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Poster Abstracts

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Contents

A scoping review of importation and predictive models for vector-borne diseases, pathogens, reservoirs and/or vectors that exist globally

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Objectives: We conducted a scoping review to compile and characterize documents describing predictive and importation models of vector-borne diseases, pathogens, reservoirs and/or vectors that exist globally. Our secondary objective was to summarize models with a focus on Canada and/or the northern United States, and those which incorporated the impact of climate change.

Methods/Approach: A literature search was conducted to identify publications published between 1999 and 2016 through a search of five scientific databases using relevant keywords. Relevance screening and data characterization were performed by two reviewers using pretested forms. The data were cleaned, and analyzed using descriptive statistics.

Results: The search initially identified 19 710 unique documents which contained models that were created by the author(s) or used in a way unique to its original development. This was reduced to 511 relevant documents after the relevance screening. Preliminary results indicated that the majority of models were predictive (82%) versus those which focus only on importation (2%), or both (16%). Africa was the region modelled most (22%). Only 23% of models focused on the impact of climate change.

Conclusion/significance: The spread and introduction of vector-borne diseases into Canada is expected to occur under climate change. Models can be useful in predicting when and where future distribution of vector-borne diseases may occur. This review will inform researchers of the gaps that may exist in the literature. Additionally, this work will provide a framework for creating these models specific to Canada and the United States.

An environmental scan of small area analysis methods

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The concept of small area analysis (SAA) (also referred to as small area estimation or small domain) is a term used to describe statistical methods or techniques to produce accurate estimates when there is insufficient information or small sample size in the area of interest. With the growing need for population health data for small geographic areas, an environmental scan was undertaken to identify methods or techniques that have been developed that could be used by public health units (PHUs). We approached this environmental scan by gathering information from three different inputs: 1) a brief scan of the literature; 2) an online PHU survey aimed at identifying SAA methods used at the local level; and 3) telephone interviews with organizations or individuals with expertise in this area. SAA encompasses a variety of methodologies.

These methods can range in complexity from simpler techniques such as pooling datasets to increase sample size, to complex model building. Although simpler methods can be easily interpreted, reproducible and transparent, modelling methods can be used to produce more precise estimates, but often require more expertise and time to implement. The analytic approach to SAA depends on the on the nature of the data and the specific question being answered, and there are no one-size-fits-all solutions. This poster will describe the results of the environmental scan, including techniques, and introduce PHO's plans for creating SAA guidance document and resources.

Baseline Animal-Related Exposures among Canadians: Foodbook Study, 2014-2015

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Exposure to animals and pet ownership are common among Canadians. Animal companionship can have many benefits; however animals can also transmit enteric infections to humans, and contact with animals has been estimated to cause over 200 enteric illnesses per 100,000 Canadians each year. To address this public health concern, the Foodbook survey conducted in 2014-2015 assessed exposure to animals, animal food, and animal-related venues among Canadians. Data were analyzed by province and territory, age group, gender, season, and urban/rural residency. Overall, dogs and cats were the most common reported animal exposures (43.3%, and 31.9%, respectively). Children aged 0 to 9 reported higher exposures to four types of high-risk animals compared to the national average: rodents (5.6%), poultry (4.0%), reptiles (2.1%), and amphibians (1.8%); with the most vulnerable children aged less than 5 years also reporting higher exposure to these high-risk animals compared to national levels. The data suggests farm animal exposure among urban respondents occurs primarily at a farm/barn, instead of other animal-related venues (e.g. petting zoos or agricultural fairs). Nearly 1 in 25 respondents handled raw pet food within the last seven days; the majority of which had also been exposed to a dog (86.4%). These results highlight potential areas for targeted intervention that can focus on higher risk activities (e.g. handling of raw pet food) as well as higher risk populations (e.g. young children). Additionally, they support the need to better understand the burden of enteric illness associated with animal contact and their environments.

BETTER Health Durham: A protocol for a cluster RCT of prevention practitioners engaging residents of low-income neighbourhoods in collaboration with public health and primary care

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The Building on Existing Tools to Improve Chronic Disease Prevention and Screening (BETTER) trial demonstrated a 30% improvement in adherence to evidence-based chronic disease prevention and screening activities in the primary care setting. The BETTER intervention consists of a personalized visit between a participant and a Prevention Practitioner who uses Brief Action Planning to empower the participant to set achievable short-term goals. We will adapt BETTER to the public health setting, testing the adaptation in a cluster randomized trial among low income neighbourhoods in Durham Region.

