

**Health and Vulnerability Assessments &
Climate Resilience Opportunities Workshop**

**Friday, November 10, 2017**

**Meeting Notes**

Analysis of Transferable Components of Health Vulnerability Assessments: What is transferable, what isn’t? What questions would need to be answered to assess transferability?

Health Vulnerability Assessments, Resilience Interventions & Climate Adaptation Plans: Where are we and Where do we want to go?

This workshop brought together stakeholders who are developing/have developed health vulnerability assessments and/or resources and guidance for the development of health vulnerability assessments. It explored inputs, processes, results and next steps associated with health vulnerability assessments.

Discussion at the workshop also explored how these vulnerability assessments are informing Climate Adaptation Plans and the development of interventions to address vulnerabilities and provide an opportunity for discussion related to assessing the potential for the transferability of health vulnerability assessment processes and interventions.

Presentations

**Peter Berry and Anna Yusa, Health Canada: Health Vulnerability Assessments to Prepare for Climate Change**

* Vulnerability Assessments are useful in determining who would be affected, what the climate change hazards would be, when would health be impacted, and where would the greatest health risks be located. The health vulnerability tool assessment tool addresses uncertainties and prepares communities for compounding effects of combined events. We need to start coming to terms with non-linear relationships regarding climate change and health implications.
* Business as usual for Canada means 8-9 degrees warming by the year 2100; we are now currently experiencing 1.6-1.7 degrees. This means increased heat and precipitation events are going to be the new normal. Health units should be planning for increased health impacts from heat waves and forest fires, foodborne diseases, water-borne diseases, and vector-borne diseases.
* Increased cases of Lyme disease, increased heat waves and hot nights, food security and food related-impacts.
* There is a new National Health Assessment Report that will be released in 2021 that will look into food security in more detail as to how it has been affecting low-income populations in regards to food production, processing, distribution, and preparation & consumption. Toronto Public Health is also doing research regarding food insecurity.
* Mental health: floods and droughts that lead to displacement—evacuations take a long time and rehabilitation is often a very long process. There is interest in investigating and learning more about the mental health effects of droughts/floods/weather disruptions.
* Case Study Example: Hurricane Maria dislocated 100,000 people and it is safe to say that this is likely to have mental health ramifications as well as food security and economic disruptions. Roughly 80% of the vegetation was wiped out placing pressure on health and social services: demand.

**Resources**

* [Ontario Climate Change and Health Toolkit](http://health.gov.on.ca/en/common/ministry/publications/reports/climate_change_toolkit/climate_change_toolkit.aspx) outlines a three-step process: assessment guidelines (key indicators to identify key health issues within the region), workbook (templates used in communications and outreach strategies with stakeholders) and a modeling study (information on research and real-life case studies). Unique Internationally.
* [WHO Operational Framework for building climate resilient health systems](http://www.who.int/globalchange/publications/building-climate-resilient-health-systems/en/) developed a resource that highlights all the major components that need to be considered to have a healthy health system.
* [The Canadian Coalition for Green Health Care](http://greenhealthcare.ca/) is documenting which facilities have already been impacted by climate change. They have adaptation case studies from already experienced extreme weather events. A tool has been developed to assess whether the hospital would be prepared when disaster strikes.
* [Canada in a Changing Climate - Assessments](https://www.nrcan.gc.ca/environment/impacts-adaptation/10029) highlights the climate change implications for Canada as a whole.

**Canadian Specific Vulnerability Assessments**

* Pan-Canadian Framework on Clean Growth and Climate Change and the Budget 2017, commits to addressing climate change and health issues, provides support for addressing climate change-related risks, and supports healthy Indigenous communities.
* Vulnerability Assessments have occurred at the national level as early as 1995. Health Canada released a [Human Health in a Changing Climate: Canadian Assessment of Vulnerabilities and Adaptive Capacity](http://publications.gc.ca/collections/collection_2008/hc-sc/H128-1-08-528E.pdf) in 2008. There is interest in developing health assessments at the subnational level. Currently, there are four municipalities completing their HA reports and four other jurisdictions undergoing the process.
* [National Climate and Health Technical Assessment 2021](http://www.nrcan.gc.ca/environment/impacts-adaptation/19918): provides a chance to provide public input, opportunities to submit relevant documents, and register as an expert reviewer. This assessment is expected to have a number of products, one of which is climate change and health technical assessment.

