Communicating synthesised complex public health evidence to decision makers and end users
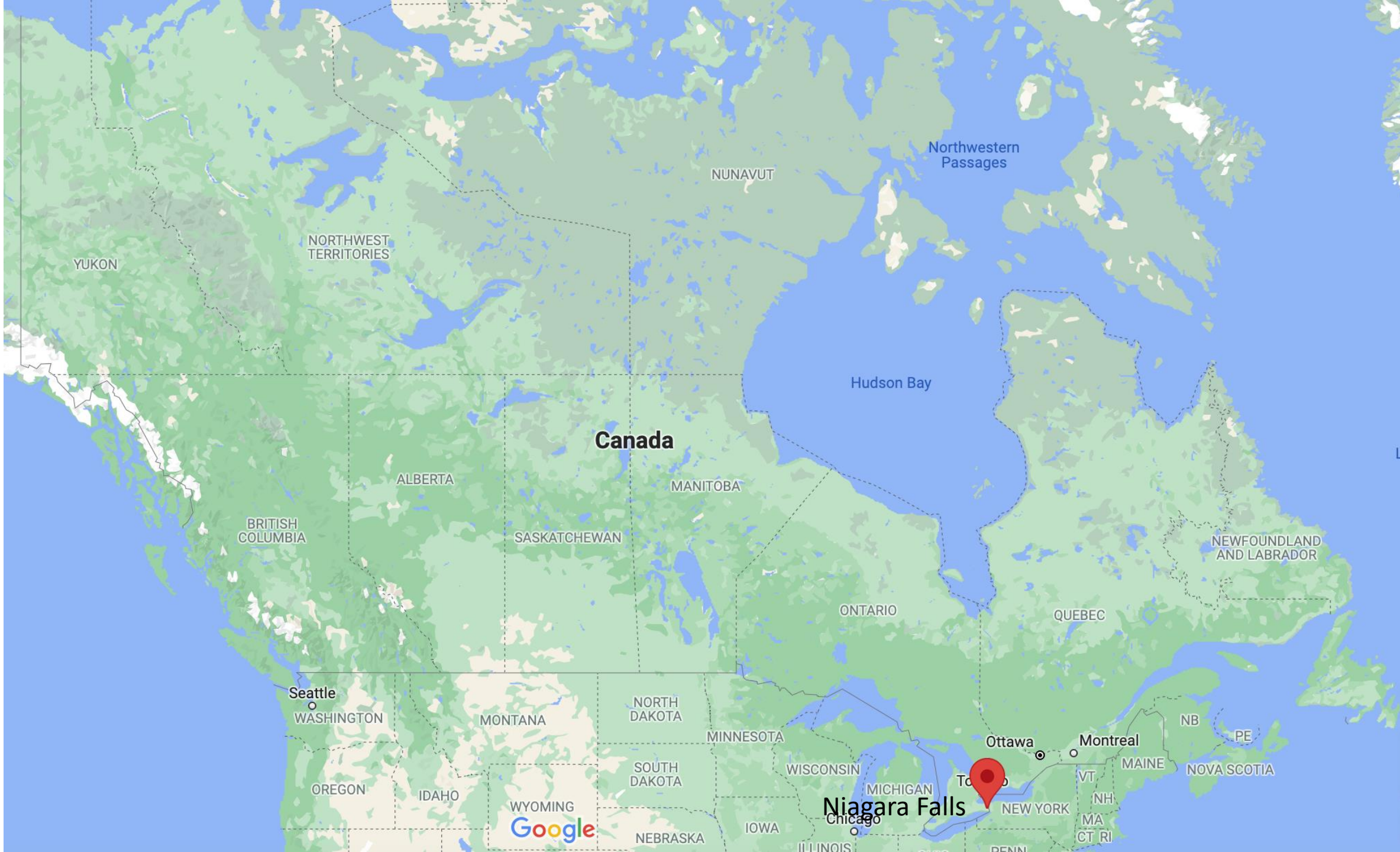
Nancy Santesso, RD, PhD

