged ≥ 65 years. Correlation analyses showed numerous weak associations ($r < 0.3$) between NEWS-A subscales and the EQ-5D-5L, while the ICECAP-O was correlated with the SC-5PT ($r=0.293$, $p \leq 0.001$). Regression analyses revealed that aesthetics, cul-de-sacs, physical barriers, and social characteristics surfaced as potentially important predictors of QoL. Still, a large portion of the variability remained unexplained. Overall, perceived physical aspects of the BE were closely associated with HRQoL than were social aspects, which predicted older adults' capability wellbeing.

Conclusion: Our analyses demonstrated that features of the BE may influence older adults' QoL and cannot be ignored in policy decisions. However, we were unable to determine causal relationships from this cross-sectional study. More longitudinal research with bigger sample size is needed to investigate this association further.

Environment and health
Methods – quantitative
Neighbourhood

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Tertiary students' wellbeing in a neoliberal climate

Higher education in New Zealand and across the world is going through a period of fundamental change in a neo-liberal climate, including for example declining public funding for the tertiary sector and the transfer of cost to the individual student via student loan. As a consequence, tuition fees rise while scholarships become more competitive; financial demands for students increase and the pressure to 'succeed' intensifies. Universities around the world address stress related 'symptoms' in their student body by running 'exam success workshops' or listing online different 'healthy' coping mechanisms for stressful times throughout the semester. Despite these scattered top-down prevention attempts, little is known about tertiary students' wellbeing in light of the changing demands and stressors currently existing within higher education. This paper employs a mixed method approach consisting of a large scale survey, review of selected social networking sites and 20 semi-structured interviews. From the quantitative work, caffeine (69%) and vitamin supplements (31%) were the most common substances used to cope, with a smaller proportion (4%) using prescription stimulants. Through the qualitative work, we unpack how students perceive, experience and justify their sometimes 'unhealthy' behaviour in relation to the neoliberal university climate, parental expectations and future life aspirations. The paper concludes with a reflection on the implications of the multiple truths uncovered and the socio structural context that contributes to sometimes risky behaviours to propose recommendations and harm reduction initiatives that speak to tertiary students' lived experiences.

Health promotion

Educational wellbeing

Exam stress

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Towards a critical perspective on children's health and wellbeing in urban places

Children's health has been an under-researched area within health geography, yet various aspects of physical and social environment can affect children's wellbeing. In this paper we seek to establish a closer engagement with the ways in which children shape, and are shaped by, the conditions of urban life and, in so doing, experience wellbeing. Through a critical literature review and reflection on our own work, we develop a conceptual framework that situates the production of wellbeing across a number of scales, taking into account children's agency and the enabling and disabling character of places themselves. Positive benefits accrue from access to friends and places to socialise and play whereas exposure to environmental pollution, violence and chronic poverty are more likely to undermine wellbeing. Children's social and mental wellbeing is also shaped in relation to different family or parenting situations and practices. In Western countries, for instance, trends such as increasing educational demands and engagement with new technologies alongside declining experience of local environments and loss of contact with 'nature' are changing children's attachment to places and accrual of wellbeing. We conclude that the determinants of children's wellbeing in urban environments are multifaceted, embracing diverse dimensions, structures and scales. We advocate a new agenda for health geography that sees children as not only active participants in the making of their environments, but also actors constrained by diverse socio-economic and political contexts.

Adolescents/Children
Diversity/health
Social determinants of health

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Mapping Ebola: On Big Data's Big Promises of Epidemic Surveillance

Big Data has proved advantageous and profitable in some social sectors (Lewis 2014, Mayer-Schönberger & Cukier 2013), but questions remain as to whether health is one of those sectors. Big Data for health comes with big promises: stopping ebola (CNBC, 2014; Caulderwood, 2014); treating diabetes (SAS Institute, 2014); revolutionizing healthcare (Groves et al. 2013), even making the scientific method obsolete (Anderson 2008). Big Data problem-solving capacities can appear infinite, evoking a pleasing sense of affective potentiality “to imagine particular human futures, and to warn against undesirable outcomes” (Taussig, Hoeyer & Helmreich 2013). But human health, replete with histories and incidence of bodily suffering and recovery, is a particularly vulnerable social sector for Big Data promises; poor health can inspire big hopes the world over. Drawing on a SSHRC-funded primary ethnographic research data collection conducted in 2013 and 2014 in Sierra Leone and secondary research done on telecommunications data collection, this paper provides one example of affective aspects of Big Data anticipatory praxis. Mobile phone data – “pings” – have been championed by Big Data advocates as capable of indicating the significant human migrations that spread disease. The paper presents ethnographic evidence to show the limitations of ‘following the pings’ to eradicate Ebola, starting with data on the social life of mobile phones and actual mobile phone usage within social networks.

Global Health Surveillance
Technology
Mapping

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Homelessness, the right to housing, and liberal biopolitics in Canada

Affordable, habitable, accessible and appropriate housing is essential for human wellbeing. The state plays an instrumental, complex and sometimes conflicting role in this regard. For example, courts in Ontario recently dismissed, at the request of the Attorney General, an application brought forward against the Governments of Canada and Ontario that sought to establish a right to housing under the Canadian Charter of Rights and Freedoms. Simultaneously, the Government of Canada, the province of Ontario and City of Toronto have invested hundreds of millions of dollars into the implementation of the 'housing first' (HF) approach which provides chronically homeless individuals with immediate access to housing followed by supports and services. In essence, the state has proactively blocked the path towards legal recognition of statutory rights to housing while simultaneously embracing a targeted social program premised upon an inalienable right to housing. How can we reconcile this apparent contradiction? In this paper I attempt to by first placing both state practices in the wider context of 'liberal biopolitics' and then applying Roberto Esposito's notion of 'immunization.' Doing so reveals a fundamental dilemma regarding public health promotion in a liberal democracy: how to organize conditions required for life to flourish, such as housing, among self-governing individuals vis-à-vis a self-limiting state. An understanding of liberal biopolitics and its immunitary qualities not only grants theoretical insight into how this is being politically reconciled in Canada and elsewhere; it also provides a theoretical template for how it can be changed.

Homelessness
Critical health research
Public health

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Exploring the premature mortality gap among small areas in Scotland 1981-2011

Scotland's population was the highest ever recorded in 2011 at 5,295,403 and the health of its population appears to be improving. Indeed, the life expectancy at birth for males has increased from 69.1 years in 1981 to 76.8 years in 2012 and from 75.3 years to 80.9 years among females. Despite these overall improvements, numerous studies over the past decade have reported widening health gaps between those residents in the least deprived and most deprived areas.

Previously, we have used Consistent Areas Through Time (CATTs) – a geographical boundary file whose boundaries did not change between 1981 and 2001 to investigate inequalities in mortality between 1980-2 and 1999-2001.

We describe the extension of the CATTs to incorporate the 2011 Output Areas (OAs). Using the same 'merging' process as before, we demonstrate the development of a unique set of zones which were aggregated from 1981 Enumeration Districts (EDs), 1991, 2001 and 2011 OAs. The boundaries of CATTs are fixed over these periods and each ED or OA is nested within one CATT and do not require population estimation for comparisons through time.

Using the most recent CATTs we investigate the extent to which the premature mortality gap between the least deprived and most deprived neighbourhoods in Scotland have widened since the 1980s.

GIS

Health inequalities

Population health

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The HbA1c profile of adults in the Auckland Region, 2006-2012

HbA1c is commonly used by clinicians to screen for diabetes and for routine monitoring of glycaemic control for patients with diabetes. National guidelines introduced in 2003 recommend that patients with diabetes should have at least one HbA1c test annually. While considerable research has been conducted on the socio-demographic risk factors of diabetes in New Zealand and abroad, little is known about the patterns of testing for HbA1c within the Auckland region serving a pop of 1.5 million residents. Every New Zealand resident has a unique National Health Index (NHI) number, which enables anonymous and secure linkage of data from patient electronic medical records within the health and disability support sectors. Using an encrypted NHI, we identified 861,992 patients with complete demographic information, of whom 60,250 of whom had a diagnosis of diabetes (based on pharmaceutical dispensing and hospitalisations).

This research investigates variations in HbA1c tests for routine monitoring of patients aged ≥ 25 years with diagnosed diabetes in the Auckland region and trends of testing between 2006 and 2012 by geographic and socio-demographic characteristics. The implications of the finding in relation to the national guidelines will be discussed.

Equity
Chronic disease
Population health

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Geography and Epidemiology: together for a better health

Background: studies using a combination of the methodologies of geography and epidemiology are encouraged to be made in order to solve public health issues since the two sciences, combined, provide a broader understanding in health studies. Objectives: To analyze the reasons why a specific district have the highest number of cases of pediatric hospitalization for pneumonia in the first half of 2011 in a country city in Brazil. Methods: The authors conducted a survey of respiratory diseases using the admission data of a high complexity hospital. Thereafter, in situ studies have been conducted to verify the geographical and epidemiological conditions of the neighborhood that presented higher incidence for the period (hydrography, climate, sanitation, cultural aspects, nutrition, etc.). Result: the high number of pediatric hospitalizations for pneumonia in the Cristo Rei district is due to: poor diet of children; presence of a river in the area, which increases the humidity in the region. In addition, children do not dress appropriately for the cold weather. We can also add as cause the lack of political interest on solving the problems in this area of low income population. Conclusion: the geographical and epidemiological methods can be used concurrently in a harmonic way to study the causes of endemic diseases, especially when those causes have strong environmental roots. We conclude that the district needs an interdisciplinary intervention to reduce the number of pediatric hospitalizations for pneumonia as the cause of these hospitalizations is not unilateral.

Adolescents/Children
Community Health
Epidemiology

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Place-Making with Older Persons: Establishing Sense-of-place through Participatory Community Mapping Exercises

Principles of positive 'aging in place' emphasize the importance of creating sustainable environments that enable older people to maintain a sense of safety and security, autonomy, independence and belonging. Initiatives to help older adults remain in their communities have contributed to planning and design concepts such as age-friendly cities and neighbourhoods. Yet, simply altering the built environment is insufficient for creating more inclusive environments for older persons, since 'meaningful' places for aging involves consideration of psycho-social and cultural issues that go beyond designing physical spaces. A strong sense-of-place is articulated through access to culturally-appropriate supports for active participation, and opportunities to build and sustain social networks and assume meaningful roles in the community. One approach to researching sense-of-place is through participatory community mapping exercises (PCMEs). PCMEs are founded on tenets of empowerment, which highlight the value of building on community strengths to generate new knowledge and ideas for action, shared awareness and an understanding of community resources and assets. PCMEs provide opportunities for older adults, particularly those transitioning into new homes, to situate themselves within the context of the new community and visualize prospects for active, meaningful engagement and social participation. This paper presents findings from PCMEs conducted with older adults transitioning into affordable housing as well as local service providers. Through effective visual representations, participatory maps created by community stakeholders demonstrate community functionalities, values and their perceptions of place to identify significant features (e.g. services, amenities, open spaces) within the environment that make it a positive place to age.

Aging and place
Community mapping
Empowerment

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Incidence of Malaria: A case study of Bahawalpur Pakistan.

The study in point titled “Incidence of Malaria: A Case Study of Bahawalpur Pakistan” is an applied and updated piece of research work from the discipline of Medical Geography. The study deals with the spatial and temporal incidence of malaria in Bahawalpur District, including its sub administrative units namely, Ahmadpur East, Khairpur Tamewali, Yazman, Hasilpur, Bahawalpur Saddar, and Bahawalpur City. The main purpose is to measure spatial and temporal patterns which might be helpful for generating environmental etiological hypothesis for malaria. Descriptive study design was selected in general and exploratory in particular. Analysis is based upon primary as well as secondary data. Primary data was collected mainly through the health centers of respective tehsils, while secondary data was taken from District Health Office Bahawalpur. By spatial and temporal analysis of diseases, high risk areas of malaria have been identified. The study also suggests the set of strategies and policies addressing the local environmental issues and to minimize the incidence of malaria through administrative environmental management and community participation.

Incidence rate
Malaria
Epidemiology
GIS and health

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Cities of (In)Difference: Neighborhood Health and Aging in the 'Right' Place

Despite current demographic shifts towards an aging population and the consequent issues this raises across a spectrum of health and social welfare needs, geographic scholarship critically focused on aging, health and place remains scarce. This paper investigates the complex interplay of personal and local socio-spatial factors impacting the health and wellbeing of older adults. It utilizes a mixed-methods approach incorporating surveys, geographic information science, interviews and ethnography to critically consider how neighborhood environments across the Minneapolis (MN) metropolitan area affect the physical, mental, and social health of older residents (aged 60 and over). Preliminary findings demonstrate that residential environments designed for the able and highly mobile can have deleterious effects on the health of aging residents. They can generate vulnerability, isolation and poor quality of later life. Conversely, neighborhoods with particular socio-spatial structures can contribute to a higher quality of life and enhanced physical, mental and social health for older residents. These variables include housing, transportation, local services, support networks, safety and affordability. Neighborhood factors intersect with the subjectivities, personal biographies, daily routines and embodied identities of older residents to influence their health and wellbeing. This paper contributes to a growing field of research, practices and policies connecting aging, health and place. It enriches conceptions of 'aging in place' and deepens understandings of aging as complex, differentiated and experienced in a range of moments and places in people's lives.

Aging
Neighbourhood
Urban

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A (green) way to better health? A natural experiment to evaluate the impact of a built environment intervention on activity patterns and social interactions among older adults

Purpose: Neighbourhoods and health research has been largely based on cross-sectional studies. We aimed to advance the evidence by conducting a natural experiment to examine the impact of a Greenway development on the activity patterns and social interactions of older adults.

Methods: Active Streets Active People is a longitudinal study in downtown Vancouver, British Columbia, in which participants completed questionnaires, at baseline and follow-up, on individual characteristics (attitudes towards walking, gait efficacy), and environmental variables (neighbourhood satisfaction, perceived social environment). Participants wore an ActiGraph GT3X+ accelerometer for 7-days during Fall 2012 (t1) and 2014 (t2). We assessed differences in physical activity (moderate to vigorous physical activity, MVPA) and social interactions across time using general linear models and Wilcoxon-signed ranked tests.

Results: There were 155/193 (80.3%) participants who completed questionnaires at both time points and 128/193 (67%) participants with valid longitudinal accelerometry data [t1 mean age (SD) 69.8 (6.5) years]. Participants did not significantly change their daily MVPA [t1 mean (SD) 45.5 (35.4) minutes/day; t2 mean (SD) 41.9 (38.7)], or steps [t1 8418.9 (4122.2) steps/day; t2 7749.9 (3996.8)]. A significant time*gender interaction ($p=0.04$) indicated that men decreased their social interactions within their neighbourhood over time, whereas women maintained their interactions. Participants' frequency of interactions within their personal network decreased with increasing age ($p=0.02$).

Conclusion: Little age-related decline was observed in the two year follow-up. Older adults were highly active prior to and after built environment changes. They maintained positive attitudes, gait efficacy and perceptions of their community. Social connectedness only declined in men and older participants.

Environment and health

Social determinants of health

Neighbourhood

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The contribution of health geography in understanding self-medication

This paper stems from an ongoing multidisciplinary research aiming at understanding the ongoing changes in France regarding self-medication. The paper will specifically focus on the socio-spatial dimensions of such practices. Self-medication is historically low in France for 3 main reasons: (i) France has a strong social protection system and a facilitated access to care; (ii) health authorities guarantee both the repayment and the prices of a list of reimbursed drugs; (iii) when prescribed by a GP, optional medical prescriptions can be reimbursed. In France, recent evolutions aiming at reducing health expenditures have conducted the government to invite patients to endorse the responsibility for their health and manage themselves their "œminor illnesses" through self-medication. This came out with the possibility of accessing drugs in pharmacies without a medical prescription. These evolutions are made under the argument that the patient's autonomy must be encouraged. But like Fainzang (2012) writes, patients can practice self-medication by default and in that case, it can reinforce social inequalities: the most defavorised people can be forced to renounce to medicines because it is not reimbursed. The aim of this communication, over the examination of the specificities of the French example at local and national scales, is to suggest that the issue of self-medication is a relevant and rich issue for health geography. Based on both a quantitative and qualitative methodology, this research suggests that there are social and spatial dimensions that can inform about social inequalities in health and healthcare access through the lens of self-medication.

Self medication

Access to drugs

Critical Health Research

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Investigating the relationship between active commuting and biological antecedents of cardiovascular disease in mid-life: Evidence from UK Biobank

Purpose: The beneficial effects of physical activity on cardiovascular disease (CVD) outcomes are well understood. Among Western populations however, lifestyles have become increasingly sedentary. Active commuting (AC) has been promoted as a way of incorporating greater levels of activity into daily life.

Objectives: To test associations between AC and biological antecedents of CVD, and to investigate the roles of environmental and behavioural factors.

Methods: This study uses baseline (2006-2010) data from UK Biobank: a nationally representative sample (n=500,000) aged 40-69. The analytic sample was restricted to 265,704 individuals who commuted. The exposure of interest was operationalised as a 4-category variable: car; public transport (PT); mixed PT and active travel (AT); AT (walking and cycling). Outcomes were objectively measured: BMI, blood pressure, percentage body fat. Univariate and multivariate regression modelling were undertaken.

Results: Preliminary age-adjusted findings suggest that female commuters who used AT or PT modes had significantly lower BMI scores than their car-using counterparts (mixed PT and AT: $b=-0.75$, $p<0.001$; AT: $b=-1.1$, $p<0.001$). Men who travelled actively had BMI scores 1.72 points lower than their car-using counterparts (age-adjusted, $p<0.001$). Similar results were found for percentage body fat and hypertension, for both men and women. Final results from multivariate regression modelling will be presented.

Conclusions: While evidence generally suggests an association between AC and cardiovascular health, the strength of this evidence is varied and the nature of the relationship remains unclear. UK Biobank provides a unique opportunity to investigate this issue in a large, nationally representative dataset using objectively measured outcomes.

Epidemiology
Public health
Quantitative methods

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Rhythm and outdoor swimming: Narratives of health and wellbeing

In medical/health geographies, emotions and everyday practices conducive to health are receiving increased attention. In wider public health policy, there is a parallel interest in health behaviours across the life-course. This paper looks at one such practice, outdoor swimming, and, using an oral history approach, uncovers from personal narratives how swimming has functioned as an important aspect of people's healthy lives. The choice of method, allows one to trace a life-course engagement that is both context/place specific but equally, mobile. It also reflects an older phenomenological approach, inspired by Seamon's writings on lifeworlds, but with a stronger focus on health and well-being. The paper discusses narratives from both coastal and inland settings, primarily Irish, that speak to three broad thematic areas. Firstly, connections to a swimming place are central to an emotional history, via shared personal, familial, communal and wider cultural memories. Secondly, the affective act of swimming equally shapes individual life-histories, reflecting differing and mobile emotions and experiences in place in specifically active and embodied ways. Finally a range of explicit associations with physical and mental health emerge from the narratives to show how swimming functions as maintainer, restorer but also occasional reducer, of health across the life-course. Here a rhythm of health emerges from the voice of informants that reflects an embodied practice beside, on and in water. That rhythm also draws from Seamon's categories of movement, rest and encounter to recast outdoor swimming as potential healthy inter-generational third places, with active and ongoing value to wellbeing.

Swimming

Bluespace

Emotion

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Aging in place: Neighbourhood routine and active travel patterns – More than A to B

Introduction: More than 50% of Canadian adults aged 50-79 years do not meet physical activity¹ guidelines. Physical inactivity predicts disease and mortality². Thus, there is a need to better understand determinants of physical (in)activity and how they interact to influence older adults' health and mobility.

Objective: We will; (1) describe the routine patterns of older adults physical activity and travel within their communities; (2) identify the intrapersonal, built and social environmental factors that influence the mobility patterns.

Methods: We collected data for a cohort of low-income older adults living in Metro Vancouver neighbourhoods in 2012 (n=27), 2013 (n=19), and 2014 (n=16). Mobility data included 7-day self-report trip diaries and accelerometry (ActiGraph GT3X+ (min/d)). We described differences in routine physical activity (moderate to vigorous physical activity (MVPA)) overtime. Qualitative data included in-depth face-to-face interviews (coded thematically; NVivo10). Emergent themes were compared within and across groups. The mobility data was interpreted in light of the qualitative findings, to illustrate how intrapersonal, built and social environmental factors play in to routine activity.

Findings: Across all walkability settings, participants who embedded active travel patterns into their daily routines maintained or improved high levels of daily physical activity over 3 years. They did so for 3 key reasons: 1. increased opportunities for meaningful social interaction, 2. a sense of belonging and 3. to avoid loneliness.

Conclusion: Factors that support and maintain older adults' independence, health and out-of-home mobility as they age are those that provide opportunities for social interaction and engagement, including active travel.

Methods-Qualitative

Mobility

Aging

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Different world views, common future? The potential for cooperation between traditional healers and biomedical health care workers for health system resilience in Botswana

Despite increased availability of biomedical health care services, visits to traditional medical practitioners remain an important part of pluralistic health care seeking behaviour in Botswana. This highlights the continuing co-existence of traditional and western medicine, despite a long history of systematic marginalisation of traditional medicine and indigenous knowledge systems. Since the colonial era, unequal power relationships and the lack of legislation protecting and regulating traditional medicine have led to secrecy and problematic paucity of communication between the different health care worlds. This marginalises traditional practitioners and indigenous knowledge while risking patients' health and well-being. Recent international and national moves to increase cooperation between traditional healers and biomedical practitioners are promising but require sufficient resource commitments and policy guidelines based on a greater understanding of the lived experiences of practitioners and users. We present results based on qualitative analysis of in-depth interviews with 87 traditional healers, 45 community members and 22 public health workers from five districts in Botswana. Results reveal nuanced health-seeking preferences of patients and indicate practitioners' mutual awareness of patients' pluralistic health care behaviour which defines their roles in a globalized world. However, lack of open discussion of specific practices and of mutual referral can create avoidable risks to patients, communities and the health system.

Aboriginal/Indigenous Health

Diversity and health

Methods – mixed

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Drug addiction – geocoded deaths as a key to sources and diffusion

Although drug abuse is an increasing, potentially lethal, health hazard, the sources, the diffusion routes, and the exposure leading to addiction and, frequently, death, are insufficiently known.

This study is based on the assumption that precise mapping the locations of drug-related deaths might open opportunities to explore the processes behind the observed distribution and diffusion patterns.

Our study was based on data from Toxreg, a database containing information about all forensically examined deaths in Sweden. This includes 6448 deaths with presence of illicit drugs or methadone, buprenorphine, and fentanyl in the blood between 1994 and 2012, of which 6402 cases could be geocoded to municipalities. Further, in major cities the spatial analysis was brought down to districts and blocks.

Drug-related deaths have spread from metropolitan areas to other parts of the country. The overall analysis displays clearly different diffusion patterns for different drug types. It is hypothesized that these differences are probably associated with the origin and sales organization of the drugs. Since 2005, deaths related to methadone, buprenorphine and fentanyl have occurred mainly outside metropolitan areas. Further analysis of the processes behind this diffusion might explain most of the total increase in drug-related deaths.

The study has yielded a uniquely complete and detailed image of the locations of deaths caused by various types of drugs. Thus, it has provided opportunities to approach the processes behind the diffusion of drug abuse. The study evokes issues of personal integrity, the relevance of spatial exactness and spatial correlation.

