Understanding the Differences between Rural & Urban Healthcare Needs

Lunch ’n’ Learn Webinar | May 12, 2021

Natalie Pallisco, Western University

Alliance for Healthier Communities
Alliance pour des communautés en santé

Acknowledgement of Indigenous Territory

The work of the Alliance and our members takes place on traditional territories of the Indigenous nations who have lived on these lands since time immemorial. The land settlers call Ontario is covered by 46 treaties, agreements, and land purchases, as well as unceded territories.

The Alliance is located in Toronto, on lands that are the traditional homes of the Anishinaabe, the Mississaugas of the Credit, the Huron Wendat and the Haudenosaunee. This is Dish with One Spoon treaty territory.

Ontario continues to be home to many Indigenous people who live here alongside settlers, newcomers, and people whose ancestors were enslaved across the Americas and the Caribbean. We are grateful to live and work on this land, and we acknowledge the impact our existence here has on the many Indigenous nations for whom this is home.

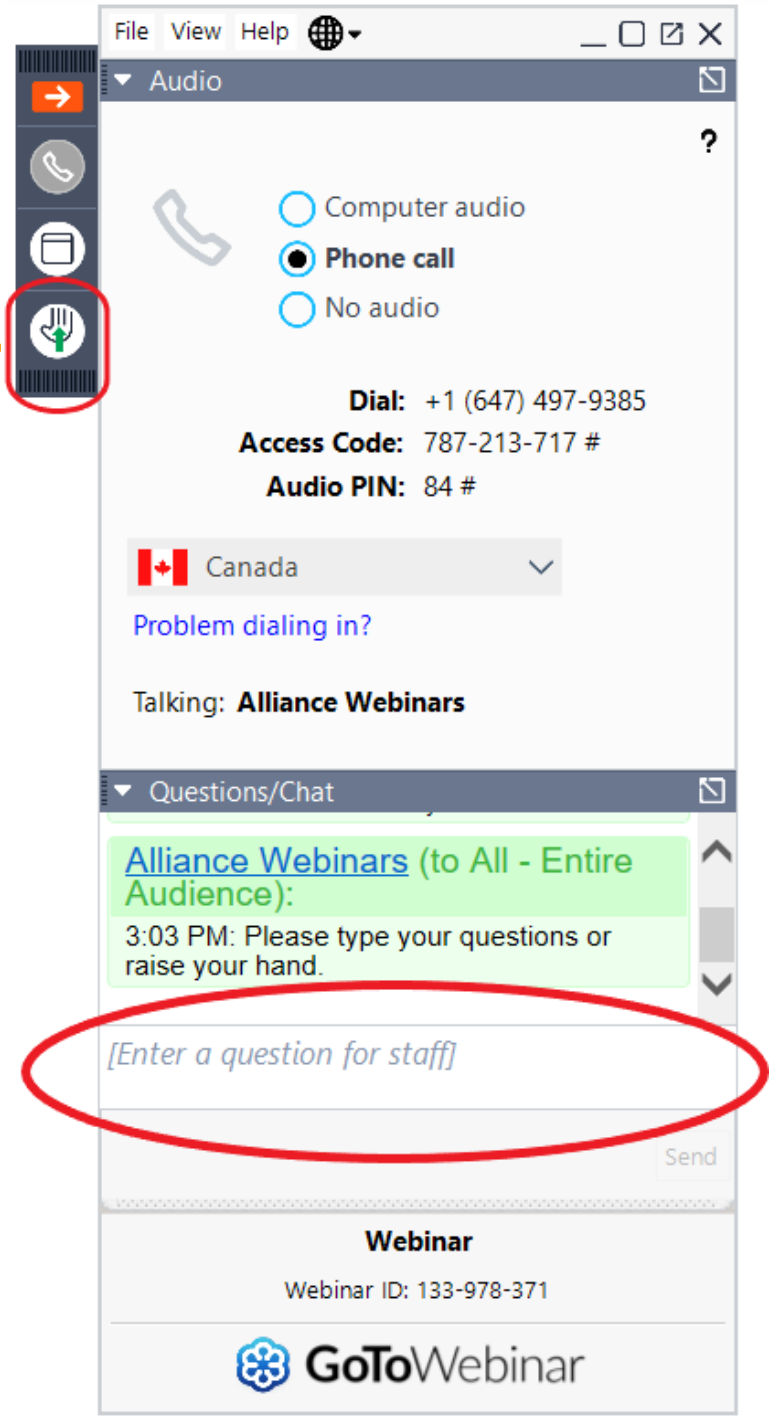
Doing this in a meaningful way means making commitments to sharing and upholding responsibilities to all who now live on these lands, the land itself, the water, the animals, and the resources that make our lives possible. It means considering the impacts of our words and actions on those who were and continue to be marginalized by colonialism. In our work, let us be mindful of these commitments.

Housekeeping

Click the orange arrow to open up your panel

Questions and Comments
Please type in the chat window circled in red throughout the meeting. There will be a moderated Q&A session after the panelists have spoken.

If you require individual support, please raise your hand using the hand icon with a green arrow.