Methods: BETTER HEALTH: Durham aims to establish that the BETTER intervention can be adapted and proven effective among 40-64 year old residents of low-income areas when provided in the community by public health nurses trained as Prevention Practitioners. Focus groups and key informant interviews among stakeholders and eligible residents of low-income areas will inform the adaptation, along with feedback from a Community Advisory Committee (CAC). After adaptation, 10 clusters will be randomly allocated to immediate intervention or six-month wait-list control and results compared between the two groups.

Results: We have established a CAC of nine community members, which has identified recruitment strategies to reach eligible individuals, and have completed the adaptation focus groups and key informant interviews. A primary care advisory group has also been initiated. Trial recruitment is anticipated for fall 2017.

Conclusion: BETTER HEALTH: Durham provides an opportunity to build partnerships across public health and primary care through a research project that focuses on chronic disease prevention in low-income neighbourhoods.

Beyond BMI: A collaborative partnership to build a childhood healthy weights surveillance system including nutritional risk and protective factors

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Objectives: To demonstrate collaboration between public health units, primary care, BORN Ontario and academia in collecting data related to risk and protective factors for healthy childhood weights.

Methods: Phase 1 developed and tested a process to obtain data from 18-month enhanced Well Baby Visits. Data were acquired from electronic medical records (EMRs) through BORN Ontario, assessed for data quality and used to estimate the prevalence of overweight and obesity. Phase 2 assessed the implementation of NutriSTEP® through 10 semi-structured interviews with primary care practices already using NutriSTEP®. Phase 3 is testing the implementation of an electronic version of NutriSTEP® in primary care practices associated with their local Public Health Unit using ACCURO® EMRs.

Results: Phase 1 results demonstrated EMR data were of good quality based on percent of missing data and face validity. Records showed 14% of children were at risk of being overweight and 8% were overweight or obese. Phase 2 results show that NutriSTEP® is being used effectively in primary care to identify risk and protective factors for healthy weights. All primary care practices were interested in a system to automatically enter this data. Phase 3 EMR data are currently being analyzed. Interviews with primary care practices are ongoing related to factors for successful adoption and implementation of NutriSTEP®.

Conclusion: Phases 1-3 demonstrate the value of small-scale pilot projects for developing key partnerships and creating opportunities to use data from EMRs to improve patient care and management, while supporting population health assessment and health system quality improvement.

Developing an Evidence-Based Falls and Injury Risk Communication Tool for a Multidisciplinary Care Team

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Injuries from patient falls in a hospital environment remain a top concern and are associated with significant costs. Currently, Niagara Health is performing a review of its falls prevention policy as a part of its commitment to healthcare innovation and quality improvement. To facilitate an informed review process, compliance audits and informal discussions with multidisciplinary staff members were conducted in complex care settings across the system to identify recurrent themes and organizational needs. From a completed review of recurrent themes, a need for development of an evidence-based patient risk communication tool specific to injurious falls prevention has been identified as a way to innovate and

streamline healthcare delivery. Niagara Health currently utilizes a validated Morse Falls Scale for falls risk assessment. A literature review has identified that no validated injury risk assessment tool currently exists for use in healthcare. As a part of a graduate student research project, a systematic review of literature was conducted to identify common patient-specific risks associated with injurious falls in hospital settings. Based on the systematic review, informal multidisciplinary staff discussions, and examples of similar tools from other healthcare institutions, a simple evidence-based falls and injury risk communication tool was developed relevant to a multidisciplinary care approach at Niagara Health. The tool comprises 12 categories of patient risk with corresponding decision tree interventions, which makes it easier for nurses and allied staff to map out patient-specific risks and mitigation strategies. The next step would involve testing the tool in a clinical setting for utility. This development highlights a need for evidence-based falls and injury risk communication tools in clinical settings that streamline and improve multidisciplinary care delivery.