**Middlesex-London Vulnerability Assessment**

* First phase: the team worked on a literature review regarding current risks, adaptation measures, and future climate change projections.
* Second phase: dealt with an extensive stakeholder engagement to understand the level of community awareness regarding adaptive capacity, the location of vulnerable populations, highlight vulnerabilities, and address adaptation strategies that could work within the community
* Third phase: five key recommendations were developed: education and awareness; evaluation of existing adaptations/programs; enhance surveillance and monitoring; understanding urban and rural vulnerabilities; and develop an adaptation action plan.
* Currently working on a Climate Change and Health Adaptation Plan that will address specific risks

**US Specific Vulnerability Assessments**

* Undertaken by all levels of government and are supported by the US Centers of Disease Control “Climate Ready States and Cities” initiative using the BRACE (Building Resilience Against Climate Effects) framework that emphasizes addressing the impacts and vulnerabilities as the first step.
* Trend: Cities and States that have undergone health vulnerability assessments have gone on to develop Adaptation Plans or adaptation actions.
* The State of California and its subsequent 58 counties have all undertaken Health Assessments.
* [Arizona:](http://www.azdhs.gov/documents/preparedness/epidemiology-disease-control/extreme-weather/pubs/arizona-climate-health-adaptation-plan.pdf) undertook a vulnerability assessment, local and state emergency plans, and local development plans, which were all used to inform their Climate and Health Adaptation Plan. The Action Plan is structured according to the 10 essential public health services outlined by the U.S.A. National Public Health Performance Standards.
* [Oregon:](https://apps.state.or.us/Forms/Served/le8267a.pdf) undertook a vulnerability assessment which informed their Adaptation Plan that highlights recommendations for both the state, counties and local level agencies of how the changing climate threatens their access to clean air, clean water, and healthy food. This Plan is structured on how to promote climate change and adaptation in their policies, jurisdictional systems, and the environment.
* [North Carolina:](http://epi.publichealth.nc.gov/oee/climate/ClimateAndHealthAdaptationPlan.pdf) used the Hanlon Method (a method used to determine priorities) to inform their adaptation plan. Two main priories revolved around air quality, respiratory disease, and heat-related deaths and illnesses.
* Illinois and Vermont have developed online modules used to train public health officials about climate change-related health impacts.
* Florida has undergone Risk Profiles for each of their resulting Priority Health Hazards (heat, storms and extreme precipitation) for the public.

**Questions:**

**Are there going to be studies done on food systems in order to address climate change impacts? When is this going to be released?**

The National framework is going to tackle food insecurities. There is also interest in developing a regional approach to collect data regarding production, processing, distribution, and preparation & consumption. This pilot study could come out within the next year.

Built Environment and Health: Gregory Richardson is leading an initiative on this. He has been influential in leading studies regarding heat island effects and pushing more vegetation within the urban centre as a means to promote health.

Regarding water and health vulnerability: paper to be released based on a literature review that highlights evidence connecting global populations to flooding.

Comment: Transferability is a fundamental component not only within vulnerability assessments but between action plans. There are many stakeholders involved and this makes this process more complex and also an enriching experience. It would help to have a visual map of all the plans and how they interact with other plans. This would be able to highlight intersectionality’s between departments and across stakeholders and address the multidisciplinary approach required for water and wastewater management.

