

**International Medical
Geography Symposium (IMGS)
2024**

Report of Contributions

Contribution ID: 3

Type: Paper

Strengthening water and health security in Europe's marginalized communities through citizen science and integrated social, geographical, medical and technological approaches

Monday, July 15, 2024 11:00 AM (20 minutes)

Vulnerable groups at the margins of societies in Europe, such as people experiencing homelessness and Roma people, often live in deprived areas and under problematic conditions, excluded from access to safe drinking water, sanitation, hygiene (WASH) and waste management. Understanding the extent of related high health risk, and providing assistance through targeted interventions, are complicated by the invisibility of this group, and the inaccessibility of reliable, up-to-date information.

Two exploratory case studies will be presented that use novel approaches to understand and strengthen water and health security in Europe's marginalized communities. A study conducted in Germany aimed to i) understand challenges that people experiencing homelessness face regarding WASH insecurity, by ii) co-design methods most suitable to capture these challenges, and iii) jointly identify interventions with inclusive participatory mapping. A study conducted in Slovakia aims to i) improve the acquisition of information on water insecurity and related health risks among Roma communities, and ii) develop an innovative assessment system that iii) integrates social, medical, geoinformation and earth observation science methods.

As urban and rural poverty, homelessness, multiple vulnerability factors and related (health) challenges keep growing, co-research and citizen science, and novel integrated research approaches become key to inform targeted interventions.

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Session Classification: Paper Presentations

Track Classification: Health, Justice, Human Rights, Policy & Practice: Community Engagement

Contribution ID: 4

Type: Paper

Urban blue and green spaces for well-being of disadvantaged population groups

Monday, July 15, 2024 2:40 PM (20 minutes)

Nature and water hold value for human well-being at different levels, and exposure to natural and built blue and green spaces enhances physical and mental health outcomes. Blue and green spaces in urban areas provide therapeutic services by promoting emotional attachment and identity, and relief from everyday stress while also offering regulating ecosystem services. The rapid pace of global urbanization and the increasing frequency and unpredictability of extreme weather events makes them ever more important to be considered in sustainable urban planning and decision-making.

Although the development of blue and green spaces has been pointed out as a promising strategy, all too often the most disadvantaged parts of the population, including elderly people and those in deprived neighbourhoods, miss out on nature's benefits due to a lack of such spaces nearby and additional barriers related to infrastructure, social stigma, and lack of involvement in urban planning processes.

We present case studies from the Netherlands and Kenya, conducted in the context of the Horizon EU project Well-being in a Sustainable Economy Revisited (WISER) which aim to understand the role of blue and green spaces for well-being and development, and in the context of the collaborative research between University of Twente and Vrije Universiteit Amsterdam on Co-designing Climate-Sensitive Blue and Green Spaces with Vulnerable Urban Populations which aims to counteract access barriers to green and blue spaces by considering the needs and preferences of disadvantaged population groups.

Based on mixed methods research, we explore how different disadvantaged groups and residents of deprived neighbourhoods perceive and are impacted by the qualities of the built and natural blue and green environment; and analyse how these environmental conditions can enhance people's subjective well-being. Through a participatory co-design approach, we include such populations in climate-sensitive urban planning processes supported by geoinformation systems (GIS), and artificial intelligence, which open up possibilities for visualizing and exploring potential changes to the city landscape.

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Session Classification: Paper Presentations

Track Classification: Health, Justice, Human Rights, Policy & Practice: Community Engagement

Contribution ID: 5

Type: **Student Paper Competition**

Climate crisis adaptivity and mitigation potential in urban primary healthcare in Ghana and Germany

Monday, July 15, 2024 1:20 PM (20 minutes)

Introduction

By crossing ecological boundaries and insufficient political agenda to protect the earth's climate and biodiversity, the Anthropocene drives the earth into an uninhabitable planet. Despite years of efforts to raise understanding of Planetary Health and other holistic concepts that recognise human, animal, environmental, and ecosystem health as interdependent, urgently needed political and cultural change remains absent. A particularly large burden to respond to climate crisis-related consequences weighs on primary healthcare practitioners. At the same time, Planetary Health is not yet integral to health- and medical training programs.

Objectives/Methods

Mixed-methods identify Ghana's and Germany's most relevant climate-sensitive health threats and their adaptation and mitigation capacities. A cross-sectional survey collects data on knowledge, attitudes, and practices (KAP) and potential influencing factors among first-responding healthcare practitioners. The survey categories include Planetary Health dynamics, practices to mitigate and address climate-sensitive health threats, and threat perception.

Outcomes

Practical information on factors and barriers encouraging healthcare professionals to promote climate action, more sustainable lifestyles, and increased awareness of the climate crisis and health can influence cultural and political change. Investigating potential cues to action that affect KAP scores will guide policy and training recommendations to increase structural public health promotion. For the Ghanaian region, we specify which of the included health professional groups are most suitable for delivering climate-sensitive health counselling and which medium of knowledge transfer should be utilised.

Keywords

Planetary Health; Climate-Sensitive Health Counselling; Primary Healthcare

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Session Classification: Student Paper Competition

Track Classification: Climate Change & Health: Sustainability

Contribution ID: 6

Type: Paper

How is grocery shopping completed in household with children? Gender gaps and typologies of grocery shopping in four Canadian metropolises

Monday, July 15, 2024 2:40 PM (20 minutes)

Grocery shopping is an important household labor closely related to die quality and health outcomes. Like other household tasks, it is usually unequally divided within households, with women doing more grocery shopping, which causes burden and health impacts on them. However, classic volume-based indicators of gender gaps (usually activity frequency and duration) are unable to sufficiently depict the full picture of the constraints women may face when they are doing grocery shopping, specifically regarding women in household with children because of heavy care responsibilities. In contrast, this paper examines the gender differences in multiple dimensions, including frequency, duration, location type, travel mode, companions, time of day, and trip chaining. Drawing upon the Time Use & Food Habits survey in four Canadian metropolis in 2021, the results show that women and men in households with children are different in various characteristics of grocery shopping. In addition to spending more time, women also drive less and have more accompanied trips and more shopping in working time. The gender differences were further compared among different types of grocery shopping patterns, which were identified through latent class analysis. Various gender gaps are found across different types, with women of accompanied shoppers potentially having multidimensional constraints. Multinomial logistic regression furtherly shows that the accompanied shoppers are associated with relatively low socioeconomic status, more care responsibilities, and urban area. Overall, this study provides evidence of nuanced gender gaps of grocery shopping in multiple dimensions and within different groups of people. The results highlight group-specific policy implications.

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Session Classification: Paper Presentations

Track Classification: Health, Justice, Human Rights, Policy & Practice: Health Disparities

Contribution ID: 7

Type: Paper

Exploring if and how equity and inclusion are considered in neighbourhood revitalization projects: A case study of downtown Sherbrooke, Canada

Tuesday, July 16, 2024 3:40 PM (20 minutes)

Introduction: Recently, nearly 80million, including 25 million in public funds, were invested to revitalize downtown Sherbrooke, Canada, through the construction of office and residential towers, development of new public spaces and improvements of street aesthetics. These changes can improve residents' social conditions and health, and reduce social inequalities in health. However, the equitable and inclusive character of the revitalization project depends on whose needs were considered in its planning and implementation.

Objective: We explored how equity and inclusion were discussed in the context of the revitalization project, paying particular attention to young and marginalized people, who are over-represented downtown.

Methods: We conducted nine semi-structured interviews with key informants from the political, municipal staff, community organization and private sectors who were concerned by, or involved in, the downtown revitalization. Interview topics included intersectoral collaboration, inclusion of young and marginalized people in the project, anticipated challenges, and potential impacts of the revitalization. We conducted a codebook thematic analysis of interview transcripts.

Results: Although the needs of downtown young and marginalized residents were not explicitly part of the revitalization plan, key informants seemed open to collaborate for a more inclusive revitalization. Despite this, two parallel discourses emerged, distinguishing actors and sectors. We will discuss four topics on which discourses diverged: (1) revitalization aims; (2) how young people were defined; (3) communications and public consultations; and (4) how revitalization benefits were expected to materialize, and for whom. Findings can inform more inclusive and equitable neighbourhood development practices moving forward.

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Session Classification: Paper Presentations

Track Classification: Health, Justice, Human Rights, Policy & Practice: Environmental Racism and Justice

Contribution ID: 8

Type: **Student Paper Competition**

Maternal Health Accessibility in Dallas and Austin, 2010-2020

Tuesday, July 16, 2024 1:00 PM (20 minutes)

In 2020, maternal mortality in Texas was three times the US average but its geography and drivers remain unclear. Effective access to MCH services reduces maternal mortality but remains inequitable due to affordability and transportation costs particularly for rural residents and minority populations. Even in urban areas with better MCH facility access, vulnerable populations face challenges. In effect, the spatial-temporal trends of MCH access among these populations in urban Texas remain unclear. This study explores the geography of MCH facility access in the Dallas Fort-Worth Metroplex and the city of Austin from 2010-2020. Using zip code level demographic and socioeconomic data from the American Community Surveys, CDC WONDER maternal mortality data, and geocoded MCH facility data, we examine the spatial-temporal trends of MCH access and address how disparities in MCH contributes to MCH access. Preliminary results show that pockets of severely limited access persist in counties considered to have good MCH access. Improving MCH access for vulnerable urban populations in these areas is crucial to reduce maternal mortality rates.

Key words: Spatial-temporal trends, maternal mortality, geocoded data, maternal mortality rates, zip code level data.

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Session Classification: Student Paper Competition

Track Classification: Health, Justice, Human Rights, Policy & Practice: Healthcare Accessibility

Contribution ID: 9

Type: **Student Paper Competition**

Assessing the Role of Small Food Retail in Alleviating Food Deserts

Monday, July 15, 2024 1:00 PM (20 minutes)

Although low-income areas are often designated food deserts, small independently owned food retail stores can act as a crucial access point for low-income areas by providing affordable, healthy food options, and even fostering an equitable and sustainable food system in these communities. However, there remain uncertainties regarding whether communities that solely rely on small groceries experience diet-related challenges. Using grocery store data from the 2022 Supplemental Nutrition Assistance Program (SNAP) Retailer Locator database and the 2023 CDC PLACES: Local Data for Better Health report, this research will employ Geographically Weighted Regression to assess the impact of small groceries in relation with diseases such as obesity and diabetes in low-income communities in Dallas. The findings from this research can be used to improve the current identification and practices aimed at reducing the impacts of food deserts in low-income urban communities and guide targeted local interventions that aim to improve community health.

Keywords: food deserts, Small retail stores, Diet-related diseases, low-income communities, Geographically Weighted Regression

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Session Classification: Student Paper Competition

Track Classification: Global Health: Food Insecurity

Contribution ID: 10

Type: **Student Paper Competition**

The Environmental and Socio-Economic Impacts of Galamsey (Illegal Small-Scale Gold Mining) on Selected Communities in Ghana

Monday, July 15, 2024 1:00 PM (20 minutes)

Illegal artisanal gold mining (galamsey) accounts for about 40% of Ghana's gold production and is an important contributor to the economy. However, it has significant negative impacts on the environment that are not well-documented. Using remote sensing analysis of land cover changes and in-depth interviews of galamsey operators and community residents in 4 towns, this paper examines the impacts of galamsey activities in two regions –Ashanti and Eastern –to evaluate the extent of environmental degradation and remediation efforts. Findings revealed notable vegetation loss and widespread water pollution that compels residents to seek alternative water sources with little effort towards reclamation. Urgent action is necessary to curtail these losses and preserve the environment not just for the current residents but for the long-term future of the area.

Keywords: environmental impacts, water pollution, gold mining, galamsey, Ghana

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Session Classification: Student Paper Competition

Track Classification: Climate Change & Health: Environmental Health

Contribution ID: 11

Type: Paper

Environmental behaviours and concerns, experience of climate change events, and wellbeing outcomes: a socio-spatial analysis of the UK Household Longitudinal Study.

Thursday, July 18, 2024 11:20 AM (20 minutes)

Introduction: The accelerated rise in global surface temperatures and the occurrence of extreme climate events, driven by the emission of greenhouse gases, present a formidable global threat. The global health community has officially recognised climate change as a public health emergency due to its immediate effects on health resulting from storms, floods, droughts, and wildfires, as well as indirect consequences like psychological stress. There is a suggestion that the influence of climate change is likely to intensify existing social and health inequalities in the UK. Notably, factors such as age, pre-existing medical conditions, and social deprivation have been identified as critical elements that heighten susceptibility to adverse health outcomes associated with climate change.

Methods: We aimed investigated the link between environmental concerns, behaviours (lifestyle environmentally friendly), residence in climate vulnerable (flood-affected or temperature-changing) areas, and subjective wellbeing. Analysing UK Household Longitudinal Study data (n:24,950, 16+), linked with flood (2010-18) and temperature change (2001-2020) spatial data, revealed environmental concerns varied by sociodemographic factors.

Results: Older and disadvantaged socioeconomic groups were most satisfied with their current behaviours. Reporting that one's lifestyle is environmentally friendly was associated with both higher life satisfaction and an increased likelihood of optimism, whereas indicating this could be improved was associated with worse subjective wellbeing and a reduced likelihood of life satisfaction. Residing in an area that had experienced a climate event was not associated with our wellbeing outcomes.

Conclusions: Mitigation strategies are required to support adverse wellbeing outcomes related to environmental concern.

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Session Classification: Paper Presentations

Track Classification: Climate Change & Health: Environmental Health

Contribution ID: 12

Type: **Poster**

STUDY ON ABUSE AND ITS ASSOCIATED FACTORS AMONG ELDERLY POPULATION OF KAMALAMAI MUNICIPALITY OF SINDHULI DISTRICT

Thursday, July 18, 2024 12:00 PM (20 minutes)

INTRODUCTION: The global rise in the elderly population brings attention to the pressing issue of elder abuse, categorized into physical, psychological, neglect, financial and sexual abuse. According to the WHO (2022), 1 in 6 individuals aged 60 and older has experienced some form of abuse in community setting necessitating increase awareness and support for older people.

OBJECTIVE: This study aims to assess abuse and its associated factors among elderly population of Kamalamai Municipality of Sindhuli District.

METHODOLOGY: A community-based cross-sectional study, employing both qualitative and quantitative approaches, was conducted from May to October 2023. The study included 398 elderly respondents (≥ 60 years) for quantitative study utilizing stratified sampling techniques. Qualitative study included two key informant interviews and one in-depth interview along with two focus group discussions were conducted using purposive sampling technique. Quantitative Data were analyzed using SPSS 11.5 with bivariate and binary logistic regression analysis were performed at 95% confidence interval. Qualitative data were analyzed using thematic analysis.

RESULTS: The mean age of the elderly respondents was 70.88 years, with 64.1% respondents reporting experiencing some form of abuse. Neglect (46.0%), psychological abuse (42.5%), and financial abuse (24.4%) were most common while physical abuse (4.8%) and sexual abuse (2.8%) were less common. statistically significant Associations were found between abuse and family types and socio-economic status.

Qualitative findings revealed mistreatment, vulnerability, negligence, economic factors, family dynamics, loneliness, financial exploitation, food withholding, physical abuse, and emotional attachment as key aspects.

CONCLUSION: The study highlights neglect and psychological abuse was the most common forms of elder abuse. These findings emphasize the urgency of implementing programs at the municipal level aimed at controlling and reducing the incidence of such abuse targeting both elder individuals and their caretakers to ensure comprehensive well-being.

KEY WORDS: Elderly individuals, Abuse

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Session Classification: Poster Presentations

Track Classification: Health, Justice, Human Rights, Policy & Practice: Human Rights and Health

Contribution ID: 13

Type: **Student Paper Competition**

Where should we build the next maternal health facilities in Ethiopia? A geospatial approach to emergency obstetric and newborn care facility allocation

Tuesday, July 16, 2024 2:00 PM (20 minutes)

Background: Emergency Obstetric and Newborn Care (EmONC) facilities are scarce in Ethiopia and concentrated in bigger cities. Using geospatial analysis, this study modeled the optimal locations for new EmONC facilities such that the maximum number of women could access EmONC facilities.

Methods: We used data from the 2016 EmONC Assessment encompassing 3,804 health facilities (including 370 EmONC facilities). Using OpenStreetMap data, we created a road network with different speed assumptions for different road types. We assumed women would walk to the nearest available road and use public transport afterward. We modeled the upgrade of health facilities using a location-allocation analysis based on the existing distribution of facilities and population and road conditions. Three scenarios—conservative (25% gap closure), moderate (50% gap closure), and ideal (100% gap closure)—were modeled to enhance EmONC facility numbers to recommended levels.

Findings: The majority of Ethiopian women live over two hours, the maximum suggested travel time, away from EmONC facilities, with significant regional variations. In all three scenarios, upgrades mostly targeted facilities in Oromia, Amhara, and Southern Nations Nationalities and Peoples regions, with minimal facilities selected in Addis Ababa, Dire Dawa, and Harari.

Conclusion: Modeling the location of new facilities has shown considerable potential in enhancing geographic accessibility and reducing regional disparities. Nonetheless, even under the most favorable scenario, a substantial portion of the country still lacks geographic access to EmONC facilities. Therefore, strategic health facility upgrades should be complemented by expanding or enhancing road infrastructure.

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Session Classification: Student Paper Competition

Track Classification: Health, Justice, Human Rights, Policy & Practice: Healthcare Accessibility

Contribution ID: 14

Type: Paper

The contribution of comparative genomics to health geography research: a case study on the identification of *M. ulcerans* contamination sites in Benin

Monday, July 15, 2024 5:00 PM (20 minutes)

Buruli ulcer or *Mycobacterium ulcerans* infection is a neglected tropical disease that causes necrotising skin lesions. The endemic areas most affected are located in West and Central Africa, where direct contact with stagnant open surface water has long been the only risk factor identified [1]. In these environments, aquatic bugs are strongly suspected of acting as hosts and vectors of the bacillus [2]. Despite a great deal of research [3], it is still impossible to identify the precise sites of contamination and the mechanisms of transmission for several reasons. Firstly, incubation times are long and variable. Secondly, PCR extraction of the bacteria from living organisms and plants taken from the environment is complicated. And thirdly, patients generally have no recollection of the place or circumstances in which they contracted the disease.

Faced with this relative impasse in research, it seems necessary to develop new approaches to improve prevention. With this in mind, a mixed research method has been developed as part of the COPTER-UB project (ANR funding) by health geographers from the ESO team at the University of Angers (France). These are geographical health surveys that combine a classic case-control study with a census of all water points likely to be contaminated and with microbiological sampling in the environment. Mapping of land use and the presence of water completes this work (using remote sensing).

The study area is the endemic focus of the Ouémé-Plateau region in south-east Benin, and the areas considered potentially at risk are not limited to water supply points alone, but also include flooded crossings, ditches and ponds used in farming activities, as well as other, sometimes seasonal, water points (e.g. fishing ponds). This work made it possible to reduce the potential number of contaminated sites as it became clear that no patients or control-individuals frequented them. Nevertheless, the etiology of the disease remained too uncertain.

Genomic analysis is a new approach. A study of *M. ulcerans* strains among patients at the Buruli ulcer treatment centre in Pobè has identified 8 distinct genotypes whose geographical distribution is not random. This study, carried out by the ATOMycA team at INCIT, highlighted an area of interest, in the south of the Ouémé region, where there is a spatial clustering of two specific genotypes. In this communication, we will present this new approach, which crosses the data obtained by comparative genomics with that collected in geographical health surveys. We will show the advantages of using this mixed research method to highlight common areas of infection and gain a better understanding of the ecological reservoir(s) of *M. ulcerans*. In conclusion, we will discuss how ongoing progress in genetic technologies can help to modify our practice of health geography, particularly on smaller scales, by including here the spatial distribution of micro-organisms capable of partitioning *M. ulcerans* in places with strong local roots.

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Session Classification: Paper Presentations

Track Classification: Global Health: Infectious Diseases

Contribution ID: 15

Type: **Paper**

Lung Cancer Risk and Its Potential Association with PM2.5 in Bagmati Province, Nepal - A Spatiotemporal Study From 2012 to 2021

Tuesday, July 16, 2024 3:00 PM (20 minutes)

This study investigates the spatial-temporal distribution patterns of lung cancer incidence in Bagmati province, Nepal, focusing on the potential association with particulate materials (PM2.5). Analyzing data from 2012 to 2021 reveals an increasing trend in crude cancer incidence rates, with notable municipal-level variations. Males consistently exhibit higher rates, particularly in middle-aged and elderly populations. Spatial analysis identifies concentration trends and hotspots developed in Bhaktapur, Panchkhal, and Sunapati municipalities; they had the highest lung cancer risk in Bagmati province, emphasizing the impact of pollution and high population density. The results showed the association between the distribution of lung cancer and PM2.5, which requires a detailed analysis of the patient's data obtained in the Bhaktapur Cancer Hospital from the perspective of geospatial distribution. The findings underscore the need for targeted public health interventions, highlighting the role of PM2.5. Future research should explore the relationship between lung cancer distribution and various risk factors for effective screening and prevention. Addressing air pollution could potentially reduce future lung cancer incidence in Nepal.

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Session Classification: Paper Presentations

Track Classification: Climate Change & Health: Environmental Health

Contribution ID: 16

Type: **Poster**

Global positioning system-based food environment exposures, diet-related, and cardiometabolic health outcomes: a systematic review and research agenda

Thursday, July 18, 2024 12:40 PM (20 minutes)

Objective

We aimed to systematically summarize the evidence for an association between GPS-based exposures to the retail food environment and diet-related and cardiometabolic health outcomes.

Methods

We performed a systematic search in PubMed, Embase.com, APA PsycInfo (via Ebsco), Cinahl (via Ebsco), the Web of Science Core Collection, Scopus, and the International Bibliography of the Social Sciences (via ProQuest) from inception to October 31, 2022. We included studies that measured exposure to food retailers in an activity space defined through GPS tracking and its association with food choices, food purchases, food consumption, cardiometabolic risk factors or cardiometabolic health outcomes.

Results

Of 2949 studies retrieved, 14 studies fulfilled our inclusion criteria. The evidence was heterogeneous and inconclusive. Most studies examined multiple exposures and outcomes with only a few of these being statistically significant or representing meaningful associations. Inconsistency of results was independent of specification of the activity space, buffer sizes, how distal the outcome was and whether temporal aspects were taken into account.

Conclusions

Although many studies advocate the use of GPS-based methods, the current but limited evidence base does not provide strong evidence for more consistent associations with diet-related and cardiometabolic health outcomes of GPS-based vs. static exposures of the food environment. We highlight challenges related to variations in GPS data processing, the lack of studies investigating selective daily mobility bias and temporal aspects, and the need for studies that examine the behavioral pathways through which individuals respond to food retailer exposure.

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Session Classification: Poster Presentations

Track Classification: Global Health: Obesity

Contribution ID: 17

Type: Paper

Differentials and Determinants of Full Antenatal Care Utilization among Scheduled Caste Mothers in India: Evidence from NFHS-5 (2019-21)

Thursday, July 18, 2024 10:40 AM (20 minutes)

Background: One of the key factors contributing to high maternal death rate among women in India is inadequate utilisation of full ANC. Despite very low level of ANC coverage among mothers belonging to Schedule Castes, as compared to privileged groups, no study has focused on ANC utilisation among them at national-level.

Methods: Using data from the National Family Health Survey-5, 2019-21, a sample of 30394 SC mothers was analysed. The outcome variable full ANC was determined from three components. Bivariate statistics was employed to determine the significance of association between full ANC utilisation and its predictors. Furthermore, to investigate the net effect of the predictor variables on full ANC coverage, univariate and multivariate binary logistic regression was applied.

Results: Only 30% of SC mothers received full ANC with 58% undergoing four or more ANC visits, 47% ingesting the recommended amount of IFA, and 84% receiving TT injections at least twice. Mothers aged 30-39 years, those who had higher education (AOR: 1.89, 95% CI: 1.62-2.20), belonged to rich households (AOR: 1.49, 95% CI: 1.32-1.68), had high exposure to mass media (AOR: 1.32, CI: 1.09-1.60), met with health workers (AOR:1.27, CI:1.17-1.35), belonged to southern (AOR: 2.07, CI: 1.86-2.30) region had higher likelihood of utilising full ANC. On the other hand, multiparous (AOR: 0.55, CI: 0.48-0.61), rural (AOR: 0.85, CI: 0.77-0.93) and Muslim mothers (AOR: 0.67, CI: 0.0-0.90) had lower odds of the same.

Conclusions: Several socio-demographic, and behavioural factors were found to be significantly associated with full ANC coverage among SC mothers.

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Session Classification: Paper Presentations

Track Classification: Health, Justice, Human Rights, Policy & Practice: Structural Determinants of Health

Contribution ID: 18

Type: Paper

Predictors to Intensive Care Unit Admission Among Patient With Coronavirus Disease in Sukraraj Tropical and Infectious Disease Hospital, Nepal: A Case-Control Study

Tuesday, July 16, 2024 4:40 PM (20 minutes)

The clinical features of COVID-19 are vary widely, ranging from asymptomatic states or mild upper respiratory tract infections to severe pneumonia. Previous studies have shown that 20.0% of COVID-19 patients are hospitalized, out of which 10.0–20.0% are admitted to the Intensive Care Unit. The present study aims to assess predictors associated with COVID-19 leading to Intensive Care Unit admission among reverse transcriptase- polymerase chain reaction (RT-PCR) positive patients in Sukraraj Tropical and infectious disease hospital, Nepal.

A case-control study was conducted from June 2022 to July 2022 among patients admitted to Sukraraj Tropical and Infectious Disease Hospital. A hospital-based age (± 2 years) and sex-matched case-control study design were adopted in which ICU admitted (case group, n= 33) and general ward admitted (control group, n=66) were included . Data were collected using a structured questionnaire. Data were analyzed using the Statistical Package for Social Science version 11.5. The Chi-square test and conditional logistic regression to determine the predictors associated with ICU admission.

High blood pressure, high C-reactive protein ,and poor application of preventive practices were found to be the predictors of ICU admission. Conditional logistics regression analyses revealed that independent risk factors associated with ICU admission were elevated blood pressure (AOR = 2.22; 95% CI 1.05 –4.71, p= 0.015) and abnormal C-Reactive Protein (AOR = 2.92; 95% CI 1.24 – 6.84, p = 0.012). Likewise, patients with poor preventive practice (AOR = 3.34; 95% CI 1.19 –9.31, p=0.02) more likely to get admitted to ICU than patient with good preventive practices.

These research findings hold potential significance for facilitating early triage and risk assessment in COVID-19 patients.

Keywords: Clinical predictors,COVID-19, Intensive Care Unit, Preventive practices, Sukraraj hospital

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Session Classification: Paper Presentations

Track Classification: Global Health: Infectious Diseases

Contribution ID: 19

Type: **Poster**

Impact of Climate Change on Vector Species Suitability in Arkansas

Thursday, July 18, 2024 12:20 PM (20 minutes)

Ticks are the most prevalent vector species in the United States (Beard, Eisen, and Eisen, 2021). They are a common parasitic insect, which bite humans to receive sustenance from our blood. When they bite a human, they leave behind bacteria, viruses, and parasites, which can cause secondary infections and illnesses (Parola and Raoult, 2001). Despite knowing the impact that ticks can have on human and animal health, there is little information regarding how the lifecycle and range of ticks has been impacted by a locally changing climate. The term “ecological niche shift” explains the renegotiated patterns that fauna integrates when impacted by new external stressors. Due to climate change, progressive warming has expanded the tick’s temporal range, allowing it to have more days per year to feed and to mate (Alkishe, Raghavan, and Peterson, 2021). This study’s purpose is to evaluate the impact of vector borne disease in Arkansas across time. Understanding the changing temporal and spatial scale of ticks will be vital to future public health efforts, as their status as the United States’ primary vector species speaks to their prolific status in everyday life, and their potential detriment to the health and wellbeing of the nation. To date, there is a wealth of information regarding vector borne diseases, but there is a lack of consolidated information regarding the changing ecological niche of disease vectors in Arkansas across temporal scale. While the climate changes globally, all species will need to adapt to prepare for ecological stress, including insects which can spread zoonotic diseases. Though this poster’s scope would be to address a knowledge gap in Arkansas, the tools and background information detailed will have more national or global applicability.

Primary author: Mr WILLIAMS, Dalton (University of Arkansas)

Presenter: Mr WILLIAMS, Dalton (University of Arkansas)

Session Classification: Poster Presentations

Track Classification: Global Health: Infectious Diseases

Contribution ID: 20

Type: **Student Paper Competition**

Unequal Scene and Health Inequality in Rapidly Growing City of Akure: The Nigerian Reality.

Thursday, July 18, 2024 1:40 PM (20 minutes)

Cities play important and critical role in the achievement of Sustainable Development Goal 3. However, the urbanization trend in Low Middle-Income Countries (LMICs) like Nigeria presents significant sustainable development challenge, particularly the striking urban health inequalities. It is well known that factors such as geography, social determinants of health, economic and health policies influence health inequality; little is known about the complex interplay between urban structure and health in rapidly urbanizing cities in Nigeria. Therefore, this study utilizes retrospective primary health care data and Very High-Resolution satellite imagery to determine the malaria prevalence among children below five years (U5) based on various settlement types in Akure, southwestern Nigeria. Malaria Indicator Questionnaire (MIQ) was used to obtain U5 malaria prevalence based on random sampling of households while the satellite images aided settlement classification of the city based on unique morphological features into four settlement types –informal, medium density, formal/planned, and peri-urban settlements. The model-based geostatistical modelling of U5 malaria prevalence and settlement classification of the city using Momepy tool in Python yielded interesting insights. Key findings show spatial variability in malaria prevalence among U5, with higher malaria burden in the informal and peri-urban settlement compared to the lower prevalence in formal settlements. Thus, our findings underscore the urgent need for comprehensive urban development policies to address health inequities by prioritizing physical infrastructure improvements in marginalized areas. Such improvements will translate to enhanced health equity for rapidly growing informal, poor, and deprived settlement areas and ultimately promote sustainable urban development efforts.

Primary author: BAYODE, Taye (Heidelberg University, Germany)

Co-authors: Prof. SIEGMUND, Alexander; Prof. AKINBAMIJO, Olumuyiwa

Presenter: BAYODE, Taye (Heidelberg University, Germany)

Session Classification: Student Paper Competition

Track Classification: Health, Justice, Human Rights, Policy & Practice: Health Disparities

Contribution ID: 21

Type: **Student Paper Competition**

Prevalence and determinants of Low Dietary Diversity (LDD) among men in India: Evidence from a nationally representative survey.

Monday, July 15, 2024 1:40 PM (20 minutes)

Abstract

Background: Dietary Diversity is a growing concern across the states of India. There is scarcity of studies that stressed on diversity of diet in men. Therefore, this study investigates the socio-economic and spatial disparities in Low Dietary Diversity (LDD) prevalence among men in India collecting data from the 5th round of the National Family Health Survey (NFHS-5), 2019-21.

Method: This study made use of data from the NFHS-5 and a sample of 0.1 million Indian men were taken into account. Bivariate statistics e.g., cross tabulation, Chi-squared test and multivariable logistic regression was performed to assess the inequalities in LDD prevalence among men and by their background characteristics.

Result: The analysis indicated significant socio-economic variations in LDD among men. Indian men of age group (45-54) (OR: 1.10, 95% CI, 0.99-1.22); Men who belong to the rural household of India (OR: 1.11, 95% CI, 1.02-1.21); men from Northern region (OR: 10.57; CI: 8.78- 12.72) and men who received no formal were more likely to have LDD. However, men with higher education (OR: 0.77; CI: 0.68- 0.86), "Others" category men (OR: 1.18, 95% CI, 1.07-1.29), and men from Southern region were less likely to have LDD.

Conclusion: Several sociodemographic, geographic and behavioural factors were associated with diet among Indian men. This study emphasized the importance of targeted public health interventions to cut the burden of LDD in men.

keywords: Dietary diversity score, Men, Socio-economic variation, low dietary diversity, India.

Primary author: ROYCHOWDHURY, Ratul (Banaras Hindu University)

Co-author: Dr SINGH, Harpreet (Banaras Hindu University)

Presenter: ROYCHOWDHURY, Ratul (Banaras Hindu University)

Session Classification: Student Paper Competition

Track Classification: Global Health: Food Insecurity

Contribution ID: 22

Type: Paper

Working in “holidayland”

Thursday, July 18, 2024 2:40 PM (20 minutes)

Until now, the geography of health has shown little interest in tourist areas, apart from approaches linked to medical tourism. This communication focuses on the socio-spatial dimension of the health of tourism workers. This subject has received little attention in the social sciences given the relative invisibility of this population, due to the fact that work and holidays are antinomic (Delaplace, Simon, 2017; Guibert, Réau, 2021). But what does it mean to work in holiday country? What are the socio-spatial characteristics of tourist destinations capable of influencing the health and well-being of tourism workers? To tackle this issue, this communication will draw on the results of a seven-month qualitative study carried out on the island of Mallorca, in the Balearic Islands of Spain, between February and August 2022. The study is based on 47 semi-structured interviews with workers in the tourist restaurants sector, politicians, trade unions and health professionals, as well as a phase of direct observation (Arborio, Fournier, 2021). The originality of this research lies above all in the fact that it used the determinants of health as a socio-spatial framework for interpreting the health and well-being of workers in a tourism context. An analytical framework based on the list of health determinants (see figure) provided a qualitative and multi-dimensional interpretation of the health of the population of workers studied. This tool could be used in the future as a tool for socio-territorial health diagnosis in tourist areas.

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Key words : Health, Tourism, Work, Wellbeing, Social geography

Primary author: Dr SZPYRKA, Thibaud (ESO-Angers)

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Presenter: FLEURET, sebastien (University of ANgers, ESO-CNRS)

Session Classification: Paper Presentations

Track Classification: Health, Justice, Human Rights, Policy & Practice: Structural Determinants of Health

Contribution ID: 23

Type: Paper

Delving into Reproductive Health Challenges: A Qualitative Inquiry among Rural Meo-Muslim Women in Ujina Village, Haryana

Monday, July 15, 2024 10:20 AM (20 minutes)

Background: Reproductive health inequalities persist in rural areas, particularly among marginalized communities like the Meo-Muslim population, due to various socio-cultural and economic factors. This study aims to identify and comprehend the distinct reproductive health obstacles facing Meo-Muslim women in study area.

Objectives: The research has two main objectives: firstly, to clarify the specific reproductive health issues experienced by Meo-Muslim women within their socio-cultural setting, and secondly, to investigate the factors influencing these challenges, including cultural norms, access to healthcare, and socio-economic circumstances.

Methodology: Using a qualitative approach, this ethnography study seeks to capture the nuanced perspectives and lived experiences of 40 participants. Purposive and exponential discriminative snowball sampling techniques will be employed to recruit Meo-Muslim women of reproductive age from study area. Data collection methods include key informant interviews, focus group discussions, and individual in-depth interviews with women aged 15 to 49 years.

Findings: Key findings underscore the prevalence of early marriage, limited spousal communication, inadequate contraceptive use, frequent and closely spaced pregnancies, lack of knowledge about menstrual hygiene, and frequent reproductive tract infections. Thematic analysis will be used to identify recurring patterns and themes related to reproductive health challenges.

Conclusion: The study aims to enhance understanding of the reproductive health needs of rural Meo-Muslim women and to inform the development of culturally sensitive interventions aimed at improving reproductive health outcomes in this community. This research paper contributes to the ongoing efforts to empower women in the Meo-Muslim women of this community, promoting their social, economic, and overall well-being.

Keywords: Meo-Muslim Women; Reproductive health; Healthcare challenges; Qualitative study; Nuh

Primary author: Mr MEENA, Avadhesh kumar (Banaras Hindu University)

Co-authors: Dr SINGH, Harpreet (Banaras Hindu University); Mr KUMAR, Vineet (Banaras Hindu University); Mrs SINGH, Sanjana (Banaras Hindu University); Mr ROYCHOWDHURY, Ratul (Banaras Hindu University)

Presenter: Mr MEENA, Avadhesh kumar (Banaras Hindu University)

Session Classification: Paper Presentations

Track Classification: Health, Justice, Human Rights, Policy & Practice: Human Rights and Health

Contribution ID: 24

Type: Paper

Examining the Contribution of the Neighborhood Built Environment to the Relationship Between Neighborhood Disadvantage and Early Childhood Development in 205,000 Australian Children

Monday, July 15, 2024 5:00 PM (20 minutes)

OBJECTIVE: We examined associations between neighborhood built environment features and early childhood development, and the contribution of the built environment to associations between neighborhood disadvantage and early childhood development.

METHODS: Spatial neighborhood built environment measures were linked to participant addresses in the 2015 Australian Early Development Census (AEDC) for children approximately 5 years old (n=205,030) living in Australia's 21 most populous cities. The AEDC contains teacher-reported data on five developmental domains for all children in their first year of formal schooling. AEDC scores were classified as 'developmentally vulnerable' (≤ 10 th centile) on each domain. Using multilevel logistic regression, 44 built environment measures were tested with developmental vulnerability on at least one domain of the AEDC, and contribution to associations with neighbourhood disadvantage.

RESULTS: Children had decreased odds of developmental vulnerability when living in areas with more early childhood education and care services exceeding Australian standards, healthier food outlets, and affordable housing, after adjusting for individual-level socioeconomic factors and neighbourhood disadvantage. Disadvantage remained significantly associated with developmental vulnerability after adjustment for child/family and neighborhood built environment features.

CONCLUSIONS: The neighborhood built environment had small effects on the neighborhood disadvantage-early childhood development relationship. However, small population effects may have wide-ranging impacts. Results suggest that modifying the built environment at scale, with attention to early childhood education and care, food provision, and housing, may be a promising strategy for supporting good child outcomes. More attention is needed to understand the mechanisms between neighborhood disadvantage and child development.

Primary author: BADLAND, Hannah (RMIT University)

Co-authors: Dr VILLANUEVA, Karen (RMIT University); Dr ALDERTON, Amanda (RMIT University); Prof. DAVERN, Melanie (RMIT University); Mr HIGGS, Carl (RMIT University); Prof. TURRELL, Gavin (RMIT University); Prof. GOLDFELD, Sharon (Royal Children's Hospital)

Presenter: BADLAND, Hannah (RMIT University)

Session Classification: Paper Presentations

Track Classification: Health, Justice, Human Rights, Policy & Practice: Structural Determinants of Health

Contribution ID: 25

Type: **Paper**

Eating for health and the planet: Shifting discourses of sustainable healthy diets

Tuesday, July 16, 2024 5:00 PM (20 minutes)

The global pandemic and extensive extreme climate hazards have propelled public awareness to unprecedented levels on lifestyle changes, at the center of which is healthy and responsible eating. In practice, however, achieving the optimal balance between maximizing health benefits and minimizing environmental impacts through dietary changes is often not as straight-forward. Often, food preferences and culinary decisions are the results from socioeconomic conditions and cultural norms, and, ultimately, their interactions with public discourses about dietary choices. It is therefore crucial to investigate such public discourses to inform sustainable dietary transitions. This paper traces the shifting public discourses about sustainable healthy diets and investigates the dynamics behind the changes, with a primary focus on the United States. It utilizes diverse sources of publicly available data –i.e., government policies, dietary guidelines, media, and marketing communications –to map out key trends in public discourses about the relationship between diets, health, and sustainability. Adopting an interpretative approach of qualitative data analysis, it demonstrates the role of key players –from international organizations and national government agencies to private companies and marketing agencies –and cultural norms in shaping the narratives about eating for health and for the planet. By identifying ambiguities and contradictions in these narratives, the paper sheds light on the challenges and controversies in the societal dietary transitions towards sustainability.