Drug Abuse

Diffusion

GIS

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Canada Post community mailboxes: Implications for health research

We will discuss the implications for health research of Canada Post's transition from door-to-door postal delivery using postal codes to Community Mailboxes (CM). We argue that two main problems will occur and could bias health research in Canada in unknown ways. First, in comparison to assignment based on 6-digit postal codes, assigning people to a geographic location based on their CM will increase positional error because CM areas are bigger. Second, we often use postal code information to link health data with administrative data. Linkage errors between CM and Dissemination Areas (DA, the smallest and most common geographic boundary for neighbourhood studies in Canada) are more likely because CM areas are more likely to overlap with multiple DAs or other geographies.

We will provide examples of how this transition might influence research. One such example is that using residential location as a proxy for socio-economic status in epidemiological research will be biased. There is evidence that residential socioeconomic status is related to health but that the size of the geographic area influences the conclusions drawn.

We believe these changes have broad implications for the health of all Canadians and should be addressed by the research community, Statistics Canada, and Canada Post. Our objective is to discuss with international experts where postal delivery areas vary in size and linkages with administrative data may be done differently, in order to develop potential solutions to this challenge for Canada.

Postal code
Data linkage
Bias

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Exploring the appropriateness of different spatial units to study neighbourhoods and smoking in young adults: Extent of variability across increasingly large spatial units

Context and Objectives: Current evidence shows that selected neighbourhood characteristics are associated with smoking outcomes. However, limited attention has been devoted to understanding the role of geographic scale in these associations. This study describes the magnitude of variation in smoking outcomes across different spatial areas in Montreal, Canada.

Methods: We used data from the Interdisciplinary Study of Inequalities in Smoking (Frohlich et al., revise and resubmit). Between November 2011 and August 2012, a sample of 2,093 residents of the Island of Montreal (56.5% female) aged 18-25 years was recruited through Quebec's Master List of Health Care Beneficiaries. Participants completed a questionnaire via Internet, mail, phone or in person. Participants' street addresses were coded and linked to shape files identifying three increasingly large spatial areas: sociological neighbourhoods (n=111), Community Health Center Area (CLSC, n=29), and Health and Social Services Areas (CSSS, n=12). The dependent variable was smoking status at baseline (0=non-smoker, 1=occasional or daily smoker). Logistic multilevel analyses were applied to estimate between area variability.

Results: Multilevel analyses revealed significant variability at the largest-level spatial unit, CSSS. Prevalence of smokers ranged from about 9% through 30%, with 22.9% being the median. There was no between-area variability at the CLSC and sociological neighbourhood levels.

Conclusion: These findings suggest that there are relevant smoking-related processes at larger spatial unit levels. Further research must be conducted to identify these processes.

Smoking

Young adults

Spatial scales

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Integrating geographic space and social network of HIV-positive drug users

Most HIV transmissions occur within group actions that are related to risky behaviors including having unprotected sex, using drugs, alcohol, or sharing needles with members of the social or risk networks. Recently social network analysis has become an important analytical approach to understand the influence of social networks on drug use and HIV/AIDS. However, such analysis is one-dimensional because social behaviors are context-specific and therefore requires multidimensional analysis by integrating context or space with social processes. This study explores how drug users' position in geographic space can be analyzed simultaneously with their position in social networks. The study population is HIV-positive drug users living in Washington, District of Columbia. Using a combination of egocentric social network analysis, GIS, and statistical analysis, we first calculate aspatial social network metrics (eg. degree, structural hole, homophily) of a participant's (ego) social networks (kinship, friendship) and risk networks (drug users, criminal activities). Second, we integrate spatial dimensions to the same metrics based on location of ego, their network members (alters), and distances between them. Third, we compare the effect of both aspatial and spatial social network metrics on drug use and HIV treatment outcomes. Preliminary analysis showed that frequency of contact, friendship ties, and overlap of risk and social networks had significant impact on treatment outcomes. For an ego, the effect was strongest when the friendship and drug use ties overlapped over 70%. Alters in the drug users' network clustered spatially and were in close proximity to those egos with strong homophily between them.

HIV

Drug use

Spatial social networks

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Palliating inside the lines: The effects of borders and boundaries on the provision and receipt of palliative care in rural Canada

Regardless of the scale, we draw lines to divide our world into specific places, territories, and categories. Although borders and boundaries are processes that are dynamic and socially constructed, their existence creates many broad effects on our daily lives by geographically distinguishing between groups (e.g., us/them; here/there; inside/outside) at various scales from the national down to the personal spaces and territories of the individual. Particularly, borders and boundaries can be used to define a variety of differing spaces such as the familial, social, economic, political, as well as issues of access - including access to palliative care. Considering this, it is important to acknowledge individual experiences of borders and boundaries in order to reflect the diverse ways in which they impact upon the daily life and practices of people. Here, we present a secondary thematic analysis that aims to explore the various borders and boundaries that shape the provision and receipt of palliative care in the context of rural Canada. Drawing upon data from forty qualitative interviews conducted across four purposely selected rural Canadian communities with a range of palliative care professionals and informal palliative caregivers, our findings identify both formal (e.g., provincial borders) and informal boundaries (e.g., physical geographic terrains) that participants felt effected their experiences of rural palliative care. We conclude by discussing the implications of these borders and boundaries for palliative care in rural Canada, particularly in regard to access to care and the ways in which these 'lines' formally and/or informally define issues of inclusion or exclusion.

Palliative care
Access to care
Rural health

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Topographies of the Intersection: Resource Extraction and Public Health in Northern British Columbia

This oral presentation will explore the idea of the topographies of the intersection in research on the health and wellbeing of Aboriginal and non-Aboriginal women and children living and working in or near natural resource dependent rural, remote, Aboriginal and northern communities in British Columbia. When investigating the gendered impact of living and working in communities experiencing 'boom and bust' economic cycles it becomes clear that the intersections between social, ecological, biophysical and geographical spaces are concretely embodied and materially expressed in the lives of women and children. This paper draws empirically from new research being conducted through university/knowledge user partnerships in the north and seeks to give voice to the complex intersections which produce and reproduce vulnerability and sustain the disproportionate impacts of social and health inequalities for women and children in resource driven communities in the north.

Aboriginal/Indigenous Health
Resource Extraction
Women and children's health

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Herbal-Healing Traditional Wisdom A Spatial Enquiry for the Dwindling Situation of Traditional Healers in Kangra,Himachal Pradesh

Health seeking behavior of people is closely interwoven with the socio-cultural and religious background. The research work is an effort to explore and document the knowledge and challenges faced by traditional healers of Kangra district using Purposive sampling, questionnaire and informal discussions. The findings indicate the spatial dislocation of the traditional healers and rapid decline of specialized healers is due to the deaths of the knowledge bearers, lack of governmental strategy to protect their knowledge, erosion of knowledge among the present generation and overall impassive attitude towards traditional healing sector. There is an impact of globalization and commercialization in the traditional medicine sector. Majority of the healers affirmed their inheritance of traditional knowledge from their ancestors. They also indicated the faith and emotion attached with the age-old culture bound belief system where it is considered gifted by Almighty. Dharamsala being excess rainfall zone lead to high incidence of snake bite and therefore snake healers are found to be more in number as compared to others healers. This establishes positive correlation between climate, geographical location and health treatment patterns. The study facilitates understanding of the present status of indigenous knowledge system, local innovations and practice of herbal based traditional knowledge diffused in the society. The data accrued is expected to serve as a tool for establishment of strategies for the protection of traditional healers and their knowledge and conservation of medicinal plants and its habitat.

Life style change

Missing vaidyas

Time tested

Spiritual healing

Geographical attributes

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Developing a critical understanding of place at the end of life

Place occupies a paradoxical position within the discipline of palliative care. Most research is conducted within a paradigm which ostensibly affords great importance to the spaces where people do their dying, with place of death representing a key research priority. However, a reductive understanding of place is typically adopted which fails to extend analyses beyond determining the physical location of dying. The multiple, often contradictory, meanings attributed to particular places at the end of life remain under-explored, as do the factors structuring those meanings. In this presentation, we draw on a number of qualitative studies which have explored the circumstances and settings of end of life care for older people in the UK and New Zealand to demonstrate the need to develop a critical understanding of place within the context of end of life experience. In particular, we focus upon the role of gender, socio-economic status, cultural identity and indigeneity in shaping the meanings, and experiences, of place within an end of life context. Ultimately we argue that developing a new critical focus upon place within palliative care research and discourse would open up new ways of thinking about the provision of health and social care at the end of life.

Palliative Care

Aging

Aboriginal/Indigenous Health

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The Geography of Medical Risks and Preterm Birth among Black Mothers Residing in Racially Segregated Neighborhoods

Over the past several decades in the United States black infants have been at least twice as likely as white infants or infants of other racial and ethnic groups to die before their first birthday. The causes of these disparities are largely the result of high preterm birth rates among black mothers and the delivery of small and physiologically immature infants. This study examines the mediating effects of medical conditions among black mothers residing in racially segregated neighborhoods on preterm birth focusing on maternal infections and high blood pressure present and/or treated during pregnancy. Racial residential segregation isolates black mothers from other racial and ethnic groups and within this isolated environment maternal infections may cluster and chronic hypertension may go untreated without access to high quality health care. This study examines these relationships in Michigan's highly segregated urban areas between 2008 and 2013 using vital records data, social and environmental datasets and a spatial epidemiological approach.

Social Determinants of Health
Health Inequalities
Epidemiology

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A Multilevel Analysis of the Measurement and Socio-Demographic Determinants of the Distribution of Mental Health in the UK.

In this paper we investigate the distribution of mental health across the UK via the 12-Item General Health Questionnaire (GHQ-12) and the more recently developed Short Warwick-Edinburgh Mental Well-Being Scale (SWEMWBS) as included in the 2009 wave of the Understanding Society dataset. This represents the largest ever study of community mental health in the UK, providing a unique opportunity for insight into the distribution and variability of mental health and the importance of measurement effects. Spatially linked data also provides detailed neighbourhood data in addition to that at the individual and household level.

Multilevel methodology is used to model the data at a number of spatial scales simultaneously to examine risk factors including Education, Ethnicity, Migrant Status and Type and Length of Housing Tenure. Decomposing variation into different spatial scales as well as with respect to these multilevel variables in this manner allows us to construct realistic recommendations about the appropriation of funding to address mental health in the UK.

The use of two sets of measurement instruments (reflecting positive and negative mental health) allows us to address limitations in the univariate literature, identifying both the key determinants in each response, and crucially at which spatial scale they are most pertinent. Notably we find that, contradictory to previous studies, Africans and Caribbeans exhibit the best mental health after factoring for socio-economic variables. Gender effects are also shown to be critically measurement-sensitive, with females scoring significantly worse on the traditional GHQ-12, but with no significant gender differences exhibited in the SWEMWBS.

Mental Health
Quantitative Methodology - Multilevel
Social Determinants of Health

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The geography of mental health and general wellness in Galveston, Texas after Hurricane Ike

The majority of survivors of natural disasters exhibit resilience, defined as low levels of a given symptom or problem over time, with only minimal elevations in symptoms limited to the time period during the disaster and its immediate aftermath. However, recent evidence suggests that mental health wellness (resilience across multiple mental health conditions) and general wellness (resilience across mental health and other domains, e.g., physical health and role functioning) are less common outcomes among disaster survivors. Geographic variability in the presence and predictors of mental health wellness and general wellness has not been explored. The current study aimed to fill this gap using data from a three-wave population-based study of Hurricane Ike survivors (N=508). We used the spatial scan statistic (SaTScan) to identify spatial clusters of mental and general wellness, multivariable regression to assess predictors of wellness, and Geographically Weighted Regression (GWR) to explore geographic variability in predictors. We found spatial clusters of both higher and lower mental health and general wellness, as well as geographic variability in associations between predictors of wellness (e.g., age, predisaster posttraumatic stress disorder, postdisaster stressors), across the study area. We conclude that predictors for mental health and general wellness may manifest differently across geographic space. Our approach could be used to inform geographically targeted interventions to promote mental health and general wellness in disaster-affected communities.

Natural disasters

Mental health

Spatial epidemiology

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Place as a Vital Sign of Health - Impact of geography on the control of Type II diabetes mellitus in Western Australia

The incidence, prevalence and cost of Type II Diabetes Mellitus is increasing with an estimation that every day in Australia 280 people are diagnosed with diabetes, placing diabetes is a major cause of morbidity and premature mortality in Australia. With an estimated financial burden of \$10.3 billion, a reduction in the prevalence of Type II diabetes and its associated comorbidities such as obesity and hypertension, will result in both cost savings to the health budget as well as increased health outcomes for a better quality of life. Health practitioners are aware that prevention and management of this disease needs to be multi-faceted. Among the many strategies advocated is an emphasis on the role of general practice in reducing the risk factors associated with the long term complications of diabetes mellitus, including hypertension, hyperlipidaemia and hyperglycaemia.

In this 13 month, retrospective observational study, data from non-identifiable patients older than 18 years of age, obtained from a medical practice in Western Australia; have been analysed using a series of descriptive statistics and spatial analysis to identify risk factors, including access to clinic, for Type 2 Diabetes. Our focus was to primarily investigate the profile of people who were noted to have risk factors for atheromatous vascular disease in the context of diabetes mellitus. Our results show the geographical distribution of people with continuing risk factors and their interactions with general practice including their consultation rate and prescribing with reference to national guidelines.

GeoHealth
GIS and Health
Type II Diabetes management

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Tracing independent lives: where do people go when collective care sites close?

In countries in the Global North, major reforms of the welfare state and care systems are underway. Collective or 'segregated' sites of 'care' are being closed; at the same time community facilities are under pressure and welfare benefits are being cut. The paper reports on a new research project, tracing the routes travelled by people with intellectual or learning disabilities who are transitioning from collective care spaces into mainstream community contexts to live 'independent lives'. The project focuses on three sites: group accommodation; day care centres; and sheltered employment, in the UK. The paper will report on the two parts of the study: the collation and analysis of secondary data, sourced from central and local government, and charitable organisations, to chart the extent and nature of the transition of the care of people with learning disabilities; and interviews and participatory research with people with learning disabilities, and their carers, families and advocates, in case-study areas, to trace their transition to independent lives, and how they are shaping, in collaboration with others, their everyday spaces, networks and experiences. The paper will argue that it is important to critique the dominant discourse of independence, autonomy and individualisation, framed within the language of human rights, that is driving policy and practice in care. And, further, by drawing on their experiences of transition, to understand and highlight how people with learning disabilities (and their supporters) are responding to and actively transforming this new landscape of care and caring.

Learning disability
Care
Independent living

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Ovarian Cancer and Pulp and Paper Manufacturing in the US: Geospatial Analyses

Ovarian cancer is the fifth leading cause of cancer mortality for U.S. women and accounts for 5% of female cancer deaths. Although 5-year survival rates have shown improvement over the past four decades, they are still very low for late-stage cancers (27%) and only 45% for all stages combined. The high case-fatality rate reflects the lack of an effective early detection test and a paucity of specific symptoms in early stage disease. Consequently, approximately 60% of cases are detected at an advanced and incurable stage. Family history is the most significant known risk factor, most notably among women with mutations in the BRCA1 and BRCA2 genes, but genetic factors explain only 10% of cases. Other known risks are reproductive and lifestyle factors. Although genetic susceptibility is likely modified by environmental factors, no significant environmental risk factor has been consistently identified. Some evidence suggests that occupational exposure to pulp and paper mills increases ovarian cancer risk. An association between ovarian cancer incidence and pulp and paper mill locations was recently reported at the state level. We examined the association between county-level ovarian cancer incidence rates (compiled from various sources) and paper mill toxic releases (EPA Toxic Release Inventory dataset), using exploratory spatial data analysis (ESDA) and other geostatistical techniques, including “hot spot” analysis and geographically weighted regression. Our results vary by analytical technique and time period of analysis and provide some support for the ovarian cancer/paper mill hypothesis using county-level data.

Environmental health

GIS

Spatial Analysis

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Voluntarism, community development and healthy aging-in-place: Pathways of integration and marginalization

This paper contributes to emerging academic and policy interest in the linkages among processes of population aging, community development and voluntarism. We outline an innovative approach to understanding the various ways in which voluntary sector led community development seeks to create supportive environments for healthy aging-in-place. Employing this approach, we outline key findings from case studies of healthy aging initiatives in two resource-dependent communities in the interior of British Columbia, Canada. We critically examine assertions that voluntarism offers a potential means of transformation in the lives of older people, as well as in the trajectories of their aging communities. We also challenge what we regard as dualist tendencies in the literature on voluntarism (e.g., that it must be regarded as a force either for neoliberal acquiescence or resistance, social cohesion or marginalization). We conclude with a discussion of ways to acknowledge the social dynamics, nuances and contradictions of voluntary-led community development initiatives, and what this means for moving geographical gerontology theory and policy forward.

Aging

Community development

Voluntarism

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On Indigeneity, Sexuality, and Health Services Access: [Re]collections of the LGBTQ/Two-Spirit Migrant Experience in Toronto, Canada

Over the past 60 years, the urban Aboriginal population in Canada has increased by almost 700%. Toronto's population is no different; from 2001 to 2011, the Aboriginal population in Toronto grew by 87%, while Toronto's total population only grew by 5%. Quantitative research has suggested that there is a high rate of Aboriginal mobility between reserves, cities, and within cities, yet there are few qualitative studies that examine experiences of migration and how this movement relates to health. Within that, little attention has been paid to narratives of Aboriginal people who are marginalized within this already marginalized community, such as the LGBTQ and two-spirited (LGBTQ2S) population. The objective of our research is to understand recent LGBTQ2S migrants' urban transition narratives with a focus on access to healthcare and health-related services. In partnership with the Native Women's Resource Centre of Toronto – a first point of contact for many LGBTQ2S migrants – in-depth interviews were conducted with LGBTQ2S Aboriginal migrants to examine the intersections among migration, sexuality, and access to health services. The findings are discussed with respect to the perceived strengths and weaknesses of healthcare services in Toronto and relevance for future policy and programming directions for Aboriginal and mainstream health service providers.

Aboriginal/Indigenous health
Access to healthcare
Mobilities

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Weather and children's physical activity; how and why do relationships vary between countries

Background: UK children's physical activity (PA) shows a seasonal pattern, likely driven by variation in weather and day-length. However seasonal patterns in PA seen in the UK are not uniformly replicated in countries whose climates might predict more extreme seasonality, suggesting that cultural adaptation is possible and that the barriers weather conditions present may be overcome.

Objectives: The identification of seasonal patterns in children's PA, and countries that appear to be better adapted to weather conditions that inhibit PA in the UK.

Methods: Accelerometer-measured PA from 24,320 children, aged 3-18 years, participating in 18 studies across 10 countries were pooled in the International Children's Accelerometry Database. The outcome was daily minutes of moderate-to-vigorous intensity PA (MVPA; >3000 counts per minute).

Precipitation, temperature and day length were joined to PA data based on date and study location.

Multilevel regression models were used to explore associations between weather and MVPA.

Results and conclusions: Children's MVPA peaks in early summer; in the northern hemisphere children accrue an average of 7 minutes (SE 0.5) more MVPA per day in June than in January. Regression coefficients indicate a decrease of 2.3 minutes (SE 0.1) of daily MVPA per cm increase in daily precipitation. Further analyses will be presented examining these relationships in greater depth, assessing how they vary between countries. This will allow for the identification of conditions in which to target PA promotion, as well as advanced learning from countries that appear to be better adapted to conditions that inhibit PA in the UK.

Adolescents/Children

Methods- quantitative

Population health

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It May Get Better...But it Takes More Than YouTube Videos for Rural LGBTQ People

The It Gets Better Project is meant to support LGBTQ youth who are coming out, facing marginalization in their hometown, and/or need other types of support. When one views the videos, they present narratives from LGBTQ youth and adults, along with straight allies supporting LGBTQ people facing oppression and/or other lived-challenges. This social media campaign, however, provides a case study for placing these digital narratives in a physical location. The predominant concern involves the lack of information regarding local services and websites of resources for emotional and sexual health. Since this source is available on a global scale, we intend to critique the information from a rural geographical perspective. We framed our critique through the usage of geographical, information seeking behavior, and critical health promotion literature. The emerging literature about LGBTQ lived experiences in rural landscapes suggests they face unique health challenges, which have been acknowledged by geographical and public health scholars. This work suggests more scholarship is needed around rural LGBTQ health geography, critical health promotion, and information seeking behaviors. With technologies like geo-tagging data, we wonder if there is a possibility to produce virtual awareness about local supportive services. This would possibly allow the It Gets Better Project, and other campaigns, be beneficial to more LGBTQ people.

Vulnerable populations
Health services
Rural health

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Place-related well-being of people attached to wetlands in Wakiso District, Uganda

The study aims to shed light on how well-being and place are understood in the Ugandan context and investigates wetlands as an environment which promotes wellbeing. The properties of the land and the ecosystem services a wetland provides are important factors influencing people's well-being. Thus for non-Western cultures, there is a need to rethink definitions of well-being as published by several authors (Dodge et al., 2012; Campion & Nurse, 2007 etc.), as well as the relation between well-being and place (DeMiglio & Allison, 2012; Jack, 2012 etc.). This PhD research project takes place in a wetland area in Uganda.

Data are being collected in three steps. Firstly, group discussions about the benefits and challenges of living in the wetland area were conducted in 2014/15 with participatory approaches. Secondly, at the same time, a survey on well-being and its psychological, social and environmental dimensions was carried out. And thirdly, the researcher will carry out guided interviews on site with individuals from the different user groups of the ecosystem services provided by the wetland.

Especially in Uganda, which is affected by water scarcity and malnutrition, environmental conditions and land restrictions imposed by governmental institutions can affect people's well-being. Data collected to date show, however, that the water provided by these wetlands plays an important role in the people's place dependency but also in their identification with these environments. Furthermore, the feeling of being attached to the wetland contributes to their well-being and satisfaction with life.

Environment and health

Mental health

Methods – mixed

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Listening to persons with dementia talk about care in their communities

In the last decade, social scientists have turned their attention to the experiences of persons living with dementia, recognizing their rights and interests in debates about care. Little attention has been paid, however, to the socio-cultural and spatial contexts of these individual experiences. Home and community as well as urban and rural are often taken for granted without consideration of their diversity and complexity. This paper seeks to contribute to our understanding of how persons living with dementia experience sites of care and negotiate support within them. To do so, we draw on forty-seven interviews with persons with dementia and their partners in care in three case study communities in south eastern, south western, and northern Ontario. The interviews were digitally recorded with the consent of participants, transcribed verbatim, and coded using a constant comparison approach facilitated by Nvivo software. Our findings illustrate the challenges of negotiating meaningful participation and support across different stages of the illness as well as urban-rural settings, at home, in day programs, and in other community settings. We discuss these challenges in relation to current and future policy directions.

Dementia
Community care
Qualitative methods

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The international health landscapes of Cozumel Island, Mexico: a tentative exploration

In recent years, interest in the phenomenon known as medical tourism has found popular ground with researchers from health geography and similar disciplines. However, while research into medical tourism is proving to produce exciting and provocative outputs, much of this research appears to disregard the reality that healthcare establishments found abroad are not only destinations for medical tourists, but also treat and care for a wider assemblage of mobile populations including vacationers and expatriates. One of these destinations is Cozumel Island on the south eastern coast of Mexico. As a destination visited by over four million international guests every year, as well as home to many expatriates and foreign retirees, it is naught but expected that Cozumel's local healthcare services must treat a multitude of foreign patients on a regular basis. This paper provides an initial exploration into understanding the experiences, practices and place making activities that occur within Cozumel's healthcare sector. I describe the pragmatic and theoretical orientation, as well as the goals and objectives of my dissertation research into the international health landscapes of Cozumel Island. Following this, I reveal some of the initial results and thoughts emerging from my recent field work in March 2015.

