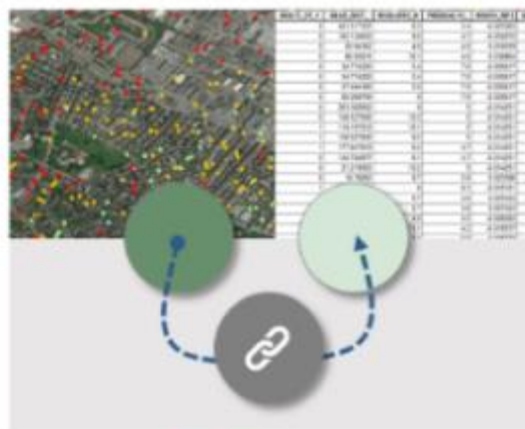


Linked CANUE and administrative health databases: PopDataBC, MCHP and NB_IRDT | March 27th | 2020



Linked CANUE and administrative health databases: PopDataBC and MCHP

March 27th (9 am pacific | 12 noon eastern)

FOR AUDIO CALL 1-855-494-5988 or join by desktop



chat...



info@canue.ca



A Tale of Three Provinces Manitoba, New Brunswick and BC, Data Scope and Availability

Charles Burchill

Manitoba Centre for Health Policy

Ted McDonald

New Brunswick Institute for Data, Research and Training

Kelly Sanderson

Population Data BC

March 27, 2020

Data Centres Supporting CANUE data for linkage.

Research Centres

- *Manitoba Centre for Health Policy*
- *Population Data BC*
- *NB Institute for Research, Data and Training*

Linkage Possibilities

Administrative Data Available and Process

Canadian Data Platform

CANUE Data

Introductions

Manitoba Centre for Health Policy

- *Research Unit at University of Manitoba - “What makes people Healthy”*
- *Main functions: data access, data curation and analytic support*
- *Supports data from ~100 administrative programs, ~230 active research projects*

New Brunswick Institute for Data, Research and Training

- *Provincial data custodian and research Institute of UNB*
- *Main functions: data access, data curation, research and program evaluation, training*
- *40+ datasets from multiple public bodies, ~60 projects in development or underway*

PopData BC

- *Multi-university, data and education resource facilitating interdisciplinary research*
- *Main functions: Data Access, Data Linkage, Secure Storage, Education and Training*
- *No research agenda, does not provide analytic support*
- *Approximately 150 active research projects*

Data Level and Likability

Administrative data – common keys

- *Client/Individual Level Data – Coded Health Care Number*
- *Service Level Data – Coded Health Care Number and Individual Services*
- *Area Level (CANUE or CENSUS) – Postal Code or Census geographies*

Project-specific/user-provided data

- *Linkable person level data– e.g. survey. clinical and RCT data*
- *Area level data – e.g., environmental or industrial, economic, infrastructure*
- *Agreements in place for additional data that can be linked as needed*

Common Registry (Coverage) Data

Coverage

- *Health Insurance Coverage*
- *Household or Family composition*

Immigration Data

- *Permanent Residents*

Vital Statistics

- *Mortality with cause of death*

Common Health Data

Health Services and Diagnostic Data

- *Hospital Separation Abstracts (DAD)*
- *National Ambulatory Care Reporting System (NACRS)[#]*
 - *Note there are provincial differences in what is captured in both DAD and NACRS*
- *Medical Services Data (Physician visits)*
- *Prescription Drugs (retail pharmacy)*
- *Long Term Care*
- *Home Care*
- *Cancer Registry*
- *Mental Health (with limits)*

NB does not currently participate in NACRS

Common Education Data

K-12 Education and Social Readiness

- *Education enrollment*
- *Early Development Instrument*

Common Social/Environmental Data

Statistics Canada

- *Census*
- *PCCF*

Environmental and Spatial Data

- *CANUE*
- *Spatial - Statistics Canada, DMTI and other*

MCHP Specific Data

Health

- *Manitoba Immunization Monitoring System*
- *Diagnostic Services Manitoba and CADHAM Lab data*
- *Clinical – ICU, FASD, Pediatric Diabetes, Cardiac*
- *In Hospital Pharmaceuticals*
- *Cancer Screening (Mammography, Cervical Screening, FOBT)*