Developing Dashboards for Public Health in Practice: Application to West Nile Virus Surveillance Data

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Objective: The overall objective was to produce a novel, comprehensive tool for data visualization for West Nile virus surveillance within the Simcoe Muskoka District Health Unit. In collaboration with the Health Hazard and Vector-Borne Disease program, we identified a list of metrics to populate a dynamic and interactive dashboard. This presentation will showcase the dashboard and its supporting macros.

Methods: Raw data files were composed of lab data received from Entomogen and climate data retrieved from Environment Canada. We developed Stata syntax to compile this raw data into summary files and to automate the addition of new files. These files were imported into Microsoft Excel where they were used to power the dashboard's tables and charts. Excel macros and VBA code were used to automate updating of the data and creation of interactive graphics.

Results: This project produced a dashboard that provides week by week visualization over a series of relevant metrics and compares the current year to the previous year and overall baseline. The entire process was successfully automated with one step to run the Stata syntax to generate the output, and one step to take that output and update the visual displays in Excel.

Conclusion: This West Nile virus surveillance dashboard is an information tool that presents technical information in an easy-to-use, visually appealing manner for use by technical and non-technical audiences. With a single location to review data, weekly surveillance and end-of-year reporting can be streamlined.

Drinking and Recreational Water Exposures among Canadians: Foodbook Study 2014-2015

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Water is essential for life, and a substance all individuals are exposed to each day. In Canada, over 400,000 enteric illnesses are estimated to occur each year related to drinking water. This burden highlights the importance of understanding where and how Canadians are exposed to drinking and recreational water sources. To address this need, a population-based telephone survey (Foodbook) of 10,942 Canadians from all 13 provinces and territories, conducted from April 2014 to April 2015 assessed drinking and recreational water exposures using a seven-day recall method. Results were analyzed by province and territory, season, age group, gender, household income, education level, and urban/rural status. Numerous recreational water activities and exposures, including swimming, pool, lake, and recreational waterpark peaked during summer and were most commonly reported among children aged 0-9 years. Store bought bottled water was reported by nearly 20% of survey respondents as their primary drinking water source, while approximately 11% of respondents reported private well. The proportion of private well users was significantly greater than the national average in the Atlantic Provinces where approximately 40%-56% of respondents reported this as their primary drinking water source. Waterborne illness in Canada requires a multi-faceted public health approach. Canadian baseline data on water exposures can inform policy and public health strategies (e.g. recreational water guidelines, private well water testing recommendations) and support research and risk assessment related to mitigating waterborne illness.

Exploring a shared component modeling approach to social determinants of health in Toronto, Ontario

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Introduction: Area-based measures have been developed to monitor geographic differences in health disparities, in part, to target use of limited health resources and due to challenges in obtaining or utilizing individual-level data. These measures use exploratory analysis methods (e.g. factor analysis) to summarize multiple factors that influence health and typically do not account for the spatial correlation in the data.

Objectives: This ecological study aims to: 1) quantify the interrelationships of key social determinants of health indicators using a Bayesian model that accounts for spatial autocorrelation, 2) to map neighbourhood-level estimates of the shared- and individual-components with measures of precision, and 3) to assess the consistency of this approach with a current Canadian deprivation index.

Methods: Informed by a focused literature search, income, education, and employment were conceptualized as key dimensions of social determinants of health. Data were obtained for dissemination areas in Toronto, Ontario to pilot a Bayesian shared components model. The results were compared to an existing index using Spearman's rank correlation coefficient.

Results: Preliminary results identify spatial patterns and quantify the proportion of variance shared by and specific to the indicators. The results can be categorized to improve dissemination and uptake. Updated results will be presented at the conference.

Conclusion: A Bayesian shared components model identifies associations between indicators to characterize social determinants of health. The unique measure has potential to better inform the relative contributions of the indicators for work on health inequities.