**Noor Shahid, Ministry of Health and Long-Term Care: Ontario Climate Change and Health Toolkit**

* The Ministry of Health and Long-Term Care is undergoing a modernization process for their Ontario public health standards. The new Healthy Environments Standards promotes activities to minimize the effects of climate change and promote healthy natural and built environments. Two documents were released under this standard: the [Healthy Environments and Climate Change Guideline](https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=2&cad=rja&uact=8&ved=0ahUKEwiTkLG3_6_aAhUEx58KHatxD44QFgg0MAE&url=http%3A%2F%2Fwww.health.gov.on.ca%2Fen%2Fcommon%2Fministry%2Fpublications%2Freports%2Fclimate_change_toolkit%2Fclimate_change_toolkit.pdf&usg=AOvVaw2IALIwUhwl5I0hPgv29DRr) and the [Ontario Climate Change and Health Toolkit](http://www.health.gov.on.ca/en/common/ministry/publications/reports/climate_change_toolkit/climate_change_toolkit.aspx).
* The healthy environments and climate change guidelines enables cooperation between public health unties, provincial ministries and local partners to assess risks and develop mitigating strategies within their own communities. This guideline will come into effect in January 2018. It includes a vulnerability assessment plan requirement with annual updates. There is some flexibility in regards to deadlines health units need to have these done by—the goal is to promote proactive participation and advance existing initiatives to support provincial approaches.
* The Ontario Climate Change and Health Toolkit is being used by public health units undergoing vulnerability assessments and for spreading awareness about potential health impacts of climate change. Health units will be trained by MOHLTC in partnership with Health Canada, Environment and Climate Change Canada, MOECC and Public Health Ontario. This Toolkit includes vulnerability and adaptation assessment guidelines, as well a workbook and modeling study.
* MOHLTC is developing a training plan for the public health sector consisting of a webinar format. Introductory webinars will focus on vulnerability assessments already done. The second phase will focus on technical development regarding how to make the best use of the toolkit.
* Next Year, the government will release a Standardized Cold Alerting System

**Questions**

**The MOECC is recently coming out with an Adaptation Approach report, what kind of collaboration has been happening between the MOHLTC and the MOECC?**

The guideline that the MOHLTC has developed did not involve the MOECC. The MOHLTC did consult with them on the MOECC’s first draft of the Adaptation Report but the MOHLTC is not aware of what the final draft consists of as of yet. They will be reaching out to the MOECC before the final draft will be released to the public.

**How will the webinar series be communicated?**

The ministry will be targeting all the health units, key stakeholders, and working groups who will also be sending it to organizations that would be interested in this resource.

**Would the reporting mechanism from the health units to the MOHLTC be open data?**

No, the only reporting that the health units would inform the Ministry of would be the completion of the vulnerability assessment and not the assessment itself. The goal is to encourage health units to get started in considering climate change effects and impacts on their health units and their residents.

**Will the guideline or toolkit provide health units with some sort of database where they would be able to access data?**

As of yet, this idea has only been discussed. Nothing has been developed yet.

**Does the MOHLTC toolkit include performance measurements?**

No, there is a response system put in place. The last section of the toolkit speaks to the evaluation of how the health unit decides to develop its Plan. The implementation and monitoring stage would address the issue relating to how successful the actions have been. There is a focus on risk awareness, but there is a lack of focus in regards to the consequences of non-action. Annual progress updates are going to be mandatory to find out how the health units have made use of the information brought forth from the vulnerability assessments. Under the Healthy Environments Standard Framework, the identification of vulnerable populations is taken into consideration during the vulnerable assessment procedure. Vulnerable populations are also referred to as priority populations in the guidelines.

**Municipalities have been facing difficulties in finding links between infectious diseases and improved water management strategies and in Plan integration as a whole. How does the Guideline speak to that issue?**

Within the guideline there is an emphasis on developing the collaboration piece between health units and municipalities. The bringing climate change into Official Plans policy may be a mechanism to encourage Plan integration and ensure that climate change doesn’t just sit in one Plan but is rather integrated into all Plans. A helpful resource to look into is the [Ontario ECOhealth group](http://www.ecohealth-ontario.ca/) which is exploring the connection between green infrastructure and health outcomes.

**What has the Ministry done to address the lack of action within the infrastructure /transportation/parking policies as it relates to the critical care section of the health system and now including climate change vulnerability?**

There is currently a focus group within the chronic diseases subsection of the ministry that is working on a guideline that addresses policies relating to the built environment and how it relates to climate change impacts.