Social

- *Social Assistance*
- *Child and Family Services*
- *Family First Screening*
- *Public Housing and Rent Assist*

Justice

- *Prosecutions, Criminal Courts, Corrections*

Education

- *University of Manitoba and RRC*
- *Assessment and Marks (G3, G7/8, G9-12 High school)*

See: http://umanitoba.ca/faculties/health_sciences/medicine/units/chs/departamental_units/mchp/resources/repository/datalist.html

PopData BC Specific Data

Registry

- *Vital Statistics Birth & Still Births*
- *Vital Statistics Marriages*
- *BC Income Bands*

Health

- *Patient centered measures*
- *NACRS Level 2*
- *BC Generations*

Social

- *WorkSafe BC*

See: <https://www.popdata.bc.ca/data>

NB-IRDT Specific Data

Health

- ***Clinical – spirometry, HBA1C, diagnostic imaging, IV chemotherapy, cardiac***
- ***Cancer screening – Mammography***
- ***NB Trauma***

Social

- ***Social Assistance and other income support programs***

Education and Training

- ***K-12 report cards, provincial assessment***
- ***University and community college PSIS***
- ***Adult training and retraining programs***

Other – in development

- ***Criminal and civil court appearances***
- ***WorksafeNB injury claims***
- ***RAI LTCF nursing home data***

See: <https://www.unb.ca/nbirdt/data-holdings/holdings.html>

Data Access Process



Access to Data

BC – secure remote environment available anywhere in Canada

MB – secure remote environment available in Manitoba

NB – secure on-site access at NB-IRDT lab (multiple sites)

Canadian Data Platform

Multi-Jurisdiction Research Access Support

Data Access Support Hub (DASH) - <https://dash.hdrn.ca/en/how-it-works>

Data Inventory - <https://dash.hdrn.ca/en/inventory/>

Algorithms Inventory - <https://dash.hdrn.ca/en/algorithm/>



<https://cdp.hdrn.ca/>



Air quality



Greenness



*Neighbourhood
Factors*



*Weather and
Climate*

***Linked CANUE data:
Currently available and in preparation***

Dany Doiron

Canadian Urban Environmental Health Research Consortium

Canadian Urban Environmental Health Research Consortium



Postal
code



Air quality



Greenness



Neighbourhood
Factors



Weather and
Climate

POSTALCODE06	ALE06_01	ALE06_02	ALE06_03	ALE06_04	ALE06_05	ALE06_06	ALE06_07
TOA0A0	48130314	0.60000002	0.5	-1.2326522	-0.7681431	-2.0007954	1
TOA0B0	48120175	0	2.3	-1.2614889	-0.7665497	-2.0280385	1
TOA0C0	48120239	0	0.80000001	-1.2614889	-0.7678775	-2.0293665	1
TOA0E0	48130179	1	0.5	-1.2134278	-0.7681431	-1.9815708	1
TOA0J0	48120258	13.4	69.800003	-0.6174694	-0.7067964	-1.3242658	1
TOA0K0	48111554	15.1	148.39999	-0.5357655	-0.637217	-1.1729825	1
TOA0M0	48130184	14.7	64.900002	-0.5549899	-0.711134	-1.2661239	1
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TOA0P0	48130178	0	0.1	-1.2614889	-0.7684971	-2.0299861	1
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TOA1A0	48120216	16.299999	77.099998	-0.4780921	-0.7003341	-1.1784263	1
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TOA1H0	48120174	0.60000002	2.0999999	-1.2326522	-0.7667267	-1.9993789	1
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Pre-linked:

Administrative health data holders



Observational cohorts

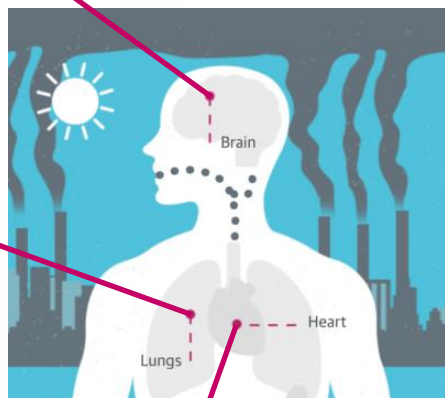


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Data request examples so far: Facilitating environmental health research through the lifecourse

Analysis of **Dementia and Degenerative Diseases** in the Metro Vancouver, Border Air Quality Study

Spatial analysis of association between environmental modifiable factors and **lung clearance index**



Individual and Neighbourhood Characteristics influencing **Cardiovascular Health** in Canadians

Investigating Pathways to **obesity** as **youth** transition to adulthood

Spatial inaccessibility of greenness and **allergic respiratory diseases in children**

WHO **Healthy Aging**: structural and predictive validity of the intrinsic capacity, functional ability and enabling environment



Evaluating the association between **maternal and early life exposures** to ambient air pollution, and the risk of **pediatric inflammatory bowel disease**

Healthy Cities, Healthy Minds: Genetic & Urban Environmental Influences on **Childhood Mental Health**

Climate change, **older adults** and immigrants: exploring community vulnerability and resilience

Canadian Urban Environmental Health Research Consortium



Air quality

MONTHLY ALSO

Fine Particulates

- A. van Donkelaar and R. Martin at Dalhousie University
- Satellite data
- 1 km resolution
- Annual average concentrations
- 2000 - 2016



Nitrogen Dioxide

- P. Hystad for Health Canada
- Estimated at postal codes
- Annual average concentrations
- 1984 – 2012



Sulphur Dioxide

- Modelled by Environment Canada
- Satellite data
- 30km resolution
- Annual average concentrations
- 2007 - 2015



MONTHLY ALSO

Ozone

- Modelled by Environment Canada using CHRONOS and GEM-MACH
- 21- 10km resolution
- Monthly and annual average concentrations
- 2002 - 2015



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Greenness

NORMALIZED DIFFERENCE VEGETATION INDEX

- *Processed using Google Earth Engine*
- *30m/250m/1km resolution*
- *Annual average , annual maximum and growing season average at each postal code, and within set distance buffers*
- *1984 - 2015*



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Neighbourhood factors

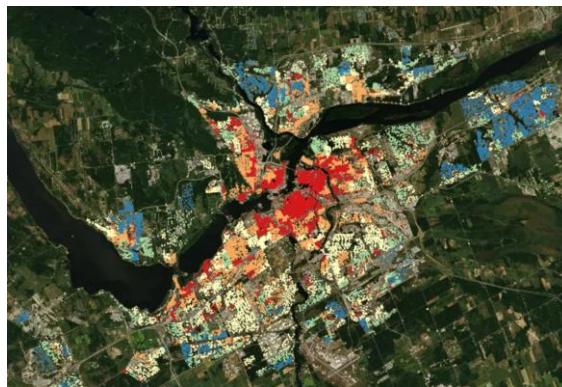
Material and Social Deprivation Index

- INSPQ using Pampalon **method**
- Based on census dissemination areas for 1991, 1996, 2001, 2006, 2011, 2016



Canadian Marginalization Index

- Flora Matheson
- Based on census dissemination areas for 1991, 1996, 2001, and 2006



Access to Employment

- 18 different variables using car vs transit access
- Based on census dissemination areas for 2016



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Neighbourhood factors

Canadian Active Living Environments Index (Can-ALE)

- N. Ross at McGill University
- Based on census dissemination areas for 2006 and 2016