Primary author: Dr JIANG, Wenjing

Presenter: Dr JIANG, Wenjing

Session Classification: Paper Presentations

Track Classification: Climate Change & Health: Sustainability

Contribution ID: 26

Type: **Student Paper Competition**

Building Carer-friendly Workplaces in Canada: Examining the Uptake of Standardized Tools

Thursday, July 18, 2024 1:00 PM (20 minutes)

Canada's employment landscape is changing, with 1 in 4 employed Canadians also juggling unpaid care responsibilities (Magnaye et al, 2023). As the backbone of the healthcare system, unpaid carers provide the vast majority of health and social care in Canada (Statistics Canada, 2023). Transportation is the primary care activity by CEs navigating a variety of environments in carrying out care related tasks, often resulting in burnout (Magnaye et al, 2023). The labour force sector has a major impact on CEs ability to navigate work-life balance. To support work-life balance, McMaster University partnered with the Canadian Standards Association (CSA) to build two tools that provide guidance for employers to build carer-friendly workplaces: the CSA B701:17 Carer-inclusive and Accommodating Organizations Standard (CAOS) and accompanying Implementation Guide B701HB-18 Helping Worker-carers in your organization (HWO) were published in 2017 (Williams et al., 2018). Although previous intervention research with Canadian workplaces has highlighted the significant health and economic benefits of carer-friendly workplaces (Ding et al., 2020; Ding et al., 2021; Ding et al., 2022), limited uptake of the CAOS and HWO has occurred. The present study aims to determine the degree of uptake of these tools. A mixed-methods approach will be employed, beginning with a quantitative survey followed by qualitative interviews with a sub-sample of survey participants. Data will be triangulated, with results providing insight into the degree to which the tools have been implemented, in addition to the identification of barriers to uptake. This will inform continued knowledge mobilization of the tools.

Primary author: CHMIEL, Brooke**Co-author:** Dr WILLIAMS, Allison (McMaster University)**Presenter:** CHMIEL, Brooke**Session Classification:** Student Paper Competition**Track Classification:** Health, Justice, Human Rights, Policy & Practice: Inclusivity and Diversity

Contribution ID: 27

Type: Paper

Exploring space and practices of control in long-term residential care violence prevention strategies

Thursday, July 18, 2024 3:40 PM (20 minutes)

Long-term residential care (LTRC) should be a safe place to work and to live, but in reality, it can be a site of violent situations for older people and staff. In this presentation, we draw on critical geographies, aging, and violence research to analyze how staff manage and control the risk of violence in LTRC. Specifically, we explore the role of space as an instrument of control in places of care; the language of risk and risk containment in these places; and how movement figures in the management of the risk of violence. Data included telephone and web-based semi-structured interviews with 29 staff in two Canadian provinces from 2021-2023, which were analyzed inductively. LTRC staff described having access to and support from other staff as an important feature of safe places. They also emphasized visibility, opportunities to escape from violent or threatening situations, being cognizant of objects that may be used as weapons and moving some residents to other tables, rooms, or specialized units. Finally, some staff acknowledged tensions between person-centered care and protecting staff and resident safety. Our analysis raises concerns about whether the management of space, objects, and activities employed to promote safety contribute to the care and dignity of older people. By drawing attention to the role of space, place, and risk containment in managing violent situations, we illustrate the important contributions of critical geography in troubling institutional care for older people and we respond to recent calls for geographers to re-engage with the long-term care sector.

Primary author: HERRON, Rachel (Brandon University)

Co-authors: Dr SPENCER, Dale (Carleton University); Dr NOVEK, Sheila (University of British Columbia); Dr FUNK, Laura (University of Manitoba); Dr KELLY, Christine (University of Manitoba); Dr AUBRECHT, Katie (St. Francis Xavier University)

Presenter: HERRON, Rachel (Brandon University)

Session Classification: Paper Presentations

Track Classification: Health, Justice, Human Rights, Policy & Practice: Human Rights and Health

Contribution ID: 28

Type: Paper

Therapeutic landscapes and the functioning-based WHO approach of healthy ageing: Results from the German Longitudinal Urban Cohort Ageing Study (LUCAS)

Monday, July 15, 2024 3:00 PM (20 minutes)

Introduction

The WHO has developed a new conceptual model of healthy ageing (WHO 2015). Rather than considering healthy ageing from the perspective of the presence/absence of disease, this functioning-based approach is oriented towards developing and maintaining the functional ability that enables wellbeing in older age. This functional ability is linked both to the individuals and the interaction between the individuals and their environment. In the Longitudinal Urban Cohort Ageing Study (LUCAS), a representative metropolitan setting in Hamburg, Germany, we examined whether the concept of therapeutic landscapes could be valuable to better understand processes supporting functional ability maintenance.

Methods

LUCAS is an ongoing cohort study comprising more than 3,300 community-dwelling seniors 60 years and older which has been established 25 years ago. One aim is to describe individual trajectories of ageing by documenting changes of functional ability from robustness to frailty and disability by the use of the LUCAS functional ability index. In 2009 and 2023 the LUCAS survey contained specific questions on therapeutic landscapes. Participants were asked about sources of power (e.g., nature, family, faith) to get through difficult phases of life and to identify places (e.g., buildings, green/blue areas) where they feel comfortable and can replenish.

Results and discussion

We analyse replies of 1,954 participants (median age 75.6 years, 61.5% female) from LUCAS wave 2009 and discuss these results in the light of their place experiences regarding changes in functional ability as reported during wave 2023.

Primary authors: KISTEMANN, Thomas (GeoHealth Centre, Institute for Hygiene & Public Health, University Hospital Bonn); Dr DAPP, Ulrike

Presenter: KISTEMANN, Thomas (GeoHealth Centre, Institute for Hygiene & Public Health, University Hospital Bonn)

Session Classification: Paper Presentations

Track Classification: Innovation in Methods: Longitudinal Analysis

Contribution ID: 29

Type: **Panel**

Creative research methods for approaching the role of space and time in health geography

Monday, July 15, 2024 2:40 PM (1h 20m)

Health geographers have been shifting the allied fields of human geography, epidemiology, and public health towards research designs that account for both space and time. Longitudinal designs are recognized as superior to cross-sectional designs given their ability to infer casual relationships and fore/backcast the role of socio-environmental determinants of health outcomes. While traditional cohort-based designs are still desirable, health geographers have been developing new research designs that gather and synthesize quantitative and qualitative data to enable unique insights about space and time in health. Panelists will briefly share their methods, followed by a discussion of the challenges and future of space-time research in the allied fields of health geography. Wray will discuss the use of a novel geographic ecological momentary assessment tool to collect spatial data, survey responses, and videos from participants in real-time as they experience places. Smith will illustrate the applications of smartphone-based walk-along interviews and observational data collection with a diverse range of populations. Sadler will discuss the use of historical built environment data to retrospectively examine health outcomes and structural racism in these outcomes. Lafreniere will describe using historical administrative data and statistical microdata to construct novel models of past infectious disease outbreaks. Following these presentations, panelists will engage in a moderated discussion among themselves and with the audience, with Widener acting as the nominated discussant. The session is expected to discuss the challenges of managing data and participants, how to develop funding applications that enable long-term research designs, and the future of space-time health geographies.

Primary author: WRAY, Alexander (The University of Western Ontario)

Co-authors: Dr LAFRENIERE, Don (Michigan Technological University); Dr SMITH, Lindsey (University of Toronto); Dr WIDENER, Michael (University of Toronto); SADLER, Richard (Michigan State University)

Presenters: WRAY, Alexander (The University of Western Ontario); Dr SMITH, Lindsey (University of Toronto); SADLER, Richard (Michigan State University)

Session Classification: Panel Discussion

Track Classification: Innovation in Methods: Longitudinal Analysis

Contribution ID: 30

Type: Paper

A geographic ecological momentary assessment of how park engagement affects wellbeing and sleep quality

Thursday, July 18, 2024 10:40 AM (20 minutes)

Background: Parks and recreational facilities are critically important places as they provide opportunities to connect with nature, pursue recreational activities, and facilitate social connections for the entire population. North American medical professionals are also considering the value of “park prescriptions” to address a wide range of chronic health conditions. However, there is a weak cross-sectional evidence base linking park engagement to wellbeing or sleep quality. **Methods:** Our study makes use of a novel geographic ecological momentary assessment protocol. Participants were asked to install an app on their smartphone for two weeks, logging their device’s locations every two minutes. They would receive prompts to complete a short survey about their wellbeing (WHO-5 Index) and sleep quality (Pittsburgh Short-Form) twice per day. In addition, they received a similar survey prompt every time they were determined to be inside the boundaries of a park, and again shortly after they left a park. **Results:** 38 individuals completed the full two-week study protocol, with sufficient geospatial data for inclusion, between August to October 2023. A generalized linear mixed-effect modelling approach revealed engagement with a park in the past 24 hours led to an increase in overall wellbeing, however, no effects were observed for sleep quality. **Discussion:** This study makes several methodological advances over prior dose-response studies related to parks and health, including directly collecting geospatial data logs alongside in-situ survey responses. In addition, the study provides further justification for park prescriptions to be carefully studied before recommending their adoption within broader general medical practice.

Primary author: WRAY, Alexander (The University of Western Ontario)

Co-authors: Ms REINING, Catherine (The University of Western Ontario); Dr GILLILAND, Jason (The University of Western Ontario); Dr LONG, Jed (The University of Western Ontario); Dr DOHERTY, Sean (Wilfrid Laurier University); Dr ZHONG, Shiran (The University of Western Ontario)

Presenter: WRAY, Alexander (The University of Western Ontario)

Session Classification: Paper Presentations

Track Classification: Innovation in Methods: Geospatial Analysis

Contribution ID: 31

Type: Paper

Applying a Trauma-Informed Spaces of Care Model for Programming Solutions for Homeless Substance Users

Tuesday, July 16, 2024 11:20 AM (20 minutes)

Homeless substance users in Montreal, Canada face exceptional barriers to accessing essential resources for exiting homelessness: many homeless resources refuse individuals who are inebriated or who are dependent on drugs or alcohol, or they fail to stably house them. Addressing this gap in services, this research asks: what are the needs of homeless individuals who use substances to exit homelessness? What are the current limits within homeless resources in Montreal to actualize these needs? How can they change to meet these needs? In the summer of 2023, 30 homeless substance users participated in semi-structured interviews to better understand how to adapt housing and homelessness programming specifically for their needs. Taking full consideration of the traumatogenic circumstances that accompany homelessness, a trauma-informed spaces of care framework was employed. This framework expands on a traditional spaces of care framework by illustrating the interplay between those seeking care (homeless substance users), those giving care (resource staff), and the space (homeless resources), all under a trauma-informed lens. Findings revealed a need for a broader spectrum of harm reduction services, better occupational supports, better psychosocial accompaniment, better division of spaces in homeless resources, and specifically adapted programming for this group. Overarchingly participants highlighted the inadequacy of homelessness resources for meeting their needs while disclosing extensive traumatogenic life experiences before and during experiencing homelessness. Implications from this research suggest that the application of a trauma-informed spaces of care framework offers a valuable opportunity for developing health inequity solutions led by those who need them the most.

Primary authors: BRAIS, Hannah (McGill University); Dr RIVA, Mylene (McGill University)

Presenter: BRAIS, Hannah (McGill University)

Session Classification: Paper Presentations

Track Classification: Health, Justice, Human Rights, Policy & Practice: Health Disparities

Contribution ID: 32

Type: Paper

Gendered environmental pathways to sports injury: Insights from retired athletes in the UK high-performance context

Thursday, July 18, 2024 11:20 AM (20 minutes)

Women remain at elevated risk for some sports injuries, including ACL rupture and concussion. Research into gendered injury disparities has traditionally subscribed to a biomedical paradigm focused on the scale of the individual body as site of intervention. Informed by a health geography approach, this research applies a biosocial perspective to women's sports injuries that situates injury experiences and outcomes in the social, cultural, and material context of the sport environment. In doing so, we identify upstream modifiable social, cultural, and material contextual features as targets for intervening in women's injury burden. We employ a creative methodology combining semi-structured interviews, visually elicited storytelling, and poetic transcription, to actively centre women athletes' voices and communicate their experiences in modalities intended to stimulate system change and innovate on evidence delivery within the sport system. Drawing on interviews with 20 recently retired women athletes from 11 different Olympic and Commonwealth sports, our reflexive thematic analysis identified five gendered environmental challenges shaping women's injury experiences, risk, and outcomes: (1) Stereotypes trivialise injury, (2) Physiology is all or nothing, (3) The 'ideal' female athlete, (4) In/visible inequities, and (5) Uneven power dynamics. In this presentation, we share our online multimedia exhibition *More Than Medals* representing these findings, conceptualised as a creative intervention for turning insight into action within the sport system. We argue that intervening upstream in the socio-cultural conditions of sport is necessary to support effective injury prevention and reduce gendered inequities in sports injury.

Primary authors: COEN, Stephanie (University of Nottingham); Dr DOWNIE, Victoria (UK Sports Institute); FOLLETT, Lucy (UK Sports Institute); Dr MCCAIG, Steve (UK Sports Institute); Dr PARSONS, Joanne (University of Manitoba)

Presenter: COEN, Stephanie (University of Nottingham)

Session Classification: Paper Presentations

Track Classification: Health, Justice, Human Rights, Policy & Practice: Structural Determinants of Health

Contribution ID: 33

Type: Paper

'What Do I Ask and Who Do I Ask?': Exploring the role of evidence-informed advocacy for individuals living with a chronic illness

Tuesday, July 16, 2024 3:40 PM (20 minutes)

Engaging knowledge-users within an integrated knowledge translation (iKT) research process enhances the relevance of research outputs and outcomes. During the COVID-19 pandemic, our research team surveyed an international sample (n=1,090) of lupus (a chronic autoimmune condition) patients to increase understanding of how they access and trust health information. While lupus specialists and family physicians were ranked as most trustworthy, participants accessed these sources less frequently during the pandemic. Advocacy organizations, an accessible and credible source of information, were accessed less frequently compared with lupus specialists, family physicians and news and social media (less trusted sources), and trust in advocacy organizations decreased during the pandemic. To further explore these results, we used an iKT approach in partnership with Lupus Canada to engage Canadians with lupus to elicit their perspectives on the survey results and explore the role of advocacy organizations in meeting the information needs of individuals with lupus. Semi-structured in-depth interviews (n=16) were conducted in March/April 2023; preliminary results suggest that participants report a critical need for credible lupus-related information. Although the sample was recruited through Lupus Canada's newsletter/social media, participants report a lack of awareness of advocacy organizations and that they primarily access other sources (e.g., physicians) for health information. Identified factors that influence trust in advocacy organizations include content that is perceived as overly general, and the perception that they are associated with government/are financially motivated. Lupus Canada will use the results of this work to support information development and dissemination for those living with lupus in Canada.

Primary author: Dr CARDWELL, Francesca S. (University of Waterloo)

Co-authors: Dr ELLIOTT, Susan J. (University of Waterloo); Dr CLARKE, Ann E. (University of Calgary); BURGOYNE, Anne (University of Waterloo)

Presenter: Dr CARDWELL, Francesca S. (University of Waterloo)

Session Classification: Paper Presentations

Track Classification: Health, Justice, Human Rights, Policy & Practice: Health Disparities

Contribution ID: 34

Type: **Student Paper Competition**

The periphery of the periphery: civil society organizations navigating inequities in access to water, sanitation, and hygiene in Rio de Janeiro

Tuesday, July 16, 2024 1:40 PM (20 minutes)

The world is experiencing a global water crisis, with increasing water stress, pollution, frequent droughts and flooding, and stark inequities in access to water, sanitation, and hygiene (WASH). In its roadmap to COVID-19 recovery, the United Nations recommends that researchers collaborate with local authorities and communities to ensure continuity and quality of water and sanitation services. This research does that by describing the experiences of civil society organizations (CSOs) navigating barriers and facilitators to WASH in Brazil. In partnership with local CSOs, we designed a comparative case study of three communities facing WASH challenges in the state of Rio de Janeiro. In each community, we interviewed CSO representatives (n=3) and conducted focus groups (n=3) with residents (n=18). Interviews were digitally recorded and transcribed verbatim for subsequent thematic analysis. Emerging themes reveal that communities face similar challenges: recurring water shortages, compromised water quality, complete lack of sewage collection and treatment, and exposure to extreme weather events, such as flooding and landslides. However, communities located near the capital of the state receive more support from CSOs, often relying on them for essential services. Conversely, rural and peri-urban communities configure what participants categorized as the “periphery of the periphery”, lacking support from formal authorities, and the third sector. Data analysis is still being finalized, but participants reported that marginalized communities in the capital receive more attention from humanitarian actors, while those in peripheral municipalities are neglected by more well-funded CSOs. Complicating factors include the presence of criminal groups, militias, and limited social capital.

Primary author: CURTY PEREIRA, Rodrigo (University of Waterloo)

Co-author: Dr ELLIOTT, Susan J.

Presenter: CURTY PEREIRA, Rodrigo (University of Waterloo)

Session Classification: Student Paper Competition

Track Classification: Global Health: Water

Contribution ID: 35

Type: Paper

Residence in a Coastal communities in adolescence and health in young adulthood: an 11-year follow-up of English UKHLS youth questionnaire respondents.

Background The Chief Medical Officer for England's 2021 report showed ecological correlations between small areas in England that were coastal and worse population health outcomes. However, there is scant research on how coastal areas impact individual health.

Methods We used the UK Household Longitudinal Study to examine whether community type (inland or coastal) in adolescence (10-15 years) was associated with five adult health outcomes assessed over 11 waves of follow-up (2009-22). The study design was a pooled panel design with data fitted at the individual and study wave, adjusting for clustering of individuals within LSOAs and longitudinal study weighting. We also tested for effect modification between coastal residence and community deprivation (Townsend index).

Findings Of 4,921 adolescents, approximately 15.5% resided in a coastal area. When only community type was fitted in age-adjusted models, coastal community residence was associated with a 1.23 (95% CI: 1.01, 1.49) higher odds of lower self-rated health and 1.41 (1.03, 1.92) higher odds of long-term illness, impairment or disability, and no association with psychological distress (GHQ-12) or SF-12 functioning scores (mental or physical). However, when community deprivation was taken into consideration, all health outcomes except physical functioning scores showed worse health in increasingly more deprived communities, and to a greater extent in the most deprived communities that are coastal.

Interpretation Young people who grow up in deprived coastal communities have worse health outcomes in young adulthood, than those who grow up in equivalent inland communities. This is especially the case for mental health and wellbeing outcomes.

Primary author: MURRAY, Emily (University of Essex)

Co-authors: Dr KEATING, Avril; Dr BOOKER, Cara; Prof. CAMERON, Claire; Dr BENCHEKROUN, Rachel; Dr WHEWALL, Sam; Dr JIVRAJ, Stephen

Presenter: MURRAY, Emily (University of Essex)

Session Classification: WITHDRAWN OR REMOVED

Track Classification: Innovation in Methods: Longitudinal Analysis

Contribution ID: 36

Type: Paper

Estimating block level malaria fever risk zones of West Bengal in India using space-time conditional autoregressive model

Thursday, July 18, 2024 10:40 AM (20 minutes)

Malaria, a prominent Vector Borne Diseases (VBD) causing over a million annual deaths worldwide, predominantly affects vulnerable populations in the least developed regions. Despite the increase in malaria control and elimination efforts, climatic and non-climatic factors continue to serve as important drivers of malaria transmission, which is highly variable in space and time. A vital aspect of disease management lies in identifying associated risk factors in space and time. This study aimed to investigate the spatiotemporal heterogeneity of two malaria species, i.e. *Plasmodium vivax* and *falciparum*, as well as the effect of covariate risk factors and health inequalities within the targeted population at the block level in West Bengal, India. Different space-time conditional autoregression (STCAR) models were applied to quantify how *P. vivax* and *P. falciparum* malaria fever risk is influenced by lag and without lag-affected climatic and associated non-climatic factors. Statistical inference was performed in a Bayesian setting using Markov chain Monte Carlo (MCMC) simulation. Combining the seasonally lagged climatic variables with the spatial covariates, the results provide thorough insights about spatial heterogeneity and associated risk factors at the block level over the period. Whereas the trend of health inequalities is decreasing narrowly across time, which signifies the regions are still experiencing a greater burden of malaria species. Our space-time models are capable of investigating geographical heterogeneity for both malaria species, emphasizing the need for tailored approaches. Addressing the determinants of malaria transmission, as well as estimating health inequities, necessitates regional collaboration and strategic plans, which are critical steps towards overcoming the remaining hurdles in malaria eradication.

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Session Classification: Paper Presentations

Track Classification: Innovation in Methods: Longitudinal Analysis

Contribution ID: 37

Type: **Paper**

Jackson water crisis and its relationship to health inequities against black communities

Monday, July 15, 2024 10:40 AM (20 minutes)

This study designed a research protocol for the exploration of health inequities against black communities and the contribution of urban water crisis to health inequities in the Jackson region, MS. In addition to mental and physical health status, nine health outcomes of diseases were first applied to the spatial differentiation analysis based on the prevalence at the census tract level between Jackson and its eight peripheral cities. Two spatially and significantly differentiated regions were identified and mapped, most communities in Jackson form the critical health core, while the four peripheral cities of Madison, Ridgeland, Flowood, and Brandon composite the healthiest city belt in the Jackson region. The linear regression and spatial regression models were then designed with the prevalence of 11 types of health status as response, while the percent of black people and the urban water crisis as two explanatory variables. Given the significant spatial autocorrelation in the health data and the significant Rho and Lambda in the spatial modeling process, the spatial error model fitted best with R-squared from about 0.5 to 0.9, and both the percent of black people and the urban water crisis highly contribute to the worse health status in the critical health core within Jackson on five types of diseases of high blood pressure, teeth lost, obesity, diabetes, and physical health, and their effects on asthma, kidney, coronary heart disease, mental health, chronic obstructive pulmonary, and stroke are significant too but relatively lower than the above five diseases.

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Session Classification: Paper Presentations

Track Classification: Health, Justice, Human Rights, Policy & Practice: Health Disparities

Contribution ID: 38

Type: Paper

Multi-generational Impacts of the Uganda 1972 Expulsion Decree for South Asians; creative strategies for place-making practices and health as resiliency in new geographies

Monday, July 15, 2024 10:40 AM (20 minutes)

In the 1960s, significant political, economic and social structures were transforming East Africa as countries experienced independence following colonial histories. Racial tensions continued to divide Uganda, and in 1972, deeming them 'undesirable', self-appointed Ugandan President Idi Amin Dada announced a 90-day expulsion decree for all South Asians, forcibly sending more than 50,000 refugees fleeing.

Several studies explore this immigration event from an historical perspective however, gendered experiences of women and multi-generational impacts on families in this population group have not been thoroughly researched. Drawing from Therapeutic Landscape Theory, this study explores narrative experiences of place-making practices and material culture, through the resettlement experiences of 14, 1st generation (directly affected) and 2nd generation (born within the first five years of resettlement) refugee women who arrived in Canada and/or resettled in the United States. Using a strength-based, decolonising approach to gather these stories, experiences illustrate how creativity as resiliency in place-making practices and the significance of material culture as objects and non-objects of ontology reinforce sense of identity, place and contribute positively to health and well-being.

This study analyses health as resiliency, and reconceptualises how the traditional theory of Therapeutic Landscape can be applied to place-making practices and material culture in new geographies by re-creating relationships and connection with new places, which may offer healing, spiritual significance and connection to land. Specially, this research explores how this study group have found sense of self and place in creative strategies for trauma reconciliation towards health, healing, and meaning through practice, object and symbolism.

Primary author: KHANANI, Asma

Presenter: KHANANI, Asma

Session Classification: Paper Presentations

Track Classification: Global Health: Refugee Settlement

Contribution ID: 39

Type: **Student Paper Competition**

Gentrification, mental health, and well-being: a scoping review to document associations and pathways

Tuesday, July 16, 2024 1:00 PM (20 minutes)

Background. Neighbourhood gentrification has been found to be associated with health in general, but less is known about mental health and well-being, and how these relationships might differ between social groups. This scoping review asks (1) How is gentrification associated with mental health and well-being 2) Who is most affected by gentrification, and why?

Methods. This is the first phase of a mixed methods project on the impact of gentrification on young adults' mental health and well-being. For the scoping review, we identified peer-reviewed publications through database searches, following Arksey and O'Malley (2005) and Levac et al. (2010). An abstract screening pilot was performed by two reviewers on 10% of studies to test the inclusion and exclusion criteria. We included qualitative and quantitative studies published from 2000 to 2024 in French or English.

Results. We will describe study characteristics, and gentrification, mental health and well-being measures used. We will present associations between gentrification, mental health, and well-being, with particular attention paid to social differentials in associations. This will allow us to describe which groups (e.g., women vs. men, younger vs. older) are more or less affected by gentrification. A synthesis of qualitative studies will help us document potential pathways through which gentrification impacts mental health and well-being specifically.

Conclusions. Study findings will provide valuable information to guide future research and urban planning by (1) documenting gentrification effects on mental health and well-being, and (2) exploring if and why the health of specific groups is more or less affected by gentrification.

Keywords: Health equity, Urban health, Mental health and well-being, Gentrification

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Session Classification: Student Paper Competition

Track Classification: Health, Justice, Human Rights, Policy & Practice: Health Disparities

Contribution ID: 40

Type: Paper

Cumulative neighborhood disadvantage and racial disparities in epigenetic aging

Thursday, July 18, 2024 4:40 PM (20 minutes)

There are persistent racial disparities in a wide range of health outcomes in the United States. Biological aging has been hypothesized to underlie these disparities, with some evidence that racial minorities have faster biological aging than their White counterparts. Studies have attributed racial disparities in biological aging to differences in individual- and familial-level socioeconomic status, health behaviors, and current neighborhood environment. Yet, the extent to which neighborhood disadvantage accumulates to influence racial disparities in biological aging has not been examined. Here, using long-term residential histories and spatiotemporally linked neighborhood measures, we examine the contributions of cumulative neighborhood disadvantage over the life course to racial disparities in epigenetic age acceleration derived from DNA methylation profiles. We found that urban Black individuals generally had significantly greater epigenetic age acceleration than Whites across urban, suburban, and rural areas. On average, Urban Black individuals also had significantly greater cumulative exposure to neighborhood disadvantage over the life course than Whites across urban, suburban, and rural areas. The associations between cumulative neighborhood disadvantage and epigenetic age acceleration, particularly measured by GrimAge EAA and DunedinPACE, were stronger among urban Blacks than Whites, although the differences did not reach statistical significance. Taken together, cumulative neighborhood disadvantage plays a significant role in racial disparities in biological aging, and differential exposure, rather than differential vulnerability, appears to be the primary driver. These findings have important implications for interventions aimed at reducing racial health disparities.

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Session Classification: Paper Presentations

Track Classification: Innovation in Methods: Longitudinal Analysis

Contribution ID: 41

Type: Paper

Early adulthood socioeconomic trajectories contribute to inequalities in adult diet quality, independent of household and neighbourhood socioeconomic position

Thursday, July 18, 2024 4:20 PM (20 minutes)

Background: Diet is an important risk factor for cardiovascular disease and shows well-established socioeconomic patterning among adults. However, less clear is how socioeconomic inequalities in diet develop across the life course. This study assessed the associations of early adulthood socioeconomic trajectories (SETs) with adult diet quality, accounting for childhood and adulthood socioeconomic position (SEP) at both household and neighbourhood levels.

Methods: Participants from the 1970 British Cohort Study with socioeconomic data in early adulthood were included (n=12434). Diet quality at age 46 years, evaluated using the Mediterranean diet pyramid, was regressed on six previously identified classes of early adulthood SETs between ages 16 and 24 years, including a Continued Education class, four occupation-defined classes, and an Economically Inactive class. Causal mediation analyses tested the mediation of the association via household income and neighbourhood deprivation at age 46 years separately. Models were adjusted for sex, childhood SEP, adolescent diet quality and adolescent health.

Results: The Continued Education class showed the best diet quality at age 46 years, while little difference in diet quality was found among the remaining SET classes. The association between the Continued Education class and adult diet quality was independent of parental SEP in childhood, and was largely not mediated by household income or neighbourhood deprivation (0.7% and 3.7% of the total effect mediated, respectively) in mid-adulthood.

Conclusions: Early adulthood SETs independently contribute to adult diet quality, with continuing education associated with better adherence to Mediterranean diet. Early adulthood therefore represents a critical period for development of dietary inequalities in later life.

Key words: diet, young adults, socioeconomic inequality, longitudinal designs, the United Kingdom

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Presenter: Dr TAO, Yinhua (University of Cambridge)

Session Classification: Paper Presentations

Track Classification: Innovation in Methods: Longitudinal Analysis

Contribution ID: 42

Type: **Student Paper Competition**

Evaluation of the co-influence of heat index, social vulnerability index, and neighborhood factors on crime rate - a case study of Baltimore City

Monday, July 15, 2024 1:40 PM (20 minutes)

This study investigates the relationship between heat index (HI), built environment, socioeconomic status, social vulnerability index (SVI), and violent crimes in Baltimore in the summer from 2016 to 2022 through a univariate analysis using zero-inflated Poisson (ZIP) regression and spatiotemporal analysis using a spatiotemporal Bayesian hierarchical model. First, we found in univariate ZIP analysis that a negative correlation between green space (GS) coverage and the crime rate (relative risk (RR) = 0.544, 95% confidence interval (CI) 0.527-0.562 per 1 percentage increase) and a subtle positive correlation between HI and crime rate (RR = 1.007, 95% CI 1.004-1.008 per unit increase). SVI strongly affected crime outcomes (RR = 6.749, 95% CI 5.887-7.737 per 0.01 increase). Given HI is positively associated with crime rates in univariate analyses, the spatiotemporal analysis also shows the same result (posterior mean = 1.006 (95% CI, 1.004-1.008) in 2016), its impact is largely masked by the SVI of the city (posterior mean = 6.591 (95% CI, 5.749-7.557) in 2016). During the 2020-2022 COVID pandemic, the impact of HI showed the opposite correlation (posterior mean = 0.995 (95% CI, 0.989-1.002) in 2020). Even so, the study assumes that, as a public health intervention, reducing HI to the lowest observed level on each day within the city, the estimated number of avoidable crime incidents in 2016-2019 (before the pandemic is approximately 368.48, less than 5% of the total accumulated crimes events). However, even small numbers of preventable violent crimes highlight the significant value of such interventions.

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Session Classification: Student Paper Competition

Track Classification: Climate Change & Health: Environmental Health

Contribution ID: 43

Type: **Paper**

Making Health Visible: Social Science, the Development of Census Tracts, and the Bounding of Urban Space

Tuesday, July 16, 2024 5:00 PM (20 minutes)

Geographers and other social scientists frequently utilize Census tracts to help map and understand the spatial distribution of urban health phenomenon. As a commonly accepted series of spatial units, Census tracts are bound up in scientific approaches to understanding urban health. This paper traces the origins and impetus of the Census tract system, setting the system in its theoretical and conceptual milieu during the 1920s and exploring how Census tracts became the default unit for understanding health phenomena in the United States. Empirically, this paper investigates the role of the University of Chicago School of Sociology in developing and operationalizing Census tracts and how the city of Chicago acted as a 'truth spot' for measuring urban health issues. In the process, this paper examines how various conceptualizations of urban space combined with ideas about health to solidify the boundary systems that we utilize today.

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Presenter: SWAB, Jack (University of Kentucky)

Session Classification: Paper Presentations

Track Classification: Innovation in Methods: Longitudinal Analysis

Contribution ID: 44

Type: **Paper**

Neighborhood Deprivation and Postpartum Readmission Location and Timing

Monday, July 15, 2024 5:20 PM (20 minutes)

The United States is experiencing rising rates of maternal morbidity and mortality. Postpartum hypertension-related complications account for the majority of maternal hospital readmissions within 1 year of delivery. We investigated the influence of access to care and neighborhood factors on the location and timing of postpartum hypertension-related readmissions within 12 weeks of delivery in the Dallas/Fort-Worth metropolitan area of Texas, USA. Using the Dallas Fort-Worth Hospital Council (DFWHC) database, encompassing data from over 80 facilities, we identified patients with first-time hypertension readmissions post-delivery (2014-2018) based on ICD-9 and ICD-10 codes. Neighborhood socioeconomic status was assessed using the Area Deprivation Index (ADI). Of 475,865 deliveries, 5,471 (1.1%) had hypertension-related readmissions; of these 74% were readmitted to the same hospital, and 26% to a different hospital. Most readmissions occurred within the first week postpartum. Patients from more disadvantaged neighborhoods (higher ADI) were more likely to be readmitted to a different hospital, and also had later readmissions. For instance, patients from an ADI of 10 were readmitted 2.9 times later than those from an ADI of 1. These associations persisted after adjusting for insurance status and race/ethnicity. Our findings underscore the impact of socioeconomic factors on postpartum care access and highlight the need for targeted interventions to improve healthcare delivery.

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Presenter: YOUNG, Sean (UT Southwestern Medical Center)

Session Classification: Paper Presentations

Track Classification: Health, Justice, Human Rights, Policy & Practice: Structural Determinants of Health

Contribution ID: 45

Type: **Poster**

Geographical distribution of mailed survey responses about flood risk perception

Thursday, July 18, 2024 12:40 PM (20 minutes)

The number of major floods resulting federal disaster declarations have increased in several US states. Estimated risk of flooding to residential properties alone are expected to increase by over 10% in the next 30 years. Our goal was to assess residents' flood risk perception relative to flood plain risk. Surveys were mailed to households in Nebraska and Iowa in 2022. Because mailing and physical address do not always correspond, each survey was assigned a geocoded location based on residential structure visible on Google Street View and cross-checked with survey self-response. Analysis included descriptive, ANOVA, and geospatial visualization. Response rate was 19.4% (271 of 1,400); 13 respondents did not confirm residential location and were excluded from geographic analysis resulting in n=258.

Understanding flood-prone residents' risk perception is necessary for developing more precise preventive interventions for future floods. Data are being used to develop targeted risk communication interventions for increasing local flood preparedness.

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Session Classification: Poster Presentations

Track Classification: Innovation in Methods: Geospatial Analysis

Contribution ID: 46

Type: **Student Paper Competition**

Prenatal exposure to green space and mental health in early adolescence: Findings from the TRAILS study

Tuesday, July 16, 2024 1:20 PM (20 minutes)

Little is known about the long-term relationship between prenatal exposure to green space and adolescent mental health. Using data from the TRAILS cohort (n=1,476; study period: 1989-2002), we assessed 1) associations between prenatal green-space exposure and four mental-health outcomes, namely externalising problems, internalising problems, tobacco use, and alcohol use, self-reported at eleven-year-old; 2) the mediation of gestational age and birthweight on these associations. Both prenatal and early adolescence green-space exposure were assessed to account for their temporal intercorrelation. In a structural equational model, adolescents with one standard deviation (SD) unit more prenatal green-space exposure showed a 0.119 SD (95% confidence interval [CI]: 0.028, 0.210) more externalising problems in early adolescence. The additional analyses generated two potential explanations for this unexpected positive association. First, controlling for urbanicity attenuated this association to become insignificant, but the degree of attenuation is minor (0.096, 95% CI: -0.003, 0.195). Second, this unexpected association might be a consequence of changes in green-space exposure in the intervening years, namely from birth to early adolescence (childhood), indicating that individuals with increased green-space exposure over childhood exhibited fewer externalising problems in early adolescence. Null mediation was observed for gestational age and birthweight on associations of prenatal green-space exposure with any mental-health outcomes. Overall, these findings highlight the importance of green-space exposure in childhood to the development of externalising problems in adolescence, while green-space exposure at the prenatal period might not play a role in adolescent mental health.

Keywords: Green space, mental health, prenatal exposure, adolescence, life-course

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Presenter: ZENG, Yi (Utrecht University)

Session Classification: Student Paper Competition

Track Classification: Climate Change & Health: Environmental Health

Contribution ID: 47

Type: **Student Poster Competition**

Conceptual framework to uplift climate resilience health systems among communities

Thursday, July 18, 2024 11:40 AM (20 minutes)

Climate change is affecting Indigenous peoples' wellbeing, especially health. While the World Health Organization has introduced climate-resilient health systems to minimise climate-associated health risks, Indigenous communities are often neglected in due to their comparatively small population size. Given this context, we introduce a conceptual framework to improve climate-resilient health systems among Indigenous peoples. Our study is aimed at three objectives: i) to identify characteristics of documented health drivers of Indigenous peoples, ii) to develop a health drivers based conceptual framework to improve community resilience, iii) to apply the proposed framework in case studies. We conducted a global-level systematic literature review to collect data on Indigenous peoples' health in the context of climate change. We analysed 137 peer-reviewed journal articles published between 2013-2023. First, we identified fifteen health drivers for Indigenous peoples, which fall into three categories: i) risk (n=6), ii) protective (n=3) and iii) overlapping (n=6). Second, we developed a conceptual framework that consists of six components: i) place, ii) causations, iii) infirmities, iv) interventions, v) sustenance and vi) drivers. Third, the case study assessment affirmed the feasibility of establishing climate-resilient health systems in communities and emphasized the need to shape health drivers to specific locations. This study is one of the first to introduce a climate resilience health system approach at the community level. Identification of Indigenous peoples' health drivers enhances understanding of causes for health risks and ways for protection. The proposed framework strengthens connections within health systems by informing governments and communities on health policies and governance.

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Presenter: PERERA, Chrishma D. (Virginia Polytechnic and State University)

Session Classification: Student Poster Competition

Track Classification: Climate Change & Health: Interconnected Health

Contribution ID: 48

Type: **Student Paper Competition**

Automating Hazard-Specific Ontology Construction: Methodological Advancements Using Ontology Learning Techniques

Thursday, July 18, 2024 1:40 PM (20 minutes)

System for Ontology Learning and Extraction (SOLE) aims to automate hazard-specific ontology construction from knowledge bases of disaster-related information (e.g., scholarly articles) through the use of ontology learning techniques. The hazard-specific ontologies that are extracted from knowledge bases of disaster-related information will provide planners, policymakers, and decision-makers with the information they need in cases of disaster. This research will contribute by enabling the automated extraction and organization of unstructured data into structured data and information related to a crisis resulting from specific hazards. The proposed system, SOLE can be used to process real-time data from social media to uncover the effects of disasters in different locations, thereby improving critical disaster relief efforts. Also, this research will identify place and hazard-specific impacts by integrating formal and informal terms. Such information can provide critical intelligence for improving disaster planning, recovery, and resilience efforts. SOLE contains two components, which are the Ontology Learning System (OLS) and Semantic Mapping System (SMS). The paper focuses only on the first component.