International
Health care
Landscape

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Effects of level of affectedness and localised relocation on mood and anxiety disorders after the 2010/11 Canterbury earthquakes

Purpose: We present unique results about the effects of localised relocation on mood and anxiety disorders of help-seekers after the 2010/11 Canterbury earthquakes. Objective: We hypothesised that relocating from severely to less earthquake-affected areas in Christchurch reduced the likelihood of being clinically diagnosed with a mood or anxiety disorder after the '2011 Christchurch earthquake'. Method: In this longitudinal study over three consecutive 6-month periods after the disaster a sample of 114,875 Christchurch residents were classified into 'Stayers', 'Within-city movers' and 'Out-of-city movers' and different hazard exposure groups based on land damage. These were used to assess the interaction effects of levels of relocation and affectedness on clinically diagnosed mood and anxiety disorders. Multivariate models were used to account for possible confounding factors. Results and Conclusions: Within-city movers showed the highest rates of mood and anxiety disorders soon after the disaster, but also the highest decrease in mood and anxiety rates 18-months post-disaster, suggesting it is a protective factor over time. Other identified protective factors included being from the less affected and less deprived Port Hills area, being male and being Maori, Pacific or Asian ethnicity compared to European. For the level of affectedness, residents from Red Zone residential areas (areas damaged to the extent they cannot be rebuilt on) overall had highest rates of mood and anxiety disorders and were most likely to be diagnosed among within-city movers.

Mental Health
Mobilities
Methods – Quantitative

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“It Was the Best Decision of My Life”: a thematic content analysis of former medical tourists’ patient testimonials.

People who travel abroad with the intention of receiving medical care (often referred to as ‘medical tourists’) often use online resources when deciding whether and where to receive treatment. In particular, the websites of medical tourism facilitation companies (companies that may or may not be affiliated with a clinic abroad and help patients plan their travel) are an important source of online information for these individuals. Previous research has found that these websites typically fail to address the risks associated with medical tourism, which can undermine the informed decision-making of potential medical tourists. Less is known about patient testimonials on these websites, which can be a particularly powerful influence on decision-making. A thematic content analysis was conducted of patient testimonials hosted on the YouTube channels of four medical tourism facilitation companies. Five videos per company were viewed. The content of these videos was analyzed and themes identified and counted for each video. As with facilitator websites, these testimonials were found either not to mention or minimize the risks associated with medical tourism. The failure fully to address the risks of medical tourism can undermine the informed decision-making of potential medical tourists, particularly given the considerable influence on decision-making by patient testimonials. Regulation of these global companies is difficult, making the development of testimonials highlighting the risks of medical tourism essential.

Medical tourism
Informed decision-making
Patient testimonials

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'Thin places' as therapeutic landscapes? Exploring their perceived existence, nature, extent and impact.

'Thin places' are often described as almost mystical landscapes where the distance between our physical world and the eternal world of belief or myth appears to narrow. The lifting of this veil into other worlds has often been associated with 'Celtic spirituality', and is often reported to fuse together visible and invisible worlds. Such environments are reputed to have the power to relax, heal, connect, transform and unmask people.

This research sought to explore the perceived existence, nature, extent (if relevant) and impact (if any) among a sample of final year undergraduate students in Ireland. Written descriptions of individual encounters with 'thin places' were explored using a hybrid form of inductive and deductive thematic analysis informed by Heideggarian hermeneutic phenomenology. Results of this research will be discussed through the lens of a therapeutic landscape, as introduced by Wil Gesler.

Thin places
Therapeutic landscapes
Celtic spirituality

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Healing Gardens: Attending to 'Sacred Space' in a modern US hospital environment.

Hospital healing or therapy gardens are relatively commonplace. These therapeutic landscapes are often perceived to be important not only for physical healing, but also from a religious or spiritual perspective. The positive impact of such spaces has been documented.

However, modern hospital environments in the US, even those that are faith-based, are increasingly run as corporate businesses with firm focus on the 'bottom line'. This tension is exacerbated by spiraling healthcare costs, which often preclude long hospital stays for patients and staff that are constantly 'on call'. Thus healing gardens may be not only characterized as non-economically productive space, but may be increasingly unknown and largely unfrequented.

This research is based on in-depth interviews with key stakeholders in a faith-based hospital, which includes a healing garden in the inland Pacific North-West. Transcribed interviews were explored using a hybrid form of inductive and deductive thematic analysis informed by Heideggarian hermeneutic phenomenology. Tensions and opportunities for a revitalization of this sacred space will be explored.

Healing gardens
Therapeutic landscapes
Corporate culture

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Exploring spatial dimensions of immigrant women's experiences and trajectories during pregnancy.

This paper will highlight some key-findings issued from a research program lead in France on pregnant immigrant women (2012-2015). One originality of this research is to explore pregnancy as a key-moment revealing specific and original research questions in the broad domain of "health and immigration". Indeed, most of the research on immigrant women's health and pregnancy focuses on social and economic inequalities, precarity and sanitary emergencies. This paper, privileging micro-scale observations, ethnographic interviews and a biographical approach, will rather highlight the spatial dimensions of their daily experiences, and how this influences their access to healthcare. The paper will particularly focus on how the spatial dimension of social life, at local and individual scales, reveals the complexity of the experience of migration.

This paper will expose firstly the complexity of the French situation regarding the inter-relations between health, immigration and pregnancy from a social and political point of view. Second, the paper will focus on the repercussion of such contexts on women's daily experiences and biographical trajectories during pregnancy. After synthetizing the question of healthcare and medical monitoring access, the paper raises questions related to social networks and family dynamics during and around pregnancy amidst the different determinants to healthcare access and use. As a final discussion, the paper will raise up issues linked to mobility (at different geographical and time scales), to the way of mobilizing spatial and social resources during and around pregnancy, to the housing conditions during pregnancy, as choices or barriers for pregnancy monitoring.

Immigration

Pregnancy

Health

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Why Does Cuba Care So Much About Global Health: Chronicles of Ebola in West Africa

How did the international community get the response to the Ebola outbreak so wrong? We closed borders. We created panic. We left the moribund without health care. When governments in West Africa called out for help, the global response went to protecting the citizens of wealthy nations before meeting the needs of the vulnerable. Yet, Cuba broke this trend by sending in 465 health workers into the source of the epidemic, alongside expanding hospital beds, and training local health workers. Considering the broader global response to Ebola, why did Cuba get it so right?

Cuba is the only nation to respond to the call to stop the Ebola epidemic by actually scaling up health care capacity in the very places where it is needed the most. Many scholars have been left wondering not only how a low-income country, with its own social and economic challenges, could send impressive medical resources to West Africa, but also why they would dive into the hot zone in the first place — especially when nobody else dared to do so.

This paper explains how the moral ethics of solidarity govern Cuba's approach to global health. The paper argues that Cuba offers a compelling example of how the solidarity approach has the potential to radically transform health geographies in resource poor nations. For Cuban health workers, solidarity is embraced as a result of institutional ethics that value service to the poor and professional commitments to transform structures of inequity.

Ebola
Cuba
Solidarity

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Neighborhood effects on behavioral and educational trajectories of U.S. children and adolescents

Although child and adolescent behavioral and academic outcomes have been explored in relation to neighborhood contexts, most research conducted on this population ignores time, space, and the multiple ecologies to which children belong. The vast majority of studies rely on cross-sectional data and limited conceptualizations of residential neighborhoods, which only characterize children's contexts at one point in time and grossly ignores other influential spatial contexts. Moreover, most studies only model neighborhood-home or neighborhood-school combinations, which likely overestimate neighborhood effects. This research uses nationally representative, longitudinal survey data, longitudinal propensity scores, and multiple conceptualizations of residential and school neighborhoods to address these gaps. Growth curve models demonstrate that family and school contexts are the main drivers of variation while neighborhoods exert small direct effects on trajectories of reading and math scores and often have no direct effect on internalizing and externalizing behaviors in children and adolescents. Parallel multiple mediator models reveal that family and school characteristics simultaneously mediate the relationship between neighborhood exposure and child outcomes. Moreover, these models demonstrate that as children progress into adolescence and become more independent the neighborhood context becomes more influential – supporting hypotheses in developmental research. Theoretical and policy implications are discussed.

Neighbourhood

Child/adolescent

Healthy development

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Long-term neighbourhood recovery from the Christchurch 2010/11 earthquakes: the Neighbourhood Resources Resilience Index

Given increasing evidence for the link between urban form and healthy lifestyles, observing cases where places change rapidly can be informative. Along with more fixed amenities such as parks, streets, and recreation facilities, businesses are part of the neighbourhood backdrop to everyday life providing employment and places to shop and connect socially. Christchurch, New Zealand, is experiencing rapid and ongoing redistribution of many neighbourhood amenities and resources resulting in considerable change for some neighbourhoods and their residents, while others have seen little difference. What can we learn from such change about neighbourhood resilience?

We will present the Neighbourhood Resources Resilience Index (NRRI) developed for Christchurch. Generalised linear regression modelling was used to develop estimates of the association between neighbourhood (census area unit) levels of earthquake damage and business expenditure, accounting for relevant neighbourhood conditions such as population and business mix. Deviance residuals were calculated to quantify the NRRI. This index identifies individual neighbourhoods that are performing unexpectedly well given local conditions (that is, resilient), or unexpectedly poorly (or vulnerable) in the model.

The index was calculated for each year post-earthquake (2011-2014) so resilience dynamics could be observed across space and time within the city. Further analyses will examine proximity and connectivity effects, and how physical, material and social factors interact, for example the role played by deprivation, traffic flows, and schools in neighbourhood recovery and resilience. The index provides a useful lens to investigate the emerging nature of the recovery, and identify areas with potentially vulnerable populations that may benefit from place-based interventions.

Neighbourhood
Hazards and health
disaster recovery

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Testing the health impacts of future built environments using ‘virtual’ experiments.

Will people increase their everyday physical activity if they moved to a more supportive built environment? ‘Virtual’ experiments may be a useful means to exploring neighbourhood effects given the challenges in conducting longitudinal studies or randomised control trials. Findings from one such experiment designed to identify future urban possibilities (and downstream consequences) will be compared with recent findings from observational studies.

Rebuilding Christchurch’s central city following recent earthquakes offered the opportunity to improve liveability, but there was uncertainty about what needed to be developed for it to be a desirable and healthy place to live. In 2013, Opus Research conducted a ‘virtual experiment’ where potential residents took part in scenarios of moving to the central city at different rebuild stages. Responses to dwelling and neighbourhood features, and neighbourhood qualities were tested. We also tested anticipated location and transport mode changes in everyday activities between current circumstances and moving to the rebuilding central city.

Analyses identified a shift to locally-based activities such as shopping, socialising, and using public places. Our findings also showed that participants anticipate increasing active transport modes, in keeping with a more urban lifestyle. Further, the magnitude of change in the scenarios was comparable with findings from previous Neighbourhoods & Health (University of Otago) cross sectional studies comparing active transport practices in varying built environments, suggesting participant responses were realistic.

Findings demonstrate important interactions between the residential, commercial, and infrastructure sectors that contribute to liveable environments. Scenario testing can provide insights into future travel behaviours and therefore reveal how residents may adapt to changing conditions.

Neighbourhoods
Mobilities
Urban

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How best to model Meade's Triangle of Human Ecology? With Bayesian hierarchical spatial models

In 1977, Melinda Meade published "Medical Geography as Human Ecology: The Dimension of Population Movement," in which she developed one of medical geography's guiding frameworks: the triangle of human ecology. This framework posits that an individual's health status is a function of interactions between population, behavioral, and environmental forces. In that work, she also noted that one danger in such a holistic approach is that it "can easily become too generalized to be enlightening or useful." Thus, empirical work within medical geography has been presented with a challenge: modeling the complexity of population, behavioral, and environmental interactions while at the same time not over-generalizing. Over the course of the last 25 years, however, the development of hierarchical Bayesian models has greatly increased modeling flexibility, allowing scientists to model these complex relationships. Medical geography has been slow in taking up Bayesian methods, however, and as a result the over-generalization that Meade cautioned against remains with us. Here, we present an overview of common study designs in medical geography, and explain how the flexibility of Bayesian methods gives richer inferences. We give an applied example using Bayesian kriging.

Triangle of Human Ecology

Bayesian Methods

Spatial statistics

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Examining differences in health service utilisation between immigrants and non-immigrants in Australia

Health care utilization is very critical for everyone to maintain good health. Using data from wave 9 of the Household, Income and Labour Dynamics in Australia (HILDA) survey and Negative-binomial regression models, this study examined whether there were any differences in the visits to general practitioner (GP), among Foreign-Born (FB) from English Speaking Countries (ESC) (1,219) and non-English Speaking Countries (NESC) (1,456) relative to Native-Born (NB) Australians (10,618). After adjusting for predisposing, enabling, and need factors, FB from NESC are found to have more number of GP visits relative to the NB people. We also found FB from ESC had relatively fewer number of GP visits while their duration of residence (DoR) is less than 20 years and after this DoR they have similar levels of GP visits as those of the NB people. On the other hand, FB from NECS though had relatively fewer number GP visits while their DoR is less than 10 years relative to NB people but they were not significantly different from the NB people while their DoR is 10-19 years and after this DoR they are more likely to have more number of GP visits than those of the NB people. On the whole, this study showed usage of health care facilities in Australia is a matter of country of birth and duration of residence of immigrants in Australia.

Health services
Social determinants of health
Immigrants

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Geographies of Respiratory Disease and the Role of Arsenic Exposure in Bangladesh

While diseases of the respiratory system are typically associated with inhalation exposures (e.g. smoking), drinking arsenic-contaminated water may also negatively affect the lungs. Many people in Bangladesh suffer from acute and chronic respiratory diseases and part of the problem may be related arsenic exposure. Bangladesh has a well-documented history of exposure to arsenic as an unintended consequence of development projects which installed new wells. This exposure has already been linked to other negative health effects such as skin diseases and cancers. Arsenic occurs naturally in the sediments of this region but with high spatial variability due to local geology. Yet an individual's exposure to that arsenic varies with social, economic, and political factors. This research uses new data from the Matlab Health and Socioeconomic Survey (MHSS), including objective measures of lung capacity and strength, information on exposure to arsenic-contaminated drinking water, and spatially-referenced socio-demographic data. We have previously found that arsenic exposure is now higher among lower socioeconomic status households and geographically concentrated. We use a combination of cluster detection methods and spatial regression models to further examine the local-scale patterns of lung disease in Bangladesh and the potential role of arsenic exposure. The current evidence linking exposure to arsenic-contaminated drinking water to respiratory diseases in Bangladesh or elsewhere is limited. Therefore, this research contributes new information on the effects of arsenic by using spatial analytic methods to examine the human-environment interactions that influence exposure and health.

Environment and health
Arsenic
Bangladesh

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Latin American and Caribbean Perspectives on Medical Tourism Development: Barriers and Drivers of Health Services Export

‘Medical tourism’ describes the practice of patients travelling across international borders in order to access private medical care outside of their home country. Many countries and hospitals have become associated with medical tourism in the past decade as the number of international patients has increased and the practice is more widely recognized. To date, studies of medical tourism have largely focused on locations where it is already well-established, such as Thailand, Malaysia, and Costa Rica, providing retrospective accounts of the sector’s development and impacts. However, there is currently a growing global interest across an enormous range of countries in become medical tourism destinations where these limited accounts can provide little insight or guidance. There is still little known about the factors driving and informing medical tourism’s prospective development and how the practice is understood, advanced, or resisted by local stakeholders in locations seeking to become medical tourism destinations. We explore here the findings from a comparative qualitative study examining medical tourism development in three different countries within the region of Latin America and the Caribbean: Mexico, Guatemala, and Barbados. 149 semi-structured interviews were conducted with private and public stakeholders in the health, trade and investment, and tourism sectors in order to better understand what existing international trade in health services is occurring in the region, why medical tourism is being pursued, and how development policies and activities are being implemented to support the sector. We present some of the key findings emerging from a thematic analysis of the coded interviews.

Medical tourism

Caribbean

Qualitative methods

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Gamification of active travel to school: an evaluation of the Beat the Street physical activity intervention

Physical activity (PA) levels in children are low, and use of technology has been partly blamed. Beat the Street is an intervention aiming to make technology part of the solution by encouraging participants to walk and cycle around their neighbourhood using walk tracking technology linked to a reward scheme. This pilot study evaluates the impact of Beat the Street on PA behaviours in a sample of schoolchildren in Norwich, UK.

The intervention was conducted within a Norwich neighbourhood for 9 weeks during May-July 2014. Children were recruited to the evaluation via two schools; one in the intervention neighbourhood, and the other located on the opposite side of the city. All year 4 and 5 children (aged 8-10yrs) were invited at both schools. Recruited children wore an accelerometer for 7 days at baseline (May), mid-intervention (July), and 3 months post-intervention (September). From accelerometry we derived mean counts per minute (cpm) for each measurement occasion. We examined differences in changes in PA between intervention and control children using linear models.

Fifty-one children (34.0%) participated at the intervention school and 29 (51.8%) at the control. We found no evidence to suggest Beat the Street increased PA levels; few statically significant differences in physical activity were found, with most in a counterintuitive direction. For example, post-intervention PA declined by -32.30cpm ($p=0.004$) compared to baseline at the intervention school versus -26.00cpm ($p=0.04$) at the control. Further work is needed to understand how patterns and level of engagement with the intervention might impact outcomes.

Adolescents/Children
Methods – Quantitative
Community Health

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EMPLOYMENT AS A SPACE OF RESPITE AND RESISTANCE FOR FAMILY CAREGIVERS

The aim of this research is to advance understanding of the way that employed family caregivers of adults with dementia create a space of respite. With the support of several prominent Canadian caregiver support networks, 12 employed caregivers responded to a call to participate in semi-structured telephone interviews concerning their experiences engaging in respite. Respondents varied by gender, age and work history. All were caregivers to spouses or parents who have a dementia-related illness. Transcribed data were analysed using established qualitative methods. This included the use of NVIVO to identify exemplars of common and unique experiences. Results suggest that the space in which paid work occurs is a consistently important site of respite. Some respondents engaged in paid employment out of financial necessity, others continued to work even though they did not need to. In both instances, we found examples of agency that were evident through intentional changes to part-time status, modifications in career path and work location, all of which were undertaken to create a successful respite space. We use the words of respondents to illustrate these changes, noting in particular the presence of actions that constitute resistance to family/societal expectations and workplace norms. We draw out implications for social and organizational policy.

Aging

Family caregiver

Policy

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Environments, Mobility, Social Networks, and Healthy Aging: A Cohort Study Involving Wearable Sensors

Background: There is growing recognition that the determinants of healthy aging are multifactorial and complex. Among these factors, built environments, social networks, and mobility have been the focus of increasing attention, both because these dimensions are potential targets for intervention. This paper overviews technological tools and preliminary findings from the Canadian arm a cohort study part of an international research program involving researchers from Canada, France and Luxembourg intent on understanding how urban environments relate to healthy aging.

Methods: Data on health, mobility, social networks, and social participation were collected among participants of the NuAge cohort (Quebec Longitudinal Study on Nutrition and Aging), aged 79 ears and over in 2014-2015. Tools to collect data included an interactive map-based questionnaire integrating a social network module, and a multisensor wearable device collecting both location (GPS) and physical activity data (accelerometry). Participants wore the multisensor device for 7 consecutive days. Data were processed using activity location detection algorithms and linked to environmental data within a geographic information system.

Results: The feature and capabilities of the tools are described and initial patterns of findings from processing spatial, social and environmental indicators are outlined. Conditions likely to increase the feasibility of implementing such tools among larger cohorts and an agenda for future research are discussed.

Conclusion: Rich data on regular and daily mobility, social networks and social participation can readily be collected among older adults to improve our understanding of contexts promoting healthy aging and to provide perspectives on planning aged-friendly communities.

Aging
Mobility
Neighbourhood

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Towards the big jump: challenging the antediluvian ban on bathing for the river Ruhr

The Ruhr, a medium-size river in North Rhine Westphalia (NRW), serves as drinking water resource for five million people in the Ruhr Metropolitan Area (RMA) and as receiving water course for sewage treatment plants and storm water overflows. As for most German rivers there has also been a long tradition to be enjoyed as a place for rest, recreation, bathing and swimming. Many public and non-official bathing beaches lined the mostly picturesque and natural banks until the early post-war time. However, as a public health emergency reaction prompted by a severe poliomyelitis epidemic, bathing was forbidden in the Ruhr in 1953 to avoid contact with water contaminated by sewage. Although the microbial river water quality improved substantially and polio was eradicated in Germany, the ban on bathing was never scrutinised. In 1975 the EU Bathing Water Directive entered into force, but no single river of NRW has ever been registered as an EU bathing water.

Within a 4-year research project not only hygienic water quality was intensively tested, sources of contamination were traced, microbial risks were quantitatively assessed (QMRA), DALYs for swimmers were calculated, and early warning systems indicating temporary water contamination were tested. Also attitudes of the local population and important stakeholders were explored, legal conditions were sorted out, a broad public discourse was kicked off, and a process to revitalise urban river bathing in the RMA was initiated and facilitated. As a result, 2015 is expected to bring the first river bathing season after more than 60 years.

Environment and health

Therapeutic landscapes

Urban

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Integrating syndromic surveillance in Europe

Europe's population faces diverse health threats. Current traditional surveillance systems focusing on predefined communicable diseases are unable to monitor emerging and non-communicable health threats. Further, the provided information is often available only days and weeks after an event. Syndromic surveillance can provide near real-time information on different kinds of events of potential public health concern based on existing electronic data sources ranging from web searches to patient records.

Between 2011 and 2013, the European Commission co-funded project Triple S-AGE inventoried syndromic surveillance activities in Europe, developed guidelines for implementing syndromic surveillance for future users and proposed a European strategy for syndromic surveillance.

More than 60 syndromic surveillance systems in 15 European countries conduct syndromic surveillance on local, regional and national level, using diverse data sources, and monitoring different health risks such as common communicable diseases, rare environmental events or man-made industrial accidents. Because of this diversity, we developed three models of implementation of syndromic surveillance systems in Europe.

We propose to integrate syndromic surveillance information on a regular basis into European health information systems in order to enhance preparedness for various public health threats and for European countries to meet the requirements of the International Health Regulations 2005 and the European Union Decision on serious cross-border health threats.

Public health
Epidemiology
Policy

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Trade Agreements: Challenges for Global Health?

The plans for new comprehensive trade agreements among the major economic powers have raised questions about the potential global health implications. In the public and scientific debate on the current negotiations on far reaching trade agreements (CETA, TTIP, TPP etc.) concerns are expressed regarding (a) a possible roll back of health protection provided by accomplished standards and legislations and (b) the impact on the future development of standards and regulations. The concepts envisaged for a regulatory cooperation that have emerged from the few preparatory documents available (for example) on TTIP could have a considerable impact on global health. The trade agreement negotiations aim for harmonizing of regulations and reduction of existing or perceived trade barriers that result from non-tariff or technical regulations. Regulatory coherence should be achieved through the introduction of an institutional regulatory framework that oversees the development and implementation of relevant legislation in the signatory states of the trade agreements. Stakeholders will have the right to appeal to these regulatory institutions if they fear potential trade impacts from planned regulatory or legislative initiatives. ISDS (Investor state dispute settlement) instruments that are intended to provide effective investor protection under the trade agreements can have far-reaching impacts on health related policies (emission standards, tobacco control etc.). The transatlantic tensions on the adoption of the precautionary principle as detailed in Article 191 of the Treaty on the Functioning of the European Union (EU) is one example for future challenges related to the trade agreements.