From paper to paperless: Improving outcomes and efficiency of postpartum HBHC

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BORN Ontario, in collaboration with MCYS, partnered to enhance the way in which key maternal-child health information on the HBHC Screen moves between hospitals and public health units to facilitate care and transitions from hospital to community. A pilot study was performed to examine whether leveraging BIS infrastructure and existing data collection mechanisms to create an electronic HBHC Screen would support increased data quality and timeliness of data transfer. The pilot project occurred over a 12 week period. Data from a participant survey, focus groups, and raw data from both ISCIS and the BIS were analysed. The Infoway Benefits Evaluation Framework was used to assess the following areas: data usage, data quality, access, productivity, and user satisfaction. Overall, pilot sites reported a positive experience utilizing the new technology, indicated that the technology helped ensure secure transmission of PHI, noted that the new process did not adversely impact on the screening process with families and observed faster communication of information to PHUs. Compared to the same period from the previous year, there was a statistically significant increase in percentage of babies that received an HBHC Screen, completeness of HBHC screens, and a decrease in the time it took to contact families. The BORN-ISCIS Integration HBHC pilot project demonstrated that data from the HBHC Screen can be transmitted from the BIS to ISCIS seamlessly while protecting PHI. This project provides the groundwork for a provincial roll-out of this technology to support and facilitate care to at-risk families in Ontario.

Healthcare utilization and expenditures among high resource users prior to death in Ontario between 2005 and 2013

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Objective: To analyze population level trends in healthcare utilization and expenditures preceding death in Ontario using multi-linked mortality files.

Methods: We linked and analyzed vital statistics, population files, and health administrative data to examine all deaths occurring in Ontario between 2005 and 2013 (N=777,646 deaths). We calculated comprehensive overall and per-person healthcare utilization and costs for the time preceding death. Findings were classified according to resource utilization gradients (top 5%, top 6-50%, bottom 50%) for the last 2-years, 1-year, 180 days and 30 days of life.

Results: Overall, healthcare expenditures in the last 2-years of life increased in Ontario ($4.81B in 2005 vs. $7.18B in 2013); however, the proportion of costs consumed by the top 5% remained stable. In the last year of life, ICU admissions were highest among the top 5% (56.7%) versus the bottom 50% (18.8%). Consistent with high expenditures for hospital stay, more deaths occurred in hospital among the top 5% compared to the overall cohort (e.g., 59.8% vs. 42.7% in 2013). In the year prior to death, average per person costs ranged significantly (range = $265 thousand), such that costs were 10 times higher among the top 5% compared to the bottom 50%, despite the fact all had died within that year.

Conclusion: Utilization and costs leading up to death are high in Ontario; however, significant variation exists. Due to the high cost and frequency of ICU use and death in hospital, more research is warranted regarding the characteristics of users and their end-of-life experiences.

Impacts of Access to Dental Care on Oral Health: A Spatial Analysis of Ontario

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This paper addresses this issue by exploring the spatial distribution of dentists and the effects on oral health of residents in Ontario. Through the construction of a dentist database and maps, the concentrations of dentists were mapped to help visualize and determine disparities in dental care. Surveys were then distributed across Ontario to determine oral health targeting low and high dentist concentrated areas. The main findings were that dentists were concentrated in more urban areas in Southern Ontario and sparsely distributed in rural areas. Within municipalities, the highest densities of dentists were located in the downtown core and along major transportation networks with few dispersed dentists around the outskirts. All dentist locations were acquired from the Royal College of Dental Surgeons of Ontario and were georeferenced in order to place them on a map. Dental concentrations were mapped in order to show the unequally distributed dentists in Ontario. A finer scaled investigation at the Census Tract level using unique dentist locations was also conducted to produce heat maps to show the distribution of dentists within the city. In order to evaluate oral health an adopted oral health survey was distributed to 300 participants to determine their DMFT (Decay Missing Filled Teeth) score which is a standard oral health evaluation tool. These scores were also georeferenced in order to determine the distance between the dentist and participant and whether the distance or method of travel affected the oral health of participants.

Individual and social determinants of health in global pediatric diabetes care delivery– a participatory search for barriers and opportunities.

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Objectives: Glycemic control among children in low-income countries is poor, resulting in morbidity and mortality. Low socio-economic status (SES) is associated with poor diabetes control, but other factors may contribute. The objectives of this study are to characterize the clinical phenotypes of Haitian children with diabetes and to determine how SES, psychosocial and mental well-being, illness perception, health literacy, self-efficacy and lifestyle habits associate with glycemic control and quality of life(QoL).

Methods: Haitians youth with diabetes ≤25 years and their caregivers living in Haiti or in Montreal, are eligible. In Haiti, home visits will be conducted (150 participants), in Montreal, encounters will be organized at a clinical setting (50 participants). Validated questionnaires on SES, mental health, self-esteem, self-efficacy, QoL and health literacy were translated and culturally adapted, and piloted using cognitive response interviews. Questionnaires will be administered together with a food security assessment. Three 24-hour dietary recalls per participants will be conducted, and physical activity patterns assessed using fitness trackers. Quantitative statistical methods will include descriptive statistics and linear regression to determine predictors of glycemic control and QoL. Qualitative data will be assessed by thematic analysis.