**Comments**

* The most important lessons learned from municipalities undertaking vulnerability assessments are: to make sure they have a clear and delineated scope; good climate data, and be ruthless in narrowing down indicators addressed in the trends/baseline/focus on vulnerable populations. This is favored over trying to understand and capture all the variables presented within the data.
* There has not been enough progress in integrating climate change considerations within a variety of different plans.
* The environmental assessment framework does not capture health impacts and it does not address climate change. It would be of significant value if it did require that and used the Guideline as a way to go about doing that.
* It is very hard to get support for the link between green infrastructure and health benefits.
* At the federal level there will be an increasing direction towards sharing knowledge relating to climate change risks within different jurisdictions—they aim to cultivate a community practice on vulnerability assessments. They are developing a Data Portal that would be dedicated to environmental services (which will also be addressed in the MOECC Adaptation Approach document).

**Louise Aubin, Peel Public Health: Public Health Vulnerability to Climate Change in the Region of Peel**

* Peel region: Brampton, Mississauga and Caledon make up the second largest municipality in Ontario—the geographical area consists of 1.3 million residents. The Oak Ridges Moraine, the Niagara escarpment, and Lake Ontario influence this region’s climate. Peel region also hosts the third largest good movement (strong economic base) in North America, which consists of the busiest airport in Canada.
* It is growing rapidly, adding 30,000 people a year; Caledon wants to remain rural; there is a large newcomer population; and an aging population represents a significant portion of the overall population.
* Peel Public Health partnered with 6 different jurisdictions that ranged from conservation authorities, municipalities, and the Region of Peel to develop the Climate Change Strategy. This was considered a novel approach in 2011. Consistent reporting to council on the actions being delivered is fundamental.
* The goal of the vulnerability assessment for the Region of Peel is to identify key health indicators of current and future vulnerabilities; to identify vulnerable populations, and address the region’s adaptive capacities. Peel Public Health developed a Climate Change Strategy that commited to the development of the public health vulnerability assessment.
* Methodology: The guiding research question led to the development of a literature review and then the vulnerability assessment. Peel Region worked with Health Canada and piloted the 2012 Vulnerability Assessments guidelines.
* Peel’s work predates the Ministry’s guidelines and toolkit but they did communicate with the ministry throughout the development of the vulnerability assessment (VA).

**Data Collection**

* Challenge: There was a lot of data available, but not found in one place—time and resource intensive.
* Health Unit Data: Surveillance data was used, especially for tracking vector-borne diseases and health status data.
* Census Data was used which was problematic because for 2011 there was only the truncated census resulting in having to use census data from 2006.
* Municipal Data: planning documents were extremely valuable as they incorporate future projections in their scope. Planners are great partners to have because they are already collating valuable data—Peel Public Health gained an understanding of how vulnerable populations with disabilities were able to access and use the transportation system, potential long-term effects on health unties, the lifecycle of the local infrastructure, growth patterns, emergency preparedness etc.
* Data was also gathered from the Local Health Integration Network.
* Conservation authorities have lots of data, especially regarding weather, flooding potential, and the effects on residential areas.
* Federal Data was crucial for generating a food scaling-down model at the regional level. Peel region had to go and do this work manually, since then the Ministry of Health and Long-term Care has taken it upon themselves to deduce this data. Data included information from PHAC-Lyme Disease, Environment and Climate Change Canada, Health Canada, and Natural Resources Canada.

**Suggestions and Findings**

* Areas of interest were temperature-related morbidity and mortality, air quality related illnesses, the risk of injuries related to extreme weather and natural disasters/hazards, increases in food- and water-borne contamination, and increases in vector-borne diseases.
* Key Findings: Most vulnerable populations include seniors, children, those experiencing social isolation, individuals with chronic conditions, disabilities, or both (47% of Peels population reported having at least one of these conditions); and socially and economically marginalized individuals.
* Climate change is set to worsen existing health inequalities by increasing the health burden on already vulnerable groups.
* Peel’s existing programs and services alone will not be able to address the future health impacts of climate change.