Alliance for Healthier Communities
May Lunch ‘N’ Learn Webinar

Understanding the Differences Between Rural and Urban Healthcare Needs

Natalie Pallisco
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Western University

12 May 2021

POLL QUESTION:

Which best describes your affiliation?

A) **Support staff**
   - Ex: Administration, clerical, or IT

B) **Healthcare provider**
   - Ex: Physician, NP, or interprofessional

C) **Community health**
   - Ex: Health promotion, outreach, community development

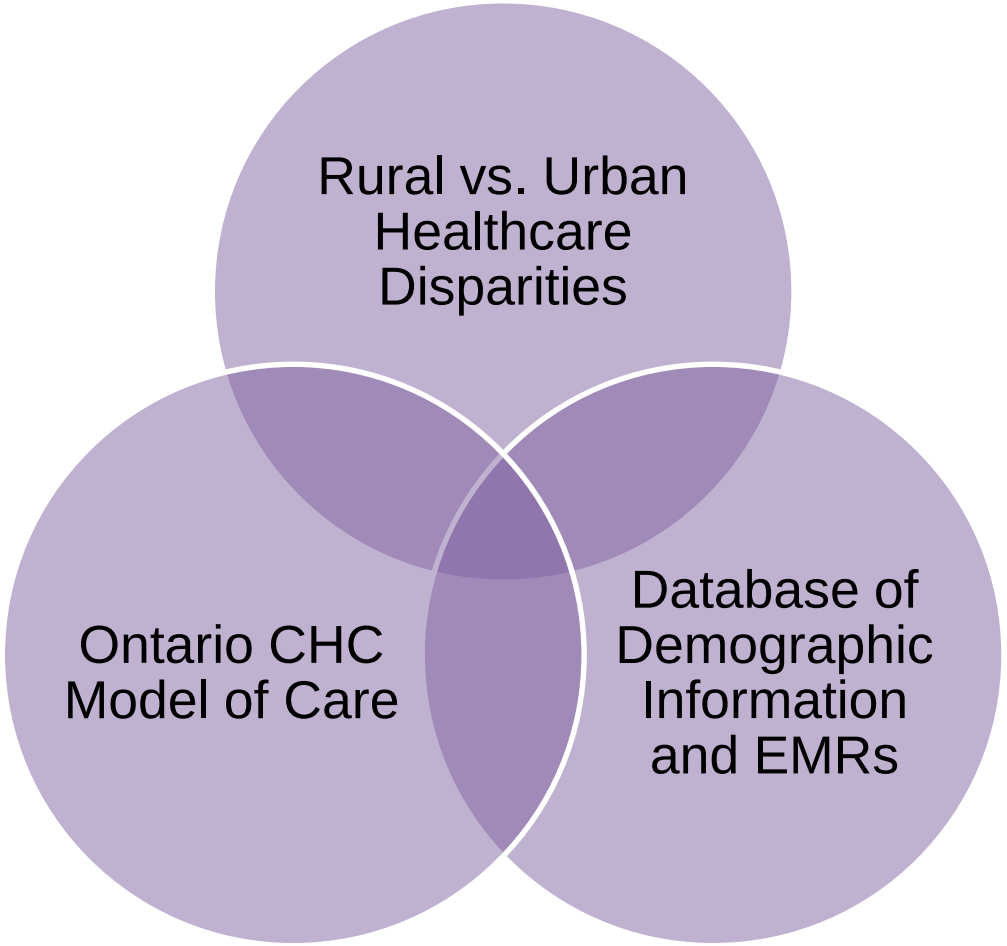
D) **Other – within healthcare**

E) **Other – outside healthcare**

Research Objectives

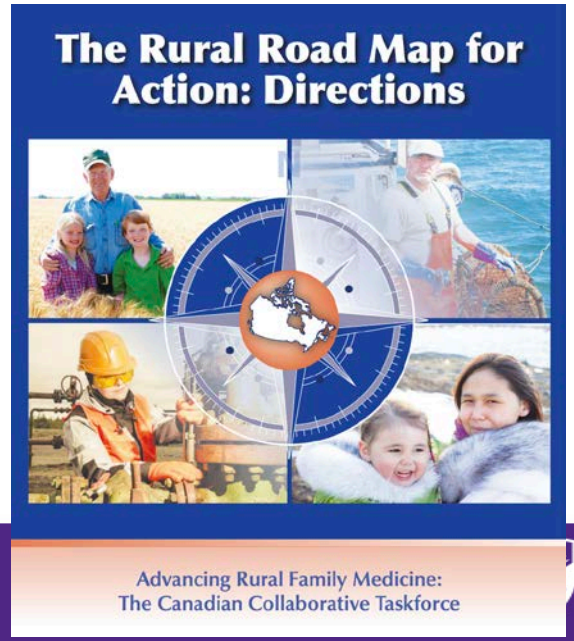
- To compare demographic, ambulatory-care, and mental health care characteristics between urban and rural clients who receive care from CHCs
  - **Ambulatory Care:** Respiratory conditions, diabetes, hypertension, and cardiovascular disease (CVD)
  - **Mental Health:** Stress, anxiety, suicidal ideation/attempts, depression, and sleep deprivation/disorders

Components of the Research Topic



Background: Rural vs. Urban Healthcare

- 18% of the Canadian population is considered “rural”, but they are only served by 8% of all practicing physicians (Bosco et al., 2016).
- Rural populations are older, less affluent, and less healthy than their urban counterparts (Wilson et al., 2020).
- The 2018 Rural Road Map for Action stresses the importance of exploring and evaluating health service delivery in rural regions (CFPC, 2018).