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Presenter: AL SUBHI, Sundos (Georgia State University)

Session Classification: Student Paper Competition

Track Classification: Climate Change & Health: Natural Disasters

Contribution ID: 49

Type: Paper

Insights into compound ground-level ozone and temperature events relevant for human health

Thursday, July 18, 2024 3:20 PM (20 minutes)

Ground-level ozone is a major air pollutant harmful for human health and there are concerns that ground-level ozone will increase under climate change despite efforts for a rigorous air pollution control. High levels of ground-level ozone often prevail in combination with heat events, e.g., under persistent anticyclones in summer. Due to climate change heat events such as hot days and heat waves are also increasing. Thus, ground-level ozone pollution and thermal stress frequently occur simultaneously, show strong increases under climate change and can have additive or even synergistic effects on human health.

Heat stress plays a particular role in urban areas due to the urban heat island effect and the high number of people affected. Highest temperatures usually occur in densely built areas. Cities are also air pollution hot spots. Due to the formation of ground-level ozone as a secondary air pollutant from precursors, mainly nitrogen oxides and volatile organic compounds, concentrations are highest in suburban areas. The vulnerability of the urban population to heat and air pollution strongly depends on individual conditions such as age, gender and pre-existing health conditions as well as on factors of the living surrounding such as green and grey spaces.

The present contribution highlights relationships and changes of ground-level ozone and temperature with the atmospheric circulation under ongoing climate change. Spatial and temporal differences of the exposures in urban areas and important governing factors are regarded and human health outcomes are discussed. European areas serve as regional examples.

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Session Classification: Paper Presentations

Track Classification: Climate Change & Health: Environmental Health

Contribution ID: 50

Type: Paper

Results of community pilot for connecting people experiencing cancer with social needs

Tuesday, July 16, 2024 3:00 PM (20 minutes)

Over 8 million patients who have experienced cancer face Social Determinants of Health (SDoH) challenges like food, housing, and financial insecurity that directly impact their health outcomes. While social distress screening has been useful for identifying social needs, patients cannot often fail to utilize resources. Therefore, we piloted a patient-centered social care referral platform to see if individuals experiencing cancer would be able to access social care programs provided to them by Community-Based Organizations.

We recruited 14 community organizations and 41 community members to participate in a 3-month pilot study. Community participants registered and consented to the study by using the application on their personal device. After registering, they completed a social needs assessment and were prompted to connect to organizations that could address these needs. Participants also participated in two user experience surveys at 30 and 60 days respectively, and upon completion of the study, participants were recruited to participate in a 30-minute interview.

Our results showed that community members reported needs in 14 categories in our assessment. The top 3 reported needs were physical activity, financial strain, and mental health. Using our social care referral platform, approximately 39% of community members were able to connect with Community Organizations. Patients self-reported that 82% enjoyed using the technology and 29% of them connected with a new CBO.

Primary author: Dr HAYNES, David (University of Minnesota)

Presenter: Dr HAYNES, David (University of Minnesota)

Session Classification: Paper Presentations

Track Classification: Health, Justice, Human Rights, Policy & Practice: Community Engagement

Contribution ID: 51

Type: Paper

Inter-continental analysis on accessibility to vaccination service during COVID-19 pandemic

Tuesday, July 16, 2024 11:20 AM (20 minutes)

Background

Reflecting on the trajectory of COVID-19 from its emergence to its containment, it is evident that vaccination continues to be a potent strategy in mitigating its impact. However, vaccination rates exhibit notable disparities within and across nations. The uneven spread of vaccination sites leads to unequal access beyond supply issues. In the study, we estimated the vaccine accessibility and potential knock-on effects on vaccination uptake and public health.

Method

We included 54 countries/regions spanning all continents, collecting 1km resolution population distribution data and vaccination site locations. We applied the Probability Density Function (PDF) curve to visualize travel times to nearby vaccination sites and used cumulative opportunity measures to access vaccine accessibility within 30 minutes. Additionally, we used E2SFCA method to comprehensively evaluate disparities in vaccine accessibility based on the uneven population distribution within each country.

Finding

For most nations, the median travel time to nearest vaccination site falls within a 30-minute range. The PDF curves for most countries exhibit a right-skewed distribution or approximate a normal distribution, indicating the inadequate vaccine service coverage in certain areas. Furthermore, we observed that regions such as USA and UK generally have higher cumulative opportunities, in contrast to lower levels in Canadian and many African nations. Hong Kong ranks highest with an impressive accessibility of 331.7 sites within a 30-minute range.

Interpretation

The results of accessibility were compared with GDP per capita at country level to reveal disparities in health care and health economy, which provides policy implication to target country/region for vaccine access when the next pandemic comes.

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Presenter: CAO, Yanjia (The University of Hong Kong)

Session Classification: Paper Presentations

Track Classification: Global Health: Infectious Diseases

Contribution ID: 52

Type: **Paper**

Creating a learning health system to include environmental determinants of health: The GroundsWell experience

Monday, July 15, 2024 4:40 PM (20 minutes)

Policies aiming to prevent ill health and reduce inequalities in health need to consider the full complexity of health systems, including environmental determinants. Our objective was to establish privacy-preserving household record linkage for England, ensuring person-level health data remain secure and private when linked with data from households or the wider environment.

We held a stakeholder workshop with participants from the health board, data processor, data provider and academics, where we discussed the risks and benefits of household linkages. This group co-designed actionable dataflows.

A process was defined whereby the Personal Demographics Service dataset, which includes the addresses of all patients registered with a General Practitioner in England, could be used to match patients to a home identifier, for the time they are recorded as living at that address. Discussions with NHS England resulted in secure and quality-assured data linkages and a plan to flow pseudonymised data into regional health boards. We agreed methods for matching algorithms, transfer processes, and information governance approvals. Our collaboration accelerated the development of a longitudinal version of the household linkage system, facilitating future public health intervention evaluations, such as those in GroundsWell.

Establishing a secure method for protecting the privacy of NHS patients in England, while allowing linkage of wider environmental data, enables local health systems to learn from their data and improve health by optimising non-health factors. Proportionate risk-benefit governance of health and linked non-health data is practical in England for incorporating key environmental factors into a learning health system.

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Presenter: RODGERS, Sarah (University of Liverpool)

Session Classification: Paper Presentations

Track Classification: Innovation in Methods: Longitudinal Analysis

Contribution ID: 53

Type: Paper

Resilience Amidst Multiple Crises: Lessons from "Saving Little Lives" Project During the COVID-19 Pandemic, Siege and War in Tigray, Northern Ethiopia

Tuesday, July 16, 2024 10:20 AM (20 minutes)

Abstract

Background: The impact of man-made disasters like war on healthcare systems can be profound and multifaceted, affecting infrastructure and human resources. One of the recent bloodiest and deadliest wars is the Tigray war in Northern Ethiopia, which lasted from November 2020 to November 2022. Approximately 90% of health facilities in the Tigray region were partially or completely damaged, highlighting the weaponization of healthcare and its severe effects on infrastructure and human resources.

Objective: Our presentation will describe the lessons learned from implementing a scale-up of the project called "Saving Little Lives" which aimed at reducing the neonatal mortality rate by 35% in the region amid the COVID-19 pandemic and Tigray war.

Methodology: We employed an Integrated Cross-Sectoral Multilevel (ICM) Health System Resilience Framework to assess the impact of war, siege, COVID-19 pandemic and other challenges on the implementation of the project. This framework allowed for analysis across four levels of the health system (Meta/International, Macro/National, Meso/Health facility, and Micro/Individual) and different time events (Pre-war, Trans-war, and Post-war). Our analysis utilized a mix of deductive and inductive approaches to qualitatively examine the data collected throughout the project implementation and identify thematic areas.

Findings: Despite wartime disruptions, including financial blockages and travel restrictions, the project continued at minimal levels. The project's adaptability and reliance on digital technologies offer valuable lessons for healthcare interventions in conflict zones. Global support played a crucial role in sustaining operations amidst adversity. Understanding the resilience of healthcare initiatives in war-affected regions is critical for effective intervention planning and implementation.

Key Words: Conflict Zones, Resilience, Healthcare attack, Crisis, Scale-up, Digital Innovations, Siege, War

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Session Classification: Paper Presentations

Track Classification: Health, Justice, Human Rights, Policy & Practice: Human Rights and Health

Contribution ID: 54

Type: **Student Paper Competition**

Community Characteristics and Their Influence on Pandemic Resilience During Shanghai's SARSCoV-2b Surge

Introduction

In early March 2022, Shanghai witnessed a rapid outbreak of the SARSCoV-2b virus, a variant of Omicron, which ultimately led to a lockdown that lasted for three months. In response, Shanghai government implemented various epidemic control policies. We noted significant regional disparities in the number of days communities were "listed" due to resident infections. Our research aims to investigate the correlation between the quality of community environments and the higher SARSCoV-2b infection rates under the implementation of epidemic policies.

Method

This study focuses on the transition from localized grid-based management to city-wide lockdown. We collected data on the coordinaties and infection rates of residential communities, as well as housing prices, population density, and other relevant housing metrics. We both applied Bayesian-optimized XGboost and Multi-scale geographically weighted regression(MGWR) to investigate how community environmental factors affected SARS-CoV-2 outbreak dynamics at various policy implementation milestones.

Result

We discovered that high population density and community ages were always the primary drivers of epidemic spread. Intriguingly, during the rapid city-wide lockdown phase within three days, higher housing prices emerged as a main factor associated with community infections. We performed spatial clustering on communities with high infection times and found that they are predominantly concentrated in the central areas of Shanghai.

Intepretation

We noted that in the politics to mitigate epidemic transmission, the allocation of scarce resources to poorer community may yield the greatest benefit. Additionally, irrational city-wide lockdowns may lead to higher-income and central city populations stockpiling supplies more aggressively, thereby causing increased population movement and pandemic outbreaks.

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Session Classification: WITHDRAWN OR REMOVED

Track Classification: Innovation in Methods: Geospatial Analysis

Contribution ID: 55

Type: Paper

“Building CapaCITY/É for Sustainable Transportation”: Documenting Implementation Processes and Outcomes in Nine Canadian Cities

Tuesday, July 16, 2024 4:20 PM (20 minutes)

Interventions that promote active and sustainable transportation modes are critical to increasing everyday physical activity, mitigating climate change, improving population health, and reducing health inequity. However, understanding the origins of such interventions, where they get implemented, how they can be translated to new contexts, and who benefits from them, all remain under-explored. The ‘Building Capacity for Sustainable Transportation’ team (CapaCITY/É) is a group of researchers, city planners, and national organizations in Canada and Australia looking to catalyze the implementation of two types of sustainable transportation interventions –All Ages and Abilities (AAA) bicycle networks and speed management interventions –to support health, mobility, and equity. This presentation will describe progress made in CapaCITY/É with regard to documenting implementation processes (e.g., historical, social, and political context, facilitating and constraining factors) and outcomes (e.g., acceptability, appropriateness, sustainability) of AAA bicycle networks and speed management interventions in nine Canadian cities. Methodologically, we are conducting a comparative case study combining a document analysis and key informant interviews. Specifically, we will (1) describe how we selected cases; (2) present our document search strategy and preliminary findings; and (3) introduce next steps. Our work will identify the array of factors associated with the implementation of sustainable transportation interventions on the ground. Practically, findings from this work will be used to develop an implementation science framework and a decision-making tool to guide city staff in designing healthier and more equitable cities.

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Session Classification: Paper Presentations

Track Classification: Health, Justice, Human Rights, Policy & Practice: Health Disparities

Contribution ID: 56

Type: Paper

“Most people feel that sports are more of a boy thing, but girls can play sports too. I would love my daughter to be involved in that”: A Qualitative Study Exploring Parental Perceptions on Sport Participation for Girls.

Despite evidence on the importance of sport participation for overall physical, cognitive, and psychological health, sport attrition among teenage girls in Canada is three-times higher than that among teenage boys. A recent study on sport participation for adolescent girls in the Greater Toronto Area identified interactive effects of individual, environmental, and task constraints that influence girls' sport participation. Factors such as family support, peer encouragement, positive early experiences, and sport requirements (e.g. physical intensity) interplayed to influence sport participation. Exploring parental influence on sport participation for girls is crucial given that research has linked benefits related to sport participation to social contextual factors, including young athletes' interactions with parents. The main objective of this qualitative study was to explore parental perceptions regarding sport participation for girls. Semi-structured interviews with parents of girls aged 6 to 12 years were conducted (n=9). Open-ended questions probed to uncover parental criteria considered in making decisions related to daughters' sport participation. Thematic analysis identified 10 main themes within the broader categories of sport criteria, daughter's representation, and parental role and experience. These themes included sport requirements, player involvement and challenge level of sports, gender stereotypes, daughter's enjoyment in sport participation, factors that influence the daughter to participate, and impact of sports on daughter's self-efficacy. Additionally, the themes encompass parental history in sports, perceived importance of sport involvement by the parent, and parent's willingness to provide both tangible and emotional support. Collectively, these aspects guide the decision-making process of parents regarding their daughters' participation in sports.

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Session Classification: WITHDRAWN OR REMOVED

Track Classification: Health, Justice, Human Rights, Policy & Practice: Structural Determinants of Health

Contribution ID: 57

Type: Paper

Intersecting inequities in health and disease management: the experiences of racialized immigrants in Canada during the COVID-19 pandemic

Monday, July 15, 2024 11:00 AM (20 minutes)

Research in the global north consistently documents the existence of a ‘healthy immigrant effect’ (HIE) wherein recent immigrants are found to be healthier, as measured by chronic conditions, higher life expectancy, and lower morbidity than their long-term immigrant and native-born counterparts. While research highlights the inequitable burden of COVID-19 among immigrants, little is known about the differential impacts of the pandemic within and between immigrant groups, or the potential synergistic effects of the pandemic on intersecting forms of health inequities among immigrant populations. Drawing on a large mixed method research project with racialized immigrants in Ontario’s Peel Region –a region known as one of the most demographically diverse and major COVID-19 hotspots in Canada –this presentation examines COVID-19 variations within and between immigrant groups, and the underlying determinants driving disparities. In contrast to the HIE, our findings indicate recent immigrants have higher rates of COVID-19 yet lower COVID-19 vaccine rates, while long-term immigrants have lower rates of COVID-19 and higher vaccine rates, suggesting the HIE may have limited applicability to infectious disease. Delving deeper into immigrant group variations, we show how institutionally engrained inequities in Canada’s immigration system intersect with regional legacies of neglect to recalibrate new forms of inequities among immigrants, permanent residents, temporary residents, and refugee groups that co-produce differential opportunities for health, labour, and social welfare needed for health and disease management. We close with a discussion on key knowledge to action gaps and highlight suggestions for health policy and practice.

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Session Classification: Paper Presentations

Track Classification: Health, Justice, Human Rights, Policy & Practice: Inclusivity and Diversity

Contribution ID: 58

Type: **Student Paper Competition**

Life Course 'Cognability': Examining Neighborhoods, Health Behaviors, and Health Disparities

Tuesday, July 16, 2024 1:20 PM (20 minutes)

While disparities in Alzheimer's Disease and Alzheimer's Disease Related Dementias (AD/ADRD) are well-documented, the underlying causal process explaining how and why these inequalities arise is less clear. Evidence suggests that potentially-modifiable individual factors, such as social isolation and physical inactivity, can significantly reduce one's dementia risk. Much less attention, however, focuses on the upstream, contextual factors that structure people's access to these risk factors and behaviors. The Neighborhoods and Health at All Ages Study addresses this gap by investigating neighborhood influences on cognitive health-promoting activities across the lifespan. Seated and mobile interviews conducted from August 2023 to March 2024 in the Minneapolis-St. Paul metropolitan area captured perceptions of neighborhood amenities and hazards among 60 participants aged 18-75 (average age 42). 53% identified as female, 40% male, 7% non-binary; and 30% identified as Asian, 25% Hispanic, 20% Black/African American, 18% non-Hispanic White, and 7% American Indian/Alaska Native. Reflexive thematic analysis revealed age-specific patterns: young adults prioritized affordable amenities and online social infrastructure, mid-life individuals emphasized safe transportation and educational sites, while later life participants valued civic/social organizations and accessible outdoor recreation. This study uncovered nuanced perspectives on neighborhood engagement, including experiences of structural racism, classism, and ageism. Analysis captures nuanced perspectives and varied experiences of how individuals engage with their neighborhoods across the life course. Results highlight the importance of creating equitable neighborhoods with opportunities to support lifelong cognitive health. Findings deepen understanding of how adults of different ages leverage community sites to engage (or not) in cognitively-healthy lifestyle behaviors.

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Session Classification: Student Paper Competition

Track Classification: Health, Justice, Human Rights, Policy & Practice: Structural Determinants of Health

Contribution ID: 59

Type: Paper

Accounting for the prevalence of chronic conditions in an agent-based model for COVID-19 hospitalizations

Tuesday, July 16, 2024 10:40 AM (20 minutes)

People with chronic conditions, such as asthma, chronic obstructive pulmonary disease (COPD), diabetes, hypertension, and obesity, are at high risk for poor health outcomes from COVID-19. Accurately accounting for the heightened risk of hospitalization for individuals with these chronic conditions is crucial for future public health emergency preparedness in health care systems. We employ a novel approach of integrating national prevalence data of chronic conditions into the Framework for Reconstructing Epidemic Dynamics (FRED) agent-based modeling platform. Specifically, while also matching age and race prevalences, we assign conditions to adult individuals in FRED's synthetic population which is developed by RTI International from 2010 census data. To address potential over- or under-counting of certain attributes, we have developed an algorithm to check for and adjust individuals accordingly. We have developed this methodology with the intention of leveraging hospitalization risk ratios to better predict COVID-19 hospital admissions using the Simulator of Infectious Disease Dynamics in North Carolina (SIDDD-NC) model built using the FRED platform. This approach, when later integrated into the SIDDD-NC model, will provide valuable insights for public health emergency planning efforts in North Carolina.

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Session Classification: Paper Presentations

Track Classification: Global Health: Infectious Diseases

Contribution ID: 60

Type: Paper

Labour Will Progress Where Māmā Feel Safe: Constructing primary birthing centres as sites of care for low-risk women

Thursday, July 18, 2024 3:40 PM (20 minutes)

High rates of intervention in birth is a significant health issue. In New Zealand, a primary birthing centre is a site for assessment, labour/birth and post-natal care close to home. These centres are midwife-led, supporting normal birth in an environment free from intervention that encourages active labour. Yet less than ten percent of NZ women birth in a primary birthing centre. We consider, how can primary birthing centres build confidence in primary birth? In-depth interviews were undertaken with 24 health care workers at four successful primary birthing centres. The findings demonstrate that ontological beliefs about birth are critical in shaping where the Māmā – and midwife – feel safe birthing. Medicalised beliefs about birth were observed to be self-fulfilling; in the face of entrenched beliefs, midwives adopted a relational approach, scaffolding the sharing information over the course of their client's pregnancy. Participants discursively and visually re-centred birth as a normal physiological event by shifting conversations about pharmaceutical pain relief to natural options, avoiding negative comparisons with hospital. Birth was framed as a process that affords staff the time to manage labour deviating from normal thus minimising clients' fears, such as distance from hospital. The use of reflexive thematic analysis identified midwives' respect for entrenched worldviews that impacted where the Māmā felt safe birthing. Midwives' experiences that labour progresses where Māmā feel safe reflect a neurohormonal understanding of labour that was evident in the qualities of the birthing centre. Our findings demonstrate the implications of growing rates of intervention in labour on birth place decision making.

Keywords: Place, qualitative, reproductive health, primary birth

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Session Classification: Paper Presentations

Track Classification: Health, Justice, Human Rights, Policy & Practice: Community Engagement

Contribution ID: 61

Type: Paper

Is the availability and quality of local early childhood education and care services associated with young children's mental health at school entry?

Monday, July 15, 2024 4:20 PM (20 minutes)

Purpose: This study investigated availability and quality of local early childhood education and care services and cross-sectional associations with mental health outcomes for all children entering their first year of full-time school in Melbourne, Australia.

Methods: We capitalise on a population linked dataset, the Australian Early Development Census –Built Environment, which combines geospatial measures of children's neighbourhoods with demographic information and child mental health outcomes for all school entrants in 21 Australian cities. We analysed data for all children in Melbourne (approximately 50,000 children), stratified by urbanicity (inner, middle, outer and growth areas). Objective early childhood education and care service location and quality exposures were developed for each study child based on home address. Four availability exposures (counts within 3km from home) were examined for associations with mental health outcomes using multilevel logistic regression, adjusting for demographics and stratifying by urbanicity.

Results: Children with higher counts of high-quality preschool services within 3km of home had lower odds of difficulties and higher odds of competence, compared with children with fewer high-quality preschool services available. Associations were not uniform across Melbourne's urbanicity strata and results varied depending on whether service quality was accounted for in availability measures.

Conclusion: We found some evidence that availability of high-quality preschools was associated with better child mental health outcomes, but results varied by urbanicity. Future research should unpack these nuances. There is also a need to develop datasets which combine information on early years service attendance, quality, and geographic availability to better quantify exposure.

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Session Classification: Paper Presentations

Track Classification: Health, Justice, Human Rights, Policy & Practice: Structural Determinants of Health

Contribution ID: 62

Type: **Paper**

A Nature Based Social Prescribing Evaluation Framework (NaBSPEP) applying the One Health perspective

Monday, July 15, 2024 5:20 PM (20 minutes)

Introduction/purpose

Social prescribing (SP) involves a person being referred into a non-pharmacological community based intervention by a healthcare professional to support their health and wellbeing. In the UK and beyond, SP is expanding rapidly and garnering policy and research attention. Nature Based Social Prescribing (NBSP), involves a component of nature and has potential to affect ecological as well as human outcomes which should be recognised in evaluation and planning of NBSP.

Methods

The five key principles of the One Health perspective (equity between different sectors and disciplines, parity between different groups, environmental stewardship, transdisciplinarity and equilibrium of interactions between animals, the environment and humans) are applied to develop the NaBSPEP (Nature Based Social Prescribing Evaluation Pathways) model, showing six interacting causal pathways that can be used in the evaluation of NBSP.

Results

Using the six causal pathways in NaBSPEP model, current evidence is presented, showing the outcomes for each of pathways of influence between NBSP with animal, environmental and human health and wellbeing outcomes.

Conclusions & Recommendations

Typically, evaluations of social prescribing take an anthropocentric viewpoint looking at the ways that nature can support human health. This model of NBSP evaluation takes an ecological justice and posthumanist perspective to understand the important and reciprocal relationships that can exist between NBSP with animal, environmental and human health. In so doing this shows how human health interventions can support human and ecological health and contribute to the sustainability agenda.

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Session Classification: Paper Presentations

Track Classification: Climate Change & Health: Interconnected Health

Contribution ID: 63

Type: Paper

Connection to nature (CTN) and health and sustainability behaviours

Tuesday, July 16, 2024 4:40 PM (20 minutes)

Introduction/purpose of research

The association between accessing nature in a variety of ways and improved health outcomes is well established. However, the causal pathways in this relationship are less well understood. This rapid review considers the potential of connection to nature (CTN) in this association. Additionally, CTN is associated with environmental stewardship which has important implications for sustainability agendas.

Methods

A rapid review of the literature in relation to Connection to Nature defined as feelings of interconnectedness or sense of inclusion with nature.

Results

The review found associations between CTN with a range of health and wellbeing outcomes across sociodemographic groups. There were instances where CTN may have a negative correlation with health and wellbeing such as exacerbating eco anxiety. CTN was associated with environmental stewardship and pro environmental behaviours, behaviours which are increasingly recognised as playing an important role in mitigating environmental degradation.

Conclusions & Recommendations

The policy implications of the role of CTN are wide ranging. From supporting access to nature in education and workplace settings to contributing to national sustainability policy. This review suggests that simply providing natural spaces may not be enough to support mental and physical health benefits, to leverage maximum health benefit consideration should also be given to facilitating a human nature connection. The concept of CTN should be given further consideration in future research into mutual associations between nature with sustainability and health and wellbeing outcomes.

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Session Classification: Paper Presentations

Track Classification: Climate Change & Health: Interconnected Health

Contribution ID: 64

Type: Paper

A geographically-explicit ecological momentary assessment approach (GEMA) on the association between mental wellbeing and micro urban spaces along daily mobility path.

Monday, July 15, 2024 4:40 PM (20 minutes)

Most of the literature examining associations between urban environments and mental health relies only on residential neighbourhoods to define exposure contexts, leaving aside the effects of non-residential environments such as the effects of landscapes along daily mobility paths. Our work offers an innovative geographically-explicit ecological momentary assessment approach (GEMA) to study associations between mental wellbeing and the micro urban spaces along daily mobility path.

Multiple devices and sensors (smartphones, GPS, geographic information systems) were used to collect individual-level spatiotemporal location data, repeated measures of momentary depressive symptomatology and mobility data. This allowed to measure accurate environmental exposures (within a street network sausage buffer of 25 meters of each GPS point) and to investigate whether individuals' momentary depressive symptomatology was related to the exposure to micro-urban spaces along the daily mobility paths within the two previous hours. More than one million GPS points and 4830 EMA depression questionnaires were analyzed for 216 older adults living in the Ile-de-France. Bayesian mixed effect models with random intercepts at the individual and day levels, and time autocorrelation were fitted.

Main results showed a better momentary mental health when participants performed leisure activities or were involved in active mobility and when they exposed to walkable areas (pedestrian dedicated paths, open spaces, parks and green areas), water elements, and commerce, leisure and cultural attractors over the previous two hours. These relationships were stronger when exposures were defined based only on outdoor location points rather than all location points, and when we considered within-individual differences.

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Session Classification: Paper Presentations

Track Classification: Innovation in Methods: Geospatial Analysis

Contribution ID: 65

Type: Paper

The role of cognitive skills on the complexity of walking behaviour and on spatial navigation in urban environment.

Tuesday, July 16, 2024 11:20 AM (20 minutes)

The complexity of cities may pose challenges to those experiencing cognitive decline due to ageing. However, there is a dearth of studies on the effects of cognitive skills on individual spatial navigation in urban environment. We examined how cognitive skills (visuospatial working memory, selective attention and cognitive flexibility) moderate the associations between the built and natural environment and the walking behaviour, including engagement in walking and the spatial complexity of walking trips.

We used mobility behaviour data from 324 adults aged ≥ 50 and living in Melbourne who participated to the iMAP (international Mind, Activities and urban Places) project. GPS mobility and diary data over 7 days were used to quantify the complexity of the mobility patterns and exposure context (both residential and walking trips). Participants' cognitive skills were assessed through face-to-face cognitive function tests. Multilevel regression models with random intercept at the residential neighbourhood and participant levels were used to estimate the associations of environmental variables with walking behaviour, as well as the moderating role of cognitive skills. Results evidenced that individuals with low cognitive skills exacerbated detrimental environmental condition for walking and are less able to adapt to challenging urban situation. Also, lower levels of cognitive flexibility, selective attention and visuospatial short-term working memory intensified the association between entropy of street network orientation and twistiness of walking routes. These results add relevant information for the relationship between urban environment and individual features on walking behaviours and suggest that cognitive skills should be a target for policies promoting walking activities.

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Session Classification: Paper Presentations

Track Classification: Innovation in Methods: Geospatial Analysis

Contribution ID: 66

Type: Paper

Retailer Responses to Public Consultations on the Adoption of Takeaway Management Zones Around Schools: A Longitudinal Qualitative Analysis

Thursday, July 18, 2024 10:40 AM (20 minutes)

Takeaway food is widely accessible in neighbourhood food environments. Local authorities in England can adopt urban planning-based interventions to manage the opening of new takeaway outlets in 'takeaway management zones around schools' ('exclusion zones'). Before adoption, local authorities undertake mandatory public consultation where food retailers can object to proposals. Evidence on common objections could be insightful for policymakers considering this intervention.

From 41 local authorities in England that adopted a takeaway management zone between 2009 and 2019, we identified objections submitted by or on behalf of food retailers. To analyse this publicly available data, we used reflexive thematic analysis to generate themes, and considered any changes over time.

Despite not being within scope of takeaway management zone adoption, transnational fast-food retailers commissioned planning consultants to object on their behalf. Independent retailers did not submit objections.

We generated four themes: The role of takeaways in obesity, Takeaway management zone adoption, Use and interpretation of evidence, and Managing external opinions. Objections from planning consultants outlined what they believed were the causes of poor diet and obesity, and suggested alternative interventions to address them and questioned academic evidence. Over time, objections contained the same arguments but then proposed the need for a partnership to achieve a shared goal.

There is demonstrable concern from transnational fast-food retailers about proposals to adopt takeaway management zones around schools, which could prevent their future proliferation. The strategies used to delay or prevent intervention adoption are likely to be similar elsewhere, making our findings applicable to international audiences.

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Session Classification: Paper Presentations

Track Classification: Health, Justice, Human Rights, Policy & Practice: Structural Determinants of Health

Contribution ID: 67

Type: **Student Paper Competition**

Sustaining a livelihood heritage: Climate challenges to Mexican fishing communities' health, well-being, and identity.

Monday, July 15, 2024 1:00 PM (20 minutes)

Climate-related impacts on the ocean are increasingly jeopardizing coastal communities' health by impacting their livelihoods, food security, and cultural heritage. These impacts are particularly acute among small-scale fishers in the Global South. Fishing communities hold valuable local knowledge about sociocultural structures and natural resource management. This knowledge has been crucial in understanding changes in marine ecosystems, but less attention has been paid to the climate-induced disruptions in socio-ecological relationships that underpin community food sovereignty, nutrition, and health that shape communities' life quality.

Drawing on a community-based approach and prioritizing the voices of Mexican fishers, our research aims to: (1) document the diverse experiences of climate change on marine food systems; (2) characterize climate-affected socio-ecological factors shaping how fishing communities respond to potential health and wellness stressors; and (3) identify the barriers that fishing communities face when adapting to climate change.

Collaborating with two Mexican fishing communities, we employed an integrative qualitative methodology, combining open-ended interviews and photo-elicitation techniques to capture fishers' perspectives and emotions. We present our findings through selected narratives and a comparative thematic analysis. Fishing community members identified environmental changes as significant economic, occupational and cultural hazards. We reveal how the socio-ecological system can dynamically drive the livelihood system, shaping resource allocation to food, well-being, and culture.

The impacts of climate change on marine food systems have complex physical and emotional repercussions, encompassing nutritional stressors and cultural identity loss. This study provides insights into the threats and opportunities faced by small-scale fisheries within the climate change landscape.

Keywords: Climate change, Food security, Food sovereignty, Small-scale fisheries, Socio-ecological health

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Session Classification: Student Paper Competition

Track Classification: Global Health: Food Insecurity

Contribution ID: 68

Type: **Student Paper Competition**

Visualizing racialized discriminatory mortgage loan denial, poor mental health, and their association in the U.S. using the “Housing-Health-Disparities Visualizer”

Tuesday, July 16, 2024 1:20 PM (20 minutes)

We will introduce a digital tool, “Housing-Health-Disparities Visualizer (HHDV)”. This tool, among other functionalities, visualizes the association between poor mental health and discriminatory loan application denials at the county level in the U.S. HHDV’s primary goal is to highlight the impact of racial segregation, driven primarily by the discriminatory denial of housing on health disparity. Created using ArcGIS Experience Builder, HHDV offers an informational platform that simplifies complex data through interactive web visualizations, making patterns of disparities accessible to a broader audience and research community. HHDV draws insights from our current study which aims to first, identify the spatial pattern of racialized discriminatory mortgage loan-denial for Black and White populations, and second, investigate the association between loan-denial and adults reporting poor mental health. We measured the odds ratio of loan-denial between the two races and racial segregation in a variety of ways. Cluster analysis identified poor mental health in the Appalachian, parts of the Rust Belt, and a few southern states. The odds of loan-denials amongst Black applicants are significantly higher than the White applicants in the predominantly Black counties and parts of the Appalachian. A geographically weighted random forest regression revealed that the odds of loan denial is a significant factor in explaining the poor mental health in counties with predominantly Black majority with persistent poverty in the southeastern states and emerging racially-diverse metro counties in Florida for Black applicants. For White applicants, loan-denial was a significant factor in parts of Appalachia, the Rust Belt, and upstate New York.

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Session Classification: Student Paper Competition

Track Classification: Innovation in Methods: Digital Cartography and Visualization

Contribution ID: 69

Type: **Student Paper Competition**

Is my neighborhood healthy? Comparison of community stakeholders' perception using qualitative GIS

Tuesday, July 16, 2024 1:00 PM (20 minutes)

The studies exploring neighborhood effects on population health are mostly quantitative, investigating the relationships between the physical, built-environment, and socioeconomic characteristics of neighborhood and health. The neighborhood characteristics, however, are often aggregated measures of an administrative unit (e.g., US census-tracts) calculated using national databases and GIS methods. While community-engagement has had a longstanding presence in public health research, there has been a limited attempt to incorporate the lived experiences of community members in identifying the nuanced effect of local neighborhoods and places on people's health. This paper analyzed qualitative data from community-stakeholders using GIS methods. We conducted individual semi-structured virtual interviews with 82 stakeholders (e.g., community and faith leaders, educators, and healthcare workers) across four states (Maryland, Connecticut, Alabama, and Missouri). Participants were asked to discuss topics around how where a person lives (or works) can impact their health. The study team individually reviewed the interview notes, which were then coded into themes describing community-stakeholders perceptions in NVivo. GIS techniques of geocoding, geotagging, and proximity analysis, further contextualized these themes into places in the neighborhoods. The participants, who were primarily African American from Maryland and Alabama expressed concerns about the burden of cancer health, diabetes, and mental health, whereas participants in Connecticut discussed cancer risk from environmental exposures. Perceptions of facilitators and barriers for maintaining a healthy lifestyle varied by local neighborhoods; participants mentioned neighborhood crime (Baltimore), poverty (Delmar divide in St. Louis), and lack of access to grocery stores (Birmingham), whereas others mentioned having social capital and support (Southington, Connecticut).

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Session Classification: Student Paper Competition

Track Classification: Global Health: Obesity

Contribution ID: 70

Type: **Invited Paper**

History and innovation in disease ecology in health and medical geography

Monday, July 15, 2024 5:45 PM (30 minutes)

This paper reviews the history of the disease ecology tradition of health and medical geography summarizing the main themes and innovations since the 1950s. It then highlights two empirical examples of innovations including incorporating landscape genetics into the subfield and how ecological approaches are used in intervention research. Disease ecology is grounded in the field of health and medical geography which uses a holistic approach to investigate health and disease. The human ecology of disease involves the complex interaction among human behavior, cultural and socioeconomic contexts, and environmental conditions, influencing disease emergence or prevention in populations. Political ecology has emerged as a response to the need to understand the political, social, and economic structures that shape health risks. The paper includes a case study of the ecology of swine influenza in the United States and China using a landscape genetics approach. Most infectious disease ecology studies have focused on incidence of diseases; landscape genetics studies focus on ecological drivers of the genetic variation and evolution of pathogens. Ecological drivers of the genetic variation of swine influenza virus include farm, farm system, landscape, and regional level factors. The paper also includes an empirical example of ecological approaches in intervention research, namely how spatial ecology contributes to the understanding deep tubewell interventions for groundwater arsenic mitigation in rural Bangladesh. We describe how the protective effect of deep tubewells on diarrheal disease incidence is unevenly distributed across space because of spatially heterogenous ecological factors.

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Session Classification: Featured Session

Track Classification: Global Health: Infectious Diseases

Contribution ID: 71

Type: Paper

Examining Spatial Disparity of Primary Healthcare Service in South Korea: A Spatial-Temporal Discrepancy Approach

Monday, July 15, 2024 2:40 PM (20 minutes)

The healthcare system of South Korea has rapidly and successfully implemented easily accessible and affordable medical services through its universal healthcare programs under control of central government. The level of healthcare services has expanded in both terms of quantity and quality, but its landscape of healthcare provision has changed raising concerns about the spatial disparity in healthcare provisions, particularly pronounced in essential primary care services. This phenomenon raises two key questions: how to examine the spatial disparity of healthcare services over time, and what the policy implications are, as these implications manifest differently at various geographic scales. Given this context, this research investigates the dynamics of spatial disparities in essential primary health services in South Korea from 1995 to 2023. We propose a spatial-temporal discrepancy approach with a set of novel disparity measures. These measures assess discrepancies between the geographic distribution of service providers and potential service demand across multiple geographic scales. For systematic analysis, we define primary care services as those offered by medical clinics and public health centers, which serve as the first line of healthcare in South Korea for non-emergency medical conditions, chronic diseases, and preventive services. As longitudinal time horizons, we examine the disparities of these services following four distinct external shocks: the Asian financial crisis (1999), the global financial crisis (2010), the COVID-19 pandemic (2022), and the post-pandemic period (2023) with the baseline analysis of year 1995. The measures will demonstrate the progression and identification of spatial disparities in healthcare provisions at different geographic scales, providing spatial policies tailored to each scale. Our research contributes to the literature by providing a standardized analysis framework that effectively examines changes in the spatial organization of primary healthcare services with simultaneous consideration of multiple spatial and temporal horizons.

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Session Classification: Paper Presentations

Track Classification: Innovation in Methods: Geospatial Analysis

Contribution ID: 72

Type: Paper

Combining map-based questionnaire, GEMA, and vocal biomarkers to investigate the environmental determinants of stress: The FragMent study protocol and pilot

Monday, July 15, 2024 3:20 PM (20 minutes)

Background:

Stress is a major public health concern, and a risk factor for 75-90% of diseases. An individual's daily activities take the form of a series of (im)mobilities (e.g., movements and places of activity) in various environments. According to the stress-restorative theory, exposure to everyday environments can contribute to stress or have restorative qualities. Yet the combination of these momentary effects on stress over the course of a day remains largely unknown. FragMent aims to assess the extent to which the spatial and temporal fragmentation of exposure to everyday environments, influences physiological and psychological stress, as well as social inequalities in stress.

Methods:

FragMent develops an observational study using both self-reported measures of psychological stress and physiological measures based on vocal biomarkers of stress. It includes adults (18-65 y.) residing in the country of Luxembourg, and combines:

- i) An online survey with a map-based questionnaire, aiming at investigating regular mobility and exposure patterns with chronic stress (N=2000).
- ii) A mobile survey, over 15 days, combining ecological momentary assessment, a GPS and vocal samples based on 6 vocal tasks, in order to investigate the environmental correlates of momentary and daily stress (N=200 out the 2000 participants)

Results:

Results from the pilot study will inform of the feasibility, acceptability and compliance to the study protocol. FragMent will assess the effect of numerous environmental factors on stress in order to identify effective environmental levers for reducing stress in public space.