Global health
Trade agreements
Public health

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Constructing a system for district level prevalence of NCDs and their prognosis into the future in Germany

Background: In Germany there is currently no access to district level data for the prevalence of non-communicable diseases due to limited access to data of ambulatory and clinical health care providers or health insurance data. We aim to broaden the basis of information on district level health status.

Data: We are using a large combined dataset for Germany based on three representative CATI-surveys conducted between 2008 to 2012 with a total number of $n=62606$ observations from 402 districts in Germany. District Level Statistics are obtained from a large federal database (INKAR) covering more than 550 indicators from different domains. To allow simulation We are using the two different approaches Small-Area-Estimation as well as Spatial Microsimulation to provide estimates on district level prevalence for different health outcomes and to simulate those for the next two decades. We want to use the small-area estimates for the district level as a benchmark for the results of the spatial micro-simulation model.

Results: We are currently in the initial phase of our project and are hoping to provide first results at the conference.

Discussion: It is crucial to gain more insights into trends of population health on a regional level to validate political decisions on the allocation of resources in the health care system as well as for preventive efforts. Currently there is a lack of information in this field and we hope to provide new insight by combining formerly separate data sources.

Chronic disease
Methods – quantitative
Public health

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Contextual and Individual Determinants of Diabetes and Obesity in Germany

Background: There is mutual evidence regarding inequalities in Diabetes and Obesity on the individual and district level in Germany. Regional inequalities have been described only using aggregated measures of regional deprivation. Our aim is to analyze the underlying contextual determinants and their relation.

Data: We are using a large combined dataset for Germany based on three representative CATI-surveys conducted between 2008 to 2012 with a total number of n=62606 observations from 402 districts in Germany. Our outcomes are diagnosed diabetes and obesity based on BMI. District Level Statistics are obtained from a large federal database (INKAR) covering more than 550 indicators from different domains. Using Structural Equation Modelling we constructed a latent variable model with 4 latent variables for urbanity, affluence, quality of infrastructure, and population health. Afterwards the generated latent variables were introduced into a multi-level regression model.

Results: Our preliminary results indicate that on a district level, health and affluence are highly correlated while there is no positive correlation of population health with neither urbanity nor quality of infrastructure. When the generated factors were introduced in the regression models, only affluence had significant effects on both outcomes after controlling for individual covariates. In gender specific analyses this contextual effect only remained significant for women but not for men.

Discussion: It is necessary to identify specific contextual pathways that explain the association of contextual affluence and health. We are planning to construct a broader set of latent factors that can be used to describe and analyze contextual health effects.

Social Determinants of Health
Health Inequalities
Public Health

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Treatment patterns of allopathic and alternate medicine practitioners in primary health care in Pune, India

The private health care sector in India, gaining increasing importance in providing in- and outpatient care, is characterized by a huge heterogeneity in terms of services provided and qualification of practitioners. These include, amongst others, formally qualified practitioners in allopathy, ayurveda, homeopathy and unani medicine. Until 2014, alternate medicine practitioners in the state of Maharashtra were legally not allowed to provide allopathic treatment.

We aimed to investigate the role of private allopathic and alternate medicine practitioners at the primary care level in diagnosing and treating communicable and non-communicable diseases in the city of Pune, located in the state of Maharashtra. First, 299 clinics of private allopathic, ayurvedic, homeopathic and unani medicine practitioners were mapped in three administrative areas of Pune. Second, a survey was conducted amongst these practitioners (response rate 86.3%, n=258).

The study revealed that alternate practitioners were predominant in all three areas (77%, n=199). More than 70% of the practitioners reported to diagnose diabetes, chronic respiratory diseases, dengue and tuberculosis in their clinics. There was no significant difference according to system of medicine indicating that alternate medicine practitioners play an important role in diagnosing and treating communicable and non-communicable diseases on the primary health care level. Lack of regulation in the private health care sector poses a challenge for adequate care and disease control.

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Challenges and opportunities for the integration of private health care providers into non-communicable disease surveillance in Pune, India

Rising burden of non-communicable diseases (NCDs) constitutes a major public health challenge in India. Given the Quality Adjusted Life Years lost and the long-term costs of chronic care, they pose a serious threat to economic and social development. Nonetheless, a comprehensive surveillance system monitoring the NCD burden is still missing in India. Further, private practitioners are only marginally involved in surveillance despite their dominating role in urban health care. Taking this as a point of departure, we aimed to investigate the barriers and facilitators of including private sector in routine NCD surveillance in Pune.

First, 299 clinics of private allopathic, ayurvedic and homeopathic general practitioners and physicians in three administrative areas of Pune were mapped. Second, we conducted a Knowledge - Attitude - Practice (KAP) survey on public health surveillance amongst these practitioners (response rate 86.3%, n=258). Third, we developed a prototype for urban NCD surveillance (including 12 diseases) and tested the model for six months among 127 practitioners.

The KAP study revealed that knowledge among private practitioners on public health surveillance is rather limited and varied by system of medicine and level of qualification. Preliminary results from the pilot study suggest that private practitioners are an important source for NCD care in Pune and that involvement in regular surveillance is possible albeit difficult. Major barriers included poor clinic infrastructure, lack of time and attitude of the practitioner. A clear legal framework, regular interaction and simple reporting formats may help improve private sector reporting.

Public health

Chronic disease

Health services

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Examining the Relationship between Ultraviolet Radiation, Vitamin D, and Health

Ultraviolet radiation (UVR) is best known for causing direct adverse effect on human health through excess skin (epidermal) and eye (lens) exposure causing skin cancer(s) and cataracts. UVR is also a catalyst for the synthesis of vitamin D in the body and, therefore, has an indirect adverse effect on human health through vitamin D deficiency. An estimated 90% of vitamin D synthesized in humans is obtained through UVR exposure. Research is demonstrating a relationship between vitamin D deficiency, and diseases of the cardiovascular system, Alzheimer's disease, and non-cutaneous cancers including non-Hodgkin lymphoma, prostate, and colorectal. Therefore, there is a need for medical geography studies that examine the spatial variation of UVR, in conjunction with, other factors that influence UVR-human interactions—e.g. environmental factors (latitude, altitude, climate, land-use, and land-cover), human behaviors (time spent outdoors, sunscreen use, and clothing coverage), and individual/population susceptibility (endocrine disorders and skin pigmentation)—in order to improve our understanding of these vitamin D deficient diseases. This research examines the remote sensing and health literature on the spatial variation in the UVR spectrum ranging from 280nm-320nm (UVB), potential exposure, and related outcomes. The Total Ozone Mapping Spectrometer (TOMS) was used to collect data on UVR from 1978 to 2008 and the Ozone Monitoring Instrument (OMI) has been collecting data from 1994 to the present. This literature review provides the background from which future medical geography research will be performed.

Environment and health
Ultraviolet radiation
Review

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Transfusing our lifeblood: reframing research impact through inter-disciplinary collaboration between health geography and nurse education

Health geographers have long grappled with how their research can positively impact individuals' lives. Nursing academics too wrestle with the endurance of a theory-practice gap and strive for ways to translate research into practice to improve patient experience and outcomes. Demonstrating research impact is an increasingly important aspect of academic life in the UK and internationally with research funding mechanisms, such as the UK's Research Excellence Framework, requiring universities to audit and account for research impact. Although renewed emphasis on the public benefit of academic work is welcome, some scholars have argued that rewarding certain types of impact distorts academic activity, potentially sidelining some research areas and approaches. One casualty has been the devaluation of impact made through education. The purpose of this paper is to consider how inter-disciplinary collaboration between health geographers and nurse educators can reframe the rhetoric and reality of research impact. We share and broaden the scope of a conversation between us sparked during the Economic and Social Research Council (ESRC) social science and nurse education seminar series. First, we situate our conversation in the current impact agenda and on-going ESRC seminar series. Second, we sketch a case study that illustrates how research around blood donation can challenge student nurses to change their practice. Finally, we suggest closer engagement between health geography and nurse education brings mutual benefit by enabling health geographers to demonstrate the impact of their research and nurse educators to enhance student nurses' education and practice.

Health services

Neoliberalism

Policy

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A Mental Models Approach to Understanding the Emotional and Embodied Experiences of Volunteering Abroad

This study compares mental models of volunteers' experiences in international placements before participating in and upon completing a placement. Mental models are a conceptual representation of a perceived situation. They are used to empirically identify gaps in knowledge and to provide a means to supply laypeople with the information they need to make informed, independent judgments and decisions. Knowledge gaps can be revealed by examining the differences in mental models through the perceived motivations, benefits and perceived harms/hazards faced among volunteers who are interested in participating in an international placement and volunteers who have recently completed a placement. It appears that the mental models approach has yet to be applied to the literature on international volunteers' perceptions and understandings of the embodied and emotional experience of volunteering abroad, and thus may provide an opportunity to expand on the existing knowledge of what it means to participate in an international volunteering placement. Through analysis of face-to-face, in-depth, semi-structured interviews, diagrams representing volunteers' perceptions of the motivations, benefits and perceived harms/hazards before participating in an international volunteer placement are compared with volunteers' accounts of their perceived motivations, benefits and harms/hazards after participating in an international volunteer placement. Gaps in knowledge are identified and evaluated. Recommendations to how these gaps may be addressed through education, training and outreach by sending organizations are provided.

Voluntourism
Emotional geography
Mental models

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Exploring the spatial practices in the use of hospital care in France

The main objective of this research is to better understand spatial accessibility to health care and its multiple dimensions. Spatial accessibility to health care can be considered by studying the potential distance (e.g., to the nearest care supply) or the actual distance travelled by patients. We adopt this second approach to explore the spatial practices in the use of hospital care in France. We build our dependent variable by comparing the distance to the nearest suitable hospital service with the actual distance travelled in order to reveal any additional distance travelled by patients. We identify the individual factors (e.g., health status, severity level of medical treatment, occupational class) and/or the contextual ones (e.g., local health care supply, urban-rural gradient of area types) involved in these spatial practices. For that purpose we utilize the French health care survey ESPS linked with the medical consumption data for hospital stays. Results of a multiple linear regression indicate the effect of different individual and contextual factors on the additional distance, all else being equal. For instance, richer people and people in rural areas are more likely to travel more. In a second model we will include new indicators on criterion for choosing of patients (e.g., the hospital's reputation, a recommendation by a physician). At the same time another research by the authors studies the spatial practices in the use of ambulatory care in France (i.e. general practitioner and outpatient specialist care) to highlight dissimilarities and similarities.

Access to health care

Methods- quantitative

Mobilities

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Does Activity Space Size Influence Physical Activity of Adolescents who Reside in Downtown Vancouver?

Objective: To investigate the association between the size of activity spaces (geographic coverage of daily travel) and moderate-to-vigorous physical activity (MVPA; min/day) amongst adolescents.

Methods: In Fall 2012, we measured 39 students (13.8 ± 0.6 y, 38% female) attending high school in downtown Vancouver. Students were fitted with Global Positioning Systems (GPS; QStarz BT-Q1000XT) and accelerometers (GT3X+; ActiGraph LLC) for 7 days (1s epoch). We manually identified GPS trips and included days with ≥ 1 GPS trip and ≥ 10 h accelerometry data. Daily activity spaces depict the geographic coverage of each person's travel by buffering daily trip routes of participants. We generated activity spaces for all trips and for those made only using active modes (walking, public transit), and summarized them using area (km^2). We used multi-level regression models (Stata v.10, StataCorp LP) to evaluate associations between daily activity space area and MVPA (min/day) for each person-day (ActiLife v.6.5.4; Evenson cut-points).

Results: We included 74 valid person-days (range 1-5 days/person). On average, students accrued 64.5 ± 4.5 min/day of MVPA. Approximately 27% of MVPA was attributable to travel. Activity spaces for travel by all modes were $2.8 \pm 0.5 \text{ km}^2$. Active modes only activity spaces were $1.6 \pm 0.3 \text{ km}^2$. There was no significant association between activity space size and total daily MVPA.

Conclusion: Although approximately 25% of adolescents' physical activity is accrued during travel – the overall geographic scope of adolescent travel is not a key player. Still, it seems prudent to encourage active travel for all adolescents as a means to complement recreation and school-based physical activity promotion efforts.

Adolescents/Children

GIS

Public Health

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Adolescent Self-Reporting of Residential Address in the ORiEL Study: Participant Mobility, Non-Response and Implications for Analysing Neighbourhood Effects on Health

Contextual studies of the effect of environment on health require high quality data on the location of respondents if they are to effectively account for heterogeneity, and avoid mis-estimation of environmental exposures in a population. However, studies that link individual and environmental factors rarely report on the quality of location data used to capture residential neighbourhood exposures. Here we use the data from The Olympic Regeneration in East London (ORiEL) study to assess the characteristics of address self-reporting in terms of biases introduced by adolescents not reporting their address. Further, we consider the implications to assessing the effect of environment of the minority of adolescents (<10%) who report moving house over the 3 study waves.

The ORiEL Study investigates Olympic-related urban regeneration as a natural experiment through which to evaluate the effect of built environment change on the health and wellbeing of adolescents. For this paper we utilise three waves of collected data: baseline before the Olympic Games, and follow ups at 6 and 18 months post-Games. Participants were sampled from 25 randomly selected schools in East London, and answered a survey on topics including: physical activity, health and wellbeing, and diet. Ethical approval and data protection constraints meant that we could not obtain respondent addresses directly from schools, thus participants were asked to self-report.

The paper assesses the implications of individual characteristics that pattern address non-reporting: sex; ethnicity; length of time living in neighbourhood; and, adolescents who receive free school meals. Further, we consider the impact of individual residential mobility and respondents who enter or leave the study and the implications for assessing neighbourhood effects on health.

GIS

Methods – quantitative

Mobilities

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Objective environmental determinants of health inequalities in East London adolescents: A cross-sectional baseline from the Olympic Regeneration in East London (ORiEL) study.

The Olympic Regeneration in East London (ORiEL) study is evaluating the effect of London 2012 Olympic Games led physical regeneration. One aspect of the study is set to explore the role of the changing local environment in understanding the health of study participants. Objective environmental measures of: food; alcohol; physical activity resources; green space; and, walkability, have been computed for a cross-sectional sample of adolescents aged 11 to 12. These adolescents, recruited from 25 schools in the London Boroughs of Hackney, Tower Hamlets, Newham and Barking & Dagenham, were surveyed using paper-based questionnaires (3,105 participants). Objective spatial measures were linked to individual data in terms of both the adolescents' school and residential locations.

An individual's set of environmental exposures for each environmental variable were computed using GIS in three ways: proximity on the road network; density of a given resource using an adaptive Kernel Density Estimation approach; and, count of resources within an 800m egocentric buffer. These exposures were assessed against a range of primary outcomes of interest to ORiEL: the Warwick-Edinburgh Mental Well-being Scale used for assessing positive mental well-being; the Short Moods and Feelings Questionnaire based on the DSM III-R criteria for assessment of depressive symptoms; the Youth-Physical Activity Questionnaire; and, a self-assessment of general health and longstanding illness. This paper discusses baseline cross-sectional findings from ORiEL in terms of the effect of the objectively measured urban physical environment in explaining health inequalities.

Epidemiology
Neighbourhood
GIS

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Creating Space for Healing in Mental Health Care

Continuing a conversation begun in Durham (IMGS 2011) this paper discusses findings from an autoethnographic investigation of place and healing in mental health care. Healing, an intensely personal process at the heart of recovery, is necessary when there is disruption of integrity or wholeness. In the context of mental illness, healing involves both a journey and a destination; an emplaced process of exploration, connection, understanding and integration.

Autoethnography creates space for the multiple and often contradictory voices of the researcher; in my situation, service-user, family member and psychiatrist as I explored my personal and professional experiences of psychiatric hospitals, and researcher as I engaged with the data and literature.

Broadening the research to include the voices of others, this project has involved multiple conversations, not just internal, but also formally and informally with other service-users (ten research participants), professional and academic colleagues. Over the last decade autoethnography has become almost synonymous with the study of one person, with little guidance on how to engage with other participants. This paper will offer a way of working autoethnographically with multiple perspectives to expand the understanding of the personal experience of healing in mental health places of treatment.

Mental health

Methods- Qualitative

Recovery

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Professional identities and place in rural midwifery care: A cross-country comparison of experiences in Ontario, Canada and Otago, New Zealand

Rural population decline coupled with the closure of hospitals and specialist maternity units has led to a labour force crisis in rural maternity care. Midwifery was sold to the New Zealand public as a solution to declining numbers of rural GPs practicing obstetrics; midwives are now lead carer in almost 80% of pregnancies. Midwifery in both New Zealand and Ontario was (re)established as an autonomous profession in 1994, yet midwives in Ontario remain at the periphery of the health system attending less than 10% of births. In this paper we: (1) critically examine the history and development of midwifery in the two settings to identify structural influences on contemporary midwifery practice and, (2) examine how place-based experiences of rurality are employed by midwives to construct their professional identities. We draw on interviews with 28 rural midwives from Otago and Ontario undertaken in 2013 and 2014 and analysed using thematic and discourse analysis. Our findings demonstrate that the mainstreaming of midwifery in Otago is associated with clarity in scope of practice and the framing of obstetricians as a support. Underpinning participants' professional identities was a sense of resourcefulness and competence deemed necessary to practice in isolated settings. In contrast, rural practice for Ontario midwives was typified by closer proximity to specialist care and professional identities were instead shaped by their marginalisation within the maternity sector. Through this international comparison we demonstrate how the professional identities of midwives are constructed by professional power and the rural places in which they practice.

Policy
Health services
Rural health

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Re-employment, re-assessment, relapse? The impacts of UK welfare reform on mental health service users

Longitudinal in-depth interviews with 26 mental health service-users are utilised to examine UK welfare reform as it impacts on service users. Notions of space, place, and mobility are crucial in understanding how service users' attempts to maintain stability are emplaced, and how this stability is threatened by attempts to impose onto them the normative understanding of daily life - such as 'going to work' - that are embedded in the policy and practices of welfare reform. For many, the workplace is a remote space that is at best unfamiliar or, at worst, a potentially hostile environment that imperils their fragile sense of wellbeing. Accordingly, service users are adept at adopting a strategy of boundedness, in which 'safe' spaces, places, experiences and people are separated off from those which are deemed unsafe or which presage potential instability; a boundedness that has been ruptured by the punitive process for assessing service users' ongoing entitlement to welfare benefits.

Increasingly, service users are entrapped within a seemingly never ending and dizzying circuit of assessment and appeal in which the time and space for them to (re)locate their stability becomes ever more fleeting. Service users are precariously balanced at all times between 'wellness' and 'illness'. They are acutely aware that one false move by them or, increasingly, by the state apparatus determining their entitlement, could have them fall back into places darker and more troubling than the twilight world of the reassessment process.

Mental health
Policy
Mobilities

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Understanding access to ambulatory care in France: How do patient characteristics and spatial accessibility interact?

In France, very few studies explore directly the links between care delivery, patient preferences and their abilities to use resources in their living place.

The aim of this research is to better understand the circumstances which lead patients to consult health professionals situated further than the closest one. Furthermore, distance to healthcare provider is recognized as a significant barrier to healthcare in some regions. So a specific aim is to check if potential accessibility could be a barrier to ambulatory care.

The French healthcare survey "ESPS" providing regular information on outpatient care, health status, occupational class and insurance coverage is combined with contextual characteristics. A two-step model is used to measure the effect of individual and contextual factors: firstly on the probability of consulting a physician and secondly on the additional distance (difference between distance to the nearest provider and the actual distance travelled).

Results highlight that patients living in a low accessibility place have a lower probability to consult a specialist when the distance to the nearest provider is more than thirty minutes by road, all else being equal. Additional distance increases for patients when potential accessibility decreases. Thus low accessibility reduces both probability to consult and ability to choose a physician. To explain additional distance, contextual effect seems to be greater than the individual one. A second model is being developed to consider patient choice criteria. At the same time, another research by authors studies spatial practices for hospital care in France to highlight dissimilarities and similarities.

Access to Health Care

Methods- quantitative

Mobilities

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Circumcision status and time to first sex in Sub-Saharan Africa: Evidence from six Demographic and Health Surveys

This paper examines the relationship between circumcision status and the timing of sexual debut among never married youth in Rwanda, Uganda, Kenya, Ethiopia, Cote D'Ivoire and Ghana. We used nationally representative sample data from these countries most recent Demographic and Health Surveys. Results from survival models (Log logistic) applied to a sample of never-married young men who had their first sex between the ages of 12 to 25 retrospective, indicate that association between circumcision and timing of first sex is place and context specific. Whereas circumcised men in Rwanda, Uganda and Cote D'Ivoire were more likely to initiate sex early, their counterparts in Kenya and Ethiopia delayed sex initiation. Also, knowledge of HIV/AIDS transmission and risk, AIDs myths, region of residence, relationship to household head, educational level and family structure also feed into the association between circumcision and timing of sex initiation- implying that efforts to prevent the further spread of HIV could considerably benefit from a proper understanding how a diverse set of factors interact to shape youth's decisions to initiate sex. Public health campaigns aimed at curtailing the spread of HIV/AIDS should address all known transmission routes as permitted by current epidemiological knowledge, available resources whilst contextual factors should not be ignored.

Time to first sex

Circumcision

HIV/AIDS

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Influence of geographical features on outpatient care, using the example of Rhenish lignite mining.

Lignite mines, along with military training areas, national parks and other large geographical features, have various effects on their surrounding region. They have an impact on regional image - positive or negative - and on transport infrastructure. Both have consequences for the availability and accessibility of outpatient health care. In Germany, the Association of Statutory Health Insurance Physicians is responsible for deciding on the location of outpatient health care practices. This allocation is regulated by a specific directive ("Bedarfsplanungsrichtlinie"). This directive takes into account different levels of planning areas, with different spatial resolutions (comparable to district areas) for which an allowed ratio of residents to practitioner is calculated. Geographical characteristics can be taken into account when calculating the resident/practitioner ratios.

Our study assesses the impact of geographical features on the availability and accessibility of outpatient health care near the lignite mines in North Rhine-Westphalia (Germany). The local residents' usage, needs and perceptions of accessibility of outpatient health care was assessed by a quantitative household survey (N = 252). Results of the survey were incorporated into a GIS-based accessibility analysis, using the "two-step floating catchment area" (Luo & Wang 2003) method. In an additional postal survey, medical practitioners in the survey region were asked about the factors that were critical to their original choice of location. The sub-studies were combined to identify the multiple effects of geographical features on outpatient health care. The results of the study are intended to contribute to improving the accessibility of outpatient health care services.

Access to health care
Methods - Quantitative
GIS

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Mapping grief: A conceptual framework for understanding the geographies of bereavement, mourning, remembrance and wellbeing

Drawing on feminist theories of embodiment, the emotional geographies of absence-presence and the conceptual framing of therapeutic environments, this largely conceptual paper builds on previous work on Deathscapes to outline the significance of embodied, emotional, material and virtual spaces in the at-once everyday and extraordinary experiences and practices of bereavement, mourning and remembrance.

The lived experience of these different spaces, places and landscapes is explored through material from a small scale study of in-depth biographical interviews, with particular attention to how individuals and groups (such as families or communities) identify, shape and respond to dynamic and relational geographies of grief, remembrance and consolation as they navigate bereavement and carrying on. The conceptual framework and initial study illustrate the potential therapeutic value of understanding these spatially-grounded relations and are used to scope the potential for a large scale study attentive to differences in gender, ethnicity, religion, socio-economic class and regional cultures.