Background: Community Health Centres

Background: The Database and EMRs

- CHCs consolidate de-identified client demographic and medical records into one database

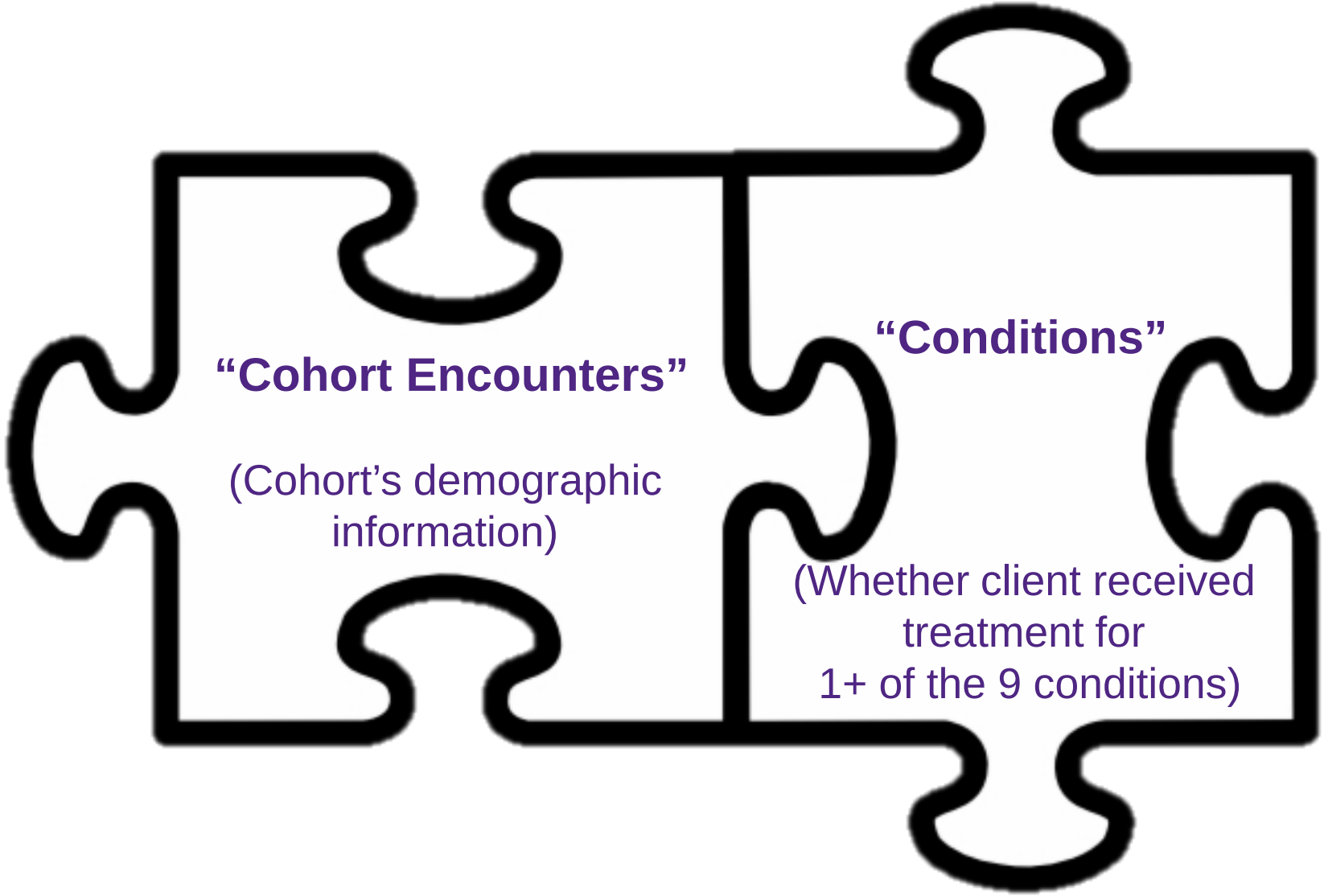
- **About the Database:**
  - Clients visited a CHC for 1+ recorded service events from Jan. 1, 2008 – Dec. 31, 2017
  - Clients are at least 18 years of age by Jan. 1, 2008
  - Includes all service records from all all patients at all CHCs in Ontario (~25 million visits!)