FragMent was funded by the EU, under the Horizon ERC Starting grant program.

Keywords: stress; vocal biomarkers; daily mobility; dynamic exposure; ecological momentary assessment

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Session Classification: Paper Presentations

Track Classification: Innovation in Methods: Longitudinal Analysis

Contribution ID: 73

Type: Paper

Travel time to hospital and patient outcomes: Why do we use the 30-minute rule?

Monday, July 15, 2024 3:40 PM (20 minutes)

Geographic access to hospital-based acute care is a priority because farther travel times may lead to worse outcomes or even death. However, this relationship is not well-established outside of patients requiring trauma care. Despite a lack of empirical support, some policy guidelines and published studies utilize a threshold of 30-minutes to signify adequate access. In this work, we address this lack of knowledge by assessing the relationship between home-to-hospital travel time on hospitalization outcomes including length of stay, discharge location, and mortality. We examine outcomes across a broad range of conditions (32 deemed emergency sensitive, and 7 non-emergent comparators). Our study population included all people hospitalized in the state of Michigan from late 2015 to 2019 (n=3,632,313). For each condition and hospitalization outcome, we used a binomial regression model to evaluate the effect of time traveled from home-to-hospital (minutes) while controlling for age, race/ethnicity, sex, and insurance payor status. Overall, we found that increased travel time led to worse outcomes for some but not all of the 32 emergency sensitive conditions (18 for length of stay, 6 for non-home discharges, 6 for mortality). For the 7 non-emergency conditions, again there were significant results for some of the conditions (3 for length of stay, 0 for non-home discharges, and 2 for mortality). Our results provide an improved understanding of the role that travel time plays in hospitalization outcomes for non-trauma conditions and support continued efforts to monitor and improve geographic access to hospital-based acute care.

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Session Classification: Paper Presentations

Track Classification: Health, Justice, Human Rights, Policy & Practice: Healthcare Accessibility

Contribution ID: 74

Type: **Student Paper Competition**

Geospatial Modeling for Watersheds Delineation: An Approach for Per- and Polyfluoroalkyl Substances (PFAS) Monitoring and Assessment in Alabama Surface Waters

Monday, July 15, 2024 1:40 PM (20 minutes)

Among the emerging contaminants of concern (CECs), per- and poly-fluoroalkyl substances (PFAS) have been widely detected in surface water across the United States. In the present study, we completed a reanalysis of seventy-five (75) PFAS samples across ten (10) major river basins and four (4) minor rivers in Alabama. Among them, the total summed concentrations of sixty-six (66) detected PFAS contaminants were analyzed using spatial autocorrelation model (Global and Local Moran's Index) to identify spatial clusters and probable sources. Dendritic terrain watershed modeling was used to trace pollution points and potentially affected counties. The highest concentrations were observed along Alabama River and its tributary, the Coosa River, indicating a likely source area for PFAS within the Coosa River basin in southeastern Alabama. Spatial agglomeration analysis indicated elevated PFAS levels downstream of wastewater treatment plants (WWTPs), airports, and industrial landfills for both short-chain PFAS (PFBS, PFPeA, PFHxA, PFHpA) and long-chain PFAS (PFOS and PFOA). These locations likely serve as primary sources of PFAS pollution in the area. The Tombigbee and Black Warrior Rivers, both tributaries to the Mobile River exhibited notable coldspots, along with the Conecuh, and Yellow Rivers. Negative autocorrelation (a pattern of high PFAS concentration near low concentrations) along the Choctawhatchee and Mobile Rivers in south Alabama implied spatial heterogeneity, suggesting potential PFAS sources in tributary watersheds. This modeling approach accurately identified contamination hotspots linked to potential sources and these findings establish a framework for watershed-scale monitoring of emerging contaminants using spatial agglomeration techniques.

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Session Classification: Student Paper Competition

Track Classification: Climate Change & Health: Environmental Health

Contribution ID: 75

Type: **Student Paper Competition**

Vocal Biomarkers Of Stress In Real Life Environments: Study Design And Insights From The Fragment Project And Colive Voice Study

Thursday, July 18, 2024 2:00 PM (20 minutes)

Background

Psychological and physiological indices of momentary and chronic stress can be found in voice. In the context of Ecological Momentary Assessment (EMA), vocal biomarkers (VB) are a non-invasive and objective way to measure stress in daily life.

Methods

The FragMent study aims to evaluate how daily activities and exposure to various environments influence stress. The mobile survey will consist of a 15-day Geographically explicit Ecological Momentary Assessment study among 200 participants in Luxembourg with 4 vocal tasks per day. Stress will be detected with models previously trained on the Colive Voice dataset, an international study aiming to develop VB for various chronic diseases. We used propensity score matching to control for age and gender between groups. We extracted vocal features from each audio sample and used a Mann-Whitney test to compare both groups.

Results

In a text reading task, stress was associated with shimmer ($p=0.032$), MFCC3 ($p=0.03$), MFCC4 ($p=0.002$) and F3 frequency ($p=0.047$). In an A-vowel phonation task, stress was associated with Harmonics-to-Noise Ratio (HNR) ($p=0.032$) and shimmer ($p=0.002$). In a counting from 1-20 task, stress was associated with F2 bandwidth ($p=0.029$), F3 amplitude ($p=0.036$), MFCC4 ($p=0.039$), jitter ($p=0.023$) and shimmer ($p=0.006$).

Discussion

We have identified several voice features associated with stress by altering articulation and muscle tension. These results show the feasibility of using VB for stress and the FragMent study will assess their ecological validity.

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Session Classification: Student Paper Competition

Track Classification: Innovation in Methods: GeoAI and Machine Learning

Contribution ID: 76

Type: **Student Paper Competition**

Daily Mobility And Environmental Determinants Of Stress In Ecological Momentary Assessment (EMA) And GPS Studies : A Scoping Review

Monday, July 15, 2024 2:00 PM (20 minutes)

Background

Stress is omnipresent in our everyday lives and a key risk factor of our physical and mental health. Yet little is known about the impact of geographic life environments, linked to our daily activities and mobility patterns, on our momentary and daily stress levels.

Objectives

We propose this review to gather evidence on the spatio-temporal determinants of momentary or daily stress in studies using ecological momentary assessment (EMA) or experience sampling methods (ESM) in addition to GPS tracking. We will focus on the spatio-temporal definition and modeling of environmental exposures accounting for participant daily activities and mobility patterns and their association with stress.

Methods

This scoping review will follow the PRISMA framework for scoping reviews (2018). We will search the PubMed, Web of Science and Scopus databases. We will include papers using EMA/ESM and GPS measuring stress (chronic, daily, momentary) as an outcome ; these methods are also referred to as geographically-explicit ecological momentary assessment (GEMA).

Articles published between January 2000 and July 2024 will be screened. Two independent reviewers will screen titles and abstracts to agree upon the inclusion of articles.

We will not consider residential mobility and will exclude PTSD or chronic mental health disorders unrelated to stress.

Discussion

This scoping review will identify research gaps in the study of environmental determinants of stress, while particularly focusing on dynamic exposure measurement related to daily mobility. We will identify methodological differences and gather evidence on daily and chronic stressors.

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Session Classification: Student Paper Competition

Track Classification: Climate Change & Health: Environmental Health

Contribution ID: 77

Type: Paper

Tick abundance and Borellia prevalence in urban and peri-urban green spaces of Bonn, Germany

Tuesday, July 16, 2024 5:20 PM (20 minutes)

Lyme disease is the most common vector-borne disease in Europe and its vector, *Ixodes ricinus* is expanding its habitat range. Although the risk of tick-borne diseases is associated with rural forested areas, urban green spaces can also harbor tick populations. Due to the high number of visitors to urban green spaces and low risk awareness, it is hypothesized that the tick-borne disease risk in urban and peri-urban green spaces is relatively high. Following a Planetary Health and One Health approach a multidimensional assessment of environmental and social factors was conducted. A continuum from rural forests via urban forests to urban parks were systematically sampled for ticks over a period of one year. The tick species and development stage were determined by microscopy, and pathogen prevalence was assessed by PCR analysis. In total 3,594 ticks were sampled from the seven collection sites. The highest abundance was observed in the rural forest and the lowest in the urban park. Borrelia prevalence ranged from 14.2% to 23.2% in the urban forests compared to an average Borrelia prevalence of 16% in the rural forest. The in-field survey revealed that green space users have some risk awareness, however, correct preventive measures are rarely practiced. Although the tick data show a lower tick abundance in urban areas, the poor preventive measures and awareness induce human health risks. Among the study participants 26.2% reported being bitten by a tick within the past 12 months and 10.98% reported being diagnosed with a tick-borne disease in the past.

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Session Classification: Paper Presentations

Track Classification: Global Health: Infectious Diseases

Contribution ID: 78

Type: Paper

Spatial analysis of the charitable food system in Georgia

Monday, July 15, 2024 3:00 PM (20 minutes)

Food banks and food pantries play a pivotal role in supporting food security among low-income households in the United States. According to Feeding America, 49 million people (or 1 in 6 residents) in the U.S. used charitable food agencies in 2022. Despite this widespread usage, comparatively few studies have analyzed the spatial distribution of food pantry sites and their spatial accessibility to potentially food insecure households. The few studies that do exist focus at a regional or metropolitan scale.

Our research helps fill this gap, presenting results of a statewide analysis of public food pantry availability in the state of Georgia. Our study draws from data provided by the nine regional food banks in the state, through coordination with Feeding Georgia, along with census figures. From these data, we create a composite measure of spatial proximity that combines distance to any pantry with two measures representing choices available in the local area. Controlling for underlying population density, we identify hot and cold spots for pantry proximity throughout the state. These results show significant challenges for residents in several locations throughout the state, including regions of metropolitan Atlanta and sections of rural south Georgia. We close by reflecting on challenges of data collection and analysis of data on charitable food distribution.

Sources:

Feeding America. (2023). Charitable Food Assistance Participation in 2022. Available at <https://www.feedingamerica.org/sites/default/files/2023-06/Charitable%20Food%20Assistance%20Participation%20in%202022.pdf>

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Session Classification: Paper Presentations

Track Classification: Health, Justice, Human Rights, Policy & Practice: Community Engagement

Contribution ID: 79

Type: Paper

Using Geographically Weighted Regression to Explore the Relationship between Homicide and Suicide in the United States

Thursday, July 18, 2024 3:00 PM (20 minutes)

Homicide and suicide are the twin pillars of intentional unnatural death, yet the relationship between them remains unclear. Prior research has shown positive, negative, and null relationships between suicide and homicide depending on the study area, spatial support, and time period. However, most of these studies used non-spatial statistics to analyze the data, ignoring the potential influence of non-stationarity. This paper analyzes the spatially varying relationship between suicide and homicide in the United States (1999-2019) at the county level by using geographically weighted regression (GWR).

An initial exploratory OLS model indicates no significant linear relationship between suicide and homicide in this dataset. However, the GWR model returned moderately strong results ($R^2=.708$). By allowing the relationship between variables to fluctuate across space, GWR reveals new clues to regional patterns of violence.

Suicide and homicide have the strongest relationships ($R^2>.600$) in the northeast and eastern states, especially in the Great Plains. However, the form of these relationships varies. In the Mountain West, Appalachia, and upper New England, the relationship is positive. High suicide rates predict high homicide rates. This supports the idea of violent places, and suggests suicide and homicide should be studied together as two parts of a whole. In contrast, negative relationships dominate central California and most of the eastern half of the US, supporting previous literature on the “opposite but equal” nature of suicide and homicide. These results can be used to dig deeper into the causes of violent behavior, which are notoriously difficult to model spatially.

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Session Classification: Paper Presentations

Track Classification: Innovation in Methods: Geospatial Analysis

Contribution ID: 80

Type: Paper

Modelling the Complexities of Built Environment and Health: A Bayesian Network Approach with Expert Knowledge

Monday, July 15, 2024 3:40 PM (20 minutes)

The built environment and health literature has rapidly grown over the last two decades resulting in a well-established evidence base on what built environment features can help support better health outcomes and behaviours. However, multiple environmental features interact in complex ways, and the relative salience of each feature and the nature of their interactions with health and wellbeing are likely to be different from one locality to another. We propose a modelling framework that incorporates Bayesian Networks (BNs) with expert (planning and design professionals) knowledge to model and visualise this complexity and for local framing. We piloted this approach using data on 4,056 adults from a study in Adelaide Australia. We modelled glycosylated haemoglobin as a function of various individual and contextual factors. These contextual factors included geographic access measures to various built environment features. Contextual factors were combined with expert information to generate various indices. These indices were included in a BN predicting glycosylated haemoglobin in addition to being individually mapped for expert consultation. The final model was developed after incorporating extensive expert feedback. Following completion of the pilot phase, the final phase is to adapt and apply the model to a new study area with consideration of local policy, public health, and clinical practices.

Primary author: MAZUMDAR, Soumya

Presenter: MAZUMDAR, Soumya

Session Classification: Paper Presentations

Track Classification: Innovation in Methods: GeoAI and Machine Learning

Contribution ID: 81

Type: Paper

Unpacking Hospitalization Patterns among Resettled Refugees: A Data Linkage Study

Monday, July 15, 2024 11:20 AM (20 minutes)

Recently resettled refugees in Global North countries have health needs and health usage patterns that differ from longer term residents of these countries. Studies of refugee health are often ad-hoc and based on small surveys. Since refugee groups often settle in cohorts, findings for one cohort may not be always relevant for other cohorts. Data linkage provides one approach to managing this problem. Using data from the Refugee Health Nurse Program in Sydney, Australia linked to hospitalisation data, we investigated patterns of hospitalisation among around 10,000 resettled child and adult refugees. We interpret our findings using an extension of Anderson's framework of health services utilisation. Our results show higher odds of emergency visits, and multiday stays among refugee children and adults compared to those born in Australia. Refugee children had higher odds of being hospitalised from digestive diseases and injury related admissions, while adults were most likely to be hospitalised with cardiovascular diseases and genitourinary diseases. Women had longer stays than men, and as may be expected, hospitalisations increased with age. Refugees from Asia and Africa had higher rates of hospitalisation than refugees from the Middle East. There were inconsistent trends of length of stay. The results suggest an interplay of contextual factors including the refugee journey and predisposing factors such as culture in addition to other factors.

Primary author: MAZUMDAR, Soumya

Presenter: MAZUMDAR, Soumya

Session Classification: Paper Presentations

Track Classification: Global Health: Refugee Settlement

Contribution ID: 82

Type: Paper

Sleep problems mediate the association between mental health and outdoor light pollution

Monday, July 15, 2024 5:20 PM (20 minutes)

Light pollution is a growing anthropogenic health threat, particularly in cities. Limited evidence suggests that exposure to outdoor night light may affect people's mental health by disrupting sleep-wake cycles. We assessed 1) the association between outdoor night light exposure and adults' symptoms of depression and anxiety and 2) the mediating role of sleep problems.

We acquired cross-sectional data from 4,068 adults in Bulgarian cities. Depression and anxiety symptoms were measured using the Patient Health Questionnaire (PHQ-4). Outdoor night light at the residence was determined using satellite imagery. We fitted regression models adjusted for person-level characteristics, green space, and nitrogen dioxide. We also assessed effect moderation by sex, age, and income. We tested self-reported sleep problems as a mediator of the night light-PHQ-4 association.

Greater night light exposure was marginally associated with higher PHQ-4 scores. We observed no effect moderation. The mediator, sleep problems, was also positively associated with night light. The mediation effect of sleep problems was significantly positive. The average direct effect was null. The total night light effect was marginally and positively associated with PHQ-4 scores.

Our findings suggest higher levels of outdoor light pollution are associated with depression and anxiety symptoms health. Poor sleep quality is a possible pathway relating night light exposure to mental health. Considering the increasing ubiquity and intensity of urban nighttime illumination, light pollution-reducing policies may provide significant health benefits for urban populations.

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Session Classification: Paper Presentations

Track Classification: Climate Change & Health: Environmental Health

Contribution ID: 83

Type: Paper

Impacts of Medicaid privatization on prenatal care utilization in Iowa

Thursday, July 18, 2024 3:40 PM (20 minutes)

Although the expansion of Medicaid has improved adequate and timely access to prenatal care throughout the United States, spatial and sociodemographic inequities in care access persist. This study examines whether initiation and adequacy of prenatal care were impacted by the privatization of Medicaid in Iowa under Managed Care Organizations (MCOs), especially amongst pregnant people residing in rural Iowa. Birth certificate data for all births in Iowa from 2013-2019 were provided by the Iowa Department of Public Health. This sample included 115,311 Medicaid paid births, with 37,898 occurring before MCO implementation (2013-2015) and 39,499 occurring after (2017-2019). Generalized additive models with a logistic link function and spatial spline were used to examine relationships between early and adequate care, and sociodemographic and temporal attributes. Dependency between rurality and MCO implementation was examined using an interaction term. The results indicate that rural birthing parents were more likely to initiate timely prenatal care, having an 8.9% (95% CI= 0.6%, 15.8%), lower odds of initiating care after the first trimester following MCO implementation. However, the odds of receiving inadequate prenatal care after MCO implementation also increased by 6.1% (95% CI= 1.6%, 10.9%) compared to births prior. Thus, while MCOs improved care initiation, additional geographic and sociodemographic barriers must be identified and addressed to ensure that pregnant people continue to receive the adequate number of care visits needed throughout pregnancy.

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Co-author: CARREL, Margaret (University of Iowa)

Presenter: BOYLE, Miah (University of Iowa)

Session Classification: Paper Presentations

Track Classification: Health, Justice, Human Rights, Policy & Practice: Health Disparities

Contribution ID: 84

Type: **Poster**

Inland flooding –mapping emergency department diagnoses with social vulnerability and flood risk to identify targeted educational outreach

Thursday, July 18, 2024 12:40 PM (20 minutes)

Keywords: inland flooding, flood-related health outcomes, geospatial flood risk, flood risk preparedness, emergency medicine

Climate change has the potential to impact environmental and human health via extreme weather events. Flooding is associated with infectious disease outbreaks, increased asthma, and worsened mental health. Previous studies have focused on coastal communities rather than inland and river flooding, the incidence and severity of which are expected to increase. In 2019, 81 of 93 Nebraska counties were declared federal disaster areas due to flooding. Socially vulnerable populations are particularly at-risk as they may lack awareness of inland flooding and flood plan knowledge and have fewer resources to recover.

We sought to identify flood-related health outcomes, particularly targeting vulnerable populations. This cross-sectional analysis of de-identified data from the Nebraska Hospital Association compared diagnosis frequency for three time periods: 2018, 2019, and 2020-2021. Potentially flood-related diagnoses were identified by ICD-10 codes, including gastroenteritis, asthma, and respiratory infections/pneumonia. Patient ZIP code was linked to the Social Vulnerability Index (community-level vulnerability scores) and flood plain maps. A binomial generalized linear model with main effects and a period of flood risk interaction term tested whether specific ER diagnoses differed by time period. Increases in specific health conditions will be tabulated and displayed in figures. Moreover, differences by flood-specified time periods will be examined and reported. We predict that populations living in high flood risk areas are more prone to flood-related health issues compared to those in lower risk areas. Results of the study possibly shed light on the need for further education on flood risk and preparation to at-risk communities.

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Presenter: HORIO, Nicole (Creighton University School of Medicine)

Session Classification: Poster Presentations

Track Classification: Innovation in Methods: Geospatial Analysis

Contribution ID: 85

Type: Paper

Caring for Older People Living with HIV/AIDS in Long-Term Care and Assisted Living in British Columbia, Canada's Fraser Health Region

Thursday, July 18, 2024 3:00 PM (20 minutes)

In Canada, the demographic landscape of HIV/AIDS is shifting, with 1 in 5 new infections occurring in people 50+. This trend requires us to understand how to support older people living with HIV/AIDS (OPLWH) as they enter long-term care and assisted living (LTC/AL) in growing numbers. Despite recognition of their social and medical care needs, little consideration has been given to how LTC/AL environments can become more welcoming for and inclusive of OPLWH. Our exploratory qualitative study addresses this gap by employing a community-based approach in collaboration with the Fraser Health Authority in British Columbia, Canada. Through interviews with stakeholders—physicians, administrators, care providers, residents & family caregivers, OPLWH, and community organization leaders—we are exploring opportunities and barriers surrounding HIV-positivity and aging in LTC/AL. Preliminary findings show that stigma is a significant obstacle for care staff in providing person-centred care, which is a desired approach that values residents' unique preferences and needs when making care decisions. Care staff emphasize the need for training on stigma and basic HIV education to effectively support OPLWH. Further, discussions regarding residents' HIV-status as a key part of identity are often overlooked in person-centred approaches. Our research underscores the urgency of addressing stigma and enhancing education within LTC/AL to better meet the needs of OPLWH as this resident community grows. By engaging with stakeholders and centering those directly involved in care, our partnered approach ultimately seeks to inform the development of inclusive care strategies that promote the wellbeing of OPLWH in LTC/AL in the Fraser Health Authority and beyond.

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Session Classification: Paper Presentations

Track Classification: Health, Justice, Human Rights, Policy & Practice: Community Engagement

Contribution ID: 86

Type: Paper

The effect of the digital environment on health

Monday, July 15, 2024 11:00 AM (20 minutes)

In today's rapidly advancing technological landscape, pervasive computing is increasingly common. As devices become smaller and more powerful, they seamlessly integrate into daily life, forming an omnipresent digital environment. This environment facilitates access to knowledge, social connections, commercial activities, and more. Despite its longstanding presence in literature, the concept of the digital environment lacks a cohesive definition, especially regarding its impact on health and behavior. This study aims to conceptualize the digital environment to better understand and measure its impact. It will: 1) Define the digital environment and its relationship with the physical and social environments; 2) Explore pathways through which the digital environment influences health and health-related behavior; 3) Propose a sensor-based method to measure the digital environment's interaction with the physical and social environments and their combined effects on health. The study will present initial findings on the measurement of digital environment usage, particularly smartphone usage, through both a large-scale self-reported survey among adolescents and the use of a dedicated mobile phone that recorded second-by-second interactions with digital, physical, and social environments.

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Session Classification: Paper Presentations

Track Classification: Global Health: Urban and Rural Health

Contribution ID: 87

Type: Paper

Online vs. In-Store: How food outlet type is linked to dietary behaviours in Great Britain

Monday, July 15, 2024 3:20 PM (20 minutes)

Background: As online food delivery service (OFDS) platforms gain popularity, understanding their impact alongside physical food outlets is important for addressing dietary quality. This study examined the associations of physical and online food outlet availability, independently and in combination, with dietary behaviours. We also explored how associations between physical outlet availability and dietary behaviours might be modified by online food outlet availability.

Methods: In this cross-sectional analysis, we used British data from the International Food Policy Study (IFPS) in 2022. We focused on three dietary behaviours: physical food outlet use, online food outlet use, and frequency of out-of-home meal consumption. To assess food outlet availability, we quantified neighbourhood food outlets using data from the Ordnance Survey Points of Interest dataset, and identified available delivery options from three OFDS platforms through web scraping techniques.

Results: Mean age of participants ($n = 3663$) was 50 (SD 18). Both physical and online availability measures were independently associated with online food outlet use and out-of-home meal consumption. After mutual adjustment, only delivery options from OFDS platforms remained associated with these outcomes. For example, a one standard deviation increase in delivery options from OFDS platforms was associated with 7% (95%CI 1%; 12%) greater out-of-home meal consumption. Online food outlet availability moderated the association between physical food outlet availability and dietary behaviours.

Conclusion: The findings highlight the increasing importance of the online food environment in explaining dietary behaviours, and highlights the need for researchers and public health strategies to focus on this evolving aspect of food availability.

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Session Classification: Paper Presentations

Track Classification: Global Health: Obesity

Contribution ID: 88

Type: **Poster**

Incorporating Queueing Theory into a Spatial Optimization Framework to Improve Mass Vaccination Programs

Thursday, July 18, 2024 12:40 PM (20 minutes)

Mass vaccination is a cornerstone of public health emergency preparedness and response. However, injudicious placement of vaccination sites can lead to the formation of long waiting lines or queues, which discourage individuals from waiting to be vaccinated and thus jeopardize the achievement of public health targets. Queueing theory offers a framework for modeling queue formation at vaccination sites and its effect on vaccine uptake. We developed an algorithm that integrates queueing theory with a spatial optimization framework to optimize the placement of mass vaccination sites. The algorithm was built and tested using data from a mass canine rabies vaccination campaign in Arequipa, Peru. We compared expected vaccination coverage and losses from queueing (i.e., attrition) for sites optimized with our queue-conscious algorithm to those obtained from a queue-naïve version of the same algorithm. Sites placed by the queue-conscious algorithm resulted in 9-19% less attrition and 1-2% higher vaccination coverage compared to sites placed by the queue-naïve algorithm. Although modest, these estimated gains do not capture the future negative effects of excessive wait times and attrition. Our results remained robust to varying queueing model parameters and arrival rates, highlighting the importance of accounting for queueing attrition in mass vaccination site placement.

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Session Classification: Poster Presentations

Track Classification: Innovation in Methods: Geospatial Analysis

Contribution ID: 89

Type: **Poster**

An image tells more than a thousand words: Mapping place perception through strhrougeet view images, crowdsourced stated preferences and artificial intelligence

Thursday, July 18, 2024 12:40 PM (20 minutes)

Urban environments perceived as safe, pleasant, and walkable stimulate sustainable and healthy human behavior. However, obtaining in-situ data on the appearance of streetscapes and people's perceptions of urban spaces is time-consuming, costly, and labor-intensive. To circumvent these limitations, AI-driven place assessments have gained momentum. Advances in AI and street view (SV) images enable the automatic extraction of reliable information visible in scenes not provided by any other data, including aerial imagery. We aim to model and map human perceptions of streetscape qualities through a newly developed deep learning model trained with open SV images based on crowdsourced stated preferences. We sampled from a million crowdsourced Amsterdam SV images, taken from Mapillary. We filtered the images to remove those with problems including inferior quality or poor lighting. We loaded the images into our mobile-friendly web app survey platform. Participants rated images on a 5-point scale regarding concepts like 'greenness' or 'pleasantness.' The mobile-friendly web app format meant participants could pull up this survey anytime and start swiping on their smartphone.

We collected the ratings and some demographic information to build deep learning models of the users' responses. For each model, the output is either a rating, or a probability distribution over ratings, meant to simulate the outcome as if this image were shown to our survey participants. Our models can be used to generate millions of ratings and build continuous place-based perception maps, as well as compare how people from diverse backgrounds experience places.

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Session Classification: Poster Presentations

Track Classification: Innovation in Methods: GeoAI and Machine Learning

Contribution ID: 90

Type: Paper

Disruption & The Impact on Rural Mental Health

Monday, July 15, 2024 4:20 PM (20 minutes)

Socio-demographic inequities in mental health were exaggerated by the COVID-19 pandemic, with women experiencing greater household burden with less support in Canada and globally. While these patterns have been observed globally, there is a research gap in rural mental health during the COVID-19 pandemic in Canada. We hypothesize that there is a disparity in mental health decline during the COVID-19 pandemic between men and women. In rural Ontario, mental health was measured through a survey of approximately 18,000 individuals living in seven counties. In 2021, survey respondents were asked to rate their mental health prior to and during the ongoing COVID-19 pandemic. Responses to survey questions regarding, social, financial, and mental health support were then evaluated. We found significant disparities in mental health ratings before and during the pandemic between men and women. Women reported poorer mental health, increased substance use, and increased worry about social, financial and community stressors. Respondents who self-identified as a woman were associated with poorer mental health outcomes and therefore interventions should be specific to geographic communities as well as individual needs.

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Session Classification: Paper Presentations

Track Classification: Global Health: Urban and Rural Health

Contribution ID: 91

Type: **Poster**

Quantifying livestock commingling in mapped areas of sustained *Brucella* spp. transmission in Kazakhstan

Thursday, July 18, 2024 11:40 AM (20 minutes)

Brucellosis is a global zoonosis caused by species of *Brucella* bacteria with high burden in underdeveloped countries. Kazakhstan, in Central Asia, reports high human/livestock burden, requiring high costs for animal testing and slaughter. *Brucella* spp. show high host affinity and vaccines are *Brucella* spp. specific. The risk of brucellosis transmission between commingling livestock and wildlife species is poorly understood, including in Kazakhstan. We first mapped patterns of *Brucella* spp. from phylogenetic studies to identify zones of mixed transmission in the country. Motion-triggered cameras were deployed on four farms within this overlap zone, and images were tagged with species/behavior observations to create kernel density estimates of species-specific diel grazing patterns and plots of commingling between sheep and other livestock species. We found overlaps in diel activity for most livestock (sheep, goats, cattle, horses). Livestock showed three grazing peaks: morning, afternoon, and evening. Wild roe deer, *Capreolus capreolus*, were crepuscular. High levels of direct commingling occurred between sheep and domestic cattle: 18.18% of the time sheep grazed, only cattle grazed with them; ~28% of the time sheep were grazing, cattle and other livestock also grazed. Sheep directly commingled with all livestock species. Sheep/cattle interactions are most likely for brucellosis transmission; molecular evidence suggests shared *Brucella* spp. in both species. Additionally, cattle indirectly commingled with roe deer on forested farms in the study area. These data will aid policy makers in the identification of effective and economically efficient intervention strategies to lessen the burden of brucellosis to Kazakhstan and other endemic disease foci.

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Session Classification: Poster Presentations

Track Classification: Global Health: Infectious Diseases

Contribution ID: 92

Type: **Student Paper Competition**

They're Sacred Fires, not fire pits: A spatial case study on three, traditional healing spaces in Canada's largest and oldest mental health hospital

Tuesday, July 16, 2024 1:40 PM (20 minutes)

Globally and historically, Indigenous healthcare has been rooted in land-based medicine derived from knowledge systems connected to the environment. Across Turtle Island, processes of dispossession have uprooted Traditional Healing practices replacing them with colonial, hospital-based care, now characterized as places of harm for Indigenous Peoples. The need for effective mental wellness services is higher than ever prompting many Canadian hospitals to take up Calls to Action (TRC, 2015) to redress harmful practices, including the addition of Traditional Healing Spaces (THS). Despite this response, there is a void of evidence about THS in hospitals, prompting us to ask: Can THS in hospital become places of healing instead of harm? By examining three, unique THS within Canada's largest mental health hospital, CAMH, research data from 22 interviews with hospital staff comprise a spatial case study describing what the THS look like, how they are used and what staff are saying about them. Framed theoretically by environmental repossession, findings identify the critical importance of designating Indigenous spaces that enable culturally affirming and wholistic healthcare practice. Valuing Indigenous knowledge in hospitals by transforming spaces sparks curiosity, increases education, and enhances capacity for leaders to support reconciliation efforts.

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Session Classification: Student Paper Competition

Track Classification: Health, Justice, Human Rights, Policy & Practice: Human Rights and Health

Contribution ID: 93

Type: Paper

Mobility, ICT, and health: a built environment investigation of older Chinese migrants' social isolation and loneliness

Tuesday, July 16, 2024 2:40 PM (20 minutes)

Social isolation and loneliness have detrimental impacts on health, especially for older adults. During the COVID-19 pandemic, physical access to third places (e.g., coffee shops, libraries) decreased due to the closure of non-essential destinations and personal risk assessments. Older adults reported adopting information and communication technology (ICT) during pandemic lockdowns, which may have sufficiently replaced previous activities that would require trips out of the home. Understanding modalities of social connection and their distinct relationships to the built environment and health for older Asian migrants, who have culturally imbedded social networks and ICT use, is critical to supporting equitable, healthy aging in a post-COVID world. Using a survey of older Chinese migrants in the Greater Toronto Area (GTA), we investigate both community mobility and ICT use to understand how either avenue of socializing is related to the built environment and what the impact of community mobility and ICT use has on loneliness (De Jong Gierveld 6-item scale), mental and physical health (SF-12). Specifically, we use a structural equation model to test a theoretical framework of older adult social isolation. Ultimately, our model demonstrates the importance of community mobility in reducing loneliness, while ICT use is significantly related to better physical health. Both community mobility and ICT use have significant, although opposite, relationships to transit density. Results indicate that ICT use might have a limited ability to reduce loneliness and support mental health when mobility is limited. Addressing older migrants' barriers to community mobility is critical to reducing feelings of loneliness.

Keywords: older adults; social isolation; built environments; ICT; mobility

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Session Classification: Paper Presentations

Track Classification: Health, Justice, Human Rights, Policy & Practice: Structural Determinants of Health

Contribution ID: 94

Type: Paper

Understanding the use of computer vision for automated extraction of environmental characteristics from street imagery: a systematic scoping review

Monday, July 15, 2024 10:20 AM (20 minutes)

Introduction

The rising prevalence of non-communicable diseases, especially in low- and middle-income countries (LMICs), highlights the need for research into their determinants. Limited data and methodological challenges hinder LMIC studies on neighbourhood health determinants. Computer vision (CV), powered by deep learning, can identify visual objects and understand what they are. CV enables a scalable solution, automating data extraction from street images. We systematically reviewed literature on CV applications for extraction of environmental characteristics from street images.

Methods

Following an adapted version of Arksey and O'Malley's six-step review process, we used eight databases to identify 11,221 studies. Eligible studies were conducted in English and focused on CV models to classify, detect or segment objects from street images. After title, abstract, and full-text screening, we included 112 studies (published 2020-2023) for data extraction. We conducted a narrative synthesis of findings, supported by harvest plots.

Results

The majority (n=75) of studies identified used Google and Baidu Street View images. Most studies were from the US and Canada (n=21) or East Asia (n=44). CV has been used to extract data on environmental characteristics, including aspects of the built (e.g. sidewalks), transport (e.g. vehicles) and food (e.g. food stalls) environments, and neighbourhood vegetation. Segmentation is the most common CV method (n=57). Almost half of studies report overall CV accuracy, with fewer reporting individual class accuracy. Most models (n=42) were pre-trained.

Conclusions

Our findings indicate that the potential applications of CV in geographical and related research are extensive. However, relatively few studies report class accuracy, which is a concern.

Keywords: neighbourhood, determinants, computer vision, street view, review

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Session Classification: Paper Presentations

Track Classification: Global Health: Obesity

Contribution ID: 95

Type: Paper

Environmental Justice & Green Space Access: Disability & Socio-Spatial Inequities

Tuesday, July 16, 2024 3:00 PM (20 minutes)

In this talk, I present novel findings on the spatial distribution of residential green space in the continental U.S. along the axes of disability, race, and class. By considering disability, this work builds on and bridges scholarly research in two distinct domains: one quantifying disparities in green space access among racialized minorities and socioeconomically disadvantaged groups, and the other utilizing qualitative methods to demonstrate that most green spaces remain inaccessible and unwelcoming to disabled visitors. Using generalized additive models (GAMs) that control for demographic factors and climatological characteristics, we find that residential areas with a higher proportion of disabled residents are greener while also having a greater share of White residents with lower household income. These statistical results run counter to expectations from the literature, thus complicating the prevailing narrative and indicating a need for mixed methods research to examine multiple dimensions of access and environmental justice. Using cluster analysis to assess spatial trends (specifically colocation bivariate local join count statistics in GeoDa), I detect residential clusters of high disability and low green space located in predominantly non-White, urban, and more socioeconomically disadvantaged neighborhoods compared to clusters of high disability and high green space. The cluster analysis results suggest inequities in green space access at the intersection of disability, race, and class, as well as across the urban-rural continuum.

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Session Classification: Paper Presentations

Track Classification: Climate Change & Health: Environmental Health

Contribution ID: 96

Type: Paper

Change in the number of new takeaway food outlets associated with adoption of management zones around schools: a natural experimental evaluation in England

Monday, July 15, 2024 3:40 PM (20 minutes)

By the end of 2017, 35 local authorities (LAs) across England had adopted takeaway management zones around schools, within which planning permission was to be denied to new takeaways. In this nationwide, natural experimental study, we evaluated the impact of management zones on takeaway retail, including displacement to areas immediately beyond management zones. We used uncontrolled interrupted time series analyses to estimate changes from up to six years pre- and post-adoption of management zones. We evaluated two outcomes: mean number of new takeaways within management zones (and by three identified sub-types: full, town centre exempt and time management zones) and mean number on the periphery of management zones (i.e. within an additional 100 m of the edge of zones). For 26 LAs, we observed an overall decrease in the number of new takeaways opening within management zones. Six years post-intervention, we observed 0.83 (95% CI -0.30, -1.03) fewer new outlets opening per LA per quarter than would have been expected in absence of the intervention, equivalent to an 81.0% (95% CI -29.1, -100) reduction in the number of new outlets. Cumulatively, 12 (54%) fewer new takeaways opened than would have been expected over the six-year post-intervention period. When stratified by policy type, effects were largest for full and town centre exempt zones. There was no evidence of a change in new takeaways on the periphery of management zones. Our findings suggest that management zone curb the proliferation of new takeaways and may therefore benefit population health.

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Session Classification: Paper Presentations

Track Classification: Global Health: Obesity

Contribution ID: 97

Type: Paper

Understanding the socio-spatial distribution of “dark kitchens” in England: developing a unique location dataset

Monday, July 15, 2024 10:40 AM (20 minutes)

Online food delivery services (OFDS, e.g. DoorDash, JustEat) allow people to access food prepared out-of-home more conveniently. The increasing popularity of OFDS has enabled a business model of food delivery from ‘dark kitchens’. Dark kitchens can take two forms: ‘ghost kitchens’, which are non-customer-facing commercial kitchens, and ‘virtual brands’, which operate from the kitchens of existing physical food outlets. However, a lack of national data on their locations limits our understanding of dark kitchens. In this study, we developed a comprehensive database of dark kitchen locations in England and analysed their socio-spatial distribution. We also developed a machine learning algorithm to predict ghost kitchen locations, as well as a record linkage process to identify virtual brands. By examining commercial kitchen providers’ location data, along with a review of keywords and addresses hosting multiple food outlets on meal delivery apps (JustEat, Deliveroo, UberEats), we identified 143 ghost kitchens hosting 1,446 food outlets (min-max: 1-57 food outlets per ghost kitchen), with the majority (66%) of these ghost kitchens in London. Using deduplicated, national data for food outlets on these three delivery apps (N=117,158), we also identified 20,801 virtual brands operating out of 9,732 kitchens. Some of the most prevalent virtual brands were SoBe Burger (N=193), Chick ‘N’ Bun (N=173), and Patty Guy (N=170). During the presentation, we will present the socio-spatial distribution of these dark kitchens including by type. This unique dataset will be instrumental in advancing research and shaping public policy on dark retail.