Deputy Director, Cochrane Canada

Associate Professor, McMaster University

To cover

- Individual/Clinical versus public health perspective

- Summary of findings

- Certainty of evidence

- COVID

Niagara Region
400 000 people
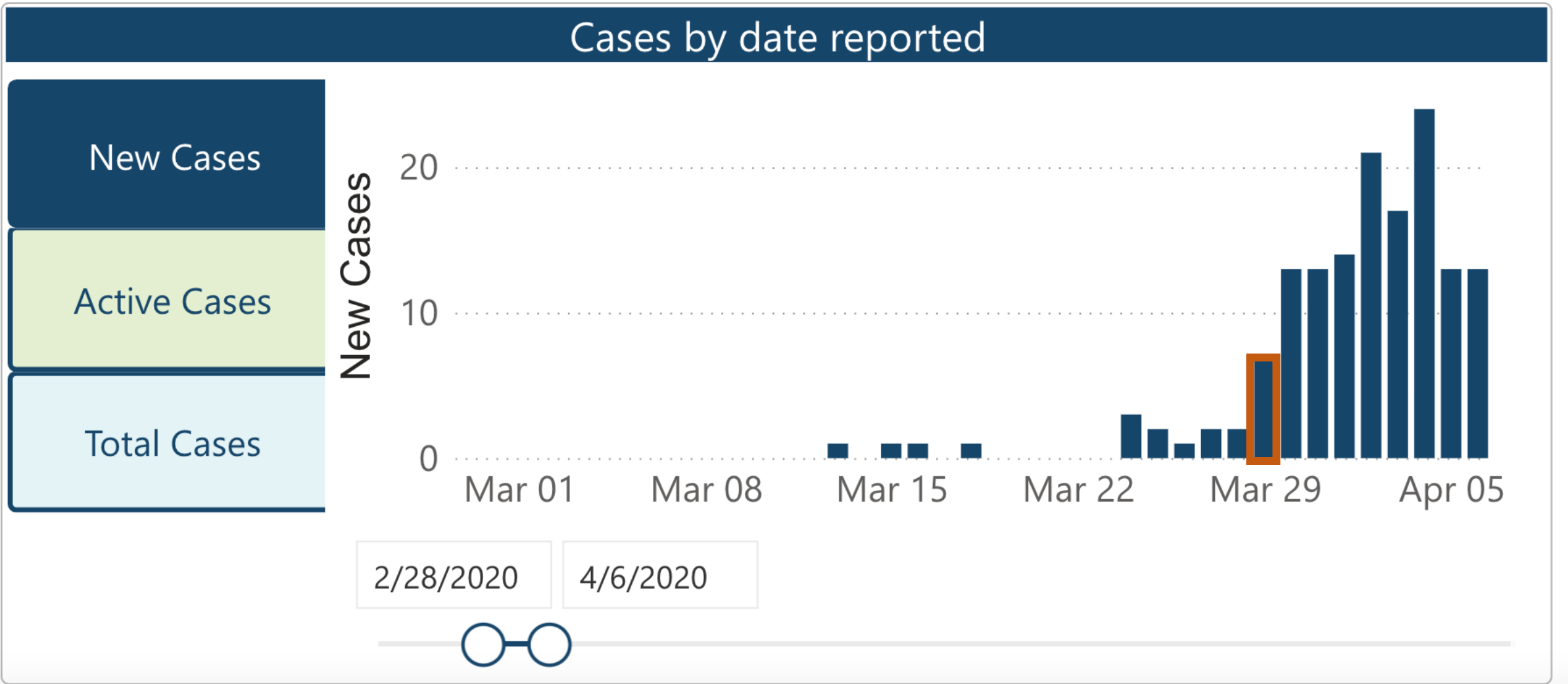
Cases by date reported

New Cases

Active Cases

Total Cases

2/28/2020   10/16/2021
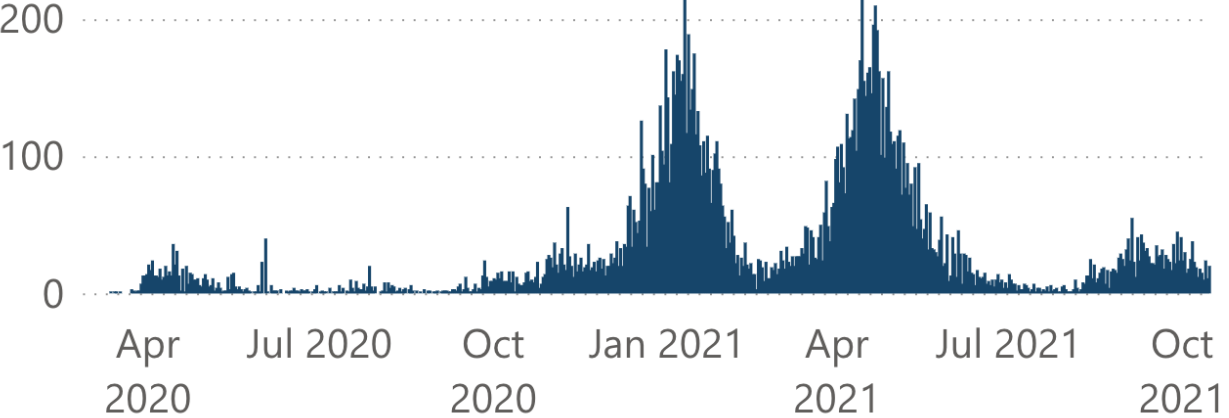
Total confirmed cases per 10,000 population by municipality