Ontario's Community Health Centres

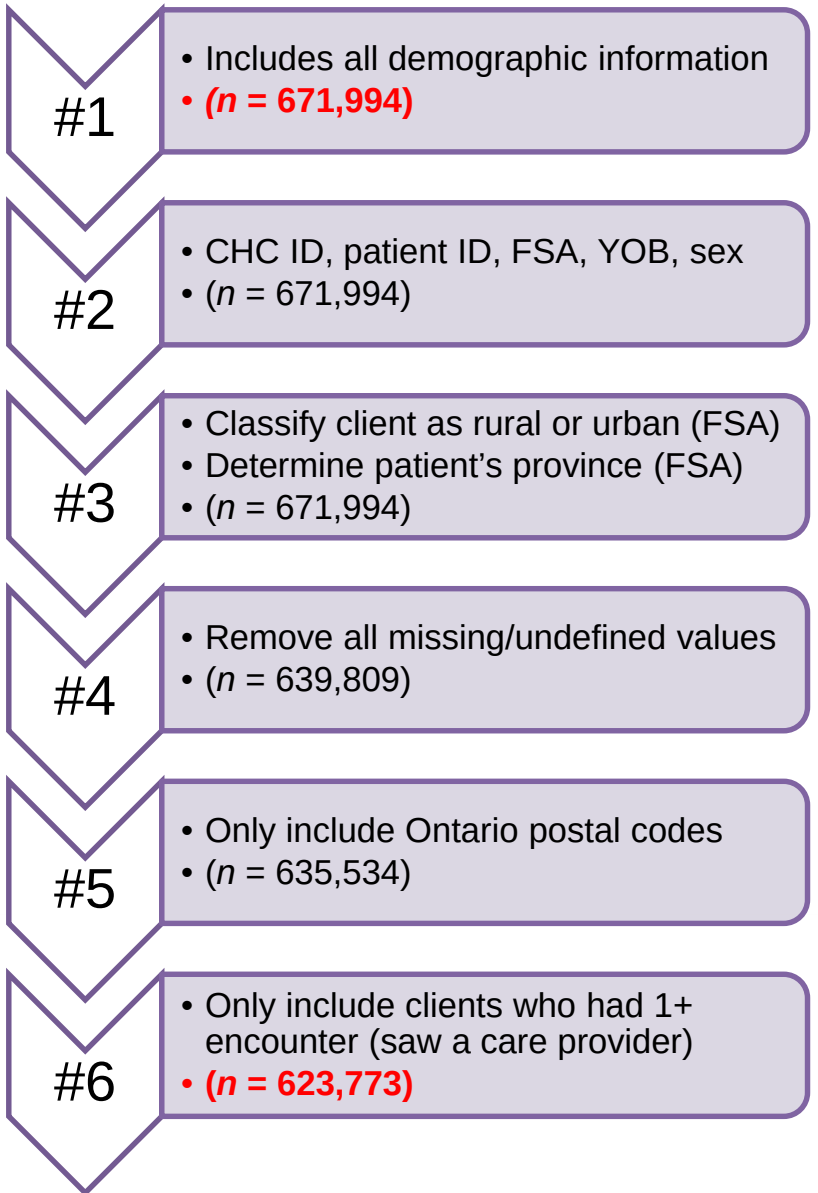
https://www.bchc.ca/

https://www.r-project.org/logo/

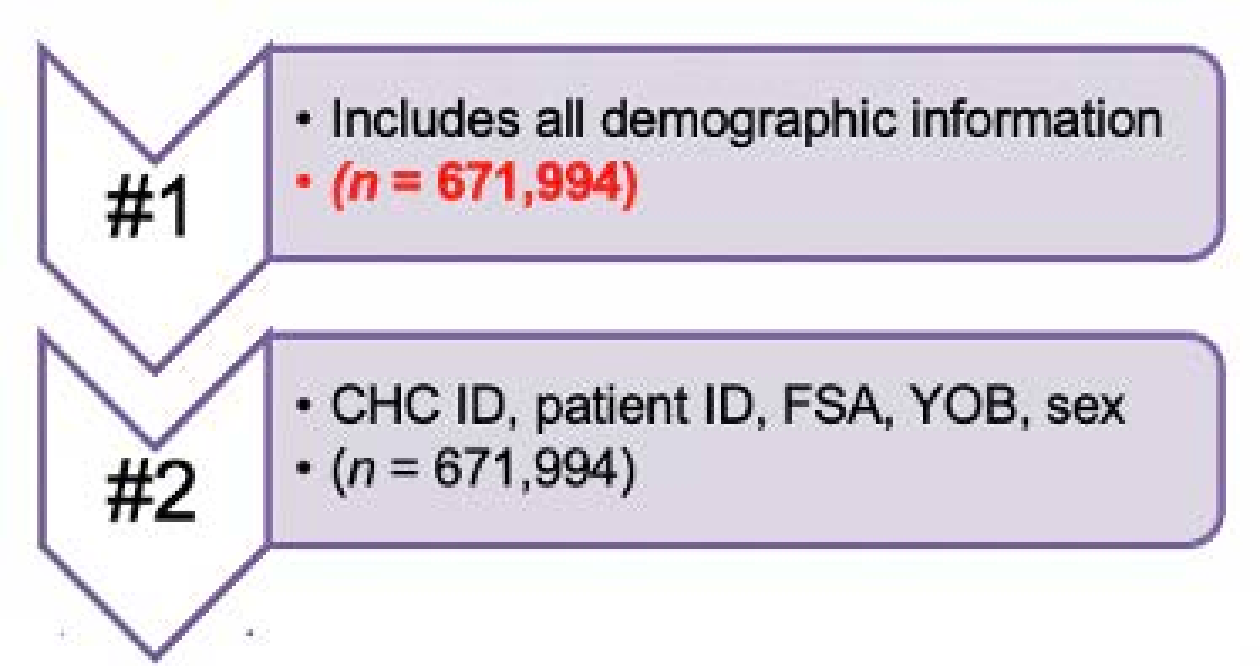
Methods: Game Plan



Methods: Creating "Cohort Encounters"