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Presenter: HUANG, Yuru

Session Classification: Paper Presentations

Track Classification: Global Health: Obesity

Contribution ID: 98

Type: Paper

Knowledge to equity action through integrated knowledge translation: A case study of childhood violence

Thursday, July 18, 2024 4:20 PM (20 minutes)

Childhood violence is a global human rights and public health issue with numerous short- and long-term repercussions for health and wellbeing. Yet, globally, one billion children experience some form of physical, sexual, or emotional violence each year. Despite international attention and policy interest in preventing childhood violence, gaps remain with respect to definitions of violence in different cultural and geographic contexts according to societal and behavioural norms. The CANVAS (Children, Attitudes, Norms, Violence and Society) project is an international, trans-disciplinary research initiative that aims to explore if and how social meanings of violence in five countries affect the development of adverse outcomes, and how these are biologically embedded. CANVAS is guided by an integrated knowledge translation (iKT) approach informed by a knowledge to equity action framework that includes an Advisory Board of global policy leaders as equal partners in the research process. The objective of this aspect of the research is to evaluate knowledge, attitudes and expectations related to knowledge translation among CANVAS researchers (n=30) and Advisory Board members (n=9). In-depth interviews will be conducted at the beginning and end of the project, transcribed verbatim, and analyzed thematically. This research contributes to an emerging body of research on best practices for iKT methodology. More broadly, this research aims to close the gaps between knowledge and action through the lens of equity to effect improved, and contextually-appropriate, global policy interventions to promote health for all.

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Session Classification: Paper Presentations

Track Classification: Health, Justice, Human Rights, Policy & Practice: Human Rights and Health

Contribution ID: 99

Type: Paper

Urban Decline and Health Implications: Applying Syndemic Theory to the Pre- and Post-Pandemic San Francisco Bay Area

Tuesday, July 16, 2024 5:00 PM (20 minutes)

The San Francisco Bay Area, known for its concentration of well-educated individuals in high-paying jobs, ranks among the wealthiest cities in the United States. However, the post-COVID-19 landscape has posed significant challenges, including a notable population decline, widening economic disparities, rising crime rates, pervasive drug use and homelessness, and an increase in foreclosed and vacant properties. These deteriorations/disorder may be linked to declining health of vulnerable populations in different stages of their lifecourse. This study employs syndemic theory as a conceptual framework to investigate synergisms between social, political, environmental and health service conditions and the clustering/escalation of comorbidities and multimorbidities (communicable, non-communicable, accidents and injuries, and mental health outcomes) in the San Francisco Bay Area. A conceptual framework will be presented that includes the driving forces behind emigration and how these same forces -e.g., changes in social, political, environmental and health service conditions contribute to emerging/escalation of comorbidities and multimorbidities clustered in population groups left behind and/or those who have newly entered. Deep learning techniques will be used to advance knowledge about the process of syndemic development (syndemogenesis) and trends in the synergistic effects on comorbidities and multimorbidities from pre- to post-COVID-19 pandemic. The findings from this research are intended to inform appropriate social and public health/health care policies and interventions to improve the health of vulnerable population groups in the San Francisco Bay Area.

Key words: Syndemic theory, health inequalities, urban decline, social determinants, San Francisco Bay Area

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Session Classification: Paper Presentations

Track Classification: Health, Justice, Human Rights, Policy & Practice: Health Disparities

Contribution ID: 100

Type: Paper

The impacts of social determinants of health on new HIV diagnosis vary over geography and race/ethnicity: a Bayesian multivariate spatial analysis of cities prioritized by EHE

Thursday, July 18, 2024 3:00 PM (20 minutes)

In the United States, the burden of HIV infections disproportionately affects states in the South as well as Black and Hispanic populations. Whether and how the impacts of social determinants of health (SDOH) on new HIV diagnosis vary over geography and race/ethnicity have been underexplored at small-area levels such as zip code tabulation areas (ZCTA). This study applies a Bayesian multivariate spatial model to investigate race-stratified new HIV diagnoses across 14 different U.S. cities that are prioritized by the Ending the HIV Epidemic in the U.S. (EHE) initiative. Five different SDOH variables are examined, including socioeconomic deprivation, income inequality, % of the uninsured population, racial segregation, and spatial accessibility to pre-exposure prophylaxis (PrEP). Results indicate that socioeconomic deprivation, income inequality, and % of uninsured population are positively associated with new HIV diagnosis only among Black and Hispanic populations and only in a few cities, but without obvious geographical patterns. The % of Black population is positively associated with new HIV diagnosis, but only among White and Hispanic populations and most prevalent in the South. ZCTAs with higher new HIV diagnosis are more likely to have better PrEP accessibility among all races/ethnicities in cities except NYC, Bridgeport-Hartford-New Haven, and Detroit. Magnitude differences in the positive association between new HIV diagnosis and spatial accessibility to PrEP, however, are also observed across geography and race/ethnicity. These findings suggest that geographically and racially tailored interventions should be developed to reduce HIV incidence in the U.S.

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Session Classification: Paper Presentations

Track Classification: Innovation in Methods: Geospatial Analysis

Contribution ID: 101

Type: Paper

ANALYSIS OF USE PATTERNS & GEO- ACCESS TO HEALTH FACILITIES: A CASE OF URBAN RURAL COMMUNITIES IN NIGERIA

Monday, July 15, 2024 3:00 PM (20 minutes)

This study presents a comparative lens into geographic access to and patterns of use of health facilities in urban and rural communities amongst sampled households of Imo state and Lagos state, Nigeria by analysing the 3Ws - where, when and what and how of health care facilities in relation to the sampled population. The available data sets are a georeferenced survey on socio demographics, type, when, where health care is accessed and how; spatial database of all health care facilities in Lagos and Imo state, and road network. These were analysed using travel distance to reveal the proximity to health facilities versus the proximity of health facilities they used. It also revealed why households preferred certain health care facilities despite further travel distances and times.

Keywords: Urban Health, Rural health, Health Accessibility, Nigeria, Proximity to Health facilities

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Session Classification: Paper Presentations

Track Classification: Global Health: Urban and Rural Health

Contribution ID: 102

Type: Paper

The dynamic interactions between urban communities during the pandemic

Tuesday, July 16, 2024 4:20 PM (20 minutes)

The travel restriction measures to reduce contacts during a pandemic, such as Covid-19, had inevitably altered the dynamics of a city as they were often applied in different strengths and at different stages of the pandemic, and led to structural changes of urban spatial interactions underlying disease spreading. A deeper comprehension of the dynamics of the spatial interaction structures is therefore crucial for a sound strategy in disease control, especially if it is based on a data-driven approach that examines the spatiotemporal patterns of real mobility data. This study uses the public transport ridership data of Singapore to reveal the dynamics of local and long-range urban mobility structures over four periods of a pandemic (pre-pandemic, lockdown, transition, and new norm). Leveraging on network community detection algorithms, the study identified latent movement boundaries from actual flows. Additionally, it revealed intra- and inter-community flow structure that potentially accounted for local and long-range diffusions. The intra-community flow intensity results showed no obvious differences in the mobility patterns among the four periods, suggesting consistent local expansion diffusion patterns throughout the pandemic. The inter-community analysis result revealed the relationships between different parts of the city and thereby the chance of virus spread. Understanding the complex intra- and inter-community network structures provides a more holistic picture of the disease diffusion process that can be used for disease management strategies simulation and future mobility-related urban planning post-pandemic.

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Session Classification: Paper Presentations

Track Classification: Innovation in Methods: Geospatial Analysis

Contribution ID: 103

Type: **Student Paper Competition**

Using GIS to Examine the Relationship Between Residential Segregation and Mental Healthcare Accessibility in Omaha, NE.

Tuesday, July 16, 2024 2:00 PM (20 minutes)

Equitable access to healthcare is regarded as a major indicator of improved health status of a country's population. Various US governments have implemented series of policies to improve healthcare accessibility. However, historical racial segregation policies have led most of such efforts to be markedly skewed towards only a part of the population, creating disparities in healthcare accessibility and health status in many US cities, including Omaha, Nebraska, that persist to the present day. By restricting access to essential social amenities like healthcare, residential segregation plays a key role in exacerbating health conditions such as mental health among racial minorities. Mental health problems, which are significantly high among racial minorities, especially Black/African Americans, serve as stimulants for the intensification of various chronic diseases. Increasing access to mental healthcare in disadvantaged minority neighborhoods is crucial for improving mental and general health conditions among racial minorities. This study, therefore, seeks to employ geospatial techniques to examine the relationship between residential segregation and mental healthcare accessibility in Omaha, Nebraska. The Divergence Index is used to estimate segregation rates, with segregation and mental health status patterns visualized using maps. The potential spatial accessibility to mental health services in Urban Omaha is estimated and mapped using the Three-Step Floating Catchment Area method. Ultimately, the study provides a spatial evidence-based direction for informing healthcare planning to minimize health disparities in the US.

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Session Classification: Student Paper Competition

Track Classification: Health, Justice, Human Rights, Policy & Practice: Healthcare Accessibility

Contribution ID: 104

Type: Paper

Rapidly Developing a Community and Evidence Based Heat Action Plan

Tuesday, July 16, 2024 5:20 PM (20 minutes)

Extreme heat contributes to 8,000 to 12,000 excess U.S. deaths per year. Partly due to increasing summer temperatures and a renewed focus on environmental justice, local governments started new initiatives to manage and adapt to extreme heat. For example, Miami-Dade County, Florida, U.S., appointed Jane Gilbert as the world's first Chief Heat Officer. This manuscript summarizes Miami- Dade County's preliminary efforts to build local evidence, engage the community, and rapidly respond to extreme heat. The manuscript's goal is to expedite the translation of existing tools into mainstream extreme heat, health, and equity planning. The study generated local evidence to identify the places and periods of time with elevated heat related illness using a statistical vulnerability and time series analysis, respectively. The places with the highest severe heat-related illness rates had hotter land surface temperatures and/or higher proportions of people who were outdoor workers, indigenous, living in poverty or mobile homes, and households with children. "Everyday" summer conditions instead of rare heatwaves increase the risk of a heat related death. The Chief Heat Officer convened workshops that engaged 298 unique community members on six cross-sectoral heat topics. Key recommendations included: increasing multi-sectoral heat monitoring and risk communication, building more affordable housing, preserving and expanding greenspace, and creating heat resilience hubs. The activities culminated in a Heat Action Plan, which was completed in less than two years from the receipt of project funding.

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Session Classification: Paper Presentations

Track Classification: Climate Change & Health: Environmental Health

Contribution ID: 105

Type: Paper

Exploring Racial and Ethnic Diversity Trajectories and Diabetes Prevalence in the U.S.

Thursday, July 18, 2024 11:20 AM (20 minutes)

Over 38.4 million people have diabetes in the U.S. While diabetes is the 8th leading cause of death overall, prevalence varies among racial and ethnic groups. Residential segregation has been shown to be associated with disparities in diabetes rates, however no study has assessed temporal changes in diversity as linked with diabetes rates. This study examines the associations between racial and ethnic diversity trajectories and diabetes at census tract (CT) level across the U.S. Adult diabetes prevalence was obtained from CDC's PLACES dataset. Diversity was calculated using an entropy metric to assess the mix of major races and ethnicities in 2010 CTs using data from 1990, 2000, 2010, and 2020 censuses via the SocScape project. K-means clustering generated 5 trajectory groups. The relationships between trajectory groups and diabetes was examined by a linear mixed model with CTs nested in counties and states, controlling for CT-level measures of age, sex, poverty, marital status, and public insurance. The reference group (cluster 0) was characterized by little change in diversity over time, while other clusters had varying linear or quadratic increasing diversity trends. Compared to cluster 0, clusters with increasing diversity trends were negatively associated with CT diabetes percentage. The lowest overall diversity group shows positive association with a lesser magnitude. Our findings indicate that CTs with increasing racial and ethnic diversity since 1990 see lower rates of diabetes compared to CTs with stagnant levels of diversity. Further work will assess spatial and race/ethnic-specific trends in this relationship.

Keywords: Diabetes, Racial/Ethnic Diversity, Segregation Trajectory, Spatial Analysis

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Session Classification: Paper Presentations

Track Classification: Health, Justice, Human Rights, Policy & Practice: Health Disparities

Contribution ID: 106

Type: Paper

Effects of the COVID-19 Pandemic on Pediatric Emergency Calls in Rhode Island

Tuesday, July 16, 2024 11:00 AM (20 minutes)

The COVID-19 pandemic significantly affected pediatric healthcare, leading to a decline in emergency department visits and hospital admissions for children globally. This decrease heightened the severity of cases, increasing reliance on Emergency Medical Services (EMS). This study, focusing on Rhode Island from March 2018 to February 2022, uses point-level locational data and spatial Poisson models. While overall pediatric emergency call likelihood remained consistent, the localized impact varied, with rural and suburban areas facing increased risks. The study highlights associations between pediatric calls and factors like poverty and renter occupancy, emphasizing the need for targeted pediatric emergency services in vulnerable areas.

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Session Classification: Paper Presentations

Track Classification: Innovation in Methods: Geospatial Analysis

Contribution ID: 107

Type: **Student Poster Competition**

Mapping Spatial Accessibility to Screening Mammography in Iowa, 2016 - 2022

Thursday, July 18, 2024 12:20 PM (20 minutes)

Breast cancer continues to be the dominant form of new cancers diagnosed in Iowa. Mammography screening is essential for early detection of breast cancer and has led to significant reductions in mortality. Spatial accessibility plays a vital role in determining whether women receive mammograms. Spatial accessibility examines the travel time along the road network between the patient's home and the facility where they receive care and the capacity of a facility to serve the population in demand. Utilizing mammogram machine data combined with population estimates, we explore rural-urban variation in spatial accessibility to mammograms in Iowa from 2016-2022.

We use a constrained optimization models from 2016 to 2022 to allocate the estimated population of screening-age women to Zip Code Tabulation Areas (ZCTA) with mammogram machines within 30 minutes of their residence ZCTA. Each year, we account for machine capacity and patient travel time. We use rural-urban commuting area (RUCA) codes to examine accessibility by category of rurality.

In all years, screening capacity is insufficient to meet the theoretical demand of mammogram screening given travel and capacity constraints. In Iowa from 2016 to 2022, the models were able to allocate the demand to approximately 85% to 89% of the population in a given year. The largest proportion of unallocated demand is in the Suburban and Rural areas.

Small changes in mammography facility availability, such as the addition of one mammogram machine, can greatly improve spatial accessibility to screening, especially in suburban and rural areas.

Keywords: mammography, screening, breast cancer, accessibility

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Session Classification: Student Poster Competition

Track Classification: Health, Justice, Human Rights, Policy & Practice: Healthcare Accessibility

Contribution ID: 108

Type: **Poster**

Disparities in canine rabies burden: An analysis of high-resolution spatial data from Arequipa, Peru

Thursday, July 18, 2024 12:40 PM (20 minutes)

Background: Dog-transmitted human rabies is commonly linked to poverty, but few studies have formally investigated the relationship between local socioeconomic deprivation and canine rabies incidence. Moreover, the use of coarse spatial data (aggregated at the subnational level) has even led some to report an increased risk of canine rabies in low-poverty areas.

Methods: We leveraged a unique, high-spatial-resolution surveillance database from the canine rabies-endemic city of Arequipa, Peru to probe the relationship between neighborhood deprivation and canine rabies risk in 2015-2022. We tested the hypothesis that case positivity increases with neighborhood disadvantage.

Results: We included a total 345 confirmed canine rabies cases and 1,343 samples for spatial manipulation and analysis. Although less than half (44.9%) of all households resided in the most socioeconomically disadvantaged blocks, these areas contained 71.4% of confirmed canine rabies cases. Moreover, surveillance effort was low in disadvantaged areas, making up less than a third (32.8%) of all submitted samples. Consistent with our hypothesis, sample positivity had a significant and positive trend with neighborhood disadvantage ($p = 0.0013$).

Conclusion: Neighborhood deprivation was associated with higher incidence of canine rabies despite lower surveillance effort in disadvantaged areas. Mass vaccination programs for canine rabies should target low SES neighborhoods to decrease inequities in rabies risk to human populations and more effectively control epidemics of canine rabies. The collection and curation of high-resolution spatial data is crucial for identifying social and spatial inequities in disease burden so that interventions can be targeted to those who need them most.

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Session Classification: Poster Presentations

Track Classification: Health, Justice, Human Rights, Policy & Practice: Health Disparities

Contribution ID: 109

Type: Paper

Identifying sources of new HIV diagnoses in southern Uganda

Thursday, July 18, 2024 10:20 AM (20 minutes)

Despite expansion of HIV treatment and prevention programs in Uganda, new HIV diagnoses continue to occur. Identifying sources of new HIV diagnoses following the scale-up of HIV interventions may provide insights into the HIV transmission dynamics in declining African HIV epidemics. Here, we investigated sources of new diagnoses using HIV sequence and survey data from the Rakai Community Cohort Study (RCCS), an open population-based HIV surveillance cohort. HIV gag genome sequence from RCCS (1994-2019) and background sequence datasets were aligned. Phylogenetic trees were reconstructed, and transmission chains were inferred in BEAST. A Negative Binomial branching process model was used to estimate the number and origin of unobserved transmission chains. The majority of sequences were either singletons or in clusters of less than 5 (94.4%), and only 1.8% of clusters were of a size greater than 10. An estimated 94.4% of subtype A1 chains originated from outside Rakai communities, while only 9.3% of subtype D chains were due to importation. Between 2016 and 2019, 447 participants were newly diagnosed and 202 had sequence data available. Of these, 32.7% were singletons, while 67.3% were part of local transmission chains. Newly diagnosed singletons were more likely to be from outside the communities, younger, and had a recent migration history than individuals in local transmission chains. This study reveals that both importations and ongoing within-community transmission chains play a critical role in shaping the dynamics of HIV epidemics. Intervention strategies that address local transmission dynamics as well as broader regional influences may be necessary.

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Session Classification: Paper Presentations

Track Classification: Global Health: Infectious Diseases

Contribution ID: 110

Type: Paper

Health care gentrification and equity: results from a scoping review

Thursday, July 18, 2024 3:20 PM (20 minutes)

Background. Health care gentrification (HCG) is the process by which the type and spatial distribution of health care resources and services shift to favor wealthier residents while potentially excluding more vulnerable residents, leading to inequitable access to quality health care. We conducted a scoping review to explore how healthcare gentrification has been described in the scientific literature and to document the reported relations between gentrification and health care access.

Methods. This scoping review followed the steps outlined by Arksey and O'Malley (2005) and enhanced by Levac et al. (2010) and Colquhoun (2014). We also followed the reporting guidelines from the Preferred Reporting Items for Systematic reviews and Meta-Analysis extension for Scoping Reviews. We adhered to the six stages of scoping review methodology, but we will only present the results from the first five steps.

Results. We will present results according to the Cole and Franzosa (2022) framework, which conceptualizes health care gentrification as stemming from the interaction between individual, neighborhood, political, and healthcare factors that may either promote or hinder access to healthcare services. Our results highlighted the geographic barriers to primary healthcare services.

Conclusion. Results could guide efforts to consider changes in the spatial distribution of health care services in healthcare planning and policy to counter the negative effects of neighborhood gentrification. This scoping review is the first phase of a multimethod study aimed at providing an in-depth understanding of the complex mechanisms influencing equity of access to primary health care for persons living below the poverty threshold.

Keywords: Neighborhood Gentrification, Health Services Accessibility, Health Equity

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Session Classification: Paper Presentations

Track Classification: Health, Justice, Human Rights, Policy & Practice: Health Disparities

Contribution ID: 111

Type: Paper

Factors related to being a “transmitter” or a “transmittee”: a spatial Bayesian modeling analysis of *M. tuberculosis* whole genome sequence data

Thursday, July 18, 2024 11:20 AM (20 minutes)

Recent advances in molecular sequencing tools and analytical methods offer new opportunities for using pathogen whole genome sequencing (WGS) to infer who-infects-whom in infectious disease outbreaks. Here we use data from a WGS study of *M. tuberculosis* transmission in a city in Malawi with a high burden of tuberculosis (TB) and HIV to identify factors related to transmission. Specifically, we aim to use directed pairwise transmission probability estimates to identify TB cases that with high probability were source cases for other TB cases (“transmitters”), and to identify TB cases that were likely directly infected by other TB (“transmittees”). We assume that each transmitter could be the source case for several other cases, but that each case could have been infected by only one source. In total, we analyzed WGS data from 847 TB cases; we found that 307 transmitters were likely source cases for 395 cases and that 164 cases were direct transmittees of other cases. Our preliminary results show that TB cases with infection of lineage 4 *M. tuberculosis* strains have 1.3 times the expected number of secondary cases from “transmitters”(95% CIs: 1.02-1.67) and 1.57 times the odds of being “transmittees”(95% CIs: 1.13-2.18), compared with cases infected with other lineages. For every year increase in age, the odds of being a “transmittee” decrease by 2% (95% CIs: 0.97-0.99). We also located geographic areas of increased risk of cases being “transmittees” or “transmitters” using kernel density estimation. We are currently fitting a spatial Bayesian modeling to explore the relationship between location and environmental factors in transmission.

Keywords: Bayesian modeling, infectious disease, tuberculosis, WGS

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Session Classification: Paper Presentations

Track Classification: Innovation in Methods: Geospatial Analysis

Contribution ID: 112

Type: **Student Paper Competition**

COVID-19, place-based vulnerabilities, and maternal and infant health in Michigan

Tuesday, July 16, 2024 1:40 PM (20 minutes)

Between March 1, 2020 and December 31, 2021 there were 1.7 million confirmed cases and 27,989 deaths due to COVID-19 among Michigan residents. Of all cases, 31.6% were among women of reproductive age (10-49 years). During the same time period there were 209,171 births in Michigan. In 2020 and 2021, preterm (< 37 weeks gestation) birth rates were 102.3 and 105.9 per 1,000 live births and rates of low-birth weight (<2,500 grams) were 89.8 and 92.5 respectively. A growing body of research suggests that COVID-19 infection during pregnancy is associated with increased maternal morbidity, including severe illness and increased risk for hospitalization, thereby increasing the risk of preterm birth, low-birth weight or stillbirth. Indirect pathways such as isolation and stress may also impact pregnancy outcomes. Place-based vulnerabilities and inequitable distribution of healthcare services may intensify adverse pregnancy outcomes for certain groups. This presentation will demonstrate the relationships between COVID-19 hospitalization (a proxy for COVID-19 transmission intensity), place-based vulnerability and preterm birth and low-birth weight outcomes in a cohort of mothers who were pregnant and gave birth during the first 19-months (pre-vaccine availability) of the COVID-19 pandemic in Michigan. To evaluate associations between community-level variations in hospitalization for COVID-19 and pregnancy outcomes, individual birth records from Michigan Vital Statistics using mother's zip code of residence were linked to zip code level rates of COVID-19 hospitalization calculated from the Michigan State Inpatient Data. The findings from this research will inform the incidence of adverse birth outcome trends in other states and regions.

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Session Classification: Student Paper Competition

Track Classification: Innovation in Methods: Geospatial Analysis

Contribution ID: 113

Type: Paper

Potential and Revealed Accessibility to Cancer Care in the United States and The Johns Hopkins Sidney Kimmel Comprehensive Cancer Center

Tuesday, July 16, 2024 3:20 PM (20 minutes)

The literature contains a plethora of spatial accessibility studies, but few examine actual cancer outcome data across multiple temporal cross-sections. Combining potential and revealed accessibility approaches can improve opportunities to generate evidence-based changes for cancer screening and treatment. This presentation will highlight findings from two research projects: (1) Disparities in Cancer Stage Outcomes by Catchment Areas for a Comprehensive Cancer Center, and (2) The Impacts of Potential Accessibility to Gynecologic Oncologists on Cancer Stage. For study (1), we found that those living outside the main catchment area were associated with higher odds of late-stage cancers for those who received only a diagnosis or only treatment at SKCCC. Non-Hispanic Black patients and those with Medicaid and no insurance at time of treatment also had higher odds of receiving a late-stage cancer diagnosis. For study (2), ~50 million women do not have access to a gynecologic oncologist within 100 miles of residence, where closer proximity is associated with lower odds of a late-stage diagnosis. Notably, women with ovarian cancer with no access within 100-miles were associated with a significant increase in odds of late-stage diagnosis; and Black women residing in the least deprived counties were associated with a significant decrease in odds of late-stage diagnosis. These findings suggest that disadvantaged populations living outside of the main catchment area of a cancer care facility may face barriers to screening and treatment; and counties with low social vulnerability may result in a protective effect. Care-sharing agreements among cancer centers could address these issues.

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Session Classification: Paper Presentations

Track Classification: Health, Justice, Human Rights, Policy & Practice: Healthcare Accessibility

Contribution ID: 114

Type: Paper

Investigating the relationship between drug use practices and mobility patterns among people who inject drugs in urban environments

Tuesday, July 16, 2024 10:20 AM (20 minutes)

People who inject drugs (PWID) are at a high risk of transmitting blood-borne infection like HIV and hepatitis C due to injection practices. By studying travel patterns as related to drug use behaviors, we may better understand disease transmission spatially. This can inform the development of targeted intervention strategies such as the allocation and locations of prevention and treatment services. In this study, we investigate the relationship between routes of drug administration and human mobility patterns among PWID.

Participants were recruited from the ongoing ALIVE Study, a community-recruited cohort of PWID in Baltimore. Following informed consent, 100 participants were provided a smartphone embedded with a GPS logger and were prompted multiple times daily to complete a survey on drug use behavior. A robust stop-location detection algorithm was applied to 14 million points of GPS data to automatically extract stop locations at which PWID stayed for at least 2 minutes. In total, over 2032 drug use sites were identified, including 714 for snorting, 670 for smoking, and 551 for injecting. Getis-Ord G_i^* statistics highlighted significant spatial disparities. Snorting and smoking locations were widespread, covering 86 and 73 block groups, respectively, whereas injecting was more concentrated within 44 block groups. Smoking sites were particularly dispersed, with over 33% located beyond one standard distance from their case-weighted geographic centroid, compared to around 20% for snorting and injecting sites. Our study reveals distinct mobility patterns among drug users by method, offering a potential reference for optimizing targeted interventions.

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Presenter: Dr LI, Yao (Johns Hopkins Bloomberg School of Public Health)

Session Classification: Paper Presentations

Track Classification: Innovation in Methods: Geospatial Analysis

Contribution ID: 115

Type: Paper

Smart Citizens Enabling Resilient Neighbourhoods (SCERN) for Equitable and Inclusive Post-pandemic Futures: A framework for resilience planning with community

Thursday, July 18, 2024 3:20 PM (20 minutes)

Within cities, neighbourhoods engender and reflect health and social inequities, giving rise to vulnerability (e.g., during a pandemic) and inter-generational trauma and poverty for some communities. Neighbourhood settings can expose people to stressors (e.g., safety concerns) and provide resources for surviving and thriving (e.g., food banks and public recreation facilities, respectively), so targeted resilience interventions can improve wellbeing (e.g., chronic disease prevention, joy) for at-risk communities. There is growing interest in fostering community resilience, but a gap remains in how to strengthen engagement of community members in the process of resilience planning at a neighbourhood scale. The Smart Citizens Enabling Resilient Neighbourhoods (SCERN) study aims to create accessible methods and tools for community-engaged resilience planning. A framework for resilience planning was developed that includes a fundamental role for community and a role for exploring, documenting, and sharing resilience contributors through digital participatory mapping. The framework was built on a system of values, including empowerment, community participation, reflexivity, and relationality as well as an annotated bibliography of methods for community-engaged decision-making. The presentation will describe the problem space and the six stages of resilience planning in the framework, including: (1) Pre-Mapping; (2) Participatory Mapping; (3) Pre-Planning; (4) Planning (Bridging); (5) Planning (Problem Solving); and (6) Post-Planning. Results from a participatory mapping pilot study will highlight the role of citizen-generated data in the process. Discussion will focus on how this approach can improve community resilience by working towards community consciousness, empowerment, well-being, and liberation.

Keywords: neighborhood; resilience; planning; participatory mapping; community engagement

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Session Classification: Paper Presentations

Track Classification: Health, Justice, Human Rights, Policy & Practice: Community Engagement

Contribution ID: 116

Type: Paper

Using geographic self-organizing map (Geo-SOM) to examine infectious disease outbreaks: A study of 2022 COVID-19 Omicron Wave in Hong Kong

Tuesday, July 16, 2024 3:40 PM (20 minutes)

A large set of data necessarily creates a higher dimension in structure, which prevents humans from examining the complex associations among numerous variables and observations. A self-organizing map (SOM) is an unsupervised artificial neural network model that effectively reduces data dimensions while preserving the topological structure of the original data. We used a set of SOMs to investigate the spatiotemporal diffusion patterns and clusters of the COVID-19 Omicron in Hong Kong with its various sociodemographic and environmental variables from the public datasets. We found that many non-urban-centric residential areas repeatedly exhibited similar diffusion patterns over time after the relaxation of anti-pandemic measures. Notably, several local areas less accessible to shops and transportation hubs, along with major commercial and business centres, often became clusters. Areas with more older housing and industrial facilities were also identified vulnerable to COVID-19 diffusion. This study showcases that the use of geospatial AI techniques is useful for examining spatial and temporal diffusion patterns of infectious diseases and designing appropriate measures of their control and prevention.

Keywords: Self-Organizing Map, GeoAI, COVID-19, Hong Kong, Disease diffusion

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Session Classification: Paper Presentations

Track Classification: Innovation in Methods: GeoAI and Machine Learning

Contribution ID: 117

Type: Paper

Putting the exposome into practice: political claims and spatial limitations of the European Human Exposome Network

Monday, July 15, 2024 11:20 AM (20 minutes)

Objectives: Contemporary research on the exposome, i.e. the sum of all the exposures an individual encounters throughout life and that may influence human health, bears the promise of an integrative and policy-relevant research on the effect of environment on health. Considering critical analyses of the first generation of exposome projects, the emergence of the European Human Exposome Network (EHEN) provides an opportunity to better situate the ambitions and priorities of this approach.

Methods: A critical textual analysis of profile articles from each of the projects involved in EHEN, published in *Environmental Epidemiology*, was carried out to derive common promises, innovations and methods across EHEN as well as their overall spatial representativeness.

Results: EHEN consolidates its integrative outlook by reinforcing the volume and variety of data, its data analysis infrastructure and by diversifying its strategies to deliver actionable knowledge. Yet data-driven limitations severely restrict the geographical and political scope of this knowledge to health issues primarily related to urban setups, which may aggravate some socio-spatial inequalities in health in Europe.

Conclusions: The second generation of exposome research doubles down on the initial ambition of an integrative study of the environmental effects of health to fuel better public health interventions. This intensification is, however, accompanied by significant epistemological challenges and doesn't help to overcome severe restrictions in the geographical and political scope of this knowledge. We thus advocate for increased reflexivity over the limitations of this conceptually and methodologically integrative approach to public and environmental health.

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Session Classification: Paper Presentations

Track Classification: Health, Justice, Human Rights, Policy & Practice: Health Disparities

Contribution ID: 118

Type: Paper

How to simulate infectious disease spreading in a high-dense city: a 3D agent-based model for 2022 Hong Kong COVID-19 Omicron wave

Tuesday, July 16, 2024 3:20 PM (20 minutes)

The COVID-19 pandemic requested scientists design a more accurate model to forecast infectious disease spreading for enhanced preparedness. While the use of spatially explicit agent-based models for infectious diseases has gained ground during COVID-19, three-dimensional (3D) urban features were not fully incorporated in ABM modelling. Since the latest urban development pursues vertical expansion in cities, incorporating 3D urban characteristics into disease-spreading models is crucial to designing them more realistically.

This study aimed to simulate the 2022 COVID-19 Omicron infection within a 3D built environment using reprojected mobility data in Hong Kong. The building data provided by the Hong Kong government was utilized to construct the 3D representation. Given the concerns regarding the infection risk in high-rise residential buildings, we considered indoor close-contact, cross-corridor, and floor-to-floor vertical transmissions within buildings. Also, unlike other studies that relied on assumed trip sequences, this model reprojected the origins-destinations of individuals' daily trips based on the latest census and land-utilization data, ensuring a more realistic representation. By replicating the infection patterns during the 2022 Omicron wave, the model provides insights at a small scale, aiding policymakers in implementing targeted measures.

Keywords: Agent-based models; Three-dimensional (3D); Infectious diseases; COVID-19; Hong Kong

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Presenter: TANG, Ka Chung (The University of Hong Kong, Department of geography)

Session Classification: Paper Presentations

Track Classification: Innovation in Methods: Geospatial Analysis

Contribution ID: 119

Type: Paper

Case study approaches to spatial data analysis: strategies for non-replicable health research

Tuesday, July 16, 2024 2:40 PM (20 minutes)

At least three, partially overlapping research frameworks are commonly employed in studies of spatial health data: the risk factor, neighborhood effects, and “formal causal inference” frameworks. These share an important but limited objective: to produce discrete effect estimates. Case studies are a broad class of study designs that involve narrative forms of argument, multiple sources of data, and often an investigative, place-based mode of research. What resources might qualitative and case-based methodologies provide for spatial data analyses? Here, I engage with Michael Burawoy’s extended case method for ethnography and ask how it might contribute to quantitative research. I consider if and how each of Burawoy’s four core concepts (his “extensions”) may be turned into questions that can be posed in order to situate small-area health data within a social context that extends outward in time and space. This presentation will introduce these ideas via an ongoing study of colorectal cancer (CRC) inequalities in the urbanizing regions surrounding Dallas-Fort Worth and Houston, Texas. The study situates the evolution of the CRC burden over recent decades in concurrent transformations of urban space, demography, livelihoods, and preventive technology. Rather than search for replicable or representative findings, the study is most concerned with learning of, and learning from, the distinctive features of the study areas. Overall, this presentation will discuss how incorporating qualitative and reflexive ‘casing’ techniques may help to enrich spatial analyses of quantitative health data.

Primary author: DONEGAN, Connor

Presenter: DONEGAN, Connor

Session Classification: Paper Presentations

Track Classification: Health, Justice, Human Rights, Policy & Practice: Health Disparities

Contribution ID: 120

Type: Paper

Plastic (Ger)ontologies: Measuring Aging, Health, Bodies, and Environments on the Epigenetic Clock

Tuesday, July 16, 2024 10:40 AM (20 minutes)

In this paper I argue that ‘epigenetic age’ measurements shape norms of health and aging by reaffirming that ‘healthy aging’—measured by reversal of epigenetic age biomarkers—is based on personal responsibility and lifestyle. To do so, I draw on preliminary findings from participant observation research at a scientific conference in the field of biological gerontology, and at a diagnostic company that makes test kits that measure consumers’ biological age based on epigenetic biomarkers. I also attend to how private biotech companies shape the ways that gerontology research interacts with broader society. Research in the field of ‘environmental epigenetics’ departs from earlier biological understandings of the genome as fixed, and pays attention to how environmental and social factors impact gene expression. In light of this, social scientists have anticipated how environmental epigenetic science can reconceptualize health as ecological and biosocial. I draw on literatures on the political economic geographies of the life sciences, the biopolitics of post-genomic science, and critical social studies of aging to examine the following questions: 1) how does biological gerontology research on epigenetic age shape normative conceptions about the relationship between aging, bodies, and their environments? and 2) how do biological gerontologists, longevity biotechnology companies, and marketers translate scientific research on ‘biological age’ into the commodity of ‘epigenetic clock’ test kits?

Keywords: environmental epigenetics; aging; lifecourse; measurement; healthism

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Presenter: PURISCH, Hans (University of Kentucky)

Session Classification: Paper Presentations

Track Classification: Climate Change & Health: Interconnected Health

Contribution ID: 121

Type: Paper

Being designated an age-friendly city: What does it mean for the health and well-being of older people?

Thursday, July 18, 2024 5:00 PM (20 minutes)

To be designated an age-friendly city by the World Health Organization (WHO), a specific set of criteria need to be met. Using the Canadian Community Health Survey (CCHS), the health and well-being of older people who live in a sample of large cities, which have been designated as age-friendly (AFCs) by the WHO are compared to older people who live in a sample of large cities (AFC-Ns), which are not 'officially' designated as age-friendly by the WHO. Overall health and mental health are used as dependent variables. In addition to the comparisons between AFCs and AFC-Ns, comparisons are made to provincial and national averages. Technical, theoretical and policy explanations are considered to interpret the results.

Primary author: ROSENBERG, Mark (Queen's University)

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Session Classification: Paper Presentations

Track Classification: Health, Justice, Human Rights, Policy & Practice: Structural Determinants of Health

Contribution ID: 122

Type: **Paper**

Gender-based violence in WASH: A threat to global health security

Tuesday, July 16, 2024 4:40 PM (20 minutes)

Despite the progress in access to WASH in Low- and Middle-Income Countries (LMICs), significant inequalities exist across space and place. This paper uses insights from feminist political ecology of health to explore the multi-scalar ways WASH inequalities expose women and girls to violence in their WASH spaces. We explore this issue using retrospective narratives from in-depth interviews with 27 Ghanaian migrants (16 women and 11 men) residing in Ontario, Canada. The case of Ghana offers insight into how gender-based violence (GBV) in WASH is produced, maintained, and embodied in space and across temporal scales. The results reveal the embeddedness of GBV in socio-political and institutional structures of place. Expanding the analysis to consider impacts beyond the household (i.e., individual) scale showcased the collective embodiment of WASH-GBV and how vulnerabilities to GBV permeate social structures in Ghana. Collectively, the findings demonstrate how WASH-GBV is a cross-cutting issue and a barrier to achieving SDG 3 (population health and wellbeing), SDG 5 (promote gender equality), and SDG 16 (peaceful and inclusive societies).

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Presenter: Dr NUNBOGU, Abraham (University of Waterloo, Canada)

Session Classification: Paper Presentations

Track Classification: Global Health: Water

Contribution ID: 123

Type: **Invited Paper**

Assessing the potential for improved response to antimicrobial resistance in outpatient *Staphylococcus aureus* isolates using seasonal and spatial antibiograms

Monday, July 15, 2024 4:40 PM (20 minutes)

Increasing bacterial resistance to multiple classes of antibiotics limits effective treatment options. Understanding spatial and temporal variation in resistance rates is important for informing empiric therapy, the prescribing of antimicrobials before lab-based susceptibility testing results are available to the provider. In particular, the use of cumulative susceptibility reports, also known as antibiograms, is recommended for improved empiric therapy and antibiotic stewardship. However, the predictive ability of antibiograms has not been well-studied nor has the potential for past seasonal or spatial variation in susceptibility been assessed as important in predicting likelihood of future susceptibility. Utilizing *Staphylococcus aureus* isolates obtained in outpatient settings from a nationwide provider of care, the Veterans Health Administration, and a local provider of care, the University of Iowa Hospitals and Clinics, standard, seasonal and spatial antibiograms were created for five commonly used antibiotic classes. A total of 338,681 *S. aureus* isolates obtained in VHA outpatient settings from 2010-2019 and 6,817 isolates obtained in UIHC outpatient settings from 2014-2019 were used to generate and test antibiograms. Logistic regression modeling determined the capacity of these antibiograms to predict isolate susceptibility to each antibiotic class. All models had low predictive capacity, with areas under the curve of < 0.7 . Standard antibiograms are poor in predicting *S. aureus* susceptibility to antibiotics often chosen by clinicians, and seasonal and spatial antibiograms do not provide an improved tool in anticipating non-susceptibility. These findings suggest that further refinements to antibiograms may be necessary to improve their utility in informing choice of effective antibiotic therapy.