Nighttime light

- Satellite imagery
- 1 km resolution
- Annual average brightness
- 1992 to 2013



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Weather and Climate

MONTHLY ALSO

INTERPOLATED WEATHER STATION DATA

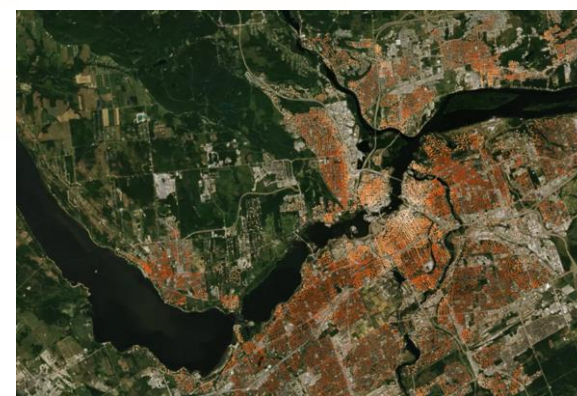
- Processed from station observations by NRCAN
- Estimated at postal codes
- Daily max/min temperature, total precipitation, consecutive days above/below threshold, extreme events

MODELLED WATER BALANCE METRICS

- Processed from station observations by NRCAN with model developed by CANUE weather team
- Estimated at postal codes
- Estimated % within 1km
- Census years 1986 - 2016

LOCAL CLIMATE ZONES

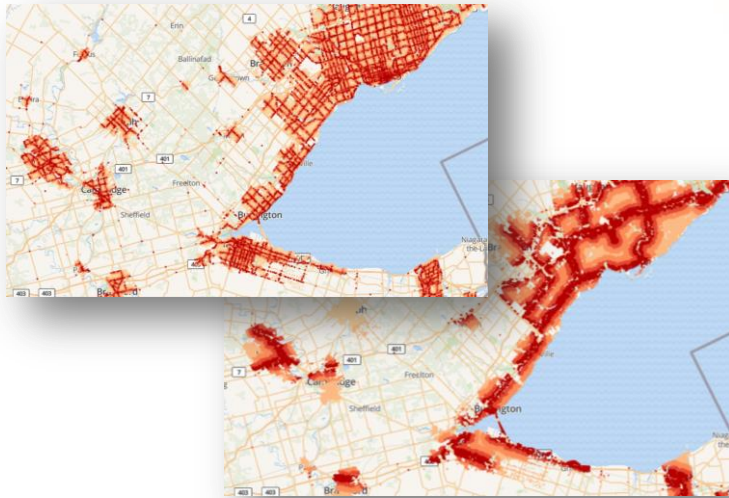
- Processed using Google Earth Engine/ LandSat and Local Climate Zone classification system
- Land uses that impact local climate
- Estimated % within 1km of postal code
- Census years 1986 - 2016



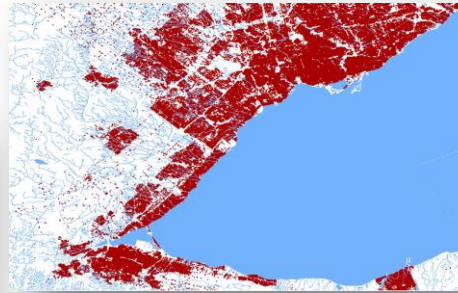
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Data in preparation...

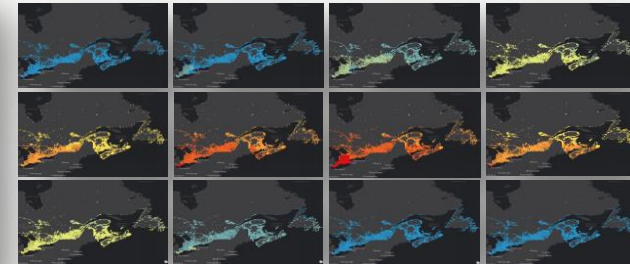
Proximity to major roads by type



Proximity to water



Long-term monthly UV



Details on all datasets at: www.canuedata.ca

Canadian Urban Environmental Health Research Consortium

Thank You, Questions

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Canadian Urban Environmental Health Research Consortium (CANUE)