"Cohort Encounters": Steps 1 and 2

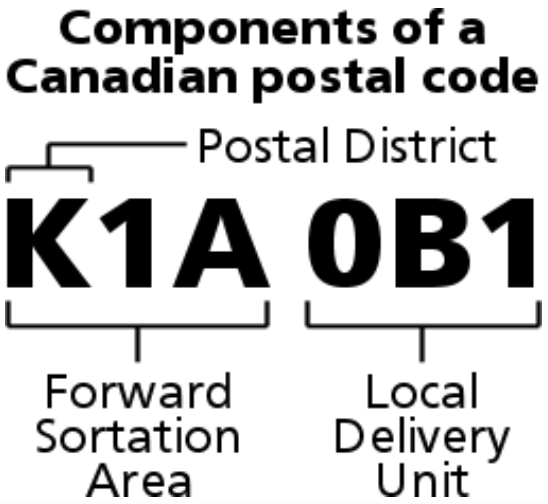


What about gender identity and sexual orientation?

"Cohort Encounters": Step 3

#3

- Classify client as rural or urban (FSA)
- Determine patient's province (FSA)
- (*n* = 671,994)



Digit of FSA:

- 1-9: Address considered urban
- 0: Address considered rural

POLL QUESTION:

Based on your postal code, would Canada Post consider you as being “rural” or “urban”?

A) Rural (2nd character of postal code is 0)

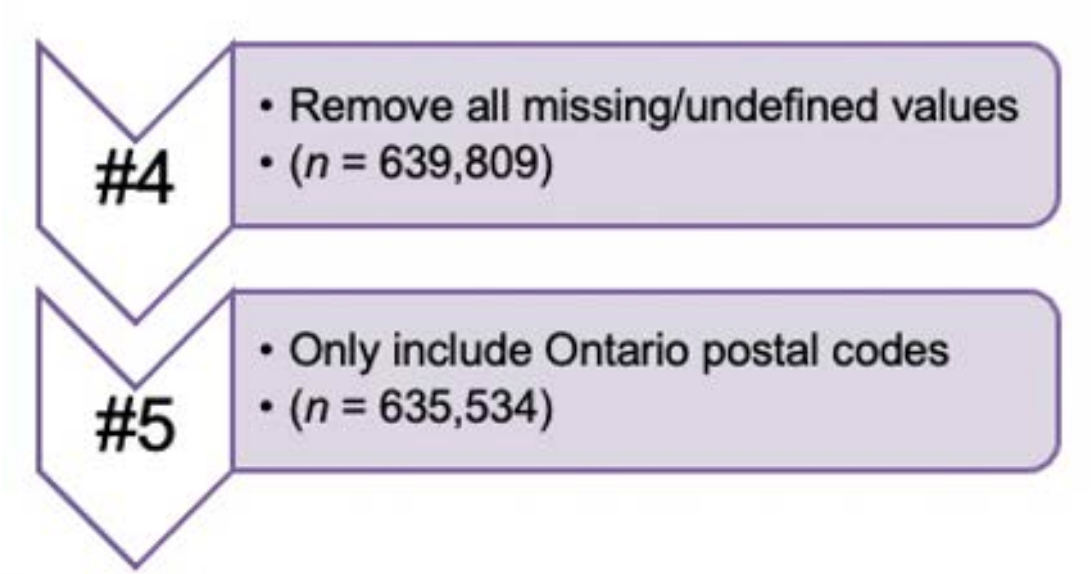
B) Urban (2nd character of postal code is 1-9)

OPEN QUESTION:
DO YOU AGREE WITH THE CHARACTERIZATION?

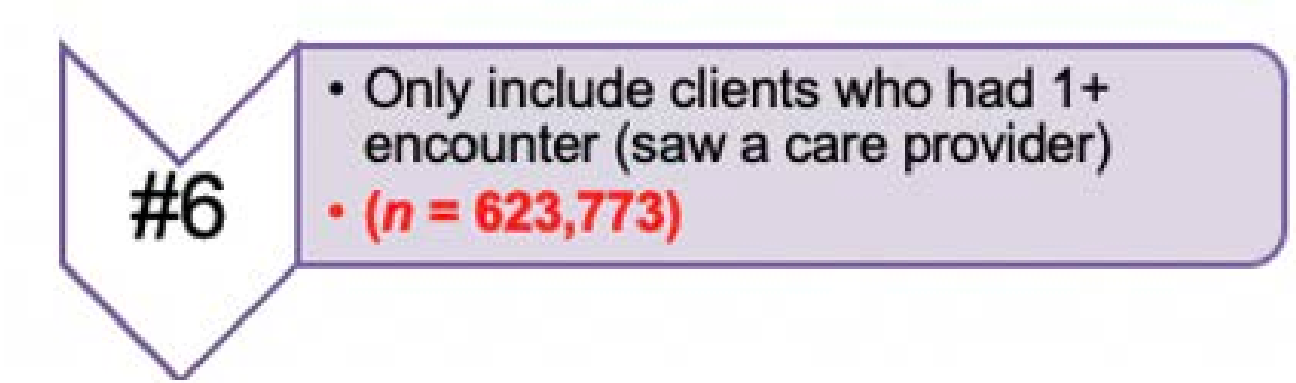
“Cohort Encounters”: Step 3 (Continued)