Results: Evaluate a range of social determinants of health and anthropological variables in the two populations to determine factors associated with glycemic control, QoL and illness perception.

Significance: This study has potential implications in all aspects of pediatric diabetes care delivery for Haitian youth in Haiti and Montreal, and potentially for other populations of non-Caucasian youth in resource limited environments

Informing future releases; results from an evaluation of the CCO SEER*Stat Package—Release 10

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Background: The CCO SEER*Stat Package allows users to produce incidence and mortality statistics to study the impact of cancer in Ontario at the provincial, Census Division, Public Health Unit and Local Health Integration Network-levels . Currently in its tenth release, the Package contains the SEER*Stat software, de-identified data from the Ontario Cancer Registry and user support documents. Users can generate statistics to better understand health disparities and monitor, prioritize and plan cancer prevention and control efforts with the ultimate goal of reducing cancer burden.

Objectives: The objectives of this project are to evaluate the access, reach, usefulness and effectiveness of the CCO SEER*Stat Package—Release 10 to inform future releases.

Methods/Approaches: Using a participatory approach, the evaluation will employ stakeholder consultation, data review and document review as the data collection methods. An online survey will be administered as the mechanism for stakeholder consultation; Google Analytics data will be analyzed; and various documents, including log of queries, profile of users and an environmental scan of products that referenced the Package, will be reviewed.

Results: Preliminary results indicate that the Package is predominantly used by epidemiologists and that the majority of users are from Ontario Public Health Units. In addition, the Package is being used to develop statistical reports at the local level for the purpose of measuring cancer burden. Updated results will be available at the time of the conference.

Conclusions: Results from the evaluation will inform future releases of the Package to ensure stakeholder needs are being met.

Mapping adult mortality trends in Ontario's Local Health Integration Networks, 1992-2014.

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This project describes geographic and temporal patterns of all-cause and premature mortality in Ontario's Local Health Integration Networks (LHINs) between 1992 and 2014. The study is part of the OPTIMISE research program, a multidisciplinary effort to investigate trends in Ontario mortality in collaboration with leaders from major Ontario health agencies. The study used population data linked at the Institute for Clinical Evaluative Sciences. Adult deaths (ages 18+) were identified from the Ontario Registrar General's Death file (ORG-D). Deaths were included if registered in ORG-D between January 1992 and December 2014 and linked to a record in the Ontario Registered Persons' Database (N=1,868,560). Age-standardized all-cause mortality rates were calculated, stratified by sex, for each LHIN. Rates for premature mortality (deaths before age 75) were also calculated. Both rates were mapped by LHIN, sex, and 7-year era. Between 1992 and 2014, all-cause and premature mortality rates declined in all groups except females in North West LHIN. Declines were greatest in Toronto Central LHIN for both male and female premature mortality, and for male all-cause mortality. Declines in female all-cause mortality were greatest in Central and Central West LHINs. All-cause and premature mortality declines were slowest in North West LHIN for both males and females. In all LHINs, mortality rates and declines were higher in males than in females. This project used comprehensive multi-linked mortality data to assess sex- and region-specific trends in Ontario mortality. Through OPTIMISE, the findings will be used to inform health system decision-making and respond to stakeholder needs.

Process Mapping to Achieve CQI Targets: improving Healthy Babies Healthy Children postpartum screen completion rate.

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Objectives: Having 100% of births screened by the Healthy Babies Healthy Children (HBHC) program is a Ministry target. Continuous Quality Improvement (CQI) activities at Simcoe Muskoka District Health Unit (SMDHU) were undertaken to improve the number of screens administered and reduce the number of incomplete screens. This presentation will describe our use of process mapping to achieve CQI targets and the relevant outcomes.

Methods/Approach: As part of a Plan-Do-Study-Act (PDSA) cycle, process mapping was used to describe the workflow from receipt of screen by SMDHU through to assignment or closing of HBHC record in the Integrated Services for Children Information System (ISCIS). This process mapping aimed to identify bottlenecks and areas for improvement.