Mapping
Mourning
Wellbeing

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Regional evaluation of Tuberculosis in British Columbia (1990-2013) and the implications for future disease prevention

Background: Tuberculosis (TB) incidence has decreased in British Columbia (BC) in recent decades. Understanding the current case distribution of TB is required if public health is to further decrease rates in low incidence settings.

Objectives: To evaluate: 1) regional differences in the distribution of cases by origin and 2) the degree of clustering in TB incidence rates from 1990-2013.

Methods: All TB cases diagnosed in BC between 1990-2013 (n=15095) are mapped by 3 digit postal code (Forward Sortation Area) of residence at time of case. Cases are stratified temporally into 3 time periods, regionally into Greater Vancouver and the Rest of the Province, and by origin (foreign-born vs. Canadian-born). Gini coefficients and Moran's I index are used to evaluate regional changes in the degree of clustering and spatial autocorrelation.

Results: High TB incidence rates are most concentrated in the Downtown Eastside area of Vancouver among Canadian-born cases (Gini index range 0.587-0.679); whereas, high TB rates among the foreign-born cases are more widely dispersed across the Greater Vancouver region (Gini index range 0.273-0.321). Spatial autocorrelation of TB was most pronounced in the Greater Vancouver region among foreign-born cases (Moran's I range 0.220-0.340; $p < 0.05$).

Conclusions: Important regional demographic changes are observed across the evaluation period.

Provincial guidelines for TB control and prevention may need to be modified to account for the regional differences in the TB context if disease incidence is to be further reduced.

Epidemiology

Spatial analysis

Methods – quantitative

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Older people as digital citizens in the 'New' New Zealand: Enabling New Spaces of Wellbeing?

Older people are often not depicted as the “Explorers, go-getters, connectors, nurturers, discoverers, free thinkers, challengers...” yet they too have a place in the ‘new’ New Zealand. People over the age of 65 are frequently seen as in need of upskilling in Information and Communication Technologies (ICT) in order to keep abreast of societal change, or as recipients of new technologies designed to facilitate for health and forms of assisted living. In New Zealand, organisations such as Senionet play a valuable role in enabling older people to learn ICT in a supportive environment. While research has indicated that this has enabled individuals to engage with agencies and organisations online and to feel less isolated, little is known about the ways in which older people use technology, and to what effect such skills are productive beyond the individual. The use of technology in enhancing wellbeing and social connectedness, and in enabling elders to access a range of services and lifelong learning has been identified in research but the kinds of contributions that older people make to whanau, iwi, community (both in paid employment and through voluntary activity) and society through their engagements with ICT technologies are largely invisible. This paper provides a preliminary identification of the kinds of discourses which frame relationships between older people, wellbeing and ICT technology, with a view to considering the spaces of possibility, and the capacities for health and wellbeing which emerge from older people and their engagement with ICT.

Ageing
ICT
Qualitative research

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Modeling triple-diffusions of infectious diseases, information, and preventive behaviors through a metropolitan social network - An agent-based simulation

A typical epidemic often involves the transmission of a disease, the flow of information regarding the disease, and the spread of human preventive behaviors against the disease. These three processes diffuse simultaneously through human social networks, and interact with one another, forming negative and positive feedback loops in the complex human-disease systems. Few studies, however, have been devoted to coupling all the three diffusions together and representing their interactions. To fill the knowledge gap, this research proposes a spatially explicit agent-based model to simulate a triple-diffusion process in a metropolitan area of 1 million people. The individual-based approach, network model, behavioral theories, and stochastic processes are used to formulate the three diffusions and integrate them together. Compared to the observed facts, the model results reasonably replicate the trends of influenza spread and information propagation. The model thus could be a valid and effective tool to evaluate information/behavior-based intervention strategies. Besides its implications to the public health, the research findings also contribute to network modeling, systems science, and medical geography.

Infectious diseases

Agent-based modeling

Spatial diffusion processes

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Stewards of the Land and Custodians for Future Generations: Debates surrounding biosolid waste processing in rural Ontario.

When assessing techno-industrial developments it is important to consider how these industries are affecting residents' overall well-being, emotional geographies and changing sense of place. Further, uncertainty surrounding potential health effects of such facilities results in heightened debate about what is 'best' and 'safest' for future generations in the community. In the Township of Southgate, Ontario a biosolid (sewage sludge) processing facility became operational in 2013. Throughout the siting process there was intense debate within the community surrounding the health and environmental impacts of this facility as well as the surrounding application of the agriculture fertilizer end-product. Further, rural communities are changing as exurban residents migrate with differing expectations than members of the surrounding agricultural community. These changes come with changing values and ways of life that impact residents' expectations and perceptions. Utilizing in-depth interviews (n=22), this paper examines debates surrounding what is best for the future health of Southgate residents and the surrounding environment examining residents' risk perceptions and their varied attachments to Southgate. This processing facility has elicited particularly strong emotional stimuli as it is altering the ways rural residents perceive their landscape and neighborhood as a safe tranquil place with a strong sense of community, which is evoking core emotions and values and amplifying community conflict. Preliminary results suggest themes surrounding residents' self-identification as custodians of their children's well-being, however varying definitions of what is best for future generations are seen, which is dependent upon residents' varied expectations and sense of their community.

Risk Perceptions
Environment and Health
Rural Health

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Promoting [?] through participatory arts in Vancouver's Downtown Eastside

In this presentation, I will discuss experiences from a three-year effort at confronting the deficit-oriented, racializing, and socially fragmenting representations of Vancouver's Downtown Eastside. Such discourses are well publicized, offered up regularly by of pro-gentrification forces and the local-to-national media in an effort to revitalize the neighbourhood along expected marketed oriented creative and mixed-use trajectories. Over several years, we have sustained an evolving research partnership that has blended organizations with ties to the neighbourhoods' Indigenous, Japanese-Canadian, and many low-income communities. Since 2010, we have undertaken a mixed-method study that seeks to juxtapose past and present-day human rights struggles associated with racism, dispossession, and community uprooting tied to histories of nation building (i.e. colonization), national security (i.e. internment), and revitalization (i.e. gentrification). A year of archival and interview-based research of human rights history and experiences has culminated this year in the Right to Remain Community Fair, a series of local artist-led workshops with diverse community groups that has facilitated a weaving together of the these histories using photography, performance, diorama, and other media. Our research partners are now leading in efforts to impress this legacy within and beyond the neighbourhood through 2015 in a line up of Right to Remain Exhibits held at the gallery of a local artist-run collective in the spring and a forthcoming installation at a national Japanese-Canadian cultural and human rights museum. Finally, I will speak to how one supports such work that has obvious implications for health and health equity in the context of a Canadian research funding landscape which paints a sharp dividing line between health and non-health related research approaches.

Health equity

Participatory research

Human rights

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Place, Austerity and Inequalities in Mental Health: A Case Study from Northern England

In the United Kingdom today we are living through a period of sustained austerity. This is arguably an ideologically driven project that is exacerbating social and spatial inequalities, and there are concerns that mental health is one of the casualties of this project. Historically recession has been shown to lead to deteriorations in population mental health; this effect is likely to be more marked for people who come from deprived backgrounds. Government driven spending cuts are disproportionately affecting more deprived areas, exacerbating regional inequalities in health. This paper will report on a case study of the borough of Stockton-on-Tees in the North East of England, an area characterised by high spatial and socio-economic health inequalities. The paper explores the impact of austerity on inequalities in mental health and the social determinants of mental health, by presenting findings from a prospective cohort study of mental health between the most and least deprived parts of the borough. Competing geographical, sociological and psychological theories of inequalities in mental health are discussed. The data is analysed using a multi-level model and the main findings of the baseline study are presented within the paper. The project is funded by the Leverhulme Trust.

Health Inequalities

Mental Health

Methods-Quantitative

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Imprecision and Shifting Meanings of “Environment” in Epidemiology

The human-environment relationship is a major intellectual foundation of many approaches in medical and health geography. The term ‘environment’ is problematic in epidemiology. It may mean anything from all that is extraneous to the body, to the physical, social, and biological environment. In some studies, the environment is treated as a confounder or effect modifier—as noise—and in others, the term may refer to the global environment as a major focus of health and disease. The present study is a systematic review of ‘environment’ and its meaning in 10 major epidemiology journals in the past decade, with particular reference to cancer epidemiology. The shifting and imprecise use of the term may result in misunderstanding, such as in the case of the oft-used statement that 90 percent of cancers have an environmental component.

Environment
Environmental epidemiology
Cancer epidemiology

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Spatial analyses of hospital separations in the Australian Capital Territory (ACT)

Background: The classic public health triad composed of people, agent and environment emphasizes the importance of geographic location in health and disease. Where people reside affects the way they live their lives and in turn impacts on lifestyle-related risk factors (e.g. physical activity and diet) for non-communicable diseases (NCDs).

Objectives: To evaluate small area variations in sex and age-adjusted hospital admission rates for the major NCDs - circulatory diseases, diabetes, chronic obstructive pulmonary disease and cancers. To examine how these rates may be influenced by features in the environment or behaviours that result from interactions between people and their neighbourhood.

Methods: Sex and age-adjusted admission rates for the major diseases in the ACT will be aggregated to the base statistical area 1 (SA1 i.e. 200-800 residents) level of geography using routinely collected Hospital Episode Statistics (from 2007 to 2013). Area level variables with the potential to explain the variation in health outcomes have been assembled from census data (population, population density, socio-economic indices), GIS data (accessibility of public spaces and facilities, accessibility of food types and services, land use mix, transport infrastructure -including cycling and walking paths, traffic, safety and crime) and behaviours (physical activity, nutrition, alcohol consumption, smoking, social capital). Explanatory multilevel models will be built for each health outcome using spatial epidemiological approaches available in R and Bayesian hierarchical approaches (OpenBugs) in conjunction with ArcGIS. **Conclusions:** Findings from the study will inform the design of public health interventions to reduce the burden of non-communicable diseases in the ACT.

GIS

Built environment

Lifestyle

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Smoking and neighbourhood: an exploratory study of young women's experience of stigma in Montreal

Overall smoking rates have declined; nevertheless social inequalities increasingly differentiate smoking behaviour. The highest prevalence of smoking is concentrated among the poorest populations. In Montreal, smoking rates vary from 16% to 36% depending on the neighbourhood. Spatial inequalities in smoking can be explained by individual and environmental factors. Social norms at the neighbourhood level represent one of the explanation about how people and places interact and shape smoking practices. Social norms have changed since the introduction of legislations to ban smoking in public spaces, contributing to the de-normalization of smoking and subsequent stigmatization of smokers. We know that women are more vulnerable to smoking-related stigmatization, however what is not well understood is the relation between neighbourhood deprivation and these experiences. In this study we ask how young women living in neighbourhoods of differing levels of deprivation experience smoking-related stigma. Theoretically, we draw Pearce et al.'s (2012) model of pathways linking area deprivation and smoking. We employ a comparative qualitative research design driven by individual semi-structured interviews. Participants, aged 21-28, were recruited from an existing cohort (i.e. Interdisciplinary Study of Inequalities in Smoking). All participants were regular smokers, half of whom lived in Montreal neighbourhoods classified as high deprivation and the other half living in the least deprived neighbourhoods. Findings reveal how elements of neighbourhood deprivation shape the way people smoke in the neighbourhood, which in turn influences how women experiences stigma related to smoking. Findings contribute to a better understanding of how deprivation shapes patterns in health inequalities.

Neighbourhood deprivation

Smoking

Stigmatization

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Residential Surrounding Greenness and Diabetes Mellitus in Older Adults in Ruhr Region of Germany

Purpose/Objective: The Normalized Difference Vegetation Index (NDVI), an index derived from satellite imagery, may better capture ambient exposure to green vegetation than land-use based green space measures (e.g. density of parkland). Using NDVI we estimated the effect of higher surrounding residential greenness on diabetes mellitus in a population-based study. **Methods:** The cross-sectional sample includes 4,006 residents of Germany's metropolitan Ruhr region from the Heinz Nixdorf Recall Study (2006-2008). Mean NDVI was calculated within a 100-meter buffer of residence, excluding pixels with negative values (e.g. water), and classified as low (<0.2), moderate ($0.2-<0.4$), and high (≥ 0.4) greenness exposure. Individuals were matched across adjacent exposure level (moderate with low, high with moderate) based on each person's propensity to be exposed to higher greenness, calculated using age, gender, non-German birth, household income, education, and marital status. Based on propensity score matching, average effect of the treatment (higher greenness) on the treated (ATT) was estimated for diabetes. **Results/Conclusion:** Diabetes prevalence was 18.5%, 13.7%, and 13.2% in low, moderate, and high NDVI areas respectively (overall: 13.9%). Covariates achieved acceptable balance between exposed/unexposed groups after matching ($<10\%$ standardized difference). ATT for moderate versus low NDVI (-0.05 , 95% CI: $-0.12-0.01$) and high versus moderate NDVI (-0.01 , 95% CI: $-0.05-0.01$) suggest the anticipated decrease in prevalence of diabetes when exposed to greener residential surroundings; however, both estimates were small and failed to reach statistical significance. Although our results suggest greenness within 100 meters of residence may have little effect on diabetes, quasi-experiments are necessary to further this research.

Epidemiology
Environment and health
Neighbourhood

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"Sod's law I got a heart attack. I wis daeing a'hing wrang!" Exploring men's and women's experiences of heart attack and recovery in Fife, Scotland.

Socio-spatial differences have been identified for a variety of outcomes, including coronary heart disease. This research took Fife, Scotland, as its case study, revealing geographical variations in coronary heart disease (CHD) outcomes, markedly poorer in de-industrialised areas. However, the role place plays in shaping health outcomes and responses to health and ill health needs further work, particularly in the field of heart attack and recovery. Bourdieu's theory of habitus was influential to better understand illness experience and recovery by embedding lifestyles within particular places. In this paper, qualitative findings are presented from in-depth interviews with fifty men and women, from different social locations in Fife, who sustained a heart attack. By exploring real-life lay experiences, the complexity, impact and consequences of heart attack and recovery (taking a distinctly NHS cardiac rehabilitation focus on recovery) for everyday life are highlighted. Findings showed that participants attempted to 'make sense' of their heart attack in myriad ways. Experiences were geographically situated and produced, reproduced and enacted through participants' habitus. This is important because 'lifestyle' plays a key role in cardiac rehabilitation programmes, but it is primarily conceived in terms of 'individual' behaviours rather than as embedded within wider socio-spatial contexts. Places produced opportunities and obstacles for recovery from heart attack and barriers to engagement with cardiac rehabilitation were found including organisational, infrastructural, situated and gendered experience factors. These are important to understand to inform health policy and practice around heart attack and recovery both locally, and nationally.

Methods - qualitative
Critical health research
Health Inequalities

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Food and harm reduction: Service provider understandings of food's role in reducing drug-related harms

Although food in various forms is often provided in harm reduction settings, such as in needle exchanges and drug consumption rooms, there has been little systematic investigation of the role that food provision plays in the health of people who use drugs (PWUDs). There are physical, social, and economic factors that contribute to, and result from insecure access to food for PWUDs, such as poor nutrition, non-adherence to medication, and stigma. This paper provides preliminary findings from a project undertaken in partnership with the Dr. Peter Centre, an AIDS services and harm reduction organization in Vancouver. This research seeks to illustrate how harm reduction service providers understand, and facilitate food provision as one way of reducing drug-related harms for PWUDs. Semi-structured interviews with harm reduction service providers in Greater Vancouver explore how these organizations conceptualize the role of food in their programming, if foods are provided, in what settings, and what barriers and opportunities exist to providing healthy, culturally-appropriate food. Interview questions and site visits uncover how the locations of harm reduction service providers impact their access to food donations, and network-building opportunities with other organizations. Analysis of the interviews involves systematically coding for emergent and expectant themes drawn from literatures on: risk and safety environments; therapeutic landscapes; geographies of poverty and survival; and geographies of institutions and service provision. The research will inform service providers and policymakers on ways to improve PWUD's access to safe, nutritious food by elucidating the relationships between food (in)security and harm reduction services.

Harm Reduction
People Who Use Drugs
Food Security

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**‘Unpacking the home’: the impact of the home death of older adults on family care-givers’
perceptions of home**

Survey data undertaken by Public Health England indicates that while the place of death is geographically uneven across England, given a choice, many people nearing end of life would prefer to die at home. The 2008 End of Life Care Strategy for England thus set out a direction of travel designed to provide those (mostly older) adults nearing end of life, with the necessary care and support to realise their preferences for care. There is, however, a growing critique that these policies fail to understand the needs and preferences of older people and that home deaths may not be regarded as either feasible or appropriate. Indeed, evidence suggests that older people facing the end of life represent ‘the disadvantaged dying’ having less access to health and social care services than younger people (Seymour et al 2005). Home death for older people thus relies heavily on the willingness and availability of family members to provide that care. While this central role for carers is increasingly acknowledged there remain major gaps in our understanding of: a) how best to provide appropriate support to them within the home during the dying phase; b) how care work undertaken within domestic settings can create tensions between home and work that can fundamentally challenge the physical and symbolic meaning of home. This can result in a constant negotiation between the home as a site of care and the home as a site of social and personal life that can produce an ambiguity of place for both carer and care-recipient. In this paper we draw on data from family carers in the ‘Unpacking the Home’ study to elicit an in-depth understanding of how the home death impacts on the physical and symbolic meaning of home for family care-givers, the issues faced by them in caring for a dying older person at home and how the home death shapes the meaning of home post-death.

Ageing

Home

End of life care

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Everyday geographies of sustained recovery from alcoholism: spaces, places, networks and identities.

Geographers have recently begun to highlight the inherently spatial nature of treatment and recovery from severe alcohol (and other drug) problems. Their primary focus thus far has been on formal treatment settings and early recovery from addiction – which have been examined mainly through a governmentality lens. This paper introduces current research that explores the complexities of alcoholic recovery experiences of people in sustained and long-term recovery from alcoholism. Drawing on emerging empirical findings and outlining the utilisation of the researcher's positionality as someone who herself was once severely alcohol-dependent, the paper discusses the everyday contexts of formal and informal spaces, networks and identities through which these experiences are constructed and lived. Even several years after severe dependence on alcohol, the maintenance of a lifestyle that encompasses active citizenship, wellbeing, and freedom from dependence is critical in preventing relapse into addiction. Individual recovery 'journeys' are heterogeneous, subjective and characterised by having no end point. If recovery is now widely accepted as a lifetime's work, how is this being done? More significantly to geographers, where is this being done? In addressing such questions, the paper engages with reflexively-synthesised ethnographic methods to illustrate the discursive and differential construction of alcohol dependence, abstinence and recovery through the contexts of everyday language, mobilities, practices and beliefs.

Recovery
Methods- qualitative
Critical health research

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Urban environment, green space and socio-economic inequalities in mental wellbeing: an international observational study

Previous international studies have suggested that inequalities in health might be lower among populations with better access to green space. However, the potential for other neighbourhood characteristics to influence health inequalities, or to confound the effects of green space, has not been well examined. This study investigated which, if any, neighbourhood characteristics were associated with narrower socio-economic inequalities in mental wellbeing health in a large international sample of urban residents. The 2012 European Quality of Life Survey provided data on 21,294 urban residents from 34 European nations. Associations between mental wellbeing (captured by the WHO-5 scale) and level of financial strain were assessed for interaction with five different neighbourhood characteristics, including reported access to recreational / green areas, financial services, transport and cultural facilities. Multilevel regression models allowed for clustering of individuals within region and country. We found that socio-economic inequality in mental wellbeing was 8 points (40%) narrower among respondents reporting good access to green / recreational spaces, compared to those with poorer access. However, none of the other neighbourhood characteristics or services was associated with narrower inequality. The findings suggest that so called 'equigenic environments' may disrupt the usual conversion of socio-economic inequality to health inequality. This large, international observational study suggests that good access to green spaces may offer such a disruption.

Green space
Health inequalities
Urban

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Sun, Sand, and Seminars: A Content Review of Claims Made by Offshore Medical School Websites

As the delivery of, and access to, health and healthcare becomes increasingly mobile in our society, so too has the process of medical education. More than ever, Canadian undergraduate students are choosing to pursue medical education abroad at offshore medical schools, which are overwhelmingly concentrated in the Caribbean. Offshore medical schools are for-profit teaching institutions that cater to foreign medical students, primarily from the United States and Canada, and are emerging as topics of contention and scholarly inquiry in medical and academic communities. This paper presents original research revealing claims made by offshore medical school websites, particularly pertaining to the quality of education, access to residency positions, and teaching faculty credentials. My research deploys an in-depth content analysis methodology, and will include a discussion relating this phenomenon to existing trends in health and healthcare mobility.

Mobilities

Global health

Health services

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Effects of residential mobility in childhood on mental health and risky behaviours

This paper investigates the impact of childhood residential mobility on a range of youth outcomes including mental health and risky behaviours. We draw on literature not only from epidemiology but also migration and neighbourhood research to shed new light on contextual influences. The data used come from a UK cohort study, the Avon Longitudinal Study of Parents and Children (ALSPAC), which provides a uniquely detailed spatio-temporal biography for childhood and a range of self-reported and clinically diagnosed outcomes. From this data we not only have longitudinal measurements of outcomes, but also information about family demographics, key life events throughout childhood, detailed migration histories, and appropriate contextual/neighbourhood information. This use of a rich and comprehensive dataset permits the project to address a number of limitations within the epidemiology literature in order to advance understanding of the independent effects of residential mobility on important health outcomes and modifiable behaviours amongst children. The focus on children helps to avoid the issue of selective migration and may help to identify pathways of poor health that track into adulthood. In order to deal with the longitudinal nature of the data, high sampling frequency, and multilevel structure, advanced quantitative methods are considered including hierarchical modelling and latent class analysis.

Mental health

Mobilities

Methods – quantitative

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Area unemployment and individual health in relation to retirement and sickness/disability transitions over 10 years: Office for National Statistics Longitudinal Study

The paper is drawn from work from the RenEWL Extended Working lives consortia www.ucl.ac.uk/renewl. Background We examined associations between area labour market and health conditions as predictors of leaving the workforce due to disablement or retirement.

Methods We used data from 98,756 Office for National Statistics Longitudinal Study members who were aged 40-69 and working in 2001, to assess whether their odds of leaving work from sickness/disability or retirement, from 2001-2011, differed by local authority area level unemployment in 2001, change in area unemployment from 2001-2011 and individual health (long-term limiting illness [LLTI] and self-rated health [SRH]).

Results Higher area unemployment in 2001, presence of LLTI and poorer SRH were independently related to a higher odds of exiting the workforce over the 10-year period, after adjusting for sociodemographic covariates, compared to remaining in work, due to both sickness/disablement. Associations of area unemployment in 2001 and odds of sickness/disability were stronger for respondents who had better SRH in 2001. Effects for increased area unemployment from 2001-2010 were only apparent for leaving the workforce because of retirement.

Conclusion Strategies to retain older workers may be most effective if targeted toward areas of high unemployment. For persons in ill health, solely labour market interventions will not be as efficient in reducing their exit from the workforce.

Keywords labour market, unemployment, retirement

Retirement
Extended working lives
England & Wales

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Detecting spatial clusters of anomalous associations: a local test for disease associative mapping

Geographically weighted regression (GWR) and its variants of generalized linear models are formulated as models with spatially varying coefficients. Mapping the estimated coefficients with a response variable related to health provides a 'disease associative map' that reflects geographical variations in relationships between the health response/outcome and explanatory variables. However, statistical testing on local variations of coefficients is suffered from the multiple-comparison problem. In this study, a new statistical method to detect local variations of regression coefficients is proposed based on the bootstrap and scan-statistics approaches. This can be used as a local testing of coefficients estimated by GWR and its variants. A demonstration using a mortality dataset will be given in the context of spatial analysis on disease mapping with introducing the software to implement it.