Postal District	Corresponding Province
A	Newfoundland and Labrador
B	Nova Scotia
C	Prince Edward Island
E	New Brunswick
G	Quebec
H	Quebec
J	Quebec
K	Ontario
L	Ontario
M	Ontario
N	Ontario
P	Ontario
R	Manitoba
S	Saskatchewan
T	Alberta
V	British Columbia
X	Northwest Territories or Nunavut
Y	Yukon

“Cohort Encounters”: Steps 4 and 5

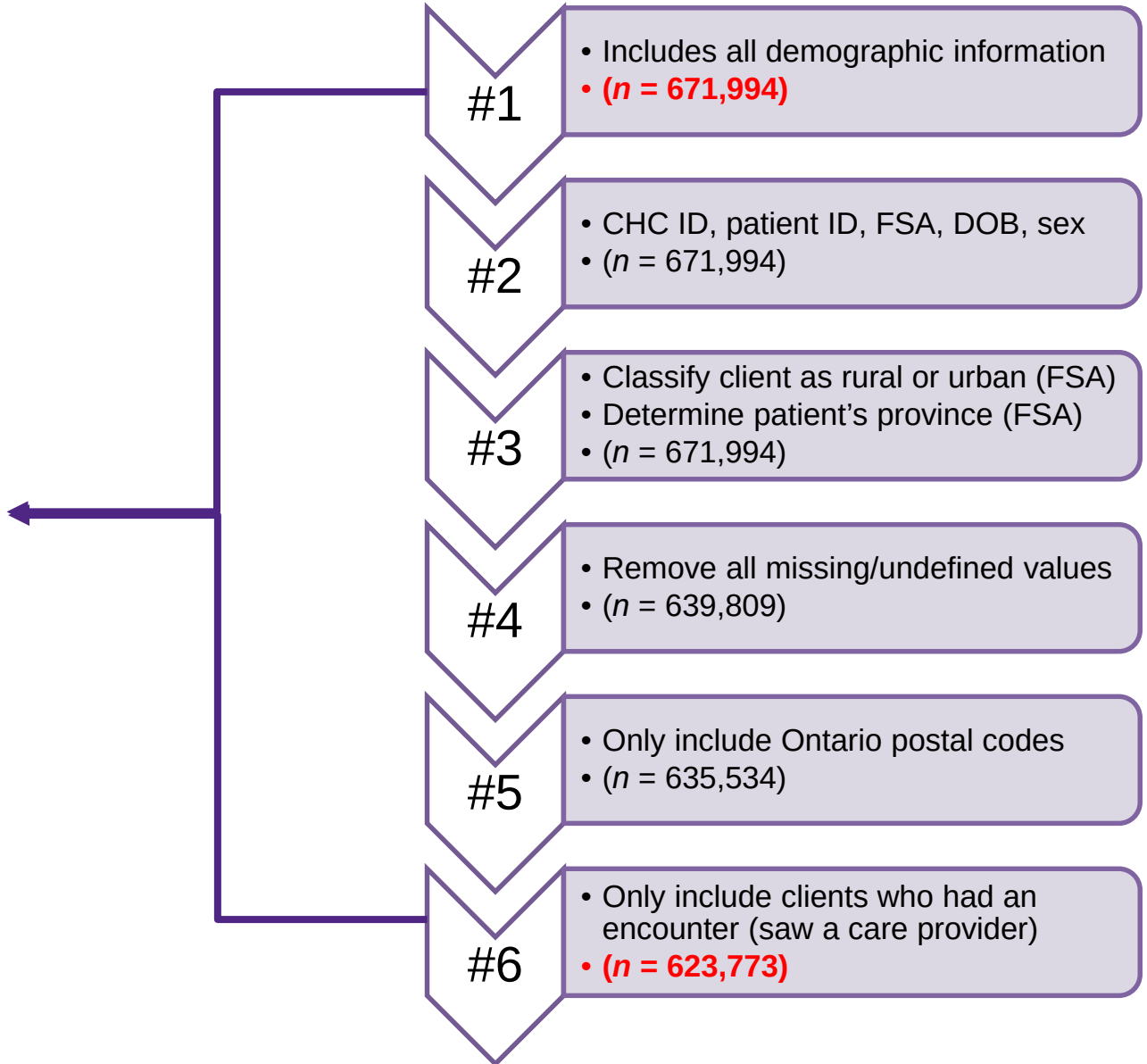


“Cohort Encounters”: Step 6



"Cohort Encounters": Summary

92.8% of all clients included in my cohort from the original demographic dataset



Methods: Creating "Conditions"