**Peel’s Capacities and Ability**

* The vulnerability assessment found that Peel’s Heat Alert and Response programcould stand some improvements. This resulted in various discussions with Environment Canada, health units, Clean Air Partnership, which ultimately resulted in the Ontario wide Harmonized Heat Alert System effort. The new Heat Alert system was piloted during the Pan Am games. One of the key findings was that this programs increased the ability for more surveillance (real-time data regarding patient check-ins to hospitals with heat-related diseases).
* Transferability within Findings: The impacts of Climate Change would be common across elderly people. The methodology is transferable but the data used and findings for intervention opportunities may not be.
* Fort McMurray Fires: mass evacuations lead to people leaving their medications at home. Statistically, elderly people use a higher amount of prescription medication—municipalities need to be aware of how this impacts their health system.
* Urban Heat Island Effect: there is a role in land use planning and incorporating an increased need for tree planting and maintenance. Municipalities in the Region of Peel have budgeted for increased tree coverage. Work has been developed to better communicate information regarding the urban heat island and the prioritization of tree location to the general public. A GIS-based tool was developed to prioritize areas using 12 different factors that influence environmental, social and economic benefits.
* Next Steps: implementing the information and starting pilots at the community level.

**Emergency Response**

* Health staff have important roles to play when emergencies occur. The Urgent Response Plan was developed as a solution to prioritize the limited amount of health staff required to be trained in transitioning from a business-as-usual function to a public health/regional emergency and to mitigate stress by effectively allocating staff, resources, and outside personnel during emergencies.
* The plan is for this to be a live document, developed by each department, which is reviewed and updated periodically.
* The Community Emergency Response Plan is for the entire region of Peel and it would be triggered by large-scale events such as an ice storm. The Health Service Department Emergency Response Plan would be triggered by an outbreak that would involve long-term care measures (Pandemic, parasite breech, H1N1 etc.).
* Peel Region Emergency Response Plan’s principal: the emergency starts at the individual program level (targets community-level emergency response) once the program area/division becomes overwhelmed, the emergency response escalates up to the upper levels and coordination across departments begin. This approach has been adopted by the several departments within the region ex: Public Works.

**Summary**

* Vulnerability assessments can be small or large : they could take into account food security, mental health, UV, cancer-related illnesses, occupational health (heat), and primary health care services, ect…
* Data gaps, especially regarding urban and rural distinction related to water (a type of water access i.e. the presence/absence of wells); and limited stakeholder engagement.
* Existing land use practices present challenges for water flow and increase risk. Challenges arise in regards to requiring increased underground pipeline size and increased paving over of watersheds. Community consultations need to capture social and cultural aspects to inform programming and planning.
* Existing programs may not address future public health impacts from climate change. Future research is needed as there is still uncertainty regarding level of future climate change impacts—this highlights the importance of ongoing surveillance.
* A multidisciplinary approach is necessary. Partnerships and collaboration are critical which lead to a cross-pollination of information on both ends. Through this ongoing work, the information helps spark awareness and dialogue of vulnerabilities.

**Next Steps**

* Review of the 2017 heat seasons completed. They have identified key internal issues regarding IT and how communication were being presented to stakeholders.
* On the 19th of November, 2018, the 2016 census data will be released. This data will be used to re-evaluate the vulnerability assessment.
* Use the MOHLTC ] tool to cross-reference data to look at issues and/or work that might have been overlooked

Questions

**What governance model was used in the development of the vulnerability assessment?**

The Climate Change Strategy has gone through several governance models but was primarily influenced through an outreach process with internal stakeholders. There were focus groups specifically directed to scope issues relating to climate change impacts based on themes e.g. water. These working groups held events, especially the working group relating to heat effects.

**Where do you get your real-time data from?**

It comes from the department responsible for chronic disease surveillance

**Will adaptation be part of the second version of Peel’s Vulnerability Assessment?**

Peel Health does have a role in the adaptation plan but there is also adaptation at the regional level. The subject of heat was a central focus because it was the obvious predominant issue. Official Plan and land-use policy will be included in the new vulnerability assessment.

Another initiative that resulted from the vulnerability assessment is the Community Forum, where environmental health brought local health agencies in on what was being done in regards to climate change and heat as a hazard. It encouraged these participants to go back to their organizations to develop a heat plan. This was a different method to build capacity at the community level.