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Presenter: CARREL, Margaret (University of Iowa)

Session Classification: Paper Presentations

Track Classification: Global Health: Infectious Diseases

Contribution ID: 124

Type: **Student Paper Competition**

The impact that natural disasters (floods) in the city of Shkoder had on increasing of Leptospirosis disease around 2010-2011.

Thursday, July 18, 2024 1:20 PM (20 minutes)

Abstract

Leptospirosis is an infectious disease which is passed through species from animals to people and it is present in different geographical periods and spaces.

This disease has got a seasonal feature. In geographical spaces with soft climate happens in Summer and Autumn seasons, whereas in tropical areas is present during the rainy season.

The case that was taken into study is from municipality of Shkoder, Albania, which went through a flooding season in December 2010 - January 2011. The geographical space of Shkoder has got an average Mediterranean climate, where the heaviest annual rainfall is in the Spring and Autumn seasons.

According to the Health Public Institute, the cases with Leptospirosis disease are present every year, but during Floods in 2010-2011, 32 cases were evidenced, which is approximately 41 percent in republic scale.

The increasing cases of Leptospirosis is attributed to the floods which city and rural areas went through. Mice were the ones who transmitted this disease to humans.

The Municipality of Shkoder and its surrounding areas are located in these geographical factors: the lower height above sea level, the water complex (Lake of Shkodra- River Buna and Drini) and the climate features where approximately 80 percent of rainfall is during November—March. Whenever there is flood there is leptospirosis as well.

Dr. Ylber DYLI

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Presenter: DYLI, Ylber (Albanian)

Session Classification: Student Paper Competition

Track Classification: Climate Change & Health: Natural Disasters

Contribution ID: 125

Type: Paper

A place-based approach to examining multimorbidity: physical and social neighbourhood features and the development of multiple long-term health conditions

Multimorbidity, defined as the co-existence of two or more long-term conditions, is a major global public health challenge with significant impacts for health and social care systems. There is a substantial body of work identifying different individual- and household-level determinants of multimorbidity, yet the role of place-based characteristics in affecting multimorbidity remains limited. This presentation will firstly provide an overview of a systematic scoping review examining place-based risk factors for multimorbidity, and synthesises the potential pathways explaining these relationships. We will then present findings from analyses of a large-scale linkage study created using data from administrative and statistical sources (the Scottish Longitudinal Study) including linked census and hospitalisation data. In particular, we examine the role of place-based factors including air pollution, green space and social capital in explaining multimorbidity health outcomes. We finish the presentation by suggesting a future research agenda for work on the role of place in understanding multimorbidity. This agenda includes adopting more precise measures of place-level environmental exposures, exploiting electronic health records to develop more nuanced measurements of multimorbidity, and a greater use of longitudinal study designs, or analytical approaches better suited to identifying causal processes.

Primary author: PEARCE, Jamie (University of Edinburgh)

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Presenter: PEARCE, Jamie (University of Edinburgh)

Session Classification: WITHDRAWN OR REMOVED

Track Classification: Innovation in Methods: Longitudinal Analysis

Contribution ID: 126

Type: Paper

Population health in coastal communities in England

Tuesday, July 16, 2024 10:20 AM (20 minutes)

Socio-economic deprivation continues to be a key driver of geographical inequalities in population health at all spatial scales. In England, significant public health challenges faced by coastal communities were highlighted in the Chief Medical Officer's 2021 Annual Report. Poor health outcomes in these coastal communities are driven by multiple social and geographical determinants, including peripherality, poor housing, fragile/seasonal economies, constraints to employment prospects, and provision of/access to services.

However, evidence is also accumulating for the potential health-promoting impacts of living in and visiting coastal environments, through mechanisms including promoting psychological well-being and supporting physical activity. Previous analyses of small-area 2001 Census data (Wheeler et al, 2012) found that populations living closer to the coast of England typically reported better general health than their equivalents inland, and a potential 'equigenic' effect, whereby the beneficial association was strongest in the most socio-economically deprived areas. Evidence since then indicates variability in these relationships depending on the place, population sub-groups, and outcomes considered.

In this study, we are using 2021 Census data to revisit and update the 2001 study, and to explore contemporary geographies of population-scale health in coastal and more inland communities of England. We will explore the data in the light of evidence on the challenges and opportunities for public health at the coast, and deepening health inequalities. We will discuss whether and how opportunities for health promotion and protection in coastal areas might be sustainably enacted in a manner that helps to tackle, rather than exacerbate, socio-spatial health inequalities.

Primary author: WHEELER, Benedict (University of Exeter)

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Presenter: WHEELER, Benedict (University of Exeter)

Session Classification: Paper Presentations

Track Classification: Health, Justice, Human Rights, Policy & Practice: Structural Determinants of Health

Contribution ID: 127

Type: Paper

Residential segregation of Latinx residents in California is associated with worse brain health measured via brain imaging

Tuesday, July 16, 2024 11:00 AM (20 minutes)

Residential segregation in the US has been associated with worse cognitive functioning in Black older adults, but the impact of segregation on Latinx individuals is less clear from published studies. We investigated whether Latinx individuals living in more segregated Latinx neighborhoods had worse brain health measured via magnetic resonance imaging (MRI). We analyzed data on 202 non-Hispanic White and Latinx older adults with normal cognition or mild cognitive impairment living in California and participating in research at the University of California Davis Alzheimer's Disease Research Center. MRI outcomes included hippocampal volume, which when reduced is a risk factor for Alzheimer's disease (AD), and white matter hyperintensity (WMH) volume, which when increased indicates white matter damage that increases risk for dementia including AD and cerebrovascular disease (e.g., stroke). Latinx segregation was defined using the Getis-Ord (Gi*) statistic, which compares the proportion of Latinx residents in the participant's neighborhood (US Census tract) to the surrounding neighborhoods and greater study region (higher scores: greater clustering/segregation). Multivariable linear regression analyses examined associations between Latinx segregation and the MRI outcomes. Living in neighborhoods with greater Latinx segregation was associated with greater WMH volume among the Latinx but not White participants. No association was found between segregation and hippocampal volume for either race/ethnicity. Our findings suggest worse brain health among Latinx individuals living in more segregated neighborhoods. Future studies need to replicate these findings and elucidate potential causal mechanisms (e.g., Latinx segregated neighborhoods may have fewer recreational, greenspace, and physical activity resources to promote healthy lifestyles).

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Session Classification: Paper Presentations

Track Classification: Health, Justice, Human Rights, Policy & Practice: Structural Determinants of Health

Contribution ID: 128

Type: Paper

Malaria Transmission Scenarios in the Brazilian Amazon

Thursday, July 18, 2024 11:00 AM (20 minutes)

Malaria remains one of the most significant diseases in the peripheral countries of the world's tropical and subtropical regions. In 2022, 131,224 cases were recorded in Brazil, 99% of which were in the country's northern region (Brazil, 2024). This study aimed to analyze the social and environmental determinants of malaria throughout the Brazilian Amazon in 2017-2022 and develop malaria transmission scenarios for 2030, 2040, and 2050. The Annual Parasite Index (API) and social and environmental indicators were calculated and inserted into a spatial database. Land use and land cover variables were included (forest, deforestation, urban area, indigenous lands, mining, hydroelectric dams), climate variables (rainfall, temperature, and humidity), and socioeconomic data (Gross Domestic Product and population growth). We use LuccME-Disease (Angelo, 2015), an open-source modeling platform developed by the Earth System Science Center (CCST) of the National Institute for Space Research (INPE) and implemented in TERRAME (AGUIAR et al., 2011) for spatially explicit models of communicable diseases to elaborate the scenarios. We created three scenarios, optimistic, pessimistic, and intermediate, based on the API rate of reduction for the Brazilian Amazon region and on climate, land use, and cover scenarios (Bezerra, 2022). Preliminary results show a reduction in malaria cases in the Amazon as a whole, with an increase in the disease in municipalities that have seen an increase in deforestation for illegal mining and occupation of indigenous lands.

Primary author: Dr RAFAEL ANGELO, Jussara (Fiocruz)

Presenter: Dr RAFAEL ANGELO, Jussara (Fiocruz)

Session Classification: Paper Presentations

Track Classification: Climate Change & Health: Sustainability

Contribution ID: 129

Type: Paper

Smart cities and disability

Thursday, July 18, 2024 4:40 PM (20 minutes)

Background: With growing urban populations, inclusive and accessible urban spaces become increasingly important, particularly for disability affected persons. At the same time, smart cities and related digital applications provide emerging opportunities for urban health advances. However, the extent to which smart city applications consider or even fulfill the needs of individuals with disabilities, remains underexplored. This paper therefore aims to provide an overview about the existing literature on the interplay of smart cities and disability to identify gaps and opportunities for future research and policy development.

Methods: We applied a scoping review in PubMed and Scopus using predefined search terms related to smart cities, smart citizens, and disability. The inclusion criteria encompassed articles in English between 2014 and 2024.

Results and Discussion: There is a growing interest in smart city applications and their potential impact on disability inclusion. Key themes identified include app-based assessments of physical barriers, digital interventions for accessibility, participatory design approaches, and challenges in implementation and adoption. The literature also highlights notable gaps in terms of equity, representation, and policy engagement in this context. While technological advancements hold promise for enhancing accessibility and quality of life for individuals with disabilities, there is a crucial need for more inclusive and participatory approaches and for policy engagement. Future research should focus on bridging the gap between smart city strategies and the lived experiences and needs of people with disabilities, with an emphasis on promoting equity, empowerment, and social justice within urban environments.

Keywords: Disability, accessibility, digital platforms, social media, smart city

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Presenter: GRUEBNER, Oliver (University of Lucerne)

Session Classification: Paper Presentations

Track Classification: Global Health: Urban and Rural Health

Contribution ID: 130

Type: Paper

Evaluating Small Area Differential Privacy Life Expectancy

Thursday, July 18, 2024 2:40 PM (20 minutes)

The decennial census provides policy-makers, researchers, and various public and private entities with high-quality geographic and demographic information. Differential privacy (DP) refers to the process of introducing random error into publicly available data products such as the decennial census. The most recent update to the U.S. Census Bureau's disclosure avoidance methodologies (DAS), known as the 'Top Down Algorithm'(TDA), utilizes DP to add error to the 2020 decennial census. Below the state level, the infusion of noise to higher levels of geography, such as the county, compounds and can further distort lower small area geographies population counts, such as the tract or block group. This means that as DP is implemented down the geographic spine from the state all the way to the block level, the error is compounded and thus, is more pronounced for lower-level geographies. This study seeks to disentangle how DP may bias neighborhood-level (census tract) life expectancy (LE) estimates and highlights the potential trade-offs between privacy-preserving methods and detecting health disparities in vulnerable populations. We calculated LE using mortality records from Florida between 2009 and 2013 for 4,175 census tracts. We then evaluate the U.S. Census Bureau's demonstration products with/without DP for two different uncertainty levels (ϵ) = 4, (ϵ) = 29.2. LE estimates characterized as biased (greater than 3 years) were temporarily assigned a value to indicate a DP biased LE estimate (e.g., '1'). Correlation coefficients were used to compare LE calculated from original (non-DP) age-specific population estimates with those from DP-infused counts. The study then analyzed the demographic and socioeconomic characteristics of census tracts with biased DP life expectancy estimates. Factors significantly correlated with increased log-odds of biased LE estimates included the % Black population (1.03, p-value < 0.001). Conversely, total population (0.21, p-value < 0.001), % female-headed households (0.86, p-value < 0.001), and % population 25+ years with no high school diploma (0.94, p-value < 0.001) exhibited significant negative associations with biased LE estimates. Future studies should consider the additional uncertainty created by DP when assessing public health interventions and tracking population health over time.

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Session Classification: Paper Presentations

Track Classification: Global Health: Urban and Rural Health

Contribution ID: 131

Type: Paper

Spatio-temporal distribution of antibiotic resistance genes in *Escherichia coli* in the US, 2000-2023.

Tuesday, July 16, 2024 3:20 PM (20 minutes)

Antibiotic resistance is recognized as one of the leading public health concerns in the 21st century. Among the various microbes that have developed antibiotic resistance, *Escherichia coli* is of particular concern due to its ubiquity and its role as a significant reservoir for resistance genes. To date, no study has provided a comprehensive examination of the geographic patterns in *E. coli* resistance to various classes of antibiotics cross the US utilizing a OneHealth perspective. This study utilizes *E. coli* samples from the National Database of Antibiotic Resistant Organisms (NDARO) and the resistance genes detected by AMRFinderPlus to understand the spatial-temporal dynamics of genotypic resistance among *E. coli* populations in the US. We chose to focus on six classes of antibiotics, including 3rd generation cephalosporins, carbapenems, trimethoprim, sulfonamides, fluoroquinolones, and tetracyclines, based on their significance in human and veterinary health. Among 30528 *E. coli* samples between 2000 and 2023, the overall rates of resistance are 18.5% for cephalosporins, 1.5% for carbapenems, 32.0% for trimethoprim, 19.9% for sulfonamides, 4.9% for fluoroquinolones, and 38.7% for tetracyclines. Our results reveal generally increasing resistance rates against all examined antibiotics in humans and companion animals, but also significant geographic disparities and variations in resistance genotypes between different hosts, indicating potential transmission barriers or selective pressure. Finally, certain resistance genes are significantly correlated, likely due to co-selection or mobile genetic elements that facilitate the horizontal transfer of multiple resistance genes.

Primary authors: TANG, Zhuo 'Austin' (University of Iowa); CARREL, Margaret (University of Iowa)

Presenter: TANG, Zhuo 'Austin' (University of Iowa)

Session Classification: Paper Presentations

Track Classification: Climate Change & Health: Interconnected Health

Contribution ID: 132

Type: Paper

Measuring Greenspace Access: Best & Current Practices for Healthy Places

Tuesday, July 16, 2024 4:20 PM (20 minutes)

Greenspace has been linked to health in a variety of ways, from having positive effects on mental health to being a potential mediating factor for asthma. However, greenspace is a broad term used to discuss anything from vegetation presence to park access. In this review we identify current uses of greenspace and greenspace measures to support standardized practices, replicable research, and Open Science. This research is part of the SDOH & Place Project, which seeks to connect communities, researchers, policymakers, and health practitioners with place-based social determinants of health (SDOH) data towards a future of health equity. As part of that mission, we aim to expand understanding and usage of greenspace measures in an SDOH context.

This research reviews current greenspace measures, indicators for each measure, and whether they identify presence or utilization of greenspace. Current measures and indicators are identified primarily through review articles, and secondarily through additional review of the literature, with particular attention to literature that identifies greenspace measures in the context of health or SDOH.

The ultimate goal of this study is to build a knowledge base to help community members and professionals alike better incorporate greenspace indicators into health research, advocacy, and planning. The knowledge base will be a resource for the community to understand and evaluate which indicators to include in their work. Further, to link this knowledge base to practice, we will also be indexing publicly available datasets in a search discovery platform, promoting a practice of Open Science.

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Session Classification: Paper Presentations

Track Classification: Health, Justice, Human Rights, Policy & Practice: Structural Determinants of Health

Contribution ID: 133

Type: **Student Paper Competition**

Health Consequences of Rural-Urban Migration on Older Adults Living in Rural China

Monday, July 15, 2024 2:00 PM (20 minutes)

China's rapid urbanization has prompted a significant movement of young working-class adults towards cities. This rural-urban migratory phenomenon, driven by economic advancement, has resulted in millions of older adults being "left behind" in rural areas as empty nest families. This review delves into the repercussions of such migration, particularly on the well-being of these left behind older adults, against a backdrop of fading traditional filial piety practices and the complexities of hukou (household registration) status. Using a PRISMA-guided approach with PubMed as the primary database, 61 peer-reviewed articles were refined to 15 subject-related papers focused in on internal rural to urban migration processes on older adults living in China. Articles that were non-English articles, before 2013, non-rural migration, and those not focused on older adults were excluded. Findings suggest that healthcare accessibility and higher living costs, often due to hukou restrictions, influence older adults' decisions to remain in rural areas or their satisfaction with urban relocation. This migration pattern has altered family structures, labor, and care dynamics, leading to increased physical and mental health challenges among rural older adults, including loneliness, depression, and a tendency towards institutionalized care due to reduced support. The research underscores the intersection of health, socioeconomic status, and cultural expectations, noting that the physical, psychological, and social health of non-migrating older adults often deteriorates due to isolation and the erosion of traditional support structures. This paper calls for more granular, mixed-methods research to develop culturally sensitive and region-specific interventions to address these disparities effectively.

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Presenter: WANG, Claire

Session Classification: Student Paper Competition

Track Classification: Global Health: Urban and Rural Health

Contribution ID: 134

Type: **Poster**

Seasonal Impact of Greenspace on Child Opportunity: An Analysis of NDVI and the Child Opportunity Index Across US Census Tracts

Thursday, July 18, 2024 12:40 PM (20 minutes)

Research shows greenspaces significantly boost children's health by promoting physical activity, reducing stress, and facilitating play and social interaction. The Child Opportunity Index (COI) score, which evaluates neighborhood potential to improve children's health and reduce disparities, currently does not include greenspace in its metrics. Additionally, it does not explore seasonal changes in greenspace and the potential impacts on health. To fill this gap, we analyze how the seasonality of greenspace is associated with the COI score. We assess the correlation between seasonality and the Normalized Difference Vegetation Index (NDVI). Additionally, we use Ordinary Least Squares (OLS) linear regression and Geographically Weighted Regression (GWR) to analyze how the seasonality of NDVI is associated with the COI overall and locally at the US Census tract level. The study results show strong correlations between summer and both spring (0.90) and fall (0.97) while illustrating a weaker correlation between summer and winter (0.58). The OLS result shows that the NDVI was significantly associated with COI in fall (coefficient: 13.76; r^2 : 0.006) the most, followed by spring (coefficient: 12.98; r^2 : 0.005) and summer (coefficient: 12.51; r^2 : 0.006), while winter (coefficient: 7.16; r^2 : 0.0008) exhibits the weakest impact. The GWR results indicate spatial variations of the local coefficients for NDVI are higher in winter than in other seasons, especially in the northern US (R^2 spring: 0.78, summer: 0.79, fall: 0.79; and winter: 0.78). In conclusion, our study highlights the significant association of seasonal greenspaces with the COI. It emphasizes the need to integrate greenspace considerations into urban and public health policies to enhance child development throughout the year.

Research indicates greenspaces significantly enhance children's health by promoting physical activity, reducing stress, and facilitating play and social interaction.

Key Word: Children; Child Opportunity Index (COI), Greenspace, GWR

Primary authors: YANG, Jue (Brown University); Dr GRIGSBY-TOUSSAINT, Diana S (Brown University)

Presenter: YANG, Jue (Brown University)

Session Classification: Poster Presentations

Track Classification: Climate Change & Health: Environmental Health

Contribution ID: 135

Type: **Student Poster Competition**

Investigating the associations between vacant homes and firearm-related crimes in Baltimore City

Thursday, July 18, 2024 12:40 PM (20 minutes)

Firearm-related violence remains a pressing public health concern in the United States, with fatalities exceeding 350,000 over the past decade. The city of Baltimore has witnessed a sustained increase in firearm-related violence, emphasizing the urgency of addressing this issue. Understanding the systemic factors associated with firearm violence is crucial for effective intervention. This study employs spatial analysis techniques to investigate the association between vacant homes and firearm-related crime in Baltimore City. Leveraging comprehensive datasets on property vacancies, crime incidents, and neighborhood characteristics, advanced spatial methods are utilized to explore the relationships between these variables. The study incorporates factors such as the Social Vulnerability Index, proximity to the harbor, green spaces, and road density to uncover the complex interplay influencing firearm violence. Results reveal significant spatial clusters of firearm-related incidents, with associations observed between vacant properties and firearm crime incidence. Findings underscore the importance of addressing neighborhood-level factors in firearm violence prevention efforts and inform targeted interventions, policy formulation, and community development strategies. This research contributes to a deeper understanding of the spatial dynamics underlying firearm violence and blight, with implications for promoting community well-being and safety.

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Presenter: Dr SURESH, Aakriti (Johns Hopkins)

Session Classification: Student Poster Competition

Track Classification: Global Health: Urban and Rural Health

Contribution ID: 136

Type: Paper

Ethnic Enclaves and Breast Cancer Stage at Diagnosis: A Residential History Analysis of New Jersey Hispanics

Monday, July 15, 2024 10:20 AM (20 minutes)

Prior research acknowledges that residence in an ethnic enclave significantly impacts health outcomes, potentially providing a protective buffer for individuals residing in these communities. This study aims to expand this perspective by hypothesizing that a long-term residence in an ethnic enclave may have a protective effect against late-stage breast cancer (BC) diagnosis for Hispanic/Latina women. The study population comprised Hispanic/Latina New Jersey residents aged ≥ 18 years diagnosed with their first, histologically confirmed invasive breast cancer between 2011 and 2017 and with at least 10 years of residential histories ($N = 4,450$). Logistic regression was conducted to assess the odds of late-stage BC diagnosis by residence at diagnosis and duration of residence in ethnic enclaves after adjusting for age, marital status, and insurance coverage as well as census tract-level factors such as poverty, marginality score (reflecting percent foreign-born residents and those with limited English proficiency). Results indicate that patients living in Hispanic enclaves at diagnosis had higher odds of late-stage BC, though not statistically significant (OR 1.06 95%CI 0.92-1.21), while living in ethnic enclaves < 5 years had significantly higher odds of late-stage BC (OR 1.22 95%CI 1.008-1.49) compared to those never living in an enclave. Interaction terms revealed that residents in low-poverty enclaves did not exhibit a protective effect against late-stage BC compared to residents in low-poverty non-enclaves (OR 1.34 95%CI 1.03-1.71). Incorporating residential histories expands research possibilities to explore the impact of length of residence and population mobility across ethnic enclaves on cancer diagnosis.

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Co-authors: Dr WIESE, Daniel (Adjunct Assistant Professor); Dr HENRY, Kevin (Professor)

Presenter: GOMES, Veronica (Temple University)

Session Classification: Paper Presentations

Track Classification: Health, Justice, Human Rights, Policy & Practice: Health Disparities

Contribution ID: 137

Type: Paper

Optimal Spatial Access Measurement for Opioid Use Disorder Treatment: Toward Medication Success and Social Justice

Tuesday, July 16, 2024 11:00 AM (20 minutes)

The opioid epidemic has been significantly impacted in the United States. To mitigate the drug abuse, spatial access to authorized medications for opioid use disorder (MOUDs) plays a crucial role. Nevertheless, there remains a dearth of comprehensive methodologies for assessing such accessibility. Questions arise regarding the permissible extent of travel, with considerations encompassing specific medication types (including methadone, buprenorphine, or vivitrol) and their respective impacts on outcomes.

This paper juxtaposes various metrics for gauging accessibility to MOUDs—ranging from travel time to the nearest facility, total counts within designated thresholds, to gravity-based (supply-demand) models—and ascertain optimal criteria for efficacy. Taking advantage of a high-performance computing environment, we could cover the entire continental United States at the census tract level as the study area. The results revealed that the choice of metrics might impact the research findings, and the compatibility among models varies depending on rurality and resource scarcity. By adopting a multi-faceted accessibility examination, our study contributes to pinpointing regions necessitating targeted interventions and resource allocation.

Primary author: MORIOKA, Wataru (University of Illinois at Urbana-Champaign)

Co-author: KOLAK, Marynia (University of Illinois at Urbana-Champaign)

Presenter: MORIOKA, Wataru (University of Illinois at Urbana-Champaign)

Session Classification: Paper Presentations

Track Classification: Innovation in Methods: Geospatial Analysis

Contribution ID: 138

Type: **Student Paper Competition**

Mapping risk of gastrointestinal diseases through association of storm events

Thursday, July 18, 2024 1:00 PM (20 minutes)

In recent years, the frequency and intensity of storm events have raised concerns about their potential impact on public health, particularly in relation to infectious disease outbreaks. Gastrointestinal diseases (e.g., salmonellosis, giardiasis) pose a significant public health concern, especially for vulnerable populations, including the elderly (over 70) and young children (under 5). Currently, community-level analysis of vulnerable populations is not possible due to the limited availability of fine-scale data. This study proposes a methodology to downscale state-level data of infectious disease counts to finer-spatial scales by redistributing state-level information to identified risk zones based on proximity to storm event locations. Further, this study aims to rank areas at high-risk of gastrointestinal disease based on the estimated case distribution and access to facilities with high degrees of human-environment interactions (e.g., water recreation). Storm event data will be obtained from the NOAA Storm Events Database, and gastrointestinal disease surveillance data from the CDC's NNDSS. This study aims to contribute to methodology in downscaling data in order to allow for finer-scale analysis. Further, we identify higher risk areas based on population impacted, location, and frequency. This can help enhance proactive public health strategies in storm-prone areas in Georgia. Downscaled data and high-risk zone identification will facilitate a more precise understanding of disease spread for public health preparedness and response, thus enabling targeted interventions and resource allocation based on historical patterns.

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Presenter: HEANG, Sivgech (GSU)

Session Classification: Student Paper Competition

Track Classification: Climate Change & Health: Natural Disasters

Contribution ID: 139

Type: Paper

Climate and container breeding mosquitoes: a perfect storm in a changing world

Thursday, July 18, 2024 5:00 PM (20 minutes)

Several mosquitoes of medical importance are known to be adept at exploiting human habitat, and adapting to urban environments to breed, feed, and transmit pathogens that affect humans. Historically, *Aedes aegypti* spread from the old to new world, and rapidly became a primary vector in the Americas, for viruses such as yellow fever, dengue, and more recently, chikungunya and Zika. *Aedes albopictus* appears to have become established in the United States following an introduction event along the gulf coast in the past few decades, providing another, perhaps less efficient, but more cold-tolerant vector for the same arboviral diseases as *Ae aegypti*. In the past few years, the world has been made aware of *Anopheles stephensi*, a malaria vector originally found in the sub-continent of India and through parts of the Middle East, but a form of this mosquito has adapted to become anthropophilic, urban-friendly, and has spread across Africa as far as Ghana. Using thermal suitability models for transmission of arboviruses and malarias by these urban-friendly container breeders, we mapped baseline and future potential climate induced range shifts, and estimated how many people in the Americas were at risk for one or more of these, and for how many months of the year. This provides an outer envelope of thermal suitability risk for transmission, without any assumptions about responses to precipitation patterns, as human water storage behavior in the form of containers, irrigation (agricultural and domestic), ornamental plantings, or pooled water in abandoned lots, can obscure the signal.

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Presenter: RYAN, Sadie (University of Florida)

Session Classification: Paper Presentations

Track Classification: Global Health: Infectious Diseases

Contribution ID: 140

Type: **Panel**

Geospatial indicators for urban planning –lessons from around the world

Monday, July 15, 2024 10:20 AM (1h 20m)

Our discipline recognizes the vast influence that the built environment can have on public health and seeks to improve this understanding, both for health and urban planning policy. Such built environment domains include access to health facilities, (un)healthy food outlets, physical activity facilities, and active/passive transport availability, as well as exposure to burdensome issues such as vacant housing, blighted landscapes, and crime. Typically, however, evidence on the broader influence of the built environment remains limited because studies are largely confined within these separate domains rather than attempting to integrate their influence. Researchers have recognized this complexity and sought to more comprehensively quantify how the built environment is relevant to health. This work has led to the creation of several geospatial composite indicators around the world.

The overall purpose of this panel discussion is to synthesize and interrogate research being conducted on these geospatial indicators across different geographical contexts, their associations with health outcomes, and recommendations for future policy and practice. Thao Lam will present recent evidence on health associations of the Dutch Obesogenic Built environment Characteristics Index. Richard Sadler will discuss considerations of Stakeholder Engagement and Methodology in the Creation of Multi-Criteria Built Environment Indices. Michael Desjardins will present the Limitations and Opportunities of Geospatial Composite Indicators of Health within Built Environments Towards Evidence-Based Urban Planning. Marynia Kolak will discuss a practical tool- an interactive data dashboard for mapping Chicago's urban environment, with an option for index customization.

These presentations will be followed by moderated discussion by Amber DeJohn.

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Presenters: Dr KOLAK, Marynia (University of Illinois, Urbana Champaign); Dr DESJARDINS, Michael (John Hopkins Bloomberg School of Public Health); SADLER, Richard (Michigan State University); LAM, Thao (Amsterdam University Medical Centers)

Session Classification: Panel Discussion

Track Classification: Global Health: Obesity

Contribution ID: 141

Type: Paper

Leveraging Communities of Practice: Insights from the SDOH & Place Project Community Toolkit

Thursday, July 18, 2024 11:00 AM (20 minutes)

Communities of practice (CoPs) play a vital role in fostering collective learning and innovation for health equity initiatives. This study delves into the significance of CoPs in addressing the Social Determinants of Health (SDOH), focusing on the innovative SDOH & Place Project Community Toolkit.

The toolkit aims to empower community and civic organizations in accessing and utilizing SDOH data, particularly spatial data, to advance health equity. Leveraging techniques like LinkedIn and virtual sessions, CoPs within the toolkit facilitate continuous communication and interaction among stakeholders, overcoming geographical constraints.

Through a qualitative approach, this paper synthesizes existing literature on CoPs and integrates insights from the toolkit's application. Key CoPs characteristics, including domain, community, and practice, are analyzed in the context of promoting health equity.

Results from the application of CoPs within the toolkit demonstrate significant outcomes. Collaborative learning and knowledge sharing have led to innovative practices and enhanced capacity building. Organizations have effectively accessed and utilized SDOH data, contributing to health equity initiatives. Engaging apps developed using the toolkit have inspired user activation, fostering greater community engagement.

This paper highlights the collaborative learning processes, knowledge sharing mechanisms, and innovative practices facilitated by CoPs and the SDOH & Place Project Community Toolkit. Emphasizing the importance of inclusive, supportive communities, the paper underscores the potential of CoPs and innovative tools like the SDOH & Place Project Community Toolkit in addressing health disparities and advancing health equity for all populations.

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Presenter: BARRONVILLE, Kamaria (University of Illinois Urbana-Champaign)

Session Classification: Paper Presentations

Track Classification: Health, Justice, Human Rights, Policy & Practice: Community Engagement

Contribution ID: 142

Type: **Student Paper Competition**

Spatiotemporal trends and environmental correlates of *Aedes aegypti*, *Aedes albopictus* and *Culex quinquefasciatus* abundance in Haiti

Thursday, July 18, 2024 1:00 PM (20 minutes)

Introduction

Within Haiti, determining spatiotemporal and environmental patterns of mosquito abundance is critical for tailoring vector-borne disease control, as diseases such as dengue fever and lymphatic filariasis are endemic. Here we investigated the spatiotemporal and environmental patterns of *Aedes aegypti*, *Ae. albopictus*, and *Culex quinquefasciatus* abundance in Haiti.

Methods

Mosquitoes were captured using CDC Gravid, CDC Light, and BG Sentinel traps from August 2018 to September 2019 in three communes of Haiti's Ouest department. In total, 730 successful collection events were analyzed from 22 unique trap sites. Kernel density estimation (KDE) and space-time permutation models in SaTScan were employed to assess spatial and spatiotemporal dynamics. Zero-inflated negative binomial models and negative binomial hurdle models were used to assess the correlation between study sites, trap types, precipitation, temperature, NDVI, wind speed and mosquito abundance.

Results

KDE identified a hotspot for each mosquito species at the intersection of the three communes. Consistent spatiotemporal clusters were identified for all three species in the northwestern area of the study region, with heterogeneity across species in the central and southern areas. Count models identified statistically significant associations with trap type and site location for all three species, with the four environmental variables being associated with differing rates of abundance for each species.

Conclusions

We elucidated key differences in the spatiotemporal patterns and environmental correlates of *Ae. aegypti*, *Ae. albopictus* and *Cx. quinquefasciatus* in a periurban area of Haiti –this heterogeneity provides insights pertinent for tailored vector control, potentially warranting specific regional and seasonal approaches.

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Presenter: PSHEA-SMITH, Ian (University of Florida)

Session Classification: Student Paper Competition

Track Classification: Global Health: Infectious Diseases

Contribution ID: 143

Type: Paper

Exploring Early-life Climate Anomalies and Acute Respiratory Infections in Children Across Sub-Saharan Africa - A Developmental Origins of Health and Disease Perspective

Thursday, July 18, 2024 4:40 PM (20 minutes)

Acute respiratory infections (ARI) persist as a significant threat, contributing to 15% of under-five deaths globally, with Sub-Saharan Africa (SSA) bearing a disproportionate burden. Climate change compounds this challenge, exerting profound effects on vulnerable populations, particularly children. With escalating frequency of extreme weather events like wildfires, floods, and heat waves, respiratory infections surge through direct and indirect pathways. Yet, the intricate interplay between climate variables and ARI in SSA remains underexplored.

This study delves into the nexus of climate change indicators, specifically temperature and precipitation anomalies, and ARI prevalence among children in SSA. Furthermore, we investigate how ambient air pollution interacts with climate change to exacerbate ARI risk. Additionally, we scrutinize the heterogeneity of climate anomalies' effects on ARI across different climatic regions in SSA. To achieve this, we amalgamate extensive health data from multiple SSA countries with climate, air pollution, and environmental datasets.

Through this multifaceted inquiry, we aspire to illuminate the pivotal determinants shaping the health and well-being of children in SSA. By elucidating these relationships, our research endeavours to enhance our understanding of the challenges and opportunities for safeguarding child health amidst environmental transformations.

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Session Classification: Paper Presentations

Track Classification: Climate Change & Health: Environmental Health

Contribution ID: 144

Type: Paper

Phylogeographic patterns of *Escherichia coli* isolated from white-tailed deer, *Odocoileus virginianus*, during necropsy in farmed deer surveillance program

Monday, July 15, 2024 4:20 PM (20 minutes)

White-tailed deer (*Odocoileus virginianus*) (WTD) farms are distributed throughout Florida and number nearly 400. The Cervidae Health Research Initiative (CHeRI) is an initiative that investigates disease and health of farmed cervids statewide. Within the Florida industry, Epizootic Hemorrhagic disease virus (EHDV) and Bluetongue virus (BTV) are major causes of disease and associated economic losses. Often, deer survive EHDV or BTV infections but succumb to secondary bacterial infections, including *Escherichia coli*. *E. coli* can be opportunistic with severe illness or death occurring in hosts weakened from viral infection. We investigated presumptive *E. coli* strains isolated from WTD during necropsy investigations. Genomic DNA was extracted and whole genome sequenced from 61 suspect *E. coli* isolates. Exploratory spatial data analysis (ESDA) of the distribution of *E. coli* phylotypes, distribution of *E. coli*, and deer between ranches was performed. We examined phylogenetic relationships between isolates, categorized by ranch and year and compared to all reported *E. coli* isolates in Florida from Enterobase. One strain was *Enterobacter hormaechei* and the other 60 were *E. coli*. Two strains were toxigenic. Deer isolates represented 7 phylogroups with B1 being the most prevalent (45/60) and geographically widespread (14/16 counties reporting *E. coli*). Phylogroup A was the second most prevalent phylogroup. In at least two instances two phylogroups were present within a single animal. We found that deer isolates spanned many of known phylotypes in Florida from animals and humans. Diversity patterns suggest animals are infected locally with most animals on ranches having high genomic similarity within phylogroups.

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Presenter: Ms METRAILER, Morgan (Spatial Epidemiology & Ecology Research Laboratory, Department of Geography, University of Florida)

Session Classification: Paper Presentations

Track Classification: Global Health: Infectious Diseases

Contribution ID: 145

Type: **Student Paper Competition**

Assessing Spatial Patterns of Dengue Incidence in Nepal for 2022 And 2023: A Local Indicator of Spatial Association (LISA) Approach

Thursday, July 18, 2024 1:20 PM (20 minutes)

Dengue, first reported in Nepal in 2004, occurred as large outbreaks in 2022 and 2023 (54,784 and 51,243 cases), with cases reported in every district (n=77). Initially confined to districts of the lower plains, dengue has spread to higher elevations and is now endemic. We used spatial analyses to map and describe incidence in Nepal in 2022 and 2023. Incidence was calculated for each district, using digitized case data from Nepal's Ministry of Health and Population, and 2021 census data from the National Statistics Office. Cases, population, and peak dengue months were visualized in ArcGIS Pro. The Local Moran's I statistic was implemented in GeoDa to identify spatial clusters (hotspots and cold spots) and spatial outliers of incidence rates for the two years. In 2022, one hotspot (High-High) including six districts around Kathmandu, and one cold spot (Low-Low) including eight high-elevation districts in Nepal's northwest region were identified. District-wise peak cases occurred in August–October. In 2023, hotspots shifted to north-central and eastern regions, and a High-Low outlier district in the central region was identified, and cases peaked March-October. Identifying spatial clusters of dengue incidence can inform targeted management, improving effectiveness and cost-efficiency. The mountainous northwest cold spots align with expectations of fewer mosquitoes due to geography and climate. However, dengue peaked in all 77 districts over three months in 2022, suggesting ecological and climatic barriers may no longer be sufficient. This study provides a baseline examination of spatial patterns of recent dengue in Nepal.

Primary authors: Dr BLACKBURN, Jason K (Spatial Ecology and Epidemiology Research (SEER)Laboratory, Department of Geography, University of Florida); Dr RYAN, Sadie J (Quantitative Disease Ecology and Conservation (QDEC) Lab, Department of Geography, University of Florida); BHANDARI, Simrik (Quantitative Disease Ecology and Conservation (QDEC) Lab, Department of Geography, University of Florida)

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Session Classification: Student Paper Competition

Track Classification: Innovation in Methods: Geospatial Analysis

Contribution ID: 146

Type: Paper

Mapping Inequalities: A Geospatial Study of Opioid Treatment Disparities in Florida

Tuesday, July 16, 2024 10:40 AM (20 minutes)

This study investigates the accessibility of treatment facilities for Opioid Use Disorder (OUD) within Florida with particular emphasis on the traditionally vulnerable communities or groups. The research uses several geospatial methods to examine how the number and location of OUD facilities distributed across space correlated with population characteristics in Florida. Within the framework of our method, we assess the extent to which OUD facility accessibility varies from one county or census block to another by considering block group population and actual travel time. The analysis seeks to pinpoint places, especially in rural areas, with insufficient OUD facilities to clarify any geographical disparities in healthcare accessibility. These county-level population-weighted travel costs, designed to provide an overall view of the provider community, will form the basis for informing attempts to improve alternative OUD care options. The findings of this study highlighted areas requiring enhancement in accessibility besides giving direction on policy debates in progress for implementation based on evidence. In addition, this study analyzes the accessibility of three major cities in the state (Tampa, Orlando, and Miami) and stratifications by various age groups, races, and income levels. The research utilizes the cumulative opportunity measure at multiple threshold times, revealing the number of facilities available for each county and providing a holistic overview of accessibility across Florida. In conclusion, the findings from this research can support the development of region-specific interventions aimed at treating opioid use disorders in Florida.