Ambulatory Conditions	
ICD-10 Code	**Respiratory Conditions**
J40	Bronchitis (acute or chronic)
J41	Simple chronic bronchitis
J42	Unspecified chronic bronchitis
J43	Emphysema
J44	Other COPD
J45	Asthma
J46	Status asthmaticus
ICD-10 Code	**Diabetes Mellitus**
E10	Insulin-Dependent Diabetes Mellitus (T1)
E11	Non-Insulin-Depend. Diabetes Mellitus (T2)
E12	Malnutrition-Related Diabetes Mellitus
E13	Other specified Diabetes Mellitus
E14	Unspecified Diabetes Mellitus
ICD-10 Code	**Hypertension**
I10	Essential (primary) hypertension
I11	Hypertensive heart disease
I12	Hypertensive renal disease
I13	Hypertensive heart & renal disease
I15	Secondary hypertension
ICD-10 Code	**Cardiovascular Disease (CVD)**
I20	Angina pectoris
I25	Chronic ischaemic heart disease
I48	Atrial fibrillation and flutter
I70	Atherosclerosis
I71	Aortic aneurysm and dissection
I72	Other aneurysm and dissection
I73	Other peripheral vascular disease
I74	Arterial embolism and thrombosis
I75	Atheroembolism
I76	Septic arterial embolism
I77-I79	Other disorders of capillaries, arteries, and arterioles

Mental Health Conditions	
ICD-10 Code	**Stress**
F43	Reaction to severe stress and adjustment disorders
ICD-10 Code	**Anxiety**
F40	Phobic anxiety disorders
F41	Other anxiety disorders
ICD-10 Code	**Suicidal Ideation and Attempts**
X60-X69	Intential self-poisoning
X70-X84	Intential self-harm
R45.851	Ssuicidal ideation and tendencies
T14.91	Trauma injury (Suicide Attempt)
ENCODE-FM	
5192	Suicidal Ideation
5193	Feeling like committing suicide
5194	Feeling self destructive
5195	Suicide attempt
5196	Suicidal act
5197	Suicidal gesture
ICD-10 Code	**Depression**
F32	Depressive episode
F33	Recurrent depressive disorder
ICD-10 Code	**Sleep Difficulties**
F51	Nonorganic sleep disorders
G47	Sleep disorders
Z72	Sleep deprivation

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Methods: Creating "Conditions"

Conditions	# of Encounters	# of Distinct Visits
Respiratory Conditions	311,031	59,000
Diabetes Mellitus	1,671,123	159,948
Hypertension	698,539	91,647
Cardiovascular Disease (CVD)	202,427	31,681
Stress	361,112	78,953
Anxiety	90,664	24,365
Suicidal Ideation and Attempts	22,960	8,262
Depression	446,352	70,164
Sleep Difficulties	550,749	118,071
Total	**4,354,957**	**642,091**

Results – Demographic Data (Sex)

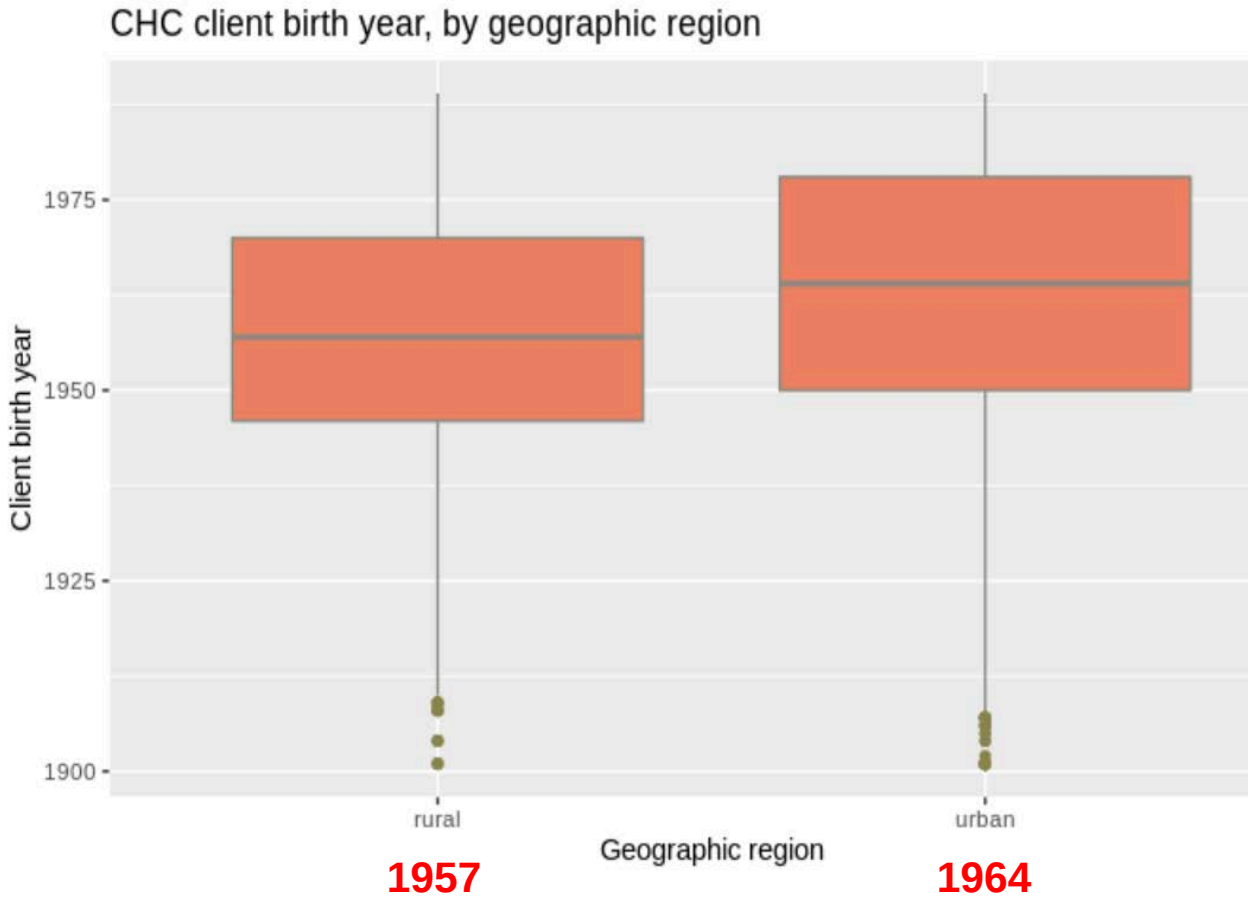
Sex	Combined n = 623,773	Rural n = 100,721 (16.1%)	Urban n = 523,052 (83.9%)
Male	42.8%	46.5%	42.1%
Female	57.2%	53.5%	57.9%