Disease mapping
Geographically weighted regression
Scan statistics

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Social Networks within the Built Environment: Implications for Healthy Aging

It is now widely recognized among population health researchers that social conditions significantly influence the health of individuals and the population. While studies have shown that older adults are particularly dependent on the quality of their proximal built environment for maintaining or developing their social network, fewer studies have concomitantly considered daily mobility and the multiple locations to which seniors are exposed.

This study combines geolocated measures of daily mobility, social activities and social networks to explore the interplay between elders' social networks, characteristics of their urban environment and its relation with health outcomes.

Data was collected among participants of a cohort of older adults (aged 79 years and older) living in Montreal, Canada. Daily mobility was obtained for seven days with a wearable multisensor device integrating a GPS receiver. Data on regular activity locations and social networks was collected with an adapted version of VERITAS, an interactive map-based questionnaire. This presentation will show how the analysis of social networks and interactions can be considered in their spatial context in order to test which characteristics of the neighborhood environment promote or limit social activities relevant to healthy aging. Conclusions from this study will be informative in urban planning in context for population ageing.

Aging
Social networks
Neighbourhood

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Aboriginal Rights and Urban Aboriginal Health Services

The purpose of this research is to link Aboriginal health services with Aboriginal rights in urban areas, looking at intersections between jurisdiction over health services, governance of and access to Aboriginal health services, and rights for Aboriginal peoples living in cities in Canada. Objectives are: 1) to investigate challenges in delivery of and access to Aboriginal health services in urban areas; 2) to understand Aboriginal rights from the perspectives of people who work in, or access, Aboriginal health services in urban areas; and, 3) to explore how discourses of Aboriginal rights impact urban Aboriginal health services, and how the availability of Aboriginal health services impacts urban Aboriginal rights. The study will be conducted in Prince George, BC and Toronto, Ontario, two cities that differ in size, context and composition. Comparing such different cities will broaden the research to take into account different understandings of the urban, and bring to light challenges and advantages for Aboriginal health services in each type of setting. Following the principles of Indigenous methodologies, this research employs a decolonizing approach. The study will also use methods of qualitative research, including focus groups and in-depth interviews. Participants will include staff working in Aboriginal health service organizations in each city as well as clients of such services. Interviews and focus groups for this research are scheduled to begin in February 2015. This presentation will include preliminary findings from research undertaken in Prince George, BC, and will offer initial analysis regarding linkages between Aboriginal rights and Aboriginal health.

Aboriginal/Indigenous Health

Access to Health Care

Social Determinants of Health

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Permeable boundaries in the waiting room? Patient and receptionist perspectives on space and time in general practice.

Waiting to see the doctor is normalised in healthcare practice, creating spaces of embodied stasis known as 'waiting rooms'. These spaces have a particular sociopolitical dynamic, and are perceived differently by those waiting (patients) and those administering the wait (receptionists). This paper draws on 11 focus group interviews undertaken in both a metropolitan and a regional centre in New Zealand in 2013-14. Our objective in this paper is to explore the contrasting perceptions of people from socially marginalised groups and general practice receptionists about the dynamics and experience of these waiting spaces. We examine the bounded nature of these under-examined spaces and highlight parallels with other sites of waiting in contemporary urban society. Drawing on narrative data, we conclude that this spatio-temporal context need not be one of constraint. Rather, there are ways in which the boundaries of this space can be permeable and potentially enabling to those required to pause in the process of enacting patienthood.

Methods - Qualitative
Health services
Vulnerable populations

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Vacant Lot Redevelopment for Population Health Improvement

In the United States, neighborhood characteristics linked with poor health often exhibit spatial patterns that echo historical processes such as residential racial segregation and economic disinvestment. Unfortunately, many neighborhood-level risk factors, including poverty, are not easily addressed through prevention, limiting the ability to translate knowledge about neighborhood risk factors into population health interventions. To maximize population health impact, researchers should identify modifiable neighborhood features that can be optimized to reduce disease and injury burdens and enhance health equity. In many U.S. cities, neighborhoods characterized by disadvantage also have higher densities of vacant land parcels. Thus, vacant land redevelopment efforts supported by innovative municipal projects and zoning policies provide an opportunity for the spatial distribution of salutogenic features that may combat long standing patterns of disadvantage. We present a method for the development of a vacant land inventory system that provides a foundation for future vacant lot redevelopment efforts in Milwaukee, Wisconsin, USA. The method integrates existing policy, parcel, and property data with observational methods in a geographic information systems framework. The inventory can be used to prioritize redevelopment strategies, target vacant parcels with particular characteristics, and evaluate redevelopment efforts. The system also provides a foundation for future work, including participatory GIS, to engage community residents in characterizing current and potential uses of vacant land. These activities will ensure that vacant lot redevelopment is well-informed by community needs and preferences to maximize and sustain population health impact.

Urban
Neighbourhood
Population health

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Does neighbourhood deprivation alter genetic influence on body mass?

Most research into the role of gene-environment interactions in the etiology of obesity has taken environment to mean behaviours such as exercise and diet. While interesting this is somewhat at odds with research into the social determinants of obesity in which the focus has shifted away from individuals and behaviours to the types of wider environments in which individuals live, which produce these behaviours. This project combines these two strands of research by investigating how the genetic influence on body mass index (BMI), used as a proxy for obesity, changes across different neighbourhood environments measured by levels of deprivation. Genetics are incorporated using a classical twin design with data from Twins UK, a longitudinal study of UK twins running since 1992. A multilevel modelling approach is taken to decompose variation between individuals into genetic, unique environmental and shared environmental components. Neighbourhood deprivation is found to be a significant predictor of BMI ($p < 0.01$) after controlling for individual characteristics and for the entire sample a heritability of 0.75 is estimated. This heritability estimate is shown, however, to be higher in more deprived neighbourhoods and lower in less deprived ones and this relationship is statistically significant ($p < 0.05$). While this research cannot say anything about the mechanisms behind the relationship it does highlight how the relative importance of genetic factors can vary across different social environments and therefore the value of considering genetics when studying the social determinants of health.

Social determinants of health
Neighbourhood
Methods- quantitative

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Crisis mobility and mental health: the case of missing persons

Geographies of mental health have arguably neglected the crisis mobilities of people with mental health problems. Drawing on a recent UK ESRC research study on missing persons, this paper outlines different kinds of crisis mobility including absconding from mental hospital, the experience of 'going missing' and return. Using the voices of people reported as missing and who returned, the paper draws out the drivers for missing episodes and reveals insights into the experiential geographies of absence. With an estimated 80% of UK missing person's cases relating to mental health conditions, the implications for health and policing services are profound. The paper concludes with a summary of the lessons that might be learnt for supporting people who are vulnerable to crisis mobility.

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Analyzing Longitudinal Food Security in an Indigenous African Population: Comparing Determinants And Predictors From Quantitative And Qualitative Methods

Mixed methods are often used to support or strengthen research findings, yet results can produce very different narratives. Quantitative and qualitative community based research methods were employed to analyse how seasonality impacts food security and nutritional status among the Batwa, an Indigenous Pygmy population in Southwestern Uganda, to better implement appropriate intervention strategies. Longitudinal census survey data were collected between Jan 2013 – April 2014 and qualitative interviews and mental mapping took place in summer 2014. These data were collected in Kanungu District, Uganda in partnership with the Indigenous Health and Adaptation to Climate Change (IHACC) research group, the Batwa Development Program, and the Bwindi Community Hospital. The results of the quantitative longitudinal analysis using the USDA household food security model indicates that there is no seasonality and model building was only marginally successful in finding significant predictors and determinants of food security among the Batwa. The quantitative analysis also identify an overall trend towards increased food security overtime. The qualitative analysis results however, indicate that seasonality is significant predictor of food security status and self-identified vulnerabilities within communities were validated by key informant interviews. This variation in results supports the use of mixed methods in research, especially when dealing with vulnerable populations and identifying culturally appropriate strategies and entry points for intervention implementation.

Aboriginal/Indigenous Health

Methods- mixed

Vulnerable Populations

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Life course, place and health: incorporating place into life course epidemiology

Many studies have demonstrated that individual circumstances throughout life influence subsequent health and well-being outcomes. Health is affected by the accumulation of social and economic advantages over an individual's life but, importantly, also that there are also critical periods during which exposure can affect subsequent health. Yet researchers interested in the relationships between health and place have been slow to incorporate a life course perspective. This study considers the feasibility of incorporating place-based measures into a life course epidemiology framework. The suitability of a number of historical and contemporary data sources were considered including city plans, paper maps, and tabular land use data. Using Geographical Information Systems, a variety of measures were created for all neighbourhoods across the Edinburgh region of Scotland at various time points during the past 100 years. These measures were appended to data on the individuals in the Lothian Birth Cohorts of 1921 (n=550) and 1936 (n=1091). By integrating spatial data from various sources it was possible to develop neighbourhood measures at various time points over the past century. The challenges of obtaining historical data to examine the spatial history of neighbourhood development include problems with what is represented, the spatial and attribute accuracy of data, and the purpose for which the data were collected. In conclusion, to date few longitudinal studies have considered place-health relations which has significantly hindered understanding of how places enable or constrain health. The findings emphasise the potential for utilising historical data to address this analytical gap.

Life course
Environment and health
Historical data

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Coping with household water scarcity in the savannah: Implications for health

Even as millions live without reliable access to water, very little is known about how households cope with scarcity. The aims of this research were to: 1) understand aspects of water insecurity in three rural villages in southwestern Uganda; 2) examine differences by demographics and type of source; 3) assess relationships between different factors related to water security; and 4) explore coping strategies used. Health implications and lessons learned that relate to future climate change are discussed.

Demographic data, water accessibility and coping strategies used were recorded using a survey.

Descriptive statistics were calculated and Spearman's rank correlations were calculated between: self-reported level of access, walking minutes to source, ranked ownership of source, and source accessibility during the past two weeks. Changes in water source type across seasons and demographic and access measures by coping strategies were examined.

Almost half of the households relied on seasonal water sources. Of those accessing 'permanent' sources, >30% experienced inaccessibility within the past two weeks. Self-reported better access to water was associated with proximity and to some degree with the source being more public or shared. Those without access to public sources tended to migrate as the primary coping strategy. Water sharing and reciprocity appears crucial between wealthy and poor households, however, those from outside ethnic groups appear to be partially excluded. Middle income households followed by the poorest had the largest reliance on purchasing water to cope. These findings underscore how access to water resources, particularly in times of insecurity, involves social networks.

Water quantity

Coping

sub-Saharan Africa

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Madhouse, or 'the regions below'

'Madhouses' really existed, or at least institutions formally named 'madhouses' existed as one part of the overall landscape of (what passed for) mental health care in Britain, from at least the 1600s through into the 1800s. Comprising an early private sector in sheltering, caring for and occasionally treating 'mad people', and ranging from tiny operations with barely a handful of inmates through to large businesses taking in hundreds of unfortunates, these madhouses possessed a noteworthy but liminal presence in the social and cultural history of Britain at this time. They were also frequently the scene of serious abuses, from wrongful confinement to brutal ill-treatment in 'the regions below' (as one source named the basement rooms of some London madhouses). It might be argued that these madhouses mark the dark sub-stratum underlying all institutionalised mental health care regimes, the limit case of what lurked beneath the more enlightened lunatic asylum/mental hospital regimes arising in Britain (and elsewhere) through the 1800s onwards. This paper will hence bring the 'madhouse system' into the light for critical scrutiny, tracing its diverse geographies (regional, urban-rural, neighbourhood, infrastructural) and exploring the claims to be made about its kinship with those forms of institutionalised mental health care which are much more familiar to health care geographers and cognate scholars, policy-makers and practitioners.

Mental health care
Madness
Asylums

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Living with Ménière's Disease: Understanding the impact of Ménière's in Everyday Life

Aims and objectives: This presentation will discuss how patients and their significant others experience and adapt to the onset and progression of Ménière's Disease, considering the impacts of this chronic illness on their everyday lifeworlds. In doing so, it will draw on the findings of an in-depth exploratory project, funded by the UK Ménière's Society, examining the mental health impacts of this long-term progressive inner ear disorder.

Methods: The presentation will present findings emerging from the second phase of this project, involving 16 in-depth interviews with Ménière's patients (including eight who received their diagnosis relatively recently and eight who were diagnosed over six years ago) and 16 interviews with people identified by each patient as being central to their everyday management of the illness (e.g. friends, family). Narrative analysis of the interview data will enhance understanding of the ways in which each participant's sense of self and personal life trajectory shape their experiences of, and responses to, the illness over time.

Conclusions: Key insights into the changing geographies of participants' lives following the onset of illness will be discussed, focusing specifically on their complex embodied emotional geographies. Efforts will be made to highlight the shifting uses of, and meanings attributed to, previously taken-for-granted everyday spaces (social and physical) as participants learn to renegotiate and manage their changing bodies with the unpredictable progression of Ménière's disease.

Mental health

Chronic disease

Qualitative

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The missing link - the role of primary care in global health

This presentation provides an overview of the role of primary care in the context of global health. Universal health coverage is a key priority for WHO and its member states, and provision of accessible and safe primary care is recognised as essential to meet this important international policy goal. Nevertheless, more than 3 decades after Alma Ata, the provision of primary health care remains inadequate, indicating that primary care has not received the priority it deserves, in many parts of the world. This is despite the proven health benefits that result from access to comprehensive primary health care. We highlight some examples of good practice and discuss the relevance of primary care in the context of health equity and cost-effectiveness.

Primary care
Global health
Universal health coverage

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Care in the Commons? Repositioning the Geographies of Care in a Post-Service Landscape

Community Care has always been a mixed economy. Nonetheless, a discernible state-provided care landscape materialised in the form of home help, day care centres, and residential care homes from the late 1970s – 2000s. Since this time, personalisation and the associated ‘choice agenda’ has become centre stage along with an erosion of state support in the wake of austerity. Thus the paper asks, has care returned to the commons? Is care becoming more fragmentary, dis-located, dissolved? Is care withdrawing from service places? Much evidence suggests as much, with the emergence of localism, a focus on a ‘good life’ in the community and ‘preventative voluntarism’. The paper considers the implications for social care users, the service sector as well as researchers in terms of methodological challenges and new frontiers in human geography.

Disability
Neighbourhood
Methods - Qualitative

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Where are older adults active? A spatial analysis of walking patterns in Vancouver, BC

Objective: Parks and greenspace are health-promoting city spaces. We aimed to characterize the types of areas where older adults are active within an urban neighbourhood.

Methods: We used data from 180 participants (≥60 years) in the Active Streets, Active People Senior study, who lived in Vancouver's West End. Participants wore an accelerometer (GT3X+, 1 sec) and GPS (Qstarz, 1 sec) for seven days. Accelerometry and GPS data were time-aligned. Using ArcGIS 10.1 (ESRI), participants' trips were manually identified and assigned a mode based on distance, speed and physical activity level (moderate-to-vigorous physical activity (MVPA), Freedson cut-points). Points for all trips (going from place-to-place) were joined spatially to land use data (DMTI). We calculated the proportion of all points and points of MVPA intensity in each land use category for the West End and downtown area (residential (58%), resource and industrial (22%), parks/greenspace (10%), and other (10%)) and Stanley Park (100% parks/greenspace).

Results: Half of all travel recorded on the GPS-derived trips was walking. Nearly a third of the walking (31%) occurred in parks and greenspaces, while far less of the car (13%) and transit (7%) travel did. In these walking trips 67% of the time was MVPA. When walking in greenspace areas, 74% of the time was in MVPA, compared with 64% MVPA in other land use categories.

Conclusion: Walking is an important source of daily physical activity in the older adult population.

Greenspaces are important city spaces that appear to yield high levels of health-related physical activity.

Aging

GIS

Population health

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Gendered impacts of cyclone disasters on accessibility to healthcare facilities in the coastal region of Bangladesh

Environmental disasters have gendered impacts on accessibility to healthcare facilities, and may be more severe for female victims. Inadequate health care facilities and disrupted transport after the cyclone disasters experienced in Bangladesh make healthcare even more difficult for the women already limited by social determinants such as poverty, dependency on men and family attitudes to women's health. Relative advantage for some groups of women, in terms of income, educational status, position in the family and urban location may help to reduce the risks increasing awareness in health and healthcare facilities but still they are deprived of decision-making power regarding their own healthcare. This paper reports field-based research which found the above determinants increased the suffering of female victims of cyclone Sidr in the coastal Barguna district of Bangladesh in 2007. However, very little beneficial change in these determinants has been observed in the following years. Initiatives of the Government and NGOs have added a few enhancements to healthcare facilities and public education, but these have made little difference to access to healthcare because of social structures and attitudes in Barguna, leaving women's health just as vulnerable to cyclone disasters. These deeply rooted social determinants should be considered more thoroughly for the effective implementation of disaster management plans reducing women's vulnerability to future cyclones.

Access to Healthcare
Gender
Methods-qualitative

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Residential segregation and urban mortality in France (2004-2008)

Inter-urban health disparities have not been widely explored. This scale of analysis is not the most favoured in explorations conducted on links between urbanisation and mortality while major population is concentrated. This approach implies to take into account the different levels of organisation of urban space (regional, city and infra-urban) in order to model inter-urban differences.

One of the important characteristics of urbanisation concerns socio-spatial segregation in the city. With few exceptions, segregation is often much greater than the size of the city is important. As societies become more urbanized, these tend to reinforce segregation. We try to analyse the association between level of socio-spatial heterogeneity within each urban area, taking into account spatial distribution of income and different social indicators, and the level of mortality of each city.

We found a positive and significative association with the level of socio-spatial heterogeneity and the level of mortality even after control on level of deprivation of each city. However this association is very thin and not observed for different causes of death. Regional situations are varied and it's difficult at this step to interpret this association. Analysis integrated housing and urban policies and modalities of development of each cities are necessary to complete this analysis.

Urban health inequalities

Spatial analysis

Population health

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Does Pregnancy Intent Influence Malaria Prevention Behaviour? : A Malawi Case Study

In endemic regions of sub Saharan Africa, malaria and HIV pose major public health concerns. Together, malaria and HIV increase the potential of co-infection, confounding detrimental health consequences, especially among pregnant women and children. Given the major public health concern posed by malaria, the World Health Organization recommends the use of insecticide-treated nets (ITNs) to prevent malaria and reduce related mortality. This paper seeks to examine how pregnancy intent, specifically unintended pregnancy influences malaria prevention behaviour during pregnancy. While ITNs are freely distributed, little is known surrounding the influence of unintended pregnancy and malaria prevention behaviour. We consider certain individual, household, and socioeconomic variables, which may influence the likelihood of utilizing an ITN. Demographic Health Survey Data collected in 2010 was used for analysis. The sample (n=527) of women were pregnant and between the ages of 14-29 years. We used a binary logistic regression to predict the factors that influence a women's ITN use. While controlling for theoretically relevant covariates, our results reveal that despite the provision of free ITNs, pregnancy intent, partner support and spousal abuse are critical in a women's ITN use during pregnancy. The results highlight a promising area for interventions that would further goals of family planning, malaria prevention, and gender equity.

Health behaviour
Sexual Behaviour
Policy

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The Housing Regeneration and Health Study

Background: A social housing improvement programme is currently investing £204M (US\$308M) by 2016 to upgrade housing stock in order to meet national housing quality standards. Residences may receive new bathrooms, kitchens, heating, windows and doors, and insulation.

Design and Methods: Using housing and regeneration data from the Local Authority and an anonymised databank (Secure Anonymised Information Linkage, SAIL) we have established a residence-based population cohort. Emergency hospital admissions (cardiovascular and respiratory conditions) will be counted over time before and after renewal work is completed. Different comparator groups will be used to adjust for trends over time.

Main Findings: We have linked housing data to individuals and their health data using a novel data linkage system. Baseline data show there were over 9,000 residences housing more than 18,000 residents at the start of the renewal work. Residents who migrate within the social housing cohort may be retained using data linkage methods. This presentation will discuss attrition using data linkage compared to conventional survey methods. It will also discuss the limitations of routinely collected data versus data available in a tailored survey.

Conclusions and Implications: Improvements in residents' health are anticipated but good quality evidence is limited and often affected by attrition biases. Routinely collected data in a privacy-preserving data linkage system may help to reduce bias by minimising attrition. The evaluation of the renewal programme has been funded by the National Institute for Health Research, Public Health Research Programme, United Kingdom. (<http://www.nets.nihr.ac.uk/projects/phr/09300602>).

Environment and health

Chronic disease

Epidemiology

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Disease environment and access to care: childhood pneumonia risk in the Philippines

Pneumonia is a leading cause of childhood mortality worldwide, responsible for approximately 18% of deaths. Developing countries bear a majority of the burden of pneumonia morbidity and mortality. The introduction of several new pneumococcal conjugate vaccines (PCVs) has provided a mechanism by which to achieve significant mortality reduction. However, to understand the populations in most need of vaccination, it is vitally important to understand the factors which place children at greater risk for contracting the disease. This study is one of the first to examine the spatio-temporal dynamics that impact pneumonia risk among children <2 years of age in a developing country. We used data from a PCV trial linked to the location of each child's household of residence. Cox hazard regression models which adjust for spatial clustering of children were used to examine whether child and family characteristics, access to health services, and disease environment affected risk for contracting pneumonia. We find that: 1) overall risk of pneumonia decreases over time as a larger proportion of infants are vaccinated (reduction of ~4 cases per 1,000 children per year; $p < 0.001$), 2) greater distance to health services appears to increase the risk of diagnosis with severe pneumonia ($HR = 1.95$; $p = 0.01$) but decrease the risk of diagnosis with non-severe pneumonia ($HR = 0.59$; $p < 0.001$), and 3) a greater number of pneumonia cases in the surrounding environment increases risk of pneumonia ($HR = 1.02$; $p < 0.001$). These results provide valuable insights into the role of health services and disease environment in pneumonia risk among children.

Infectious Disease
Health services
Global health

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Accessing MRI Services in Ontario, Canada: Where Theory Meets Practice

The Government of Ontario has made reducing wait times for magnetic resonance imaging (MRI) services a priority as part of its Ontario Wait Times Strategy. The goal of the strategy is to reduce wait times for non-emergency MRI services to no more than 28 days across the province regardless of where people live. In its own words, the goal of the Government of Ontario is to “create a system of accountability through transparent reporting of wait time information.” To achieve this goal, a web site was created by the Government of Ontario which allows anyone to check the wait times of public hospitals nearest to them or indeed any public hospital which provides MRI services.

“Accountability” and “transparency” are theoretical concepts laden with normative values. Reducing wait times to no more than 28 days is a practical goal which implies a theory of equity. The purpose of this paper is to examine critically how theory and practice are not what they appear to be through an analysis of where MRI services are located in Ontario and the failure of most hospitals to achieve the wait time target of no more than 28 days. The paper is part of a larger project on accessing MRI services in Ontario and speaks to a key question of how social justice is defined in theory and practice in health geography.