**The Vulnerability Assessment is a great tool because it gives a focus on issues that many organizations and people were not aware of.**

This is a very important comment. The vector-borne disease team has been very busy, Our whole region’s risk for Lyme disease has increased significantly. There has been a record-breaking amount of ticks this year. Additionally, this year has been a very big year in increased incubation habitat for West Nile Virus. There is an increased trend of young individuals getting sick and there have also been increased cases of sickness overall as documented by the hospitals. Budgets: In regards to Air Quality and Climate Change, we have had to go to senior management to ask for more resources and staff in order to effectively handle all the work load. Looking for two new staff in 2019.

**Is there a connection between the Ministry’s work and work done by the Canadian Alliance for Sustainable Healthcare’s vulnerability assessment report?**

Not, formally. The Coalition for Canadian Green Health Care is leading a lot of work on health assistance and resilience and are more aware of what is going on. They are also developing a metric system on how to evaluate health facilities (mini facility assessments).

**Sally Radisic and Brian Montgomery, City of Hamilton Public Health**

* Hamilton undertook a community consultation in 2014, which helped inform the Community Action Plan. Nine themes were generated from the community input. People and health did not emerge as a huge concern through the consultations but the municipality saw the necessity to start conversations around this topic.
* It took 16 months to develop the community action plan. The municipality gained insightful experience when talking with the local farmers as they came forward and said that they have already started having conversations regarding the threats to food security. What concerns them is the fact that there aren’t any safety nets in regards to urban dwellers and access to food if/when massive crop failure occurs.
* Ten priority actions are addressed in Hamilton’s community action plan that will be implemented within the next three years. The seventh action addressed the undertaking of a vulnerability assessment of public health impacts from climate change; this pushed the municipality and the community to start considering risks to health.
* Municipal achievements: corporate wide 20% reductions from 2006 emissions by 2016.
* Climate Change [Science report](https://www.hamilton.ca/public-health/health-topics/climate-change) developed for the city.
* Hamilton worked in partnership with ICLEI’s building adaptive and resilient communities [(BARC) program](http://icleicanada.org/programs/adaptation/barc) that builds capacity and awareness to respond to the risks associated with climate change. Food security resulted in a top risk which highlighted the vulnerability of the municipality to react as they don’t have a local authority that would be in charge of managing this issue.
* Hamilton is undertaking workshops with community members (especially those that interact with the vulnerable populations) to address their perceived concerns regarding community risks in order to develop stronger partnerships to increase resiliency.
* Hamilton will focus on adaptation work in 2018 that will incorporate all the information gathered from the public consultations to develop indicators used to track municipal progress.
* Climate Change Projections: increased heat, increased rain and increased extreme weather events. Hamilton has observed increased flooding incidences, increased drought, heat events, and high winds.
* Challenge: communicating the complexities associated with generalizing climate change impact data affecting the entire municipality vs. targeted vulnerable areas that are at higher risk of hazardous events— modeling deficiencies.
* Hamilton used the Ministry’s toolkit from start to finish.

**Hamilton’s Application of the Ministry of Health Long-Term Health Vulnerability Toolkit**

* Application of toolkit: helped address barriers to adopting a climate change lens within the environmental health program in the City of Hamilton. The toolkit was used to guide and inform operational process through leveraging already made programs to address hazards in an already changing climate. The municipality was fortunate to have access to an MPH student.
* Methodology: to gather quantitative and qualitative data. Quantitative data was gathered from safe water program, vector-borne diseases, health hazards, and food safety. Qualitative data was collected using Diffusion of Innovation Theory to develop interview guides based on the five stages of adoption, knowledge, persuasion, implementation, and confirmation.
* Data: Challenges arose regarding intensive time and resource allocation to locate and filter through useable data and data gaps. The municipality was able to use air quality and heat data—these became a primary focus.

**Results**

* Perception of climate change: most of the health units knew about the presence of climate change but most of them were unsure of how climate change was specifically affecting their programs.
* Roles and responsibilities: there is interest in developing stronger public and private relationships.
* Facilitators: current provincial policies and programs, organizational engagement through discussions with program managers resulted in unanticipated climate change impacts coming to the forefront (this occurred through probing and discussions), climate change ad hoc group has been very helpful.
* Proposed: A climate change and health operational model that includes: a data portal to inform program planning, this means that the data analysis has to be done by specialized staff to make very technical data more accessible; and a climate change knowledge broker that will be able to take data/evidence back to the respective programs to assist program development moving forward.