Ontario General Population Data (2016 Census):

- 49% male
- 10.4% rural

OPEN QUESTION: ANY REASON FOR THESE DIFFERENCES?

Results – Demographic Data (YOB)



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OPEN QUESTION: ANY REASON FOR THESE DIFFERENCES?

Results - Conditions

Condition or Group of Conditions	Proportion of clients with at least one encounter			Two-sided *p*-value
	Combined (n = 623,773)	Rural (n = 100,721)	Urban (n = 523,052)	
Any Ambulatory Condition	39.08%	44.14%	38.11%	< 0.001
Respiratory Conditions	9.27%	14.01%	8.35%	< 0.001
Diabetes Mellitus	24.79%	21.45%	25.44%	< 0.001
Hypertension	14.44%	22.39%	12.91%	< 0.001
CVD	5.00%	9.01%	4.23%	< 0.001
Any Mental Health Condition	29.05%	30.40%	28.79%	< 0.001
Stress	12.33%	11.69%	12.45%	< 0.001
Anxiety	3.83%	4.37%	3.73%	< 0.001
Suicidal Ideation and Attempts	1.28%	1.00%	1.34%	< 0.001
Depression	11.00%	12.42%	10.72%	< 0.001
Sleep Difficulties	18.49%	18.94%	18.40%	< 0.001

- Conducted two-sample test for independent proportions
- Rationale was to better understand the differing needs of rural clients
- **Age as a confounder?**

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OPEN QUESTION:

↑ prop. = sicker rural communities?

OR

↑ prop. = better access to services?

Project Summary

- Used FSAs to classify 623,773 clients as “rural” or “urban”, and checked whether the clients had CHC encounters for 9 different ambulatory and mental health conditions
- Overall, found that demographic data (sex, % rural/urban) of research project cohort was similar, but not completely representative of overall Ontario data
- Rural clients were found to be, on average, older
- Significantly higher proportion of rural clients visited CHCs for 6 of 9 encounter types than their urban counterparts
  - Urban: higher proportion for diabetes, stress, and suicidal ideation

Implications

- Unknown reasoning for discrepancy in the observed higher proportion of rural clients visiting CHCs for most ambulatory and mental health conditions:
  - Patients are less healthy and thus need more care?
  - Patients have no other HCP, so they use local CHC?
  - Patients can access CHC easier or are more aware of their local CHC, meaning they get more help?

- Useful for CHCs to understand who uses their services and that there are notable differences between the proportions of clients seeking out care in rural and urban regions

Limitations

- Data from 2008-2017
- 9 conditions of interest only represent 13.4% of all recorded events in the original dataset
- Results rely on ICD-10 and ENCODE coding by providers
- Only using CHC data and not accounting for the clients’ visits to other healthcare providers for conditions of interest
- No causal relationship studied

Possible Next Steps

- Looking at age of first encounter (as opposed to YOB)
- Looking at types of service providers seen
- Looking at number of visits made per condition

- Using updated/more recent datasets to track:
  - Changes in trends
  - Improvements in data collection (ex: LGBTQ+)

OPEN QUESTION:
ANY OTHER QUESTIONS/TOPICS OF INTEREST?

Acknowledgements

- A sincere thank you for supporting my research interests throughout the past academic year, and for inviting me to share my project today with the Alliance!

Western University:

- Dr. Dan Lizotte – Research Supervisor
- Jaky Kueper – PhD Student and Co-Supervisor

Alliance for Healthier Communities:

- Dr. Jen Rayner – Director of Research & Evaluation
- Catherine Macdonald – KT Specialist

References

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Questions?

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