Access to health care
Social justice
Canada

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Public Health and Wellbeing impacts of city policies to reduce climate change: findings from the URGENCHE EU-China project

The primary objective of this EU FP7 collaborative project was to quantify the co-benefits of policies to mitigate climate change in urban areas whilst simultaneously improving citizen's health and well-being. Whilst there is a large literature on Health Impact Assessment (HIA) for traditional mortality and morbidity health outcomes, rarely has well-being been addressed. In this paper we seek to illustrate the progress the URGENCHE project has made in these areas, both theoretically and substantively. Our developed methodological framework considered the impact of city policies in the domains of urban planning, building infrastructure and transport, their impact on greenhouse-gas emissions, and subsequently on human health and well-being. The GIS-based approach adopts the full-chain health integrated assessment approach. Transport models were used to estimate impacts of modal change (e.g. car to public transport) leading to a change in emissions of air pollutants and greenhouse gases. Using a set of atmospheric models the concentrations of pollutants is estimated. Based on exposure-response relationships derived from epidemiological studies, health impacts were calculated. Seven case-study city assessments were carried out covering a range of urban size and form, climatic conditions and political systems: two in China (Suzhou and Xi'an) and five in Europe (Kuopio, Finland; Rotterdam, The Netherlands; Stuttgart, Germany; Basle, Switzerland; and Thessaloniki, Greece). Real city policies were evaluated for both traditional respiratory and cardio-vascular outcomes and wellbeing effects in the domains of transport, energy and housing. Overarching comparisons will be made between the relative contributions of the different domains and between continents.

Environment and Health
Policy
Wellbeing

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A Land Bank Greening Program as a Blight Elimination Tool in a Shrinking City

Property abandonment and blight pose intractable problems for shrinking cities. Blight and the resulting negative perceptions of neighborhoods not only stymie economic opportunities for low-income and minority residents who are disproportionately exposed to these phenomena, but contribute to higher rates of aggravated assault, gun violence, vandalism, and sedentary lifestyles. Thus the remediation of blight is a public health and economic development issue of great concern. In many shrinking cities, greening programs and other strategies emanating from land bank authorities provide the opportunity to creatively and effectively address these issues. This study examines the impact of a vacant land greening program in the shrinking Rust Belt city of Flint, Michigan, through maintenance reports from 54 community organizations and in-depth interviews with 33 of these groups. We employ broken windows theory and incivilities theory to understand how interrupting the cycle of physical disorder can resolve attendant public health and safety issues. We answer the call of recent scholarship to understand both how residents perceive and make sense of blight, and whether greening programs are effective at reducing social disorder. Participants overwhelmingly supported the notion that the program was effective at addressing blight, building community pride, and increasing social capital, supporting the idea that greening programs can correct the issues of physical disorder suggested by broken windows and incivilities theories. These results are directly applicable to the development of future blight elimination programs throughout the region, as county authorities continue to seek strategies to improve quality of life in shrinking cities.

Blight elimination
Greening program
Shrinking cities

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Population Health Index: A tool for European policy dialogue

Health inequities have been increasing in Europe, particularly in a context of an ageing society and economic crisis. In countries with different levels of infrastructures and health system preparedness, there is a pressing need to evaluate and select policies with a potential to improve population health and address health inequities. To respond to this challenge, comprehensive tools for evaluating population health, either globally, in multiple dimensions and in multiple geographical levels, are required.

In this presentation we explain the research design under the EURO-HEALTHY research project, an EU-funded project under the Horizon 2020 program. The main goal of EURO-HEALTHY is to advance knowledge of policies that have the highest potential to enhance health and health equity across European regions. To achieve this a Population Health Index will be built, being informed by evidence on the relationship between multiple determinants (e.g. demographic, social, economic, environmental, lifestyle, and health care) and health outcomes in the past 15 years; and with the index being based on theoretically sound methods, and having a multicriteria structure that captures how different factors contribute to the health and wellbeing of European population. The construction of the population health index will follow a socio-technical approach, integrating the technical elements of a multicriteria value model and the social elements of interdisciplinary and participatory processes. The index will be used to foresee and discuss the impact of policies on population health and health equity. The index will be applied to evaluate the population health in 273 European regions (covering populations of 28 EU countries) and 9 selected pilot metropolitan areas, providing a basis for policy dialogue.

Health equity
Population health index
Public policies

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Quality of Life in Informal and Formal Settlements in Urban Environment. A GIS-based analysis in Bahir Dar, Ethiopia.

Health, wealth, education and well-being are essential aspects to value the quality of life. The existing approaches to measure the quality of life are based on objective and on subjective indicators. To measure well-being the WHO-Five Well-being Index (WHO-5) was developed.

Objective of this study is to compare the well-being of two groups of residents in two different settlements. In Bahir Dar, Ethiopia two test areas, one informal and one formal settlement, were chosen and compared with each other. By secondary data and mapping, the infrastructure e.g. traffic connection, supply with every day goods, schools, health facilities etc. of the test areas and the immediate environment were recorded. All data were implemented in a GIS to apply an accessibility analysis. Within every test area interviews were made based on a random sample with the goal to identify the well-being, based on the WHO-Five Well-being index. Three key questions were focused on: firstly, is there a correlation between the basic supply and the satisfaction respectively the well-being of residents within a test area, secondly, is there a difference between informal and formal settlements in urban environment in Bahir Dar considering the well-being of the population and thirdly, which contribution can be made by using GI-Systems for the analysis? Based on the accessibility and correlation analysis conclusions were made. At a first glance, the analysis results show a weak correlation between objective parameters and individual assessments.

Well-being

GIS-based analysis

Africa

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Mapping Stresscapes: Geospatial analysis of emotional stress in urban environments

How does the environment structure an individuals' emotional stress, and how does this relationship change across sociodemographic groups (e.g., by socioeconomic status, gender)? This presentation will describe the conceptual framework, study design and preliminary findings of a project investigating how our emotional state varies over space and time, and how emotive response is spatially structured, in Toronto, Ontario and London, England. Examples of how linguistic and geospatial analysis are combined in our study to sense emotional stress and map dynamic stress landscapes, or stressscapes, will be given.

Developing a better understanding of the linkages between place and emotional stress is particularly challenging in part because cognitive processes and conceptual place are both complex, dynamic and multi-faceted and are mediated by a confluence of contextual, individual and social processes. There is evidence to suggest that social media produced by individuals in situ and in near real-time may provide novel insights into the nature and dynamics of individuals' responses to their surroundings.

We measure emotional stress by mining social media streams using computational linguistics and natural language processing methods, and recontextualizing social media expressions through spatial modelling and integration with contextual geospatial datasets (e.g. traffic congestion, urban density, land use, transit use). The project includes the development of ontology and computational tools for sensing and mapping emotional expressions from social media to focus on emotional stress; validating the tool as a measure of emotional and other forms of stress; and ultimately, using geospatial analysis methods to define stressscapes.

Environment and health
Mental health
Methods – mixed

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An Institutional Ethnography Inquiry into the Management of Anaphylaxis for Adolescents at-risk in Ontario Schools

In Ontario, Sabrina's Law mandates that all school boards have anaphylaxis policies in place to protect at-risk students. Despite this law research has shown that within schools, the management of anaphylactic allergies is still challenging and at-risk students report feelings of anxiety and risk of an allergic reaction. While there are anaphylactic policies in place, research has shown that at risk food allergic students feel anxious and fearful. The purpose of this study is to explore how the everyday experiences of adolescents at risk of anaphylaxis is mediated and shaped by exterior forces (e.g. Sabrina's Law and school board policies) and secondarily to map how these forces shape and affect the everyday experiences of managing their allergies. The study employed Institutional Ethnography, a methodology that begins in the everyday experience of a particular standpoint (at risk adolescents) and then moves outwards to examine the social organization of anaphylaxis management in schools settings. Data was collected through in-depth interviews with at-risk students and key informants, as well as through document analysis. The preliminary findings of the study show how adolescents at risk manage anaphylaxis within their school settings. The research findings provide insights that may inform how government legislation and school board policy affect at-risk students.

Allergies

Adolescents

Policy

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The relationship between tobacco and alcohol outlet density and neighbourhood deprivation in Scotland.

Tobacco and alcohol use continue to pose significant public health challenges and are leading causes of preventable morbidity and mortality worldwide. Combined tobacco- and alcohol-related illnesses are estimated to account for 12.5% of all deaths globally. Strong socio-economic gradients in consumption of, and harm from, both substances persist. One possible factor contributing to the social gradient in tobacco- and alcohol-related harm may be greater availability of tobacco and alcohol in more socially-deprived areas. A higher density of tobacco and alcohol outlets is not only likely to increase supply but also to raise awareness of tobacco/alcohol brands, create a competitive local market that reduces product costs, and influence local social norms relating to tobacco and alcohol consumption. To date, research has tended to explore smoking and alcohol environments separately. This is problematic since alcohol and tobacco outlets often co-locate, and evidence suggests that related behaviours also co-occur. Using data collected from Liquor Licensing Boards in Scotland the Scottish Tobacco Retailers Register; this paper examines the association between the density of alcohol and tobacco outlets and neighbourhood-level income deprivation across Scotland. There was a positive linear relationship between neighbourhood deprivation and outlets for both tobacco ($p < 0.001$) and off-sales alcohol ($p < 0.001$). Policymakers should consider such gradients when creating tobacco and alcohol control policies. The potential contribution to public health of reducing the physical availability of both alcohol and tobacco products should be examined in developing broader supply-side interventions.

Tobacco
Alcohol
Inequalities

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Is green space related to the mental health of children in Scotland?

Mental health in childhood has important short- and long-term implications for the individuals, their families and society. Exposure to green space has been linked to improved mental wellbeing in adults, but few studies have considered this relationship in children. We investigated whether the mental health of six year olds in Scotland was related to residential proximity to and/or visits to green space, and assessed the role of physical activity as a potential causative pathway. Data for 3657 six year old children in wave six (2010/2011) of the Growing Up in Scotland birth cohort were obtained. Outcomes were domain scores from the Strengths and Difficulties Questionnaire (SDQ). The relationship between carer-reported proximity to green space and each outcome was modelled, and the mediating effects of carer-reported green space visiting frequency and physical activity levels were then assessed. The proximity of green space was largely unimportant, but the frequency with which the space was visited was associated with hyperactivity, peer problems, prosocial behaviour and overall difficulties. Physical activity levels did not mediate these relationships, suggesting that other pathways – such as restorative experiences or social activities – were more important. For improved childhood mental health it is insufficient to live close to green space – our results suggest the spaces must be visited. Even occasional visits (at least monthly) may result in better outcomes, although more frequent visits (at least weekly) may be required to promote social development.

Children

Mental health

Methods – quantitative

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Taking health geography out of the academy: Measuring academic impact

Impact is an academic buzzword that has made fundamental changes to the research landscape. In the UK impact accounts for 20% of an academic department's Research Excellence Framework (REF) result. REF measures the 'quality' of an institutions research, with the results linked to the distribution of higher education funding. In this context impact is defined as research that has an effect on the economy, society, culture, public policy or services, health, the environment or quality of life, beyond academia. As health geographers our research may naturally lend itself to generating impact, however, we should reflect upon what this means for our research and consider ways in which impact is measured. It is no longer deemed sufficient to report papers published, or presentations made, rather we must now focus on whether our research is linked to change, or citations in the policy-related decision making process. This model of impact is based on a premise that there is a direct, linear relationship between academia and policy. Often times this is not the case and our influence on policy may be much more gradual and, at times, invisible. In our recent work on alcohol and tobacco environments in Scotland we worked alongside non-academic organisations; Alcohol Focus Scotland (AFS) and Action on Smoking and Health in Scotland (ASH). Here we reflect on this experience and on the challenges of moving beyond 'business as usual' public participation towards the measurement of outcomes. In doing so we critique both the impact agenda itself and the way in which such impact is measured.

Impact

Public participation

Public policy

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Spatio-temporal analysis: predicting the impacts of climate-induced droughts on children's respiratory health in the Amazon

Natural disasters are increasing worldwide, a process sometimes attributed to Climate Change. According to the Brazilian Atlas of Natural Disasters, between 1991 and 2010 there were approximately 1,963 natural disasters in the Brazilian Amazon, 78% of which have occurred in the last decade. Previous studies have demonstrated statistically significant associations between droughts and their associated conditions, with increases in respiratory health disorders in the Amazon. However, to date, this work has yet to be developed into a predictive analysis for future impacts on human health. This is of significant importance due to evidence indicating increases in droughts in recent years, and Global Climate Models (GCMs) predicting a greater probability of droughts in Amazonia by the end of the 21st century in response to climate change.

Using satellite-derived environmental data and geospatial socio-economic indices, combined with modelled data for future climate and environmental scenarios, we are able to estimate the potential impacts droughts will have on children's respiratory health under future climate scenarios. A spatio-temporal Generalised Linear Mixed Model (GLMM) is used allowing for predictions to be derived in space and time. Using the GLMM, we can produce probabilistic location estimates of where respiratory disease disorders are above a specific threshold during droughts under future climate scenarios in the Brazilian Amazon. This type of drought-health preparedness allows decision makers to plan for greater demand on health services during drought periods, and if need be establish hospitals or primary care units in critical areas.

Environmental health
Methods- quantitative
Spatial analysis

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Size and Scale: Implications for the relationship between land-use and active transportation

Purpose Recent literature urges to correct for the area of census units in the land-use mix (LUM) index, as it has been suggested that using a unit that varies in size could dilute the association between LUM and active transportation (AT). This study seeks to examine the influence of the size of census units on the relationship between LUM and taking AT to work. It distinguishes itself from previous research by correcting for the size of census units at several geographical scales: the census block, block group and tract. **Methods** The dependent variable active transportation to work was obtained from the 2010-11 Massachusetts travel survey. The independent variable LUM was measured using the 2005 land-use file from the Office of Geographic Information of Massachusetts. Original and area corrected LUM was measured for the residence and the workplace at three different scales of analysis: the census block, bloc group, and tract. Multilevel binary logistic regression models were used to model the probability of taking an active mode of transportation to work. **Results/findings** Correcting for area strengthened the relationship between LUM and active transport at all scales of analysis. The relationship also strengthened as the scale of the census unit increased (was weakest at the block level and strongest at the tract level). Residential land-use mix was found to be a stronger predictor of active transport than workplace land-use mix. **Conclusions** The results illustrate the dependency of the LUM active transport relationship on the size and scale of the unit of analysis.

Active transport

Land-use mix

Geographical scale

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"I am from nowhere": Identity and health perceptions of skilled immigrants

Since the introduction of a point system for immigration selection, skilled immigrants from all around the world have come to Canada in search of better job opportunities, better income, better social security, better quality of life, and most importantly, a brighter future for their children. However, studies have shown that a significant number of skilled immigrants end up working in occupations that do not utilize their skills. As a result, skilled immigrants not only lose their skills and expertise, but also their dignity, social status, quality of life and health status. Therefore, understanding those immigrants' perceptions of their social status and health condition is important for population specific health care policy as well as for a productive immigration policy. To examine the effects of the under-employment of skilled immigrant workers a study based on a survey of 146 under-employed skilled workers and 19 in-depth personal interviews were conducted with skilled immigrants working as cab drivers and convenience store worker in the city of Ottawa, Ontario, in 2014. The main objective of the study is to understand health and social status of those immigrants who are working in an occupations that do not match their qualifications, skills and experiences. In this paper, we report on the results of the in-depth interviews to understand immigrants' perceptions of their identity in a new society, and to understand their current mental and physical health status. We conclude with some suggestions about ethical implications of an immigration system that recruits skilled immigrants but fails to match their skills with meaningful employment.

Immigrants

Health

Qualitative research

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Change in drug treatment coverage among people who inject drugs in 90 large metropolitan areas in the USA, 1993-2007

Objective: To investigate predictors of change in and level of drug treatment coverage (1993-2007) for people who inject drugs (PWID) in 90 US metropolitan statistical areas (MSAs). **Methods:** Drug treatment coverage for each year was measured as the proportion of PWID in drug treatment, as calculated by treatment census and entry data, divided by our estimated number of PWID in each MSA. Independent variables suggested by the Theory of Community Action were lagged by three years and analyzed as predictors of later change in treatment coverage using mixed-effects multilevel models. **Results:** Mean coverage was low in 1993 (6.7%; SD 3.7), and in 2007 (6.4%; SD 4.5). Growth curve analyses suggested that the optimal functional form for the relationship between time and treatment coverage is quadratic, reflecting curvilinear change in coverage from 1993-2007. Multivariate results indicate that baseline unemployment rate, baseline median household income, and baseline public health and social work workforce were positive predictors of mean coverage levels, and that baseline HIV prevalence among PWID predicted lower coverage trajectories over time. Negative interaction coefficients indicated that change over time in both unemployment and racial poverty disparities predicted variation in coverage trajectories. **Conclusion:** Despite efforts to increase treatment coverage for PWID, coverage has not increased. Resource availability, and change in unemployment and racial poverty disparities at the MSA level are important predictors of 1993-2007 treatment coverage. These findings suggest that new ways must be found to increase drug treatment coverage for PWID in spite of economic changes and belt-tightening policy changes.

Health Services

Quantitative

Vulnerable Populations

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What is needed: more ambulances, emergency hospital beds, or family doctors? A spatial analysis of non-emergency use of emergency services in Nova Scotia

The demand for emergency health services has seen a steady increase in Nova Scotia in the last decade, despite a small population increase. Ageing of the population is likely an important factor, and the need to increase the capacity of ambulance services as well as emergency departments seems inevitable. However, some of the pressures in demand for these services may be mitigated through a reduction in the use of emergency services by those who could be (better) serviced outside of an emergency service setting, particularly within the ageing population with chronic conditions. Planning of the future emergency healthcare services, therefore, also needs to consider family physician accessibility. We present our initial findings from the investigation for spatial patterns in non-emergency use of ambulance services (NEAS) across Nova Scotia. We calculated the rates of NEAS by geographical location (community) of patient pick-up and service user age using ambulance transportation data collected by Emergency Health Services Nova Scotia for 2008-2012. NEAS event was identified using the Canadian Triage and Acuity Scale (CTAS). The rates of NEAS in rural areas were twice as high as those of urban areas regardless of users' age. However, the rates within the older age group (65+ years) were the highest of all age groups in rural areas, while the youngest group (<25 years) had the highest rates in urban areas. There was a regional clustering of NEAS where there was low accessibility to family physicians, but not all areas with low accessibility or high proportion of older population had high rates of NEAS use. The pressure to achieve higher cost-effectiveness of primary health care through, for example, regionalization of hospitals, is becoming paramount in healthcare services planning. Further investigation is urgently needed to elucidate the spatial relationships between family physicians, walk-in clinics, and emergency department capacity (e.g., number of beds) in order to better understand a more effective way to configure spatial allocation of these related services within the larger system.

Health Services
Spatial Analysis
Emergency Medical Systems

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Physical activity among school children in northern England and its relation to material and social conditions in their neighbourhoods

This research explores how physical activity (PA) among school children relates to the material and social conditions within their residential neighbourhoods. It develops a conceptual model of theoretically relevant associations, which are tested empirically within the ESRC UK funded MOVE research project (<http://www.move-project.org.uk/>) that investigates Physical Activity and Wellbeing in Schools. The project involves over 60 participating schools and has yielded information on a large sample (in excess of 1,400) of children aged 11-12 years. The project has compiled small area indicators for the places where these children live, drawn from the latest (2011) population census and other sources. Here, we report findings from analysis of the relationship between individual physical activity and neighbourhood variables.

Adolescents/Children

Spatial analysis

Social determinants of health

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Spatial modelling of smoking prevalence and governmental actions in Austria

Smoking is still a hot discussed topic in Austria. Around 23 % of the Austrian population are smokers. Alarming is the high smoking prevalence among young ones, where Austria is on top with around 40 % of smokers aged 11 to 15. Further, the starting age for smoking gets earlier each year. Looking at the spatial context, there are variations of smoking prevalence for provinces (there are nine provinces in Austria) but this broad scale of data information can hide important variations and pockets of low and high smoking prevalence at regional level. Therefore we use simSALUD, a framework with embedded spatial microsimulation algorithms, to combine different spatial and aspatial datasets to create a synthetic population of smokers for small areas. A power of this approach is to model specific population groups, for example to model smokers in the age of 16 to 20 for small areas. This will help to define actions to target specific population groups and to therefore provide support where needed most. Different scenarios are modelled, for example where current stop smoking centres are distributed and how this can be optimized using spatial analysis tools and Geographical Information Software. The results are important for current and future policy actions in Austria, as such approaches are not widely applied yet. The research project SALUD is funded by the Federal Ministry for Transport, Innovation and Technology and the Austrian Science Fund.

Spatial analysis
Population health
GIS

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Following in your footsteps: Implementing a novel methodology to examine mobility and the built environment with multilingual community-dwelling older adults

Mobility impacts the health and wellbeing of an older person, and there are significant associations between mobility and the built environment. In qualitative studies of older adults' mobility, data have typically been gathered through interviews or focus groups. Our team sought to develop and implement a "mobile methodology" that would allow us to more comprehensively understand how older adults experience their mobility in the local environment. Our mobile methodology coupled seated interviews with walks, in which participants led us through their neighbourhood. We conducted in-depth, seated interviews with 71 community-dwelling older adults in an urban region of British Columbia, Canada. Fifty-one of these participants elected to undertake a walking interview. Walking interviews averaged 20 minutes (Range 10-60). Thirteen walking interviews were conducted in Cantonese and Punjabi. Each walk included an interviewer and a note-taker or professional translator. Interviewers composed observational memos within 24 hours of the walk. There was high concordance between what we heard in the seated interview, and what we observed on the walk. Extending what we heard in the seated interviews, walking interviews provided insight about: how features of the natural environment encourage mobility; the strategies that older adults employ to overcome challenges in the built environment; and the unique and unexpected routes and shortcuts that they use. Walking interviews elicited data that were sometimes not discussed or observed while sitting indoors. This is a strong observational tool, allowing researchers to see, not just hear, what participants do, where they go, and the challenges they face.

Aging

Vulnerable populations

Methods – qualitative

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Are migration and mortality related in the regions of Europe? The relationship between regional population loss, 2000-2010, and death rates in Europe

Recent evidence suggests that despite efforts to reduce health inequalities within Europe regional inequalities in life expectancies have remained broadly stable since the early 1990s, and increased among males within Eastern Europe. Migration could be one factor contributing to spatial differences in mortality within Europe. This analysis aims to assess the relationship between regional changes in population resulting from migration and death rates in Europe. It assesses the degree to which this relationship is mediated by regional income and how it compares between Eastern and Western countries. The relationship between age- and sex-standardised death rates 2008-2010, net population change resulting from migration 2000-2010 and 2005 household income were analysed in 250 'Nomenclature of Statistical Territorial Units' (NUTS) level 2 regions in 26 European countries. Death rates were significantly higher in areas experiencing population loss across the total group of European regions and this association remained after adjusting for income. Eastern regions account for most of the areas of Europe with the highest death rates, greatest population loss and lowest household incomes. While death rates and population change were correlated within both the groups of Eastern and Western European regions this association remained only among Western regions after adjustment for income. Migration patterns may contribute to persistent inequalities in death rates across Europe. These results suggest however that in Eastern Europe low income levels may underlie both high mortality and population loss.

Mobilities
Population health
Methods – quantitative

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General health in gentrifying neighbourhoods in England and Wales by age, socioeconomic status, housing tenure and region

Many cities in developed countries have experienced gentrification in recent decades as high socio-economic status populations have moved into neighbourhoods which were formerly home predominantly to lower socio-economic status groups. There have been high levels of academic and public interest in gentrification, and controversy over how this process impacts upon the well-being of socio-economically disadvantaged populations. However, there has been relatively little research establishing the extent of gentrification across urban neighbourhoods or assessing the health of populations in these areas. This study assesses how widely gentrification is affecting socio-economically deprived urban areas in England and Wales, whether people resident in these gentrifying neighbourhoods have distinctive health and how health status varies between population groups in these areas. This analysis uses socio-demographic data from the 1991, 2001 and 2011 Censuses and house price data from the Land Registry in England and Wales to define gentrifying neighbourhoods. It assesses Census self-reported general health status data to describe how health varies among populations groups resident within these neighbourhoods and compares their health to residents in other urban areas. The analysis indicates that rates of gentrification in deprived neighbourhoods in England and Wales during 1991-2011 varied significantly between London and other regions. General health status in gentrified areas varied with age, socio-economic status and housing tenure.