Keywords: Opioid Use Disorder, Accessibility, Geospatial, Vulnerable Populations, Healthcare

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Presenter: HOSSAIN, Rajib (Florida State University)

Session Classification: Paper Presentations

Track Classification: Global Health: Urban and Rural Health

Contribution ID: 147

Type: Paper

Modelling and Improving Public Health Outcomes of Respiratory Ailments in Rural and Resource Scarce areas of South-West Nigeria using Machine Learning

Thursday, July 18, 2024 2:40 PM (20 minutes)

The rural and semi-urban communities in sub-Saharan Africa share a disproportionately high burden of respiratory diseases due to residents' exposure to polluted indoor environment. The current study investigated the indoor condition that constituted risks to morbidity of respiratory ailments in Yewa south communities of South-West Nigeria. A multi-stage sampling procedure was employed to select 20 communities from the ten administrative units in the study area. In each of the communities, selected households were used for indoor quality assessment and questionnaire survey using appropriate tools. Collected data were modelled and analysed using machine learning tools with descriptive and inferential statistics. Particulate matter, odour, inadequate ventilation, presence of domestic animals was observed in some houses. The poor indoor housing condition was attributed to combustion of fuelwood, air-drying of agricultural produce and organic materials indoors. From descriptive and inferential statistics, indoor housing condition and practices that significantly ($p < 0.05$) constituted risk to respiratory health of residents included burning of dirty energy (OR 66.544), smoking of cigarette/tobacco (OR 9.487), room occupancy above five persons (OR 3.159), living in unplastered room (OR 12.350) and non-use of personal protective wears (OR 11.820). It is concluded that indoor environmental condition impacted air quality negatively. Consequently, the respiratory health of the occupants in the study area. Stakeholders' education programme is recommended to influence positive change in the attitude and practices of the residents for improved health. Furthermore, an extended study covering larger geographic communities in Nigeria using AI and machine learning tools for data modelling and forecasting is recommended.

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Session Classification: Paper Presentations

Track Classification: Climate Change & Health: Environmental Health

Contribution ID: 148

Type: Paper

Spatial analysis informs surveillance and control strategies of human and livestock anthrax in Lai Chau Province, Vietnam

Thursday, July 18, 2024 4:20 PM (20 minutes)

Anthrax is reported globally with varying disease intensity and seasonality among countries. Livestock anthrax vaccination protects vaccinated animals and subsequently prevents the disease in humans who have close contact with the livestock. In Vietnam, anthrax epidemiology and ecology remain understudied. We used historical data of human and livestock anthrax from 2004-2021 in Lai Chau province, to identify spatial hotspots of human and livestock anthrax, describe epidemiological characteristics, and compare livestock anthrax vaccine coverage to human and livestock disease incidence. Local Moran's I (LISA) using spatial Bayes smoothed cumulative incidence (per 10000) at the commune level for the whole study period, epidemiological descriptive statistics, livestock vaccine coverage data, and annual incidence rates (per 10000) at the provincial level were used. LISA identified a human anthrax hotspot (high-high) in the southeast, which did not overlap spatially with livestock anthrax hotspots in southeastern and northeastern communes. Most human cases were male, aged 15-59 years, handled sick animals, and/or consumed contaminated meat. Almost all cases were reported by grassroots health facilities (commune and district), with a delay of 6.3 days between exposure and case notification to the national surveillance system. 80% of human cases were reported from June-October. The increase in disease incidence occurred shortly after livestock anthrax vaccine coverage decreased. This study informs vaccination strategy and targeted surveillance and control measures in newly identified high-risk areas and seasons of anthrax.

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Session Classification: Paper Presentations

Track Classification: Innovation in Methods: Geospatial Analysis

Contribution ID: 149

Type: Paper

COVID-19 impacts on the health and wellbeing of older adults in Sub-Saharan Africa: A case study from Uganda

The COVID-19 pandemic disproportionately affected the health and wellbeing of vulnerable populations such as older adults; no population group was more vulnerable than seniors in Sub-Saharan Africa (SSA), the location of the fastest-growing senior adult population in the world and one of the most vulnerable according to the UN Research Roadmap. This research investigated the health and wellbeing of older adults in SSA during the pandemic, using Uganda as a case study. A cross-sectional survey (n= 288) with adults aged ≥60 years in rural Uganda in the acute phase of the pandemic (late 2021-early 2022) documented access to resources to meet daily needs (water, sanitation, hygiene, food, health care) as well as experiences of the pandemic in terms of psychosocial health and wellbeing. Findings indicate some of the highest levels of emotional distress reported in the published literature (87% of respondents) and low scores on an index of wellbeing (33% of respondents). These experiences emerge from the intersection of pre-existing socioeconomic disadvantage, disruptions to basic livelihoods induced by the pandemic, and uncertainties around disease impacts. This research highlights the fragility of vulnerable communities to disruptions caused by public health emergencies, underscoring the intersectionality of structural determinants of health. Future disruptions (health, climate, civil) can be lessened through the development of stronger social protections, enhanced emergency preparedness, and mental health services for at-risk groups.

Key Words: COVID-19; health and wellbeing; older persons; Sub Saharan Africa (SSA); WASH; feminist political ecology of health

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Presenter: MUSAH, Cynthia (University of Waterloo)

Session Classification: WITHDRAWN OR REMOVED

Track Classification: Climate Change & Health: Natural Disasters

Contribution ID: 150

Type: **Student Poster Competition**

Smart Citizens Enabling Resilient Neighbourhoods (SCERN): Identification of Chronic Stressors and Resilience Planning Using Participatory Mapping in Hamilton, Ontario, Canada

Thursday, July 18, 2024 12:00 PM (20 minutes)

Social and health indicators suggest that individuals experiencing marginalization within more impoverished urban neighbourhoods have disproportionate levels of daily and chronic stress, which can lead to socio-spatial disparities in chronic illness. Increasingly, research has recognized the place-based nature of stress and (community) resilience. Using an action-oriented and mixed methods approach, the SCERN project engages residents of a neighbourhood in Hamilton, Ontario (Canada) in a resilience planning intervention using a participatory mapping to identify local place-based stressors and resources. Phase 1 of the project is focused on conducting an environmental scan and creating a community advisory board to foster relationships with local residents and other actors to improve understanding of the neighbourhood context. Phase 2 will involve a digital participatory mapping study for a group of local residents to find and characterize local places that either provide support or cause stress. In Phase 3, facilitated community meetings build on the participatory mapping findings by discussing and identifying salient adaptive strategies and interventions. In this way, the project combines residents' local expertise with evidence-based geographical techniques to identify place-based contributors to resilience disparities and to build community-based strategies for closing neighbourhood health and resilience gaps.

Keywords: neighborhoods; chronic stress; participatory mapping; community engagement; urban health

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Presenter: DO, Anna (Wilfrid Laurier University)

Session Classification: Student Poster Competition

Track Classification: Global Health: Urban and Rural Health

Contribution ID: 151

Type: **Student Poster Competition**

Analyzing the Texas Prescription Monitoring Program for High-Risk Opioid Use: Doctor Hopping as an Early Warning Indicator

Thursday, July 18, 2024 12:40 PM (20 minutes)

Opioid overdose deaths have risen sharply in the United States over the past decade, presenting a growing public health crisis. According to the CDC In 2021, over 75% of the 107,000 drug overdose deaths involved an opioid. Identifying patients at risk for opioid use disorder remains challenging. To address this gap, we are analyzing the Texas Prescription Monitoring Program (PMP) data on opioid prescriptions to track how far patients are traveling for their opioid prescriptions, focusing on those at greatest risk of opioid misuse.

Doctor hopping is defined as patients bypassing nearby opioid prescribers in favor of more distant ones. It focuses on patient travel patterns as an early warning indicator of potentially risky opioid use behavior, distinct from traditional doctor shopping metrics that rely on patients receiving prescriptions from multiple providers. Using the measure of doctor hopping, we quantified the odds of high-risk opioid use compared to traditional metrics. Preliminary findings suggest that patients who consistently travel long distances, greater than 25 kilometers, or bypass nearby prescribers to obtain opioids, have higher odds of risky opioid use compared to patients who obtain their opioid prescriptions locally.

Leveraging state PMPs, an underutilized and ubiquitous resource, presents a simple and potentially cost-effective method of identifying spatial patterns suggestive of opioid misuse. Identifying patients more likely to abuse opioids could help target interventions that can curb opioid overdoses. Amid the worsening opioid epidemic, innovative surveillance methods, like doctor hopping, are urgently needed to identify and support patients at risk.

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Session Classification: Student Poster Competition

Track Classification: Health, Justice, Human Rights, Policy & Practice: Healthcare Accessibility

Contribution ID: 152

Type: Paper

Health-based drinking water violations: A human body organ systems approach to understanding health impacts

Thursday, July 18, 2024 5:00 PM (20 minutes)

The conventional approach to understanding the health effects of drinking water in the United States is based on the Environmental Protection Agency's National Primary Drinking Water Regulations (NPDWR), established under the Safe Drinking Water Act of 1974. The NPDWR, except for the recent passage of the Final PFAS NPDWR, associates single contaminant exposure with a potential health outcome. Public health departments often identify community-level adverse health effects associated with drinking water contaminants that do not meet NPDWR standards through surveillance systems that identify drinking water as the source of acute illnesses (e.g., diarrhea). Our study takes a different approach by expanding the research on drinking water and health to include the potential association between drinking water contaminants that do not meet NPDWR and chronic illnesses. We do so by using a human body organ systems (HBOS) approach. We assessed the adverse effects on HBOS using the NPDWR potential health effects from long-term exposure above the maximum contaminant level. We used a county-level unit of analysis because public health departments often function at the county level to rank health-based violations in the US drinking water supply (2016-2022) along with contaminants and which HBOS were burdened. The top three counties were Lubbock, Texas; Kern, California; and Okmulgee, Oklahoma; renal was the most burdened HBOS. This novel approach expands our understanding of the relationship between health and drinking water contaminants and has practical implications for public health policy and practice.

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Session Classification: Paper Presentations

Track Classification: Global Health: Water

Contribution ID: 153

Type: Paper

Modeling street level NDVI and traffic simulation to assess spikes in CO, CO₂, NO_x, HC and fuel use affecting vulnerable populations

Thursday, July 18, 2024 3:40 PM (20 minutes)

This study presents a novel approach to assess air pollution exposure at street level, considering traffic simulation and vegetation cover. We utilize the Comprehensive Modal Emissions Model (CMEM) to simulate traffic flow and estimate emissions of CO, CO₂, NO_x, and HC. Traffic data is derived from origin-destination matrices based on US census commute patterns. To account for the mitigating effect of vegetation, we incorporate the normalized difference vegetation index (NDVI) –a measure of street-level green cover. This combined approach allows us to pinpoint pollution hotspots, particularly near areas sensitive to respiratory health like schools and hospitals.

The simulations were conducted in Bloomington, Monroe County, analyzing over 5,000 street segments. The results indicate that arterial roads exhibit higher concentrations of pollutants. Conversely, NDVI values demonstrate greater variation across the study area. Based on these findings, we propose the implementation of green zones around arterial roads and strategic placement of future schools and hospitals behind natural buffers. This study offers valuable insights for urban planners and policymakers seeking to develop localized solutions to mitigate air pollution/heat and protect vulnerable populations.

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Session Classification: Paper Presentations

Track Classification: Global Health: Urban and Rural Health

Contribution ID: 154

Type: Paper

Exploring economic and psycho-social impacts of public health emergency measures in Guinea.

Monday, July 15, 2024 5:00 PM (20 minutes)

Like many locations in the world the Government of Guinea implemented preventive steps to reduce the spread of COVID-19 in the absence of widely accessible vaccines. While these preventative efforts were essential in reducing infection rates, they had severe negative social, economic, and health impact on marginalized communities, affecting well-being and livelihoods. Unfortunately, there is a dearth of evidence exploring how public health preventive initiatives affected marginalized populations developing countries like Guinea. This study contributes to addressing this gap by exploring the economic and psycho-social effects of COVID-19 public health measures on marginalized populations. Understanding the consequences of public health emergency measures is a crucial step in comprehending how public health emergency measures affect communities in developing countries. Additionally, this knowledge is necessary to help develop or enhance fair, efficient policies and actions that minimize the detrimental effects of public health measures on people's lives and livelihoods. Using Guinea as a case study, this study adopted a qualitative approach. Information was obtained from 12 focus groups through semi-structured interviews. With the use of NVivo 12, interview data were inductively analyzed. The findings show that public health initiatives such as travel bans and business/company closures had a detrimental effect on the economy, increasing unemployment and income uncertainty. Different levels of psycho-social health issues, such as perceived work-life balance (concerning one's social life), worry over food insecurity, fear, stress, and anxiety, emerged due to the economic impacts of adopted COVID prevention strategies.

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Session Classification: Paper Presentations

Track Classification: Global Health: Urban and Rural Health

Contribution ID: 155

Type: **Student Paper Competition**

Beyond Smoking: A Geospatial Investigation of Factors Associated with Lung and Bronchus Cancer Risk in Pennsylvania

Thursday, July 18, 2024 2:00 PM (20 minutes)

Background: Despite a decline in tobacco smoking, lung and bronchus cancer (LBC) remains a leading cause of cancer mortality, with increasing cases among non-smokers. This ecological study evaluates associations between geographic environmental factors and high LBC incidence areas in Pennsylvania, aiming to identify potential prevention strategies.

Methods: Case (PA Cancer Registry, 2010-2015) and population data were categorized by age, sex, and race, and aggregated to the census tract level. Using the spatial scan statistic implemented in SaTScan software, we applied elliptical spatial scanning windows with a Poisson spatial model to identify areas with significantly higher-than-expected LBC rates. Geospatial measures of potential behavioral, socioeconomic, environmental, and built environment LBC risk factors were linked at the census tract level. Logistic regression models were utilized to ascertain which factors increased the odds of being included in a high LBC incidence area.

Results: Using 55,229 cases, 12 areas with elevated LBC incidence were identified after adjusting for demographic factors. Significant predictors of high-risk areas included census tract level smoking rates, traffic density, percentage of pre-1960 housing, particulate matter levels (PM2.5), low education, and poverty. Notably, old homes and low income emerged as the strongest predictors.

Conclusion: This study highlights the influence of socioeconomic and built environmental factors on LBC prevention, underscoring the necessity for public health strategies that extend beyond smoking cessation to address risks associated with older housing and lower income. Further research is needed to elucidate how these factors contribute to LBC incidence which could be related to radon levels in homes.

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Session Classification: Student Paper Competition

Track Classification: Global Health: Urban and Rural Health

Contribution ID: 156

Type: Paper

Distance to Care: Measuring Temporal Variability in Care Access

Monday, July 15, 2024 3:20 PM (20 minutes)

Background: Transit burden is a little explored factor, though it is likely a key barrier to the care of many children. GIS technology has been used in the past to incorporate space and place into healthcare access. While such findings have generally concluded that disparities exist between groups and geographies, they have relied on data from ZIP codes and euclidean distance calculations as the analytical focal points. However, ZIP codes are in many cases too large a scale of geography to be useful, and euclidean distance does not incorporate routing information.

Methods: Data were obtained from the EHR systems at Children's Hospital Los Angeles under an IRB-approved study. All patient encounters from January 1, 2017 through September 1, 2023 were extracted. The addresses associated with each patient were then translated to latitude & longitude points using a HIPAA-compliant geocoding process. Transportation routes were generated using a street network dataset from which route distance and travel time could be derived at different times throughout the day. Route times and distances were mapped and compared against ZIP code estimates and euclidean distance.

Results: CHLA has a wide footprint throughout the LA region, and drive-times and traffic variability vary substantially throughout this area. Time-of-day plays a significant impact in drive-time and has a clear spatial pattern. Different demographic groups are more affected than others by this variability. Euclidean distance and distance from ZIP codes are unreliable and inconsistent indicators of route distance and vary substantially geographically.

Conclusion: Patient geography is a rich and under-exploited facet in providing comprehensive care. It provides a more granular understanding of the transit environment and the patient's experience of accessing care. Traditional approaches to care access, like euclidean distance and ZIP codes are prone to underestimate commute time and drive distance for patients.

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Session Classification: Paper Presentations

Track Classification: Health, Justice, Human Rights, Policy & Practice: Structural Determinants of Health

Contribution ID: 157

Type: Paper

Intimate partner violence during the covid-19 pandemic: Analysis of the role of change in income

Tuesday, July 16, 2024 5:20 PM (20 minutes)

Evidence shows that the covid-19 pandemic contributed to increased domestic violence globally. Much of the literature, however, attribute the observed increased in violence to isolation and quarantine orders. In this study, we expand the narrative by investigating the connections between covid-19 induced changes in income and intimate partner violence (IPV) in Guinea. To achieve this, we conducted logistic regression analysis using a sample of 1789 adults who participated in a cross-sectional study on the economic and health impacts of the pandemic in Guinea.

The results show that individuals who lost all their income or whose income reduced due to the pandemic were significantly more likely to report experiencing IPV compared to their counterparts with stable income. Respondents who were in polygamous or monogamous marriages were significantly more likely to report experiences of IPV compared to the never married. Geographically, residents of rural locations were more likely to report IPV due to covid-19 induced loss of income but compared to respondents from Conakry, those from other regions were less likely to report IPV. When the analysis was stratified by gender, both men and women were more likely to report IPV if they lost part or all of their income. Further, there was no significant difference between men irrespective of their marital status but women in monogamous marriage were likely to report IPV. These findings call for support for victims of IPV and importantly, provides policy directions for informing policy programs on future pandemics that may impact family's income.

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Session Classification: Paper Presentations

Track Classification: Health, Justice, Human Rights, Policy & Practice: Human Rights and Health

Contribution ID: 158

Type: Paper

Impact of residential mobility on associations between historical redlining, gentrification, and life expectancy at birth in Philadelphia metropolitan area

Thursday, July 18, 2024 10:20 AM (20 minutes)

Historical redlining has been associated with various adverse health outcomes in redlined, predominantly Black neighborhoods. Previous studies, however, generally have not considered neighborhood socio-demographic transformation processes, like gentrification, over time. We aimed to evaluate the collective association of household-level residential socio-spatial mobility, gentrification, and historical redlining with life expectancy at birth in the Philadelphia metropolitan area. Census tract data on life expectancy at birth were obtained from the Centers for Disease Control and Prevention. U.S. Census data were used to define tract gentrification eligibility and gentrification status in 2000-2010 (earlier gentrification) and 2011-2018 (recent gentrification). Household residential mobility and income data derived from DataAxle were used to define tract influx volume of lower- and higher-income in- and out-movers between 2011-2020. Spatial linear regression was used to estimate the association between gentrification, historical redlining, and life expectancy before and after adjustment for residential socio-spatial mobility.

In each category of historical redlining, life expectancy decreased from higher-income tracts ineligible for gentrification or with earlier gentrification to tracts with recent gentrification to non-gentrified tracts. The largest difference in life expectancy by gentrification was among redlined tracts (77.2 years in tracts with earlier gentrification vs 72.7 years in non-gentrified), which was largely explained by the high influx volume of higher-income households into gentrified tracts and lower-income households into non-gentrified tracts.

Relatively high life expectancy estimates in redlined and gentrified tracts compared to the redlined and non-gentrified tracts appear to be driven by residential mobility and replacement of lower-income initial residents with higher-income new residents.

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Presenter: WIESE, Daniel (American Cancer Society)

Session Classification: Paper Presentations

Track Classification: Health, Justice, Human Rights, Policy & Practice: Health Disparities

Contribution ID: 159

Type: Paper

Impacts of covid-19 induced income changes on mental and psychosocial health in Guinea.

Tuesday, July 16, 2024 3:00 PM (20 minutes)

The covid-19 pandemic has undoubtedly exacted grave negative impacts on economies and health systems. Indeed, the World Bank projected global economic growth to shrink by 8% because of the pandemic with low-income countries bearing the brunt. While many national economies are struggling to recover from the ravages of the pandemic, the loss of sources of livelihoods by individuals and families due to the pandemic could have deleterious health outcomes. The objective of this study consequently was to explore the impacts of lost income due to the pandemic on the psychosocial health of populations in low- and middle-income countries using Guinea as a case study. To achieve this, we fitted logistic regression models on a cross-sectional sample data of 1903 adults Guineans, which was collected in 2023. Findings show that Guineans who lost all their income or reduced due to the pandemic were significantly more likely to report poor psychosocial health compared to those whose income did not change. Compared to respondents from Conakry, those from other regions were more likely to report poor health outcomes. Rural residents and women were also more likely to report poor psychosocial health than urban residents and men respectively. When the data was analyzed by gender, men who lost all their income or reduced were still significantly more likely to report poor psychosocial health but there was no difference among women. Our findings showed geographic and gendered nuances of the economic effects of the pandemic on health within populations and calls for tailored policy interventions.

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Session Classification: Paper Presentations

Track Classification: Health, Justice, Human Rights, Policy & Practice: Structural Determinants of Health

Contribution ID: 160

Type: Paper

ChiVes: Integrating Chicago Environmental Justice Data, Researchers, and Communities with Decentralized Web Architecture, Open GIS, and Participatory Design

Tuesday, July 16, 2024 2:40 PM (20 minutes)

To better understand environmental challenges and advocate for improved policy and resources, communities need more accessible data, the ability to update their own stories, and carefully cultivated environmental justice (EJ) frameworks that strive to ensure that injustice is not reproduced in the research process itself. The EJ movement long holds a tradition of calling for place-based analyses to determine root causes of injustices, as well as incorporating grass-roots advocacy and community engaged connections. However, common approaches to EJ GIS app development include top-down design processes and closed coding infrastructures. Modern web design using service-oriented architecture, open GIS tools, and distributed data stream integration can be adapted to break free of these restrictions. The ChiVes platform, a mapping application linking dozens of environmental indicators at the neighborhood level in Chicago, serves as a decentralized spatial data infrastructure focused on stakeholder relationships in order to minimize reproduction of inequity. Open GIS is used to wrangle and visualize data, with new data streams, resources, and standards able to be updated using transparent protocols. To develop a baseline of ecological assessment, the platform integrates multiple measures of pollution exposure from varying sources and methodologies, multiple drivers of pollution exposure, green infrastructure metrics, as well as socioeconomic and health indicators. A new flexible, multi-criterion “index builder” enables residents to develop new metrics with available data on-the-fly. Using co-design participatory approaches, the ChiVes platform interface continues to be refined by city residents. Future research in EJ GIS frameworks may benefit from participatory design and Open Science approaches.

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Session Classification: Paper Presentations

Track Classification: Health, Justice, Human Rights, Policy & Practice: Environmental Racism and Justice

Contribution ID: 161

Type: Paper

Geographic Disparities in Pediatric Care: Analyzing Accessibility in Seoul, South Korea

Thursday, July 18, 2024 2:40 PM (20 minutes)

South Korea has been faced with an incremental critical shortage of adolescent and OB/GYN physicians and their healthcare facilities, accompanied by the country's lowest birth rates in the past 30 years, which is known to have been exacerbated with several socio-economic shocks, indicating the shortage may have accelerated spatial disparities in access to healthcare for children and adolescents. This study aims to investigate the dynamics of spatial disparities in pediatric and adolescent care accessibility from 2000 to 2023 in Seoul, South Korea, to examine the impact of the economic crisis on these services in spatial and temporal dimensions. To explore how spatial disparities in pediatric and adolescent healthcare services have evolved, we will develop a set of spatial statistical methods to examine spatial discrepancy among population-weighted centroids and healthcare facilities centroids with location data of registered medical facilities. Based on the identified discrepancies across different geographic scales, the degree of pediatric healthcare access will be assessed with an evolution of spatial disparities at different levels of geographic scales to measure the spatial disparities of access. In a systematic analysis perspective, the healthcare services for children and adolescents are defined to the medical service clinics providing pediatric and adolescent care and public health centers, which constitute the primary line of healthcare for non-emergency conditions and preventive services. As a horizontal dimension, we will examine the disparities of healthcare accessibility over five pivotal periods, spanned by the years 2000, 2005, 2010, 2015, and 2020 based on domestic or global economic shocks, including significant economic crises and the global COVID-19 pandemic in South Korea. This research frame aims to characterize the evolution of healthcare services accessibility disparities within a changing economic and demographic landscape during each period. The accessibility measures will be designed to measure the geographical discrepancies between the population-weighted centroids and the nearest hospitals at two geographic scales, Jipgye-Gu (Census Block) to Si-Gun-Gu level (City-Tracts) to examine spatial scale effect. Our findings will demonstrate whether inequality has been amplified during the temporal duration and exploit the relationship between economic crisis and healthcare accessibility to the adolescent and OB/GYN services. With empirical evidence, this research will provide crucial insights into healthcare service provision's temporal and spatial aspects in the current shortage of pediatric specialists and facilities in South Korea.

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Presenters: OH, Changwha; KIM, Wanhee

Session Classification: Paper Presentations

Track Classification: Health, Justice, Human Rights, Policy & Practice: Healthcare Accessibility

Contribution ID: 162

Type: Paper

Modeling anthrax outbreak dynamics under varying levels of vaccine interventions across different provinces in Vietnam

Thursday, July 18, 2024 10:20 AM (20 minutes)

Anthrax is a widespread and underreported zoonosis caused by *Bacillus anthracis*. Outbreak dynamics associated with this spore-forming bacterium depend on the environment, as spores persist in soil for years causing delayed infections. Annual livestock vaccination is recommended to manage anthrax in humans and animals. We modeled the effects of different vaccination strategies on outbreak dynamics by modifying SMILE, a compartmental model previously used to characterize anthrax transmission incorporating environmental and population dynamics. We modified SMILE to include vaccination and simulated scenarios in the context of six northern provinces in Vietnam. We explored a range of starting levels of immunity for populations, different survival curves describing vaccine effectiveness, and modified the rates at which infected individuals became immune or perished. We then used a modified local R_0 to describe the infection potential of carcasses as a metric to compare the across vaccination rates and strategies over outbreak control in different locations. Finally, using available time series and population data on vaccination rates for each province, we simulated anthrax outbreaks in the context of each, and captured observed trends where declines in vaccination coverage resulted in increased numbers of animal deaths. This modeling approach highlights the capabilities of using data simulations to understand anthrax outbreak dynamics. Considering vaccination as dynamically equivalent to reducing the system's local R_0 , we can explore how different vaccination strategies across provinces can reduce the number and magnitude of livestock anthrax outbreaks. Such efforts can better inform vaccination requirements to reduce disease in this endemic area.

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Session Classification: Paper Presentations

Track Classification: Global Health: Infectious Diseases

Contribution ID: 163

Type: Paper

Estimating the Spatiotemporally Heterogeneous Impact of Population and Environmental Factors on Malaria Vaccine Efficacy in Sub-Saharan Africa

Tuesday, July 16, 2024 3:40 PM (20 minutes)

RTS,S/AS01 is the world's first malaria vaccine to be licensed and undergo pilot implementation. However, the efficacy of the vaccine in young children is variable, ranging from 22% in Mozambique to 75% in Kenya. Initial evidence suggests that vaccine efficacy is lower in sites with high-malaria incidence. Potential mechanisms include a "rebound" effect where vaccinated children may have higher cases of malaria compared to unvaccinated children over time. However, even within study sites, there may be substantial spatial heterogeneity in vaccine efficacy that is masked by overall efficacy estimates. Using data from a 5-year trial in Malawi, Ghana and Gabon, we evaluate the rebound malaria hypothesis and determine whether individual malaria incidence is modified by malaria transmission intensity in their surrounding area (MTI). We estimated MTI for each geocoded participant using remotely-sensed and survey-collected ecological variables from the natural, social and built environment using a random forest model. We then evaluated whether the relationship between vaccination and malaria incidence is modified by MTI over time. Results show substantial spatial heterogeneity within each site. Overall, while vaccinated children had lower malaria incidence within 1 year post-vaccination, estimated malaria incidence in vaccinated children increased to a rate higher than those in unvaccinated children at 4 years post-vaccination. In low-transmission settings, however, this effect is not observed. Results suggest that rebound malaria may contribute to reduced vaccine efficacy in high-transmission areas and future RTS,S vaccination campaigns should be spatially-tailored and paired with other interventions to reduce the rebound effect.

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Presenter: GOEL, Varun (University of North Carolina Chapel Hill)

Session Classification: Paper Presentations

Track Classification: Innovation in Methods: Geospatial Analysis

Contribution ID: 164

Type: **Student Paper Competition**

Exploring the role of land cover on fowl cholera outbreaks in midwestern commercial poultry sites

Monday, July 15, 2024 1:20 PM (20 minutes)

Fowl cholera is one of the most economically significant commercial poultry diseases, capable of causing 5-20 percent mortality in the early stages of the disease and a decrease in egg production. This study employs a case-control design utilizing an epidemiological approach to investigate the relationship between land cover and the odds of having fowl cholera outbreaks in midwestern poultry farms from 2014 to 2021. Five models were constructed using circular buffers around each farm with radii of 1, 2, 3, 4, and 5 km, respectively, to explore which land cover is critical in each radius. Preliminary results indicate that, within a 1 km radius, wetland is the only influential land cover, increasing the odds of a farm being a case by 4.28 times compared to farms without nearby wetlands ($P = 0.005$). Within 2 and 3 km radii, pasture/hay emerges as the most influential land cover type. For each 0.1 km² increase in pasture/hay coverage, the odds of being a case rise by 1.88 ($P=0.005$) and 1.27 ($P=0.005$), respectively. Within a 4 km radius, the presence of large forest areas (over 3 km²) increases the odds of an outbreak by 3.5 times compared to farms with smaller forest areas ($P=0.009$). In 5 km radius, for 1 km² increase in forest area, the odds of having an outbreak increase by 1.23 times. These findings can inform biosecurity decisions in the field, especially for farms located near the identified high-risk land cover types.

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Presenter: OUYANG, Lingyu (The Ohio State University)

Session Classification: Student Paper Competition

Track Classification: Global Health: Food Insecurity

Contribution ID: 165

Type: Paper

Building ecological niche models of *Bacillus anthracis* with constrained diversity index-defined phylogenies and bespoke environmental covariates across spatial scales

Monday, July 15, 2024 5:20 PM (20 minutes)

Ecological niche models (ENMs), including several genetic algorithms and machine learning approaches, are used to prediction the distribution of *Bacillus anthracis* from local to global scales. *Bacillus anthracis*, the bacterial cause of anthrax, has a near global distribution limited by specific soil and environmental conditions constraining its range. As a spore-former, *B. anthracis* can persist for years resulting in repeat outbreaks in areas meeting these ecological conditions. Phylogenetically, *B. anthracis* is divided into five major lineages and 19 sub-lineages (defined by single nucleotide repeats [SNPs]). Within these sub-lineages, *B. anthracis* can be differentiated into several genotypes using many typing systems, including variable number tandem repeats (VNTR) in a multi-locus VNTR analysis (MLVA) and core genome multi-locus strain typing (cgMLST). While cgMLST is promising for tracking evolution in local populations, a much smaller subset of strains has been whole genome sequenced, limiting cgMLST value in mapping *B. anthracis*. In contrast, available MLVA data reflect a larger population of *B. anthracis* strains in the global collection. Some studies informed ENMs with MLVA-specific sub-lineages and showed environmental and spatial differences. No models have examined which specific VNTRs differentiate spatially, or which spatial scales are best modeled with specific genotypes. Here, we use ENMs, MLVA-25 phylogenies, and constrained-Simpson Indices to model patterns of *B. anthracis* lineages from global to local with a bespoke remote sensing approach to matching ideal covariates to spatial scales. This integrative approach improved model performance and better explained diffusion and evolutionary patterns across landscapes and a diversity of sub-lineages.

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Presenter: BLACKBURN, Jason (University of Florida)

Session Classification: Paper Presentations

Track Classification: Climate Change & Health: Interconnected Health

Contribution ID: 166

Type: **Student Paper Competition**

Tracing Food Accessibility and Consumer Behavior in Atlanta Using Mobility Data

The dynamics of urban food accessibility are complex, including availability, location, and consumer preferences. This research challenges traditional methods for identifying food deserts by the United States Department of Agriculture claiming that fixed-distance methods fail to represent the complicated spatial dynamics found in different geographical contexts. This study redefines food accessibility at the block group level in Atlanta using advanced mobility data analytics, to identify discrepancies and inform equitable resource allocation. Using spatial choice methodologies, the study investigates the relationship between physical geography and consumer behaviour. Mobility data from Safegraph is evaluated to reveal consumer travel patterns and to grocery stores, offering insights into actual food purchasing patterns. By comparing these data to USDA measures, the study reveals places with differing degrees of food access and investigates demographic connections. Results highlight disparities in accessibility and reveal socio-economic indicators of food scarcity and abundance. Moreover, the study identifies areas with multiple food choices and investigates their alignment with demographic profiles. Overall, this research advances the understanding of urban food access by incorporating granular mobility data, offering insights to inform policy and promote equitable distribution of food resources.

Primary author: SAYEM, Shah Md Shahnewaz

Presenter: SAYEM, Shah Md Shahnewaz

Session Classification: Student Paper Competition

Track Classification: Global Health: Food Insecurity

Contribution ID: 167

Type: **Student Paper Competition**

Characterization of a swine interstate movement network in Ohio using dashboard

Thursday, July 18, 2024 1:20 PM (20 minutes)

Certificate of Veterinary Inspection (CVI) records, the official documents that prove the listed animals have been inspected and meet all federal requirements, are widely used in modeling animal movement between states. Commuter Herd Agreements (CHA), which document inter-state animal movements within the same ownership instead of using a CVI, have been mostly neglected in previous analyses. The goal of this study is to map the directionality and frequency of swine movements in and out of Ohio and identify regions with intense movement events. After geocoding the addresses and grouping the movements based on their origin and destination counties, we were able to capture swine movement at the county level. An interactive dashboard was created in ArcGIS Dashboard synthesizing both CVI and CHA. The results show that compared to imports, Ohio swine exports have a much larger geographic distribution, with the most frequent movements occurring between Ohio and Indiana, Illinois, and Michigan. From May to October, CHA, constituting 6.3 percent of total records, accounts for 15.5 percent of the total number of animals transported, while CVI, making up 93.7 percent of the records, represents 84.5 percent of the moved population. This is the first attempt to use dashboard for pig movement visualization in Ohio with multiple data sources. In addition, a share of swine movements with substantial animal counts was not recorded by CVIs and may be neglected for traditional animal movement tracing approaches. This information should be incorporated to fill gaps in future animal movement mapping and disease transmission modeling.

Primary authors: OUYANG, Lingyu (The Ohio State University); Dr CHENG, Ting-Yu (The Ohio State University)

Presenter: OUYANG, Lingyu (The Ohio State University)

Session Classification: Student Paper Competition

Track Classification: Innovation in Methods: Digital Cartography and Visualization

Contribution ID: 168

Type: Paper

Liver fluke infection risk in Thailand –a social ecological model perspective

Thursday, July 18, 2024 10:20 AM (20 minutes)

Infectious diseases linked to poverty, particularly neglected tropical diseases, have adversely affected the socio-economic development in less wealthy regions. One of the neglected tropical diseases of concern is human liver fluke infection through the consumption of raw freshwater fish. Despite decades of health campaigns, high infection prevalence remains in different areas of the Lower Mekong region. This necessitates the consideration of the infection differences between the human-environment complexities of disease transmission. This study proposed using the socio-ecological model as a framework to examine liver fluke infection risk. Questionnaire surveys were conducted to gather participants' knowledge on liver fluke infection and reasons for raw fish consumption. The findings were analyzed to identify factors influencing liver fluke infection at four socio-ecological levels. At the individual level, gender and age differences in food consumption habits and personal hygiene of open defecation presented the behavioral risks. At the interpersonal level, family tradition and social gathering affected the disease risk. At the community level, physical-social-economic environments of land use and modernization and health volunteer support accounted for the varying degree of infection. At the policy level, impacts of regional and national regulations on disease control and health system organization structure were of concern. The findings provide insights into how infection risks are shaped by people's behavior, social connectedness, interactions with places, and the interplay of these multi-level socio-ecological influences. The framework allows a more comprehensive understanding of liver fluke infection risks to inform a culturally sensitive and sustainable disease control program.

Primary author: WANG, Yi-Chen (National University of Singapore)

Presenter: WANG, Yi-Chen (National University of Singapore)

Session Classification: Paper Presentations

Track Classification: Health, Justice, Human Rights, Policy & Practice: Community Engagement

Contribution ID: 169

Type: **Poster**

Proximity to Parks and Prevalence of Depression among Adults across North Carolina Census Tracts: An Ecological Study

Thursday, July 18, 2024 12:40 PM (20 minutes)

Backgrounds

Parks and green spaces enhance mental health and provide areas for recreation and interaction. However, access to parks often varies by socio-economic status (SES), with individuals in rural areas or with low SES being particularly vulnerable. This ecological study explores how community-level access to parks correlates with the prevalence of depression in census tracts in North Carolina.

Methods

We calculated the Euclidean distance from the centroid of 2,182 census tracts in North Carolina to the nearest park using publicly available data. The prevalence of depression among adults over 18 was sourced from the 2019 CDC Behavioral Risk Factor Surveillance System (BRFSS) and estimated by the American Community Survey. A generalized linear model was employed to examine the correlation between park proximity and the prevalence of depression, accounting for poverty levels.

Results

Urban areas like Raleigh, Charlotte, and Greensboro showed patterns of closer distance to parks. Overall, an increase of one mile in distance from the nearest park corresponded to a 0.09% increase in the prevalence of depression within a census tract ($p=0.0043$). Notably, the increase in depression prevalence was more pronounced in census tracts with a higher proportion of individuals below the poverty level ($p=0.0044$).

Conclusions

Improving access to parks through urban planning and public policy can be particularly crucial to help prevent depression and enhance mental well-being among community members, especially in impoverished areas.