**Morgan Levison, Simcoe Muskoka District Health Unit**

* Simcoe Muskoka is north of York Region and south of Huntsville. Simcoe Muskoka District Health Unit is an independent board of health servicing 26 municipalities. Population growth is projected to increase from 5,500 to 7,500 people, more so on the southern side of the region, as projected by the Growth Plan.
* Simcoe Muskoka’s 2014 Strategic Plan identified the importance of cross department discussions and coordination. This resulted in requiring a more comprehensive agency response between all the programs in the region. Climate change was brought forward as an urgent health concern by the health hazards team and was was selected by the executive committee.
* Agency-wide Climate Change Action Plan was created. A Rapid Risk Surveillance Survey was the (survey phone system) tool that was used to gather community member (residential) feedback, results indicated that more people are aware of changes in the climate and the impacts associated with this.
* Climate Change Action Plan has a three-phase approach: phase one deals with the analysis of the current environment within Simcoe Muskoka (key deliverable was the vulnerability assessment). SMDHU is currently working on phase two by starting to work collaboratively with municipalities to incorporate climate change adaptation work into their structure. Phase three will focus on the integration of new programs and leveraging existing programs.
* The Simcoe Muskoka District Health Unit started their vulnerability assessment without the toolkit during their planning of their vulnerability assessment as the Toolkit was not released yet—However we were able to refer back to it afterwards.

**Simcoe Muskoka’s Vulnerability Assessment**

* The purpose was to increase understanding of health impacts specific to the region of Simcoe Muskoka and its vulnerable populations in order to provide support to partners. A steering committee was established with health experts, health managers across departments, and included an epidemiologist, and staff level representation who were also passionate about climate change, food security and built environment work.
* Scope: The baseline used was from the 1990s and did future and near-term climate projections for both temperature and precipitation up until the year 2080. The assessment included data collection addressing extreme temperature, extreme weather, air quality, food and water (safety and security—data was collected and the climate disease prevention team helped with data selection, vector-borne disease (Zika virus was not included due to lack of research), and UV radiation (data was made assessable through the toolkit).

**Data**

* Data sources: downscaled modelling data was accessed from the MOECC Climate Portal (hosted out of York University and is referenced in the Ministry’s Toolkit). The steering committee provided a lot of different perspectives and information from on the ground experience and academic backgrounds, surveillance data, grey and peer-reviewed sources, and local data from community groups (20 focus groups) all contributed to the results of the assessment.
* Data Challenge: The Climate Projection Grid Points taken from the MOECC Climate Portal did not fall within the Simcoe Muskoka sub-regional boundaries and so the data projections had to be divided into Northern and Southern Regions of Simcoe Muskoka.
* Suggestions/Lessons Learned: use the templates that the toolkit provides—they are filled with information and strategic guidance to data collection and establishing indicators. Focus groups were crucial as they highlighted areas of concern that were not originally addressed in the Climate Change Action Plan, be sure to have lots of local reviews of the assessment (each section was reviewed by different departments, the Muskoka watershed council, their local conservation authority and the City of Barrie).