Mobilities

Urban

Methods - Quantitative

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Global “Drugscares” in a Post Western World

In Social sciences, the conceptualization of allopathic drugs moves according to the changing times. At present, the Western public who has faced the “Betrayal of trust” (Laurie Garrett, 2000) is becoming more and more reluctant to drugs and sometimes to vaccination when elsewhere, the access to basic medical needs is still to be met. But everywhere on the planet the need of a low pricing for medical products is increasing. Insofar, industrials have to face the challenges of a post western world where new actors emerge and pave the way to a multi polar world.

In this context, this communication is focusing on the prices of medical products in order to sustain the future project of a global atlas of medical drugs, or “Global Drugscares”. Many trials are already going on, thanks to World Health Organization and other agencies, but the lack of transparency and the complexity of the project have not yet given clear results.

As a first step for this task, it seems necessary to clarify these drug landscapes and introduce a synthesis of the various opinions, beliefs, actors and networks at work.

For this purpose, the selected method was the follow up of many (e)-documents: news and critics, on professional forums, activist networks and so on, during a long period of time in India and Europe.

The first results will be introduced for a discussion, in the hope that many colleagues would like to consider the challenges for “Global Drugscares”.

Global health

Critical health research

Policy

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Do density of services and access to transportation relate to young adults' mental health? Not equally for everyone.

This paper investigates the socially-dependent effect of selected components of accessibility to urban resources on mental health. We argue that certain components of accessibility such as density of services and means of transportation are associated with mental health, and more strongly so among more disadvantaged groups.

Data from 2,093 young adults (18-25 years-old) participating in the Interdisciplinary Study of Inequalities in Smoking (Montreal, Canada, 2011-2012) were analyzed. Self-rated mental health was categorized as good (excellent, good or pretty good) versus poor (fair or very poor). Mean number of services (commercial, leisure, sports, social and health facilities) located in 800 m. road-network buffers around participants' residential and regular activity locations were computed. Access to car and possession of a public transit card were used as indicators of access to transportation means. Three educational groups were considered: high school or less, post-secondary education or university education. Multivariate logistic regression was utilized to model associations between poor mental health and components of accessibility for the three educational groups, adjusting for potential confounders (age, sex, occupational status).

Density of services and access to transportation increased with increasing education level. A significant interaction was observed between accessibility components and educational level, as they relate to mental health. A low number of services around residential and activity locations, and a lack of means of transportation were more strongly associated with poor mental health among the less educated than those in the more educated group. In short, some health risk factors do not matter equally for everyone.

Accessibility

Mobility

Mental health

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Urban green & blue spaces for health – a matter of discursive construction and negotiation?

For the majority of the global population cities are the everyday places for life, work and recreation. Urban green and blue are identified as possible contributors to the promotion and protection of health. However, the implementation of healthy urban open spaces in urban planning is often restricted by political decisions. Therefore this paper aims at answering the following question: How are the topics "health" and "urban open space" discursively constructed and negotiated in the printed media and in local politics in Germany?

The aim of the sub-project of the young professionals research group "German Healthy Urban Open Spaces", funded by the Fritz and Hildegard Berg Foundation, is to assess the direct and indirect function of urban green and blue spaces for public health in different sectors of local politics and in printed media. As part of the discourse analysis protocols of committee meetings in the sectors of health, environment and urban planning, and of the city councils of Gelsenkirchen and Bielefeld, Germany, from 1999 to 2012 were collected and merged in a data corpus (n=586). In a comparative printed media analysis articles from Germany-wide, weekly newspapers and journals containing the keyword "health" from 1993 to 2012 were collected and merged in a data corpus (n=7780). In a computer-aided corpus linguistic analysis quantitatively linguistic structures were visualized, analyzed, and significant regularities of relationships and corresponding probability measures were calculated. Classic lexicometric methods such as frequency, concordance and co-occurrence analyses were performed as well. In the presentation major results will be shown, discussed and actions for urban planning in a healthy city of the future will be derived.

Blue / green environments and health
Urban health
Discourse analysis - mixed methods approach

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When and where are urban adolescents most physically active?

Objective: Canadian adolescents are insufficiently active to achieve health benefits. We aim to assess urban adolescents' geo-spatial physical activity behaviours to better understand when and where they are most active.

Methods: Participants were from the only high school in downtown Vancouver (fall 2013; n=31; 14.4 yrs, 38% female). They wore an accelerometer (GT3X+, 1 sec) and GPS (Qstarz, 1 sec) for seven days. Data from the two devices were merged using time-stamps. In ArcGIS 10.1 (ESRI), participants' GPS tracks were manually coded. Indoor GPS scatter was coded using land parcels for school and home locations. Trips were assigned a mode based on distance, speed and physical activity (moderate-to-vigorous physical activity (MVPA), Evenson cut-points). We included weekday person-days with ≥6 hrs of matched accelerometry/GPS data and ≥1 school trip (23% of all person-days).

Results: Valid days had on average 8.5 hrs of matched data. The majority of captured time was at school (4.1 hrs), followed by home (2.4 hrs) and other locations (1.1 hrs). Twenty-five minutes were spent travelling to/from school, and a further 19.1 minutes to travel elsewhere (for example, walking during lunch breaks). On average, students accrued 51.6 minutes MVPA/day, nearly half of which was achieved at school (21.4 minutes). Despite the comparably short duration spent travelling, this activity yielded most of the remaining daily MVPA (school-travel: 11.6 minutes, other travel: 11 minutes).

Conclusion: Travel - which in this sample largely comprised of walking and public transit trips - is an important source of physical activity in urban adolescents.

Physical activity

Adolescents/Children

GIS

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Longevity in China: environmental, social-economic and policy perspectives

Aging is one of the most serious challenges to public health and the social system in China, that can be attributed to the unique phenomenon of “birth control”, post-reform and opening up economic and baby boomers during the last century before in China. Aging society in one way causes social-economic challenge and in another way, it is an indicator of a healthy-development with positive social, environment, and economic conditions. Those related social challenges and burdens can be largely mitigated by a “healthy aging”. This paper discusses the roles of natural environmental factors, socioeconomic conditions, lifestyles and social policy in contributing to longevity in China, comparing its prevalence across regions. The results indicate that longevity is more common in regions with higher socio-economic development and that have a good natural environment, in particular a mild climate and a soil rich in trace elements. Lifestyle factors, such as sufficient sleep, positive mental state and a light diet were also found to be beneficial. From a social perspective, although China has recently introduced many elder care strategies/policies, regionally inequality and lack of full coverage are still impediments to successfully care for the elderly. Currently family care remains the major form of support. Subsidies and special healthcare services exist but need to be implemented more effectively and in a more targeted way in order to support more successful aging. The paper concludes with a reflection of the consequences for current policies.

Aging
Ecological behavior
Elderly care

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Spatial variation in obesity rates: A Spatial Microsimulation approach for New Zealand

Obesity is a significant public health issue leading to increased risk of Type 2 Diabetes and Cardiovascular Disease, among other issues. The 2013/14 New Zealand Health Survey (NZHS) showed a national adult obesity rate of 30%, one of the highest rates in the OECD. These rates are known to vary between regions.

One challenge in estimating small area obesity rates is that the available data is collected with the intention of analysing it at the District Health Board (DHB) or National scales. Consequently, there is little information on the variation in obesity rates within each region. Spatial Microsimulation Modelling (SMSM) can be used to generate simulated population estimates for small areas, closely matching the census demographic characteristics but containing additional variables from other sources (such as the NZHS). This technique offers a way to generate more detailed information about small area variation in health variables, including obesity, which may help to overcome the lack of small area obesity data. Model outputs can then be used to target interventions more specifically, enabling valuable public health funding to be spent more effectively as well as to inform policy both now and into the future.

Spatial analysis
Population health
GIS

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The geography of mortality attributed to Alzheimer's disease in the United States from 2000 to 2009 and the associations with socioeconomic context

Alzheimer's disease (AD) is one of the leading causes of death in the United States, especially of those deaths in Americans age 65 or older. The increasing proportion of deaths attributed to AD has caused a significant societal cost of care, and research on the geographies of AD is essential to the formulation of disease surveillance, prevention and treatment programs. The purpose of this research is to investigate the association between the mortality of the disease and local socio-economic and environmental factors. County-level sex-race-age-standardized mortality rates are generated using U.S. Multiple Cause of Death Records from 2000 to 2009. Spatial patterns of mortality rate hotspots are identified. Utilizing the multilevel regression approach, hypotheses of significant association between AD mortality rate and local socio-economic characteristics are tested.

Alzheimer's disease
Mortality
Multilevel analysis

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Mobility and social connectedness of older adults in the Netherlands: a mixed method approach

In later life, the mental and physical capabilities of people tend to decline, which can have a negative influence on their quality of life and wellbeing. While the need for social interaction is important for older adults' wellbeing, the resources they have to maintain socially connected typically diminish. High degrees of loneliness among older adults indeed suggest that they do not succeed in remaining socially connected. In this article, we aim to increase our understanding of the relationship between social connectedness and mobility of older adults. We applied a mixed-methods approach, in order to gain insight into the perceived and actual movement patterns of older adults. In our approach, we combined GPS tracking, travel diaries, and semi-structured interviews. Thirteen participants were asked to carry a GPS tracker when leaving their home, for a period of one week, and to write down their out-of-home mobility in a diary. After having collected the GPS and diary-data, all participants were interviewed about their perceived and actual mobility and their social relations. Our participants included both men and women, were aged 65 to 90 years, and were living in both urban and rural areas the Netherlands. Our preliminary results show the variation of the role of mobility to meet the needs for social connectedness between spatial (urban/rural) and personal (age, gender, perceived health) contexts. This research also shows the advantages of applying a mixed-method approach in order to compare perceived and actual mobility.

Social connectedness

Mobility

GPS tracking

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Ethics of Care in medical tourism: Informal caregivers' narratives of responsibility, vulnerability and mutuality

This study examines the experiences of informal caregivers in medical tourism through the lens of an ethics of care. Semi-structured telephone interviews with 20 Canadians who had accompanied their friends or family members abroad for surgery were conducted between September 2013 and January 2014. Interview questions dealt with their experiences prior to, during and after the trip abroad, and focused on the different roles they played in supporting medical tourists. A thematic analysis of interview transcripts revealed three key themes also reflected in the ethics of care literature: responsibility, vulnerability and mutuality. Informal caregivers in medical tourism reported that they were driven by a sense of responsibility to care, and that providing this care rendered them vulnerable to physical and emotional impacts. Ethics of care theorists have highlighted how care is relational and founded in interdependence. In addition, they have given attention to the ways that care has been historically devalued. Given the important role that caregiver-companions play in the medical tourism industry, it is essential to articulate the ethical and practical implications of their care labour. We contend that medical tourism provides an example of a unique landscape of care, where informal care provision crosses countries and takes place in novel care sites, including hotels, destination clinics and hospitals. Informal care, often hidden from view in the domestic context, is not accounted for by the medical tourism industry as it is hidden from view in private spaces at a geographic distance from the home countries of medical tourists.

Family caregivers

Methods-qualitative

Mobilities

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Home, Connectedness, and Mobility in Advanced Age: A study of the LiLACS NZ cohort

Attachment to place and a sense of belonging are recognised as connected with wellbeing. Residential satisfaction is related to wellbeing among older adults, and more attention is focusing on indicators such as the meaningfulness of housing in addition to functionality and health outcomes. People's experiences and perceptions of their homes may have indirect health benefits such as satisfaction, positive affect, or a sense of identity, and impacts on everyday activities or reliance on external support. The effects of relocation may be either positive or negative; relocating to more appropriate housing might lessen potential environmental burden, but potentially remove an individual from their existing neighbourhood and community networks or sense of attachment to place and precipitate medically adverse consequences (e.g. falls, delirium) in those at risk.

We draw on data from Life and Living in Advanced Age: a Cohort Study, which invited all Māori aged 80-90 years and all non-Māori aged 85 years within a mixed urban/rural region in New Zealand to undertake a comprehensive interview and health assessment. We explore their connectedness with their home, community and neighbourhood. Drawing on longitudinal data from the sample, we compare their expectations and actual experiences of moving after four years, considering their enthusiasm for and degree of control over the decision to move. Participants who had moved into their current residence for circumstantial reasons (such as death of a spouse) were three times more likely to feel lukewarm about their home than those who moved for reasons such as size or aesthetics.

Aging
Mobility
Longitudinal study

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Employment of Caregivers of Older Persons with Multiple Chronic Conditions: The Spatiality and Impact of Work Interferences

Purpose: The purpose of this presentation is to discuss the results of the reported work interferences (WI) for caregiver employees (CEs) caring for older persons with multiple chronic conditions (MCC).

Method: Survey data was collected from 63 CEs at two time points, 6 months apart (Wave 1 and Wave 2). We measured work interferences using a 12-point Work Interferences Scale and, using Generalized Estimating Equation (GEE), examined the relationship with caregiver burden (short-form Zarit Burden Inventory), self-efficacy (GSE), and mental and physical well-being (SF12 PCS & MCS). Qualitative interview data was collected from a smaller CE sample.

Results: Time and physical well-being (SF12-PCS) of the CEs were found to be the independent predictors of work interferences. Further, Wave 2 participants showed significantly higher WI scores than at Wave 1, when adjusted for employment status (FT versus PT/other) and SF12-PCS. This suggests an inverse or negative relationship between WI and SF12-PCS, where a decrease in the SF12-PCS is experienced as the number of WIs increases. In other words, greater work interference was reported for those with poor physical health scores. Qualitative data provide the spatial tensions inherent in this relationship, which will be discussed in light of the physical health scores.

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Using GIS to assess the impact of childhood environments on obesity

Purpose: Geography is used to examine the obesogenicity of the home environment; and more recently the environment around schools. We know less about the contribution of both environments on an individual's health; and even less about the quality of the environment between home and school. As many children walk or cycle to school, often unaccompanied, this environment could potentially have a significant impact on health. This purpose of this research is to examine the food and physical characteristics of the environment relate them to rates obesity. The research focused specifically on children in Hamilton, a city of 150,000 people in New Zealand. **Objectives:** The aim of the research was to establish whether the obesogenicity of local environments where children spend much of their time was associated with rates of obesity. **Methods:** This research utilised GIS techniques to measure both the food and physical environment around children's home and school environments, and their route to school. Information from the 2012/2013 New Zealand Health Survey (NZHS) was used to identify children aged 5-14. The research measured three keys areas of the child's surrounding environment: where the child lives, the child's route to school, and the school the child attends. GIS was then used to analyse the three areas of the child's environment to assess how obesogenic the environment was. The results of this analyse were then compared to a child's BMI status, in order to determine whether obesogenic environments are influencing childhood obesity. **Results:** The GIS analysis results reveal there are specific areas obesogenicity within Hamilton.

GIS

Neighbourhood

Public health

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Access to Health Care among Recent Immigrants: Examining the Impact of Ontario's Three-Month Wait Policy

Immigrants comprise approximately 20 percent of Canada's total population. The self-selection process and medical screening of potential migrants have been identified as key factors explaining the observation that recent immigrants have better health than their Canadian-born counterparts. Despite the apparent health advantage of recently arrived immigrants, research has shown that with increasing length of time in Canada, the health status of immigrants declines to levels on par with and in some cases worse than the Canadian population. The reasons for this are not clear, but it is hypothesized that the decline might be related, in part, to poor access to health care services. Despite the existence of universal health care in Canada, three provinces, British Columbia, Ontario, and Quebec impose a three-month wait period for landed immigrants before they are able to access provincial health insurance. A lack of access to provincially insured health care services within the first three months of arrival may result in immigrants delaying and/or avoiding seeking care, which in turn, may have important longer-term health implications. The goal of the research is to examine the impact of the three-month wait on health status and access to health care services among recent immigrants living in the Greater Toronto Area. Interviews conducted with over 30 recent immigrants revealed that a majority of the participants delayed receiving health care due to the financial reasons. In addition, participants reported both perceived and actual health impacts of the three-month wait on their lives and the lives of their family members.

Access to health care services
Immigration
Health policy

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Places that matter: People with intellectual disabilities negotiating the public space of the city

In this paper, we examine the lived experiences of people with intellectual disabilities (PWID) as they negotiate urban public space. Our aims in the paper are threefold. First, at a broad level, the paper contributes to a small but growing literature on intellectual disability within social and health geography, helping to shed light on the varied socio-spatial experiences of PWID beyond the narrow confines of community-care facilities and other specialized settings. Second, and more specifically, we examine the ways in which PWID embody and shift between states of dependence, independence and interdependence as they use, occupy, avoid, adapt, and move through the different places that make up their everyday routines within the city. Third, we direct attention to the ways in which changes to the design and use of public spaces can be used to create more inclusive urban environments for PWID. To accomplish these objectives, the paper draws on data collected from an innovative, mixed-methods, participatory research project in Toronto, entitled 'My Life in the City'. The project involved a small but diverse group of twelve PWID, who led academic researchers on a series of excursions designed to explore those places that make up their everyday social geographies. The significance of these places, and the mobilities that link them, were documented using a variety of methods, including audio recording, photography, video, and GIS.

Intellectual disability
Mobilities
Vulnerable populations

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Older Adults' Outdoor Walking and the Built Environment: Does Income Matter?

Background: Our society is ageing. By 2050, 30% of people living in North America will be over the age of 60. Developing walkable communities may be an opportunity to encourage outdoor walking and support older adults aging in place. Our aim was to examine the association between Street Smart Walk Score and self-reported outdoor walking among older Canadians, and to determine whether socioeconomic status modifies this association. Methods: We linked objective walkability data with cross-sectional survey data from the Canadian Community Health Survey Healthy-Aging 2008-2009 Cycle for a sample of 1,309 British Columbians aged ≥ 65 years. We examined associations between Street Smart Walk Score and meeting physical activity guidelines (≥ 150 minutes of moderate to vigorous activity/week) through self-reported outdoor walking using multivariable logistic regression, and tested for significant interactions with household income. Results: A ten point higher Street Smart Walk Score was associated with a 17% higher odds of meeting physical activity guidelines through walking outside (95% CI: 1.07,1.27). In addition, older adults living in neighbourhoods categorised as Walker's Paradise had over three times higher odds of meeting guidelines, as compared to those living in Car-dependent/Very car dependent neighbourhoods. We found no evidence that household income moderated the effect of Walk Score on walking outside. Conclusions: Neighbourhood design may be one avenue whereby physical activity levels of older people can be enhanced through outdoor walking, with benefit across socioeconomic strata.

Population health
Vulnerable populations
Neighbourhood

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Views from the street: participatory practices to inform a street redesign intervention to increase active travel

Transport planning in New Zealand prioritizes car travel and infrastructure support for active travel modes such as walking, cycling and scootering is generally poor. Re-designing our streets to make it safer and easier to get around on foot and by bicycle has the potential to reverse declining rates of physical activity, reduce traffic-related injuries, increase children's independent mobility and enhance sense of place.

Future Streets – Te Ara Mua is a street redesign intervention study that aims to make walking and cycling easier and safer in Mangere, a neighbourhood in Auckland, New Zealand. The intervention has been developed using a participatory process informed by two types of knowledge – evidence based research knowledge on what street infrastructure works to slow traffic, change driver behaviour and increase walking and cycling and local community knowledge on how streets are used and experienced – safety hotspots - and ideas and aspirations for change. Understandings arising from the participatory process have informed the transport policy agency's response to the design and construction of an experimental neighbourhood-wide street intervention.

The presentation will reflect upon the various participatory methods used, their relative success in engaging with different stakeholder groups, variation in the type and depth of information shared in the different settings, and barriers and opportunities to influence 'business as usual' solutions. The evaluative research underway to assess the effectiveness of the intervention on changing transport mode use, neighbourhood perceptions and physical activity will be also discussed.

Urban

Mobilities

Neighbourhood

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Diabetic foot in Germany - a market analysis towards comprehensive integrated care of statutory health fund members of AOK Nordost

Background: Diabetes foot syndrome (DFS) is one of the most neglected complications associated with diabetes. 1989 the WHO has called upon the world community for lowering the rate of lower limb amputations as a consequence of diabetic gangrene by half within 5 years. This aim has not been reached yet. In the state of Brandenburg, like in many other German states, the DFS care still shows substantial inadequacies. Objectives: Applying evidence-based multidisciplinary treatment results in reduction of lower limb amputations. Several studies show that a cross-sectoral and multidisciplinary approach, which includes prevention, patient education and multi-factorial care in the treatment of the foot ulcers reduce amputations by 45 to 85%. Methodes: Since the introduction of Statutory Health Insurance Modernisation Act, sickness funds in Germany are required to initiate effective programs by so-called integrated health care contracts. Analyzing the internal claims data enables the sickness funds to monitor the numbers of diabetes-related lower limb amputations, define priorities, deduce correctional measures and develop optimal strategies which could guarantee a qualitatively higher-grade and simultaneously cost-efficient comprehensive DFS health care. The geographic software allows the user to analyze and visualize health care situations by maps and present the collected data. Results: The anonymous analysis by 662,600 insured showed 917 lower limb amputations related to diabetes. Through an integrated care contract with a specialized diabetic foot care center major lower limb amputations were reduced from 6.8 % in 2006 to 2.9 % in 2010. Conclusion: Our motto for the future must be "Prevention not Amputation".

Access to Health Care
Population Care
Chronic Disease

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Research on the relationship between income inequalities and health status of older people in China

China is facing serious population aging issues because of many unintended consequences of the economic reforms which began in the 1980s and social policies such as the “One Child” policy. Understanding the impacts of income inequality on older people’s health status has attracted more and more attention in many countries including China. By employing regression techniques, this study uses income source data as well as Chinese older people’s health status data to explore health inequalities at the provincial level. The results show a geographic relationship might simply reflect a nonlinear association between health and income. The results provide a path to examine health inequalities of older people in research at the individual level and qualitatively in the future.

Aging
Income
Health inequality

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Avian Influenza in Egypt: Ecological Niche Modeling and Co-Infection Risk

Human infections with highly pathogenic avian influenza (HPAI) H5N1 and other flu strains are a continuing concern for global public health. The threat of a devastating influenza pandemic is very real, but not entirely unpredictable. Previous human outbreaks have been largely constrained by the virus's poor adaptation to non-avian hosts. This limitation could potentially be overcome via reassortment, whereby two different strains co-infecting the same host can share genetic material to create new hybrid strains. Most previous pandemics in humans appear to have originated from such reassortment events. Monitoring and mapping the movement and evolution of the virus within bird populations and identifying areas where hosts are at risk of co-infection can help in targeting surveillance efforts and intervention campaigns.

Egypt presents a unique case study in the landscape genetics of avian influenza co-infection. Unlike most regions burdened with endemic avian influenza, Egypt has little or no import/export of poultry, and live bird markets do not appear to be the hubs of viral mixing seen in other countries. Using ecological niche modeling methods that incorporate presence as well as absence data, we attempt to identify the environmental, behavioral, and population characteristics which characterize the niche of H5N1 and H9N2 within Egypt from 2010-2014. Maps of niche are compared to see if single-subtype niche maps can serve as reliable indicators of co-infection risk, as validated by a separate dataset of known co-infection occurrences during the same study period. Identifying areas conducive to co-infections can help target spaces for increased surveillance.

Influenza
Ecological Niche Modeling
GIS