Keywords

Parks, Proximity, Depression, Ecological Study

Primary author: LEE, Gayoung (Gillings School of Global Public Health, University of North Carolina at Chapel Hill)

Presenter: LEE, Gayoung (Gillings School of Global Public Health, University of North Carolina at Chapel Hill)

Session Classification: Poster Presentations

Track Classification: Health, Justice, Human Rights, Policy & Practice: Human Rights and Health

Contribution ID: 170

Type: **Student Paper Competition**

Access and disparities in public healthcare in Bangladesh: A case study of Chittagong Hill Tracts

Thursday, July 18, 2024 1:40 PM (20 minutes)

The Chittagong Hill Tracts (CHT) region of Bangladesh poses significant challenges regarding healthcare accessibility, particularly in its remote and diverse topography. This study undertakes a comprehensive assessment of the prevailing gaps in medical accessibility across the CHT, with a specific focus on elucidating disparities linked to socioeconomic factors. Using Geographic Information Systems (GIS) technology, we evaluate the geographical distribution of public healthcare facilities, measuring the population that lives in locations with limited access to medical services. Moreover, we analyze demographic data to establish connections between healthcare accessibility and socioeconomic status. This study has two goals: first, to identify locations at higher risk due to restricted healthcare access, and second, to better understand the relationship between healthcare disparities and socioeconomic factors. Further, by evaluating existing policies affecting healthcare establishments, we want to uncover links between policy measures and observed gaps in healthcare accessibility. This study aims to provide policymakers with practical information about the current healthcare access scenario in the CHT and, consequently, in indigenous remote areas. By bridging the gap between research findings and policy development, we hope to promote more equitable healthcare distribution and improve the well-being of marginalized populations in the Chittagong Hill Tracts.

Primary author: BARI, Md Ashraful (Tulane University)

Co-author: Mr SAYEM, Shah Md Shahnewaz

Presenter: BARI, Md Ashraful (Tulane University)

Session Classification: Student Paper Competition

Track Classification: Climate Change & Health: Sustainability

Contribution ID: 171

Type: Paper

Visualizing Patterns of Indoor Air Pollutants to Respiratory Health Risk in Rural Yewa Region, Southwest Nigeria

Thursday, July 18, 2024 3:00 PM (20 minutes)

Indoor personal exposures to air pollution constitute a significant environmental risk factor of acute and chronic respiratory infections, which have a disproportionately high burden in the rural communities of sub-Saharan Africa. The current study characterized the concentrations of selected gaseous and particulate pollutants in indoor environment with a view to assess their respiratory health risk in Yewa south communities. A multi-stage sampling procedure was employed to select ten rural and ten semi-urban areas in the study area. In each of the communities, 10 households were selected for air quality monitoring and comfort index measurement using appropriate tools. Data were analysed using descriptive and inferential statistical tools. In addition, machine learning tools were used to aid visualization. Air Quality index (AQI) was computed to determine the health risk among exposed residents. The mean concentrations of PM_{2.5} (51.23 µg/m³); H₂S (0.34 mg/m³), VOC (380.25 mg/m³) SO₂ (0.43 mg/m³) and CO (52.1 mg/m³) were significantly high in different semi-urban communities. Spatial variations in the levels of PM_{2.5} and PM₁₀ (32.10, 78.10 µg/m³); SO₂ and H₂S (0.20, 0.26 mg/m³); CO and CH₄ (57.90, 94.40 mg/m³); and VOC (347.20 mg/m³) were monitored in different rural communities. The indoor AQI for particulate matter and CO ranged from unhealthy to hazardous in 40 and 100% of the semi-urban communities. In all rural communities, CO rating ranged from very unhealthy to hazardous for respiratory health. Pragmatic environmental health programme is recommended for the communities.

Keywords: Air pollution, environmental risks, respiratory infections, visualization, South West Nigeria.

Primary authors: OYELERE, Ayobami (Federal University of Agriculture Abeokuta, Ogun State Nigeria); Dr TIJANI, Yemisi (Federal University of Agriculture, Abeokuta, Ogun State, Nigeria)

Co-authors: Prof. OGUNTOKE, Olusegun (Federal University of Agriculture, Abeokuta, PMB 2240, Ogun State, Nigeria); Dr OKIKE, Ezekiel (University of Botswana, Gaborone Botswana)

Presenters: OYELERE, Ayobami (Federal University of Agriculture Abeokuta, Ogun State Nigeria); Dr OKIKE, Ezekiel (University of Botswana, Gaborone Botswana)

Session Classification: Paper Presentations

Track Classification: Climate Change & Health: Environmental Health

Contribution ID: 172

Type: Paper

Infant Mortality and the Geography of Hospital Levels of Care in Michigan

Thursday, July 18, 2024 11:00 AM (20 minutes)

Over the last decade birth rates in Michigan and the United States have steadily declined while infant mortality rates (infant deaths < 1 year per 1,000 live births) have remained elevated (6.5 and 5.4 in 2022). Infant mortality rates among Black women are particularly high in Michigan (13.0) and the U.S. (10.7). There are two time periods in the first year of life when the event of death is most likely to occur among at-risk infants -i.e., the first 6-days while in the hospital (early neonatal period) or days 29-364 after the mother and infant have returned home (post-neonatal period). Hospitals in Michigan are defined by their level of care and services provided with level-1 hospitals providing basic obstetric care services, level-2 hospitals providing acute obstetric care services, which may or may not include a neonatal intensive care unit (NICU) and level-3 hospitals providing acute obstetric care services and a certified NICU. The purposes of this study are to (a) learn the hospital level of care that mothers gave birth (admitted or transferred) in Michigan, 2010-2022, (b) whether the birthing hospital level of care was appropriate for at-risk mothers and/or infants based on factors pertaining to increased susceptibility and/or vulnerability, and (c) the contribution of birthing hospital level of care on infant mortality in the early neonatal and/or post-neonatal periods. The findings from this study will inform the Infant Mortality Taskforce in Michigan, other infant mortality programs in states and infant mortality initiatives within and across Health and Human Service Regions.

Primary author: GRADY, Sue C. (Michigan State University)

Presenter: GRADY, Sue C. (Michigan State University)

Session Classification: Paper Presentations

Track Classification: Health, Justice, Human Rights, Policy & Practice: Healthcare Accessibility

Contribution ID: 173

Type: Paper

Food Insecurity Risk and Adverse Health Outcomes- a GWR approach to identify policy interventions.

Monday, July 15, 2024 4:20 PM (20 minutes)

Financial austerity, the recent pandemic, and soaring living costs have increased the UK's food insecurity levels, with an estimated that 9 million adults in the UK (17% of households) experiencing food insecurity in June 2023. Food insecurity can lead to under and over-nutrition thus increasing the risks of various non-communicable diseases, including diabetes, hypertension, stroke, cardiovascular disease, and several cancers. Food-insecure individuals also report feelings of depression and anxiety due to restricted food choices and limited access.

The Priority Places for Food Index (PPFI) was developed to capture neighbourhood level food insecurity risk by combining measures of access to affordable food and indicators of barriers to affording food across seven domains: Proximity to supermarket retail facilities, Accessibility of supermarket retail facilities, Access to online deliveries, Proximity to non-supermarket food provision, Socio-economic barriers, Fuel Poverty and Family Food for support. The PPFI uses open data, combining traditional census data metrics, scaled survey and government data with smart data.

In this study we developed Geographically Weighted regression models to identify areas where tackling specific food insecurity risk factors could cut health inequalities by reducing the prevalence of selected health outcomes. The outcomes of which have been used to inform local food insecurity and wider food systems interventions in Oxfordshire, UK.

Primary authors: Mr AMMASH, Ahmad (University of Leeds); Dr PONTIN, Francesca (University of Leeds)

Co-authors: Dr HAMBERLY, Alexander (University of Leeds); Dr ENNIS, Emily (University of Leeds)

Presenter: Dr PONTIN, Francesca (University of Leeds)

Session Classification: Paper Presentations

Track Classification: Health, Justice, Human Rights, Policy & Practice: Health Disparities

Contribution ID: 174

Type: Paper

Integrating human activity into food environments can better predict cardiometabolic diseases in the United States

Monday, July 15, 2024 5:00 PM (20 minutes)

Cardiometabolic disorders refer to the presence of metabolic abnormalities such as obesity, high cholesterol, and high blood pressure. The prevalence of cardiometabolic disorders in the United States is presumably linked to an obesogenic food environment that promotes unhealthy diets. However, past studies have reported mixed findings about the relationship between the two. One important factor that has been neglected in previous food environment research is the role of human mobility in food procurement. In the paper, we develop a novel activity-based food environment index (AFEI) at the census tract level by utilizing large-scale GPS tracking data covering over 94 million aggregated visit records to about 359,000 food retailers across the United States for two years. We identify that the AFEI has significant associations with multiple cardiometabolic disease prevalence. We conclude that the AFEI has the potential to become a useful tool for designing policy and health interventions aimed at reducing cardiometabolic disorders in communities where obesogenic food behaviors are prevalent.

Primary author: CHEN, Xiang (University of Connecticut)

Co-authors: HUANG, Xiao (Emory University); ZHANG, Kai (University at Albany); CASPI, Caitlin (University of Connecticut); LYU, Weixuan (University of Connecticut); GHOSH, Debs (University of Connecticut); LI, Zhenlong (Pennsylvania State University); XU, Ran (University of Connecticut)

Presenter: CHEN, Xiang (University of Connecticut)

Session Classification: Paper Presentations

Track Classification: Global Health: Obesity

Contribution ID: 175

Type: Paper

A qualitative approach of the environmental determinants of stress and their situational factors: The FragMent project

Tuesday, July 16, 2024 3:20 PM (20 minutes)

Background:

Everyone has to deal with stress on a daily basis. However, since stress is a risk factor for 75-90% of diseases, it has become a public health priority. According to the stress restorative theory, environmental factors may convey both stressful and restorative qualities. However, little is known on how in complex urban environments these stressors are experienced and in what situations. This qualitative study aims to delve into the environmental and situational factors that contribute to momentary and daily stress, as well as social inequalities in stress.

Methods:

This focus groups study is based on 32 adults (18-65 y.) residing in Luxembourg. Seven focus groups, ranging from 4 to 7 participants per group, have been conducted, including mixed and gender-segregated groups. The topic guide invited the participants to discuss their reaction to urban stress (behavioral, psychological and physiological), the identification of urban stressors and their intensity, the situational factors that contextualize how these stressors are experienced over the course of the day, and the differences in the vulnerability to these stressors by social groups (i.e., gender).

Results:

Participants reported a large array of reactions to stressful urban experiences, embodied sometimes by high arousal and low valence reactions. Numerous stressors have been listed including traffic, noise, incivilities, lack of green spaces, inadequate pedestrian infrastructure, road safety, etc. Situational factors have contextualized when, with whom, during which activities such factors were experienced. Finally, perceptions of urban stressors seemed to evolve with time and age of participants. The project is funded by the European Union (ERC-2021-STG, FragMent, 101040492).

Keywords: stress; daily mobility; environmental exposure; focus groups

Primary author: PERCHOUX, Camille (Luxembourg Institute of Socio-Economic Research)

Co-authors: Ms GANTREL, Kyra (Luxembourg Institute of Socio-Economic Research (LISER)); GERBER, Philippe (Luxembourg Institute of Socio-Economic Research (LISER)); Dr SIMONS, Monique (Wageningen University & Research)

Presenter: PERCHOUX, Camille (Luxembourg Institute of Socio-Economic Research)

Session Classification: Paper Presentations

Track Classification: Health, Justice, Human Rights, Policy & Practice: Structural Determinants of Health

Contribution ID: 176

Type: Paper

Communicable Disease Spatiotemporal Cluster Detection: Leveraging Data to Prevent Infection

Introduction: Hot spot analysis or spatial cluster analysis is a frequently used approach in identifying where infectious disease outbreaks have occurred in the past or are currently occurring. This became increasingly evident during the COVID-19 pandemic, when COVID-19 maps were widely used to convey where COVID-19 infections or death were most prevalent. These clusters may change significantly over time, making the importance of real time prediction of markers of clusters a potential tool in infection prevention.

Hypothesis: There may be markers of a spatiotemporal cluster early on in a time series.

Objectives: This scoping review will determine methods for identifying when within a time series a spatial infectious disease cluster forms. The review examined what methods of spatiotemporal cluster identification have been used to identify those most at risk of infection within a time series.

Methods: Literature was reviewed within PubMed, MEDLINE, Scopus, Google Scholar, and Web of Science. The literature review was conducted using Covidence, a web-application that allows for reviewer collaboration. Descriptive statistics on the final body of literature were conducted in R-Studio.

Results: The scoping review initially included 490 papers, which contained 82 duplicates in total. 209 studies were deemed irrelevant through abstract and title review. The remaining studies' full text were reviewed and included or excluded individually. Exclusion reasons were: conference papers, infections not modelled, and not a time series (we defined as 3 or more time points). The primary method of spatiotemporal infectious disease identification is the use of the SCAN statistic, which can be prospective or retrospective.

Conclusions: The modelling mechanisms for forecasting spatiotemporal infectious disease should be contrasted with the use of real data to determine methods that are best suited for integration into public health policy.

Primary author: NORTON, Amanda (University of Toronto)

Co-authors: KANGUR, Markus (University of Toronto Mississauga); ADAMS, Matthew (University of Toronto Mississauga)

Presenter: NORTON, Amanda (University of Toronto)

Session Classification: WITHDRAWN OR REMOVED

Track Classification: Innovation in Methods: Longitudinal Analysis

Contribution ID: 177

Type: **Student Paper Competition**

Exploring the relationships between housing and food for Latinx newcomers in Toronto

Monday, July 15, 2024 1:20 PM (20 minutes)

A housing unaffordability crisis is currently impacting many Torontonians. In 2016, it was found that an estimated one in five Canadian adults between the ages of 25 and 34 lived in unaffordable housing, defined as spending 30% or more of their pre-tax income on housing. Although the housing reality for Latinx immigrants in Toronto is unknown, research studying this population in other regions has found them to be at an increased risk of experiencing economic insecurity and unemployment. This, in turn, increases their risk of living in precarious housing, experiencing homelessness, and displacement. Given this increased risk and the current housing challenges in Toronto, it is important to start to uncover how housing precarity impacts important downstream factors like food behaviours. The objectives of this research will be the following: 1) to understand the original obstacles to finding housing when first migrating to Canada, and 2) to explore how precarious housing conditions (including access to food storage and preparation facilities) influence food behaviours, including food shopping, mealtimes, meal frequency, and preparation methods. In the presentation, I will expand upon the methodologies used and our preliminary data analysis results.

Presenter: LAHAIE LUNA, Marianne

Session Classification: Student Paper Competition

Contribution ID: 178

Type: **not specified**

Buses Depart GSU to Tallulah Falls

Wednesday, July 17, 2024 8:00 AM (2h 30m)

Session Classification: Conference Event

Contribution ID: 179

Type: **not specified**

Tallulah Falls

Wednesday, July 17, 2024 10:30 AM (1 hour)

Tallulah Falls, Georgia, features an array of hiking trails that provide easy access to spectacular views of the surrounding landscapes. These trails are well-suited for all skill levels, allowing visitors to enjoy the serene beauty of waterfalls and lush forested areas without strenuous effort

Session Classification: Conference Event

Contribution ID: **180**

Type: **not specified**

Buses Depart to Helen, GA

Wednesday, July 17, 2024 11:30 AM (1 hour)

Session Classification: Conference Event

Contribution ID: **181**

Type: **not specified**

Lunch in Helen, GA

Wednesday, July 17, 2024 12:30 PM (2h 30m)

Helen, Georgia, offers a delightful experience with its Alpine-themed town center. Wander through streets adorned with Bavarian architecture and browse shops for unique handcrafted goods and souvenirs. For dining, savor a leisurely lunch at one of the many local restaurants featuring a mix of cuisines, including traditional German fare.

Session Classification: Conference Event

Contribution ID: **182**

Type: **not specified**

Buses Depart to Limoges Cellars, GA

Wednesday, July 17, 2024 3:00 PM (30 minutes)

Session Classification: Conference Event

Contribution ID: **183**Type: **not specified**

Unwind with Wine and Music at Limoges Cellars

Wednesday, July 17, 2024 3:30 PM (2h 30m)

Spend a relaxing late afternoon at Limoges Cellars, a charming winery in Georgia, where you can enjoy live music and taste local Georgia wines. This picturesque setting provides a perfect backdrop for savoring an array of wines, each showcasing the unique flavors of the region. The presence of live music adds a vibrant atmosphere, making it an ideal spot to unwind and enjoy the scenic views. Whether you're a wine aficionado or just looking for a pleasant way to spend the afternoon, Limoges Cellars offers a delightful experience.

Session Classification: Conference Event

Contribution ID: **184**

Type: **not specified**

Buses Depart to GSU

Wednesday, July 17, 2024 6:00 PM (2 hours)

Session Classification: Conference Event

Contribution ID: 185

Type: Paper

Analysing antidepressant prescribing patterns in primary care

Thursday, July 18, 2024 11:00 AM (20 minutes)

Background: Antidepressant prescribing can act as a proxy for mental health conditions allowing spatial and statistical analysis to be undertaken at small area level. These data can complement national survey and hospital care data which are limited in size and typically available only at coarse geographies. This work aims to explore the spatial distribution of antidepressant prescribing in primary care data and examine associations with socio-demographic factors.

Methods: Prescribing count data were collected for Antidepressant drugs (BNF section 4.4) from openPrescribing.org. Data are at General Practitioner level and were downloaded for a 5-year period. Census 2021 data for deprivation, age, ethnicity and home ownership were downloaded from Nomisweb.co.uk. Antidepressant prescription rates were calculated at neighbourhood level using a GP catchment area to Lower Super Output Area lookup. Logistic regression was used to examine associations with prescription rates. Initial analysis was run for the case study area of Leeds, UK. This work provides a proof-of-concept study for national analysis.

Results: Antidepressant prescribing varied spatially within the study area. Positive statistically significant associations are found with social (OR=1.248), private (OR=1.269) and owned housing (OR=1.244), and Mixed ethnicity (OR=1.271). Households deprived in 2 dimensions (OR=1.078) and Asian ethnicity (OR=1.016) have weaker but statistically significant associations. Black ethnicity (OR=0.94) and rented households (OR=0.59) are associated with statistically significant negative associations.

Conclusions: This work provides evidence of spatial variations in antidepressant prescribing patterns and finds associations between higher rates of prescriptions and some socio-demographic groups but further work around GP prescribing behavior is required.

Primary author: OLDROYD, Rachel (University of Leeds)

Co-authors: PONTIN, Francesca; CLARKE, Graham (Consumer Data Research Centre, University of Leeds)

Presenter: OLDROYD, Rachel (University of Leeds)

Session Classification: Paper Presentations

Track Classification: Health, Justice, Human Rights, Policy & Practice: Health Disparities

Contribution ID: 186

Type: Paper

Assessing Geographic Provider Access by Therapist Type for Children with Autism in Missouri

Monday, July 15, 2024 4:40 PM (20 minutes)

Children diagnosed with Autism Spectrum Disorder (ASD) may require specialized therapy or care not as widely available as other forms of care. Our objective was analyzing the distribution of four different types of healthcare services supporting children with ASD throughout the state of Missouri: applied behavior analysts (ABA), occupational therapists (OT), physical therapists (PT), speech language pathologists (SLP), in relation to children with an IEP code for ASD by their local school district, in 2020. Examining the population group with ASD in Missouri in relation to these four therapy types, enables a needs assessment, identifying healthcare gaps. This project is modeled from previous geographic needs assessments done in rural communities around care distribution (Carson et al 2021). An additional layer added to this analysis is the inclusion of multiple therapist types by all counties in Missouri. The count of each therapist by county was identified using the Summarize Within tool in ArcGIS Pro, and then compared to the number of children identified in the county listed having ASD, with the number of hours a child with ASD is recommended to spend with each therapist. While need for a range of services is clearly an issue throughout the state, there is a clear urban-rural divide dependent on the type of service needed. St. Louis, Kansas City, Columbia, and Springfield –population centers in the state –all have adequate numbers of physical and occupational therapists based on recommended PT and OT usage, but this reverses when looking at ABA and speech language pathologists.

Primary author: GUHLINCOZZI, Aida (University of Missouri)

Presenter: GUHLINCOZZI, Aida (University of Missouri)

Session Classification: Paper Presentations

Track Classification: Health, Justice, Human Rights, Policy & Practice: Healthcare Accessibility

Contribution ID: 187

Type: **Panel**

Knowledge translation for equity action in health geography

Tuesday, July 16, 2024 10:20 AM (1h 20m)

Over the past decade, knowledge translation (KT) has become an important component of health research in geography and beyond. Despite collective agreement about the importance of bridging knowledge to action in health geography research, gaps remain regarding how to do KT, and how KT can be leveraged to combat health inequities. This panel session will discuss KT research and activity with a particular focus on promoting health equity in our changing world. This discussion will look back at what has been achieved through KT, our learnings and pitfalls, and how researchers can build on these foundations to move forward. Themes for discussion include best practices for doing KT, working in partnership with knowledge users, overcoming challenges and lessons learned, and future directions for KT research and practice on a global scale.

Presenters: RISHWORTH, Andrea (University of Toronto Mississauga); SHANTZ, Emily (University of Waterloo); CARDWELL, Francesca (University of Waterloo); CURTY PEREIRA, Rodrigo (University of Waterloo); ABU, Thelma (University of Connecticut)

Session Classification: Panel Discussion

Track Classification: Health, Justice, Human Rights, Policy & Practice: Health Disparities

Contribution ID: 188

Type: Paper

Geospatial analysis and data accessibility in medical geography: opportunities and challenges

Thursday, July 18, 2024 4:20 PM (20 minutes)

Globally, the spread of communicable diseases is a major concern, and as such, their eradication is one of the targets of the Sustainable Development Goals (SDG). Although the spread of infectious diseases is socially and economically driven, their spatial dynamics is conducive to the use of geospatial tools such as Geographic Information Systems (GIS), remote sensing, web mapping among others, to inform effective public health decision-making/interventions for current and anticipated impacts, particularly in an environment of changing climate. While these tools are ubiquitous, they sometimes require data that is not always accessible or available at the desired scale, which poses a constraint to the ability of researchers to conduct comprehensive analyses. Despite these challenges, there are innovative opportunities such as stakeholder engagement/consultation and the use of spatial multi-criteria analysis that can offer solutions to overcome data-access issues. This paper highlights the data challenges and opportunities related to the use of geospatial tools to fill critical gaps in medical geography/public health data access and thereby facilitate informed decision making in the public health sector.

Presenter: HENRY, Sheika (Brandon University)

Session Classification: Paper Presentations

Contribution ID: 189

Type: Paper

Qualitative and community-engaged visualization in health geography: Emerging Practices

Session Classification: WITHDRAWN OR REMOVED

Contribution ID: 191

Type: **Student Poster Competition**

Identifying Transmission Dynamics and Infection Hotspots of *Clostridioides difficile* Infection in a Community-Based Hospital

Thursday, July 18, 2024 12:40 PM (20 minutes)

Background: *Clostridioides difficile* infection (CDI) represents a significant healthcare challenge, with the CDC estimating 500,000 annual cases in the United States, leading to substantial morbidity, mortality, and over \$1 billion in healthcare costs.

Objective: This study aims to develop a methodology and algorithm to analyze the spatiotemporal movement of patients within a hospital, identifying transmission dynamics and infection hotspots of CDI.

Methods: Data from 623 patients at a California hospital, collected between August 2019 and June 2022, were analyzed. Variables included room locations, dates, and times of patient stays. The methodology will track patient movements to determine if non-infected patients stayed in close proximity to CDI-positive patients for a significant amount of time and later became infected.

Results: The study will develop an algorithm to analyze spatiotemporal patterns of patient movements, taking into account the duration in each location, total hospital stay duration, and the number of movements within the hospital. This analysis will identify the most common movement chains between hospital rooms and larger units, thereby pinpointing infection hotspots.

Outcome: The expected outcome is a visualization matrix showing patient movement patterns and proximity to CDI-positive patients, identifying high-risk areas within the hospital.

Conclusion: CDI remains a critical public health issue with high incidence and severe outcomes. This study aims to provide a novel approach to analyzing patient movements within hospitals, identifying high-risk areas and informing targeted interventions. The methodology developed can be applied to other nosocomial infections to identify transmission dynamics and infection hotspots, ultimately improving infection control measures and patient outcomes.

Presenter: SARKER, Anupam (GEORGIA STATE UNIVERSITY)

Session Classification: Student Poster Competition

Track Classification: Innovation in Methods: Longitudinal Analysis

Contribution ID: 192

Type: **not specified**

Synergies of participatory GIS and health geography: A scoping review

Thursday, July 18, 2024 4:40 PM (20 minutes)

Traditional GIS was critiqued for its reductionist approach, leading to the emergence of Public Participation Geographic Information Science (PPGIS) in the mid-1990s. PPGIS marked a shift towards inclusivity and empowerment. Along with related approaches or methodology such as Participatory GIS (PGIS), community mapping and Critical GIS, it has been used in human geography to incorporate marginalized groups into decision making and addressing social concerns. Despite its widespread use in urban and regional planning, PPGIS has been relatively underutilized in health geography research. This scoping review explores the evolution and diverse applications of PPGIS in the field of health geography. This scoping review gathers evidence from X articles to illuminate when and how PPGIS is used to address health issues. PPGIS holds promise in contributing to a wide range of health-related studies, focusing on community-level determinants of health and health equity. Moreover, the review underscores the significance of stakeholders and communities in shaping both place and health decision-making processes. By leveraging spatial participatory data, PPGIS offers a robust framework for addressing health challenges and fostering empowerment among marginalized groups in health-related decision-making contexts. Integrating participatory GIS into health geography research has the potential to bridge accessibility gaps, incorporate diverse spatial knowledge, and enhance participatory processes, thereby empowering marginalized communities in health decision-making realms.

Presenters: Dr COPE, Meghan (Department of Geography & Geosciences, University of Vermont); BHAT-TACHARYA, Shamayeta (Point Park University); ABU, Thelma (University of Connecticut)

Session Classification: Paper Presentations

Contribution ID: 193

Type: Paper

Geographic assessment of prevalence of modern contraceptive use among women of reproductive age in Uganda: Evidence from UDHS 2016

Thursday, July 18, 2024 3:20 PM (20 minutes)

Unintended pregnancies pose significant health risks, particularly in sub-Saharan Africa, where millions of cases are recorded annually, disproportionately affecting adolescent women. This study aimed to assess the prevalence, distribution, and factors associated with modern contraceptive utilization among women aged 15-49 in Uganda. The study sample comprised 9,235 women aged 15-49 who used any method to prevent pregnancy in the five years preceding the 2016 Uganda Demographic and Health Survey (UDHS). The outcome variable was the utilization of modern contraceptives. Univariate, bivariate, and multilevel binary logistic regression were used to examine the relationship between individual and contextual factors and modern contraceptive use among women aged 15-49 in Uganda. Choropleth mapping and network analysis in ArcGIS 10.8.2 were used to visualize spatial distribution and measure community access to health facilities, respectively. The prevalence of modern contraceptive use was 39.15% (n=4,919) in Uganda, with significant spatial variation by district. Individual factors positively influencing use included marital status, wealth index, and education level, while sex of the household head, history of pregnancy termination, and religion negatively affected use. Despite Kampala being a major urban center with relatively better access to healthcare services and information, the low contraceptive prevalence in Kampala suggests factors beyond mere access to services. Cultural beliefs, religious influences, and other sociocultural factors may influence contraceptive decision-making in urban settings, highlighting the need for targeted outreach and education efforts tailored to urban populations. This study highlights disparities in modern contraceptive use across age groups and districts, emphasizing the need for targeted interventions to address these disparities.

Primary author: KELEPILE, Matlhogonolo (University of Botswana)

Co-author: TOWONGO, Moses (Department of Population Studies, University of Botswana, Gaborone, Botswana)

Presenter: KELEPILE, Matlhogonolo (University of Botswana)

Session Classification: Paper Presentations

Contribution ID: 194

Type: **Panel**

Reflecting on 40 years of IMGS

Presenters: Dr TIWARI, Chetan (Georgia State University); GHOSH, Debs (University of Connecticut); LUGINAAH, Isaac (Western University); ROSENBERG, Mark (Queen's University); WIDENER, Michael (University of Toronto - St. George); KEARNS, Robin (University of Auckland); MCLAFFERTY, Sara (University of Illinois at Urbana-Champaign); ELLIOTT, Susan J.; Dr DESJARDINS, Michael (Johns Hopkins Bloomberg School of Public Health)

Session Classification: WITHDRAWN OR REMOVED

Contribution ID: 195

Type: **Panel**

The JEDI (Justice, Equity, Diversity, and Inclusion) Quilt: Dis'Patches' from the international scholars

Friday, July 19, 2024 10:00 AM (40 minutes)

Presenters: GHOSH, Debs (University of Connecticut); KELEPILE, Matlhogonolo (University of Botswana); KEEBLE, Matthew (University of Antwerp); BHATTACHARYA, Shamayeta (Point Park University); COEN, Stephanie (University of Nottingham); CAO, Yanjia (The University of Hong Kong); MCDONALD, Yolanda (Vanderbilt University)

Session Classification: Featured Session

Contribution ID: 196

Type: **Panel**

Reflecting on 40 Years of IMGS

Tuesday, July 16, 2024 9:00 AM (1 hour)

This panel session will explore the rich history, significant milestones, and future opportunities and challenges within the field of Health and Medical Geography, highlighting the contributions of the International Medical Geography Symposium (IMGS) over the past 40 years. This session will provide a unique platform for reflection and forward-thinking discussions.

Join us for an insightful session that honors the past and envisions the future of Health and Medical Geography, encouraging robust dialogue and knowledge exchange among leading experts and participants.

Presenters: GHOSH, Debs (University of Connecticut); Dr TIWARI, Chetan (Georgia State University); LUGINAAH, Isaac (Western University); ROSENBERG, Mark (Queen's University); KOLAK, Marynia (University of Illinois at Urbana-Champaign); Dr DESJARDINS, Michael (Johns Hopkins Bloomberg School of Public Health); KEARNS, Robin (University of Auckland); MCLAFFERTY, Sara (University of Illinois at Urbana-Champaign); ELLIOTT, Susan J. (University of Waterloo); WIDENER, Michael (University of Toronto - St. George)

Session Classification: Featured Session

Contribution ID: 197

Type: **Panel**

Practice and Policy: Perspectives in Health Geography Panel Abstract

Tuesday, July 16, 2024 4:20 PM (1h 20m)

Health and medical geography are critical lenses to understand the spatial dimensions of health disparities and inequities to inform evidence-based policy interventions. This panel brings together voices representative of community organizations, academia, and government agencies to explore the intersections of practice and policy within the realm of health geography. The panelists will share insights from their experiences of collaborating with and within community organizations, academia, and government agencies and delve into the practical applications of community-engaged research, geographic information systems (GIS), spatial analysis techniques, and qualitative research to identify challenges and strengths of vulnerable populations to inform policy-driven evidence-based targeted interventions to improve quality of life. By fostering dialogue and knowledge exchange, this panel aims to advance our understanding of how spatial approaches, in tandem with community-engaged research practices that include academia and government agencies, can inform more equitable, sustainable health policies, and promote healthier communities.

Presenters: MURRAY, Andrew (United States Environmental Protection Agency); KEINO, Barbara (U.S. Centers for Disease Control and Prevention (CDC)); MATTHEWS, Kevin (Centers for Disease Control); Ms MESSENGER, Leigh (UNT); ADAMS, Mary Anne (Zami Nobla); MCDONALD, Yolanda (Vanderbilt University)

Session Classification: Panel Discussion

Contribution ID: 198

Type: Paper

Capturing the neighbourhood experience for hidden voices: Approaches and challenges.

Thursday, July 18, 2024 9:30 AM (20 minutes)

Lived Experience research is increasingly being used as a method to overcome blind spots that come from working in a singular discipline or paradigm. More recently Lived Experience is being used as a powerful tool for working with more marginalised groups to rebalance power dynamics and capture 'hidden' knowledge of what it is like to be from that community based on their experiences.

However if not done well, Lived Experience can be experienced as being tokenistic and power imbalances between the 'professionals' or 'experts' and marginalised groups further solidified, causing more harm. Therefore the framing of Lived Experience and its associated principles are critical for ensuring that good outcomes are achieved for all.

Despite the benefits of conducting Lived Experience research, there are many challenges to undertaking this type of work. This presentation will focus broadly on the concepts and principles of Lived Experience research (i.e. the benefits) and then use a Lived Experience case study of young children and their families from diverse neighbourhoods in Melbourne, Australia. The case study will demonstrate some of the structural and situational challenges faced when undertaking this type of work. Reflections and learnings will also be discussed.

Presenter: BADLAND, Hannah (RMIT University)

Session Classification: Featured Session

Contribution ID: 199

Type: **Invited Paper**

More than Skin Deep: The Pervasive Nature of Racism as a Social Driver of Health

Monday, July 15, 2024 9:00 AM (1 hour)

This presentation explores the multifaceted factors influencing health disparities, particularly among African Americans. It examines the impact of geography, policy, economic stability, neighborhood conditions, healthcare access, and social drivers on health outcomes. By highlighting historical and structural roots, such as the racial wealth gap and systemic racism, the presentation underscores the pervasive nature of social and economic inequities. Key concepts like regional social deprivation and vulnerability indexes are introduced to understand the syndemic nature of health disparities. Through case studies and data analysis, it emphasizes the need to address systemic inequalities to achieve equitable health outcomes.

Presenter: LEWIS, John (Emory University)

Session Classification: Featured Session

Contribution ID: 200

Type: **Student Paper Competition**

Biomass and Stable Carbon Isotope distributions in the Amazon Plume Region

Thursday, July 18, 2024 2:00 PM (20 minutes)

Amazon River has the largest freshwater discharge into the world ocean. It exerts a profound influence on the composition of particulate organic matter over time and distance and in response to hydrological changes. We investigate the distribution of particulate carbon, C:N elemental ratio and $\delta^{13}\text{C}$ values during three seasons in the surface and upper 100 m of the water column in areas of the Western Tropical North Atlantic influenced by the Amazon River Plume: the Spring high flow period (KN197 Cruise, May-June), the late Summer period of reduced flow (AT2104 cruise, July), and the low flow period in the Fall (MV1110 cruise, Sept-Oct). We found distinct regional variations in biomass distributions, with the highest concentrations in the plume core and margins and the lowest in the offshore waters. The Surface and Mean Water Column [PC] ranged from 0.62 to 259.75 $\mu\text{mol L}^{-1}$ and 0.51 to 512.7 $\mu\text{mol L}^{-1}$, respectively. The C: N ratio was highest during the peak flow season and decreased in the late summer and fall. The surface C: N ratio was higher than MWC C: N (ranging from 4.4 to 14.2 and 5.0 to 12.9, respectively). The $\delta^{13}\text{C}$ of suspended particles showed distinctive surface and depth variability, reflecting both variations in rate and cell size as well as the nutrient status of the sampled habitats. The most positive $\delta^{13}\text{C}$ value (-15.7 ‰) was observed in the peak outflow season, and the most negative $\delta^{13}\text{C}$ (-26.9‰) was observed in the late summer, particularly in the RI habitat associated with its proximity to the river mouth, where terrestrial input predominates. Our findings emphasize the rule of the Amazon River Plume in enhancing the area's biomass and productivity and reworking the carbon cycle's biogeochemical dynamic.

Presenters: ALRIYAMI, ZAINAB (Student); MONTOYA, Joseph

Session Classification: Student Paper Competition

Contribution ID: **201**

Type: **not specified**

Conference Dinner: Ticketed Event: Azotea Cantina

Thursday, July 18, 2024 6:30 PM (2h 30m)

Address: 245 18th St NW, Atlanta, GA 30363

Timing: 6:30pm to 9pm

Directions: Please let the front desk know that you are part of the conference group and you will be directed to our reserved area on the roof top. Please don't forget to bring your name tag as well as drink/dinner tickets along.

Session Classification: Conference Event

Contribution ID: 202

Type: Paper

Estimating health service utilization potential using the Supply-Concentric Demand-Accumulation (SCDA) spatial accessibility Index

Tuesday, July 16, 2024 2:40 PM (20 minutes)

The Supply Concentric-Demand Accumulation (SCDA) index is a novel approach to assess the potential for populations in a specific area to access a health service. SCDA operates on the principle that a population's need for available services can only be met after the demand from other populations living closer to the facility has been met. This differs from other ways of estimating spatial accessibility to services, such as the two-step floating catchment area (2SFCA) Index; SCDA estimates are based on the population's ranking of travel costs to services relative to other populations rather than the absolute travel cost. The Centers for Medicare & Medicaid Services provided data about beneficiaries aged ≥ 65 who used pulmonary rehabilitation (PR) to treat chronic obstructive pulmonary disease (COPD) at their chosen facilities in 2014. Using the beneficiaries ($n = 1,105$) who used PR facilities ($n = 45$) in or around Georgia, an SCDA Index was calculated for all Census block groups in Georgia. Moran's I was used to test which spatial accessibility index (the SCDA Index or the 2SFCA Index) was more predictive of the observed geographic pattern of PR utilization. The association between the geographic pattern of the PR utilization and the SCDA Index was ($I=0.607, P<0.001$), which was much higher than the association with the 2SFCA index ($I=0.321, P<0.001$). This suggests that the new SCDA Index may better estimate potential utilization than the more commonly used 2SFCA Index. The SCDA Index can estimate utilization potential for any service in any part of the world where population and service data are available.

Presenter: MATTHEWS, Kevin (Centers for Disease Control)

Session Classification: Paper Presentations

Contribution ID: 203

Type: Paper

Community-Soil-Air-Water: Building a learning ecosystem with community partners to advance environmental justice in Atlanta, Georgia, USA

Thursday, July 18, 2024 9:00 AM (20 minutes)

The Community-Soil-Air-Water (CSAW) partnership is co-led by the Georgia State University Department of Geosciences and two community-based environmental advocacy organizations that focus on environmental justice—ECO-Action and the West Atlanta Watershed Alliance (WAWA) in Atlanta, Georgia, USA. In collaboration with other community-based organizations and higher education institutions in metro Atlanta, the partnership has grown and evolved over the past 10 years, with a focus on identifying and answering critical community-driven questions around soil, air, and water. CSAW partnerships are rooted in shared values and co-developed practices for equity, transparency, and accountability. Its current iteration involves establishing a learning ecosystem of staff researchers, graduate students, faculty and community residents to identify socio-environmental questions and develop an asset-based model of collaboration with community-driven research. This integration of graduate education into inter-disciplinary science with geographers, soils scientists, public health experts, and hydrologists to address pressing questions is rooted in answering the question: How can scholars learn from, contribute to, and find solutions with communities facing fundamental problems related to Earth systems? Following a year of CSAW activities, we present our conceptual framework, as funded by the National Science Foundation-Cultural Transformations of Geoscience Community implementation grant, and best practices for building effective, accountable collaborations with community partners.

Primary author: Prof. HANKINS, Katherine (Georgia State University)

Co-authors: MILLIGAN, Richard; LEDFORD, Sarah; FULLER, Christina; JELKS, Na'Taki; KABENGI, Nadine; GEBREGIORGIS, Daniel; HIDALGO, Paulo; SAIKAWA, Eri; HADDOCK, Darryl; LEWIS, Carla

Presenter: Prof. HANKINS, Katherine (Georgia State University)

Session Classification: Featured Session