Results: The process mapping identified that following up on screens with missing consent or contact information was a breakpoint in the process. Other bottlenecks in the screening process included low screen administration in hospital and incomplete screens being received. An audit was undertaken to identify causes of incomplete screens and workflow processes were revised. Improvement was measured by quarterly changes in CQI indicators in the HBHC monitoring report and through improved speed of screen processing.

Conclusions: Process mapping, supported by CQI data, is a useful tool for identifying bottlenecks and breakpoints in workflows. In this instance, improved work processes and data quality (completion) allowed for better screening of new parents to identify those at risk. Identifying with-risk parents provides the opportunity for the health unit to offer support and services through the SMDHU HBHC home visiting program.

Rate instability: What is it, and why do we need to address it when analyzing public health data?

Liam W. Rémillard
KFL&A Public Health

Objective: In Ontario, it is commonplace for the rates of acute and chronic diseases to be illustrated through choropleth mapping; however, researchers often neglect the influence of rate instability. Rate instability is a term used to describe the highly variable rates depicted in areas with low case counts and low population denominators. Although the phenomenon of rate instability has been demonstrated in past literature, it is unknown to what extent rate instability may influence our perception of infectious disease incidence rates in Ontario. The objective of the present study was to apply global and local empirical Bayes

smoothers (EBS) to assess the influence of smoothing on incident rates of chlamydia in Ontario.

Methods: Age- and sex-standardized incidence rates of chlamydia were calculated for all Ontario census tracts and census subdivisions. Following arte standardization, Bayesian smoothers were applied to the data.

Results: Findings from this study suggest that smoothing techniques decrease the underlying heterogeneity and variability of the data and increase our confidence when interpreting rates of chlamydia.

Conclusion: Future studies exploring infectious disease rates at fine levels of resolution should consider EBS as a tool to mitigate rate instability.

The prevalence and mean concentration of *Listeria monocytogenes* in select ready-to-eat foods: soft cheeses, deli meats, and packaged salads: a protocol for a systematic review and meta-analysis

Katheryn Churchill
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Objectives: To estimate the prevalence and mean concentration of *Listeria monocytogenes* in select ready-to-eat foods: soft cheeses, deli meats, and packaged salads.

Methods/Approach: A systematic review and meta-analysis following the PRISMA guidelines were conducted. DistillerSR was used for the screening and data extraction. Comprehensive Meta-Analysis (CMA) was used for the meta-analysis.

Results: To be determined: meta-analysis will be conducted in August 2017.

Discussion/significance: To be determined: aiming to have the systematic review be useful for decision making surrounding food safety and *Listeria monocytogenes* surveillance.

The use of longitudinal spatial data to forecast infectious disease rates and inform geographically-targeted interventions.

Liam W. Rémillard, Paul Belanger, William Pickett, Anna Majury, Kieran Moore
KFL&A Public Health

Objective: As the incidence of sexually transmitted infections (STIs) in Ontario continues to increase beyond what may be expected from annual population growth, there is a need for epidemiologists to adapt current surveillance methods to better understand what is driving the incidence rates. The objective of the present study was to Identify if STIs exert spatio-temporal patterning, and identify regions where STIs are

becoming increasingly structured over time.

Methods: Using the 2011 Census boundaries, a unique geography combining both census tracts (CT) and census subdivisions (CSD) was developed. Ontario STI cases of chlamydia, gonorrhea, and syphilis diagnosed between 2005-2016 were geocoded from identified case data, and standardized rates were calculated for each Ontario CSD and CT. To assess global autocorrelation trends, the global and local adaptations of Moran's I statistic were calculated for each STI annually.

Results: Findings suggest that STIs are not spatially random with each exerting deferring degrees of spatial autocorrelation in Ontario. Although syphilis cases are becoming increasingly clustered between 2005-2016, both chlamydia and gonorrhea are becoming more diffuse. Results also identify the presence of regions with excess risk. In contrast to chlamydia and gonorrhea, the increasingly clustered nature of syphilis may benefit from future geographically-targeted interventions.

Conclusion: Therefore, maintaining spatially invariant interventions may be the best approach for chlamydia and gonorrhea; however, syphilis interventions should be geographically-targeted.