Municipality	Value
Fort Erie	251.3
Grimsby	269.0
Lincoln	382.7
Niagara Falls	430.1
Niagara-on-the-Lake	308.0
Pelham	366.0
Port Colborne	283.0
St. Catharines	386.9
Thorold	456.1
Wainfleet	245.1
Welland	414.1
West Lincoln	335.8

JOHNS HOPKINS
UNIVERSITY & MEDICINE | **CORONAVIRUS RESOURCE CENTER**

Home   **Topics ▼**   By Region   Events & News   About   Search Data by Region...
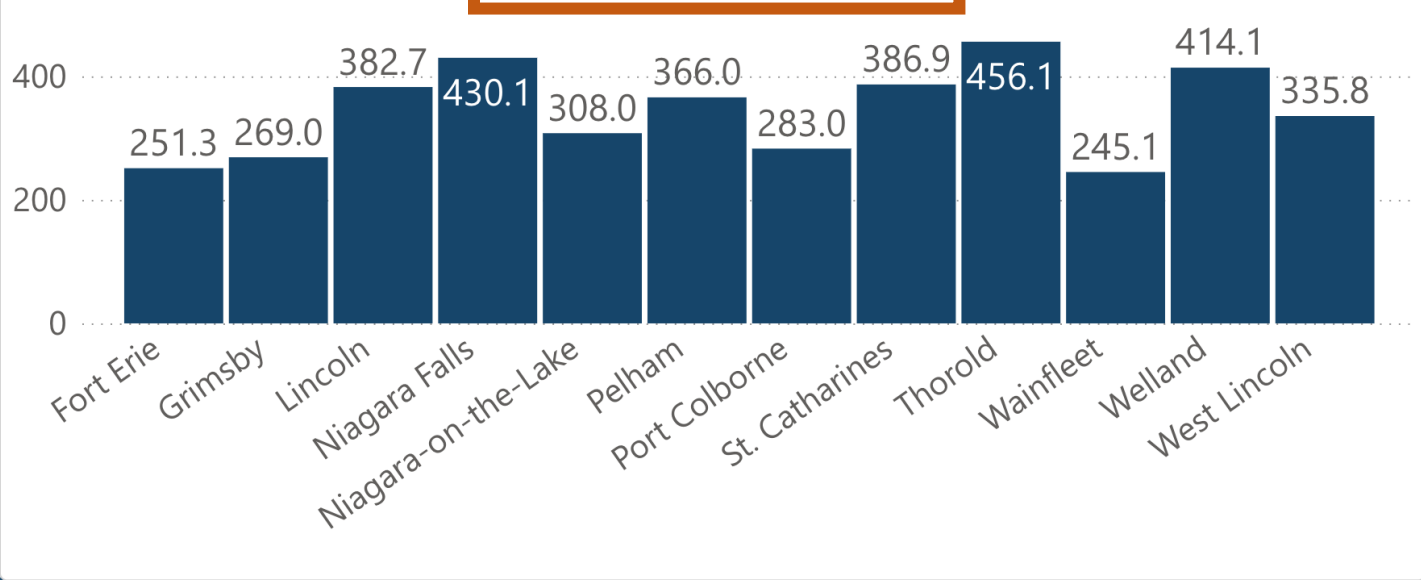
COVID-19 Dashboard by the Center for Systems Science and Engineering (CSSE) at Johns Hopkins University (JHU)

Last Updated at (M/D/YYYY)
10/16/2021, 10:21 PM

Total Cases	Total Deaths	Total Vaccine Doses Administered
1,686,625	**28,534**	**57,546,951**

28-Day Cases	28-Day Deaths	28-Day Vaccine Doses Administered
107,100	**1,100**	**2,577,754**