**Results**

* Simcoe Muskoka is expected to experience up to 5 - 7-degree warming by 2080, which is similar to present day Mississippi (this comparison really helped to put that temperature change into context for people). The most drastic changes are going to be experienced during the winter (7 degrees) and summer (5 degrees) months. The warming during the winter season has the most negative economic implications to the region as there is a heavy reliance on winter tourist attractions.
* Precipitation is going to increase mainly during the winter and in the spring—chances for a 50-year storm will become a 10-year frequency. There is a decrease in precipitation during the summer, increasing the cases of drought.
* Vulnerable populations ranked: Elderly populations, low-income individuals, and those with chronic illnesses.
* Extreme temperature: Extreme heat is a big concern and not just during the day, there is going to be increased cases of hot “tropical” nights. This makes tenants vulnerable as they have limited access to air conditioning. Extreme cooling is not going to be as prevalent but there are concerns about how fast people are able to acclimatize to the decreased temperatures not usually common in the area.
* Extreme weather: There are a lot of lakes in the region, with increased precipitation and warmer winters that reduce the rates in which the snow and ice last throughout the winter season; flooding is likely to be an increasing risk over time. Winter temperature ranging around 0 degrees likely created an increased risk of black ice leading to more vehicle accidents. Increased frequencies of drought lead to increased wildfire incident—Simcoe and Muskoka region is heavily covered in forest, which makes this a major concern.
* Air pollution: increased pollen in the air. It is interesting to note that although the northern region has better air quality, they are experiencing more ER asthma-related visits, this is something to look into.
* Food and waterborne illness: currently, the region is already experiencing an increase in food-borne illnesses in the summer months. There are some food programs already available, the region is looking into how to better support these programs.
* Water availability and contamination: Due to increased chances of flooding and vector-borne diseases, this results in an increase in water contamination (blue-green algae blooms). Most of the inhabitants, especially in Muskoka, depend on wells for their water supply. This correlation makes water quality a major health concern.
* Food Insecurity: Currently, 24% of single-parent families identify as food insecure. This is also a concern if/when food prices become more unpredictable due to interruptions within the local and global food productions systems.
* Vector-borne disease: From data through our surveillance programs; it has already been observed that within the past 10 years there has been a drastic increase in the amount and types of vector-borne diseases. It is acknowledged that there has been an increase in tick awareness due to recent outreach programs; this has an influence on the magnitude of ticks being reported.
* A media release has announced that the Simcoe Muskoka region will have an estimated risk area for black-legged ticks and will be included in the PHO map going forward in regards to Lyme disease risks.
* UV radiation: 90% of the population in Muskoka identify as white Caucasian, which makes most of the population most vulnerable to non-melanoma skin cancer—rates are projected to increase. This is something the region is considering when developing land-use planning and policies
* Through the community consultations, the agency became informed that there are already a lot of initiatives that fall under climate change mitigation and adaption but are were previously not recognized as such.
* The city of Barrie has undertaken and completed an Adaptation Plan.
* Sustainable Severn Sound is a group of seven municipalities that are all under the same watershed that are undertaking a Climate Action Plan using a watershed perspective.
* The vulnerability assessment has been valued by organizations and communities as it provided a local focus instead of always looking to the GTA region for climate change-related information. This increased local support and local interest.
* Very resource intensive (approx. 200 pages) in time and learning to how to read and interpret the data gathered.
* It created a “snowballing” environment where new ideas and key partnerships began to emerge that were once not previously there i.e. Dental team is considered how the changes in water acidity could affect dental care.
* The creation of a Climate Meeting Exchange group that unites various different organizations to discuss what is being done and talk about data collection and sharing, which would lead to help support overall collaborative climate change work.

**Next Steps**

* Focus on community engagement and community outreach work in order to start developing an adaptation plan.
* Develop a reader-friendly version (infographics)
* Work with a GIS consultant to release an interactive GIS map in early 2018, which layers the projection layers and the health risk projections together. This would be a useful tool for municipalities to visualize where the potentially vulnerable populations are.
* Develop a Climate Change Mitigation and Adaptation Plan and evaluating programs using the theory of change to support the agency’s action planning.

**Questions**

**Has your economic development department been involved in assessing vulnerabilities? If so, then how so?**

We don’t have an economic development group/person in our agency because we are classified as an independent board of health. We haven’t been in contact with the city economic development either, we mainly connected with the municipality’s planning department and engineering departments—this is where climate change topics are being held within the City of Barrie, since there isn’t a climate change office or a sustainability office. When the City of Barrie did their adaptation planning, they used the ICLEI-BARC program which allowed them to communicate and coordinate with all their internal departments. I am unsure to what extent the financial and Economic Development departments were involved.

Creating a business case is something I would be very interested in adding into this vulnerability assessment work moving forward, especially in the adaptation pieces of the work. I am unsure what resources are out there that would help.

**Comments**

* Mississauga is also a resource as they have also undertaken a [vulnerability assessment in collaboration with an insurance bureau of Canada](http://cleanairpartnership.org/cac/meetings/clean-air-council-meeting-part-2/).
* Mississauga presented to Council a Climate Change Commitment Statement with a supportive policy which council adopted giving Peel Region Health Unit the responsibility to manage climate change corporately.