The utility of spatial scanning windows as an objective form of cross-validation for cluster detection in public health

Liam W. Rémillard, Paul Belanger, William Pickett, Anna Majury, Kieran Moore
KFL&A Public Health

Objective: Although John Snow was one of the first epidemiologists to use "dot mapping" when inferring the Broad Street pump to be the cause of the London cholera outbreak of 1854, the field of spatial epidemiology has long since evolved to include a multitude of objective cluster analysis tools. Despite the overabundance of spatial tools, researchers often gravitate towards using cluster analysis tools in isolation. Under increasing financial constraints there is a growing demand for cross-validation methods to ensure the specificity of findings. The objective of the present study is compare the use of several common cluster detection methods when applied in parallel to a sample dataset.

Methods: The sample data used for this study includes Ontario STI cases of chlamydia diagnosed between 2005-2016. Cases were geocoded from identified case data, and standardized rates were calculated for each Ontario census tract and census subdivision. The cluster detection methods explored in this study include one test of spatial autocorrelation (LISA)), and two scanning window tests (Kulldorff's circular spatial scan statistic, and Tango and Takahashi's flexible scan statistic).

Results: Results suggest a high degree of correlation between the two spatial scanning windows; however, the flexible scan statistic provided a more precise representation of the shape of the clusters. In addition, the most likely cluster identified through both scanning window tests often correlated with one of the multiple cluster locations identified through LISA.

Conclusion: In conclusion, multiple cluster analysis tools should be utilized in parallel to better distinguish between core and peripheral cluster locations.

Updating the Ontario Marginalization Index

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Public Health Ontario

Objectives: (1) Update the Ontario Marginalization Index (ON-Marg) using alternative administrative data sources to replace indicators previously based on the long-form census. (2) Explore area-based marginalization in Ontario through interactive information products.

Approach: Researchers at the Centre for Urban Health Solutions at St. Michael's Hospital in collaboration with Public Health Ontario are currently preparing a 2011 update of the Ontario Marginalization Index (ON-Marg). ON-Marg was originally developed using a principal component factor analysis of 42 indicators. In an iterative process, variables with low factor scores were removed until 18 indicators across four dimensions remained. The index has been calculated for 2001 and 2006 at the dissemination area level. The updated ON-Marg uses indicators from several administrative data sources to replace indicators previously based on the long-form census. Statistics Canada Taxfiler, Immigration, Refugees and Citizenship Canada, Registered Persons Database, and Municipal Property Assessment Corporation data are being utilized for the 2011 update.

Results: The updated 2011 ON-Marg is expected to be released fall 2017. Public Health Ontario will use the updated index in interactive information products to explore the relationship between health and area-based marginalization in Ontario.

Significance: The 2001 and 2006 versions of ON-Marg have been widely used in government, health care and public health organizations for research and population health equity assessments. The development of the 2011 ON-Marg provides a more current assessment of marginalization in Ontario. The availability of this latest iteration will also allow for analyses of trends in area-based marginalization and population health equity over time.

You used to call me on my landline… (late night when you need my data)

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Background: For decades, telephone surveys have been an important source of information on our population's public health-related attitudes, perceptions, knowledge and behaviours. Recently, declining response rates – especially among young adults and males – as well as a rise in cell phone-only households, have led to challenges with sample representativeness, non-coverage, and the potential for

bias. In 2016, the Rapid Risk Factor Surveillance System (RRFSS) began including cell phone interviews in its sample.

Objectives: To investigate the impact of including cell phones interviews on the sample representativeness and results of the RRFSS.

Methods: RRFSS is a repeated cross-sectional telephone health survey using a dual-frame random digit dialing (RDD) sample. Data are collected in 3 4-month cycles per year. Data from cell phone interviews were compared to those from landline telephone interviews from the same health region, as well as to regions' population estimates by age and sex.

Results: Four (4) health regions included a total of 1,160 cell phone interviews in their 2016 RRFSS sample, in addition to 4,040 landline telephone interviews. Analyses show that the age-sex distribution of cell phone interview participants is much more consistent with that of the overall population, compared to landline interviews. Statistically significant differences in a number of health indicators, as well as in response rates, were observed between the samples.

Conclusions: Including cell phone interviews is an effective way to improve the sample representativeness of the RRFSS and other telephone surveys.