Cases | Deaths by Country/Region/Sovereignty

Canada
28-Day: 107,100 | 1,100
Totals: 1,686,625 | 28,534

Israel
28-Day: 102,770 | 482
Totals: 1,315,317 | 7,983

Italy
28-Day: 84,783 | 1,270
Totals: 4,715,464 | 131,517

Mongolia
28-Day: 67,032 | 444
Totals: 336,508 | 1,527

Singapore
28-Day: 65,989 | 156
Totals: 145,120 | 224

◄   Admin0   ►

Esri, FAO, NOAA, NRCan

NORTH AMERICA   ASIA   EUROPE   AFRICA   SOUTH AMERICA   AUSTRALIA

Powered by Esri

28-Day

Weekly Cases
100k
50k
0
2020   2021

Weekly Deaths
1.5k
1k
500
0
2020   2021

Weekly Doses Administered
4M
2M
0
2020   2021
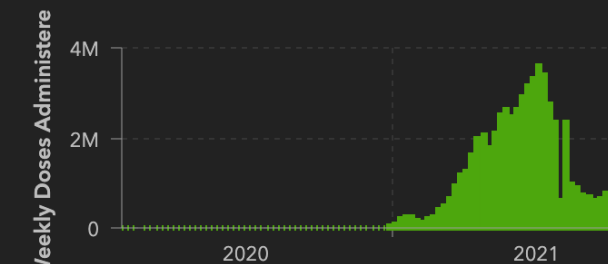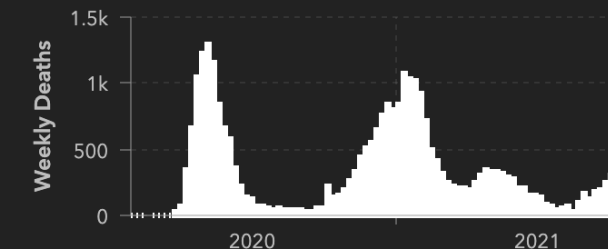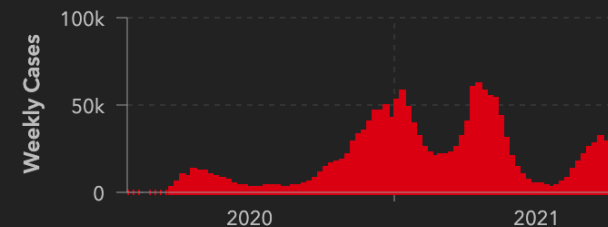
Weekly   28-Day

Vaccine roll-out: public to individual

Me

My...

Self

"each person needs to do a self-risk assessment"

Public health and clinical decisions
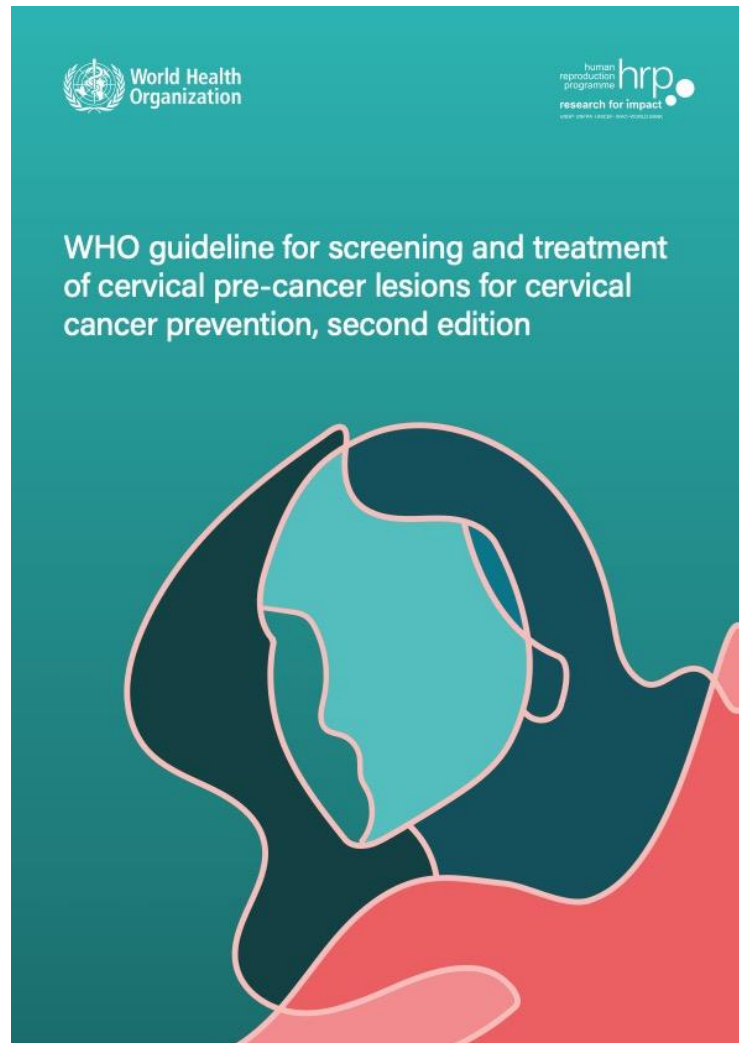
Cervical cancer screening

- Individual woman's risk of cervical cancer, unnecessary treatment of a 'false positive', and risk of pre-term delivery

- Population incidence of cervical cancer, number of tests, number of treatments for positive cases (whether false or negative cases) provided by the health care system

Public health and clinical decisions

Cervical cancer screening

- Individual woman's risk of cervical cancer, unnecessary treatment of a 'false positive', and risk of pre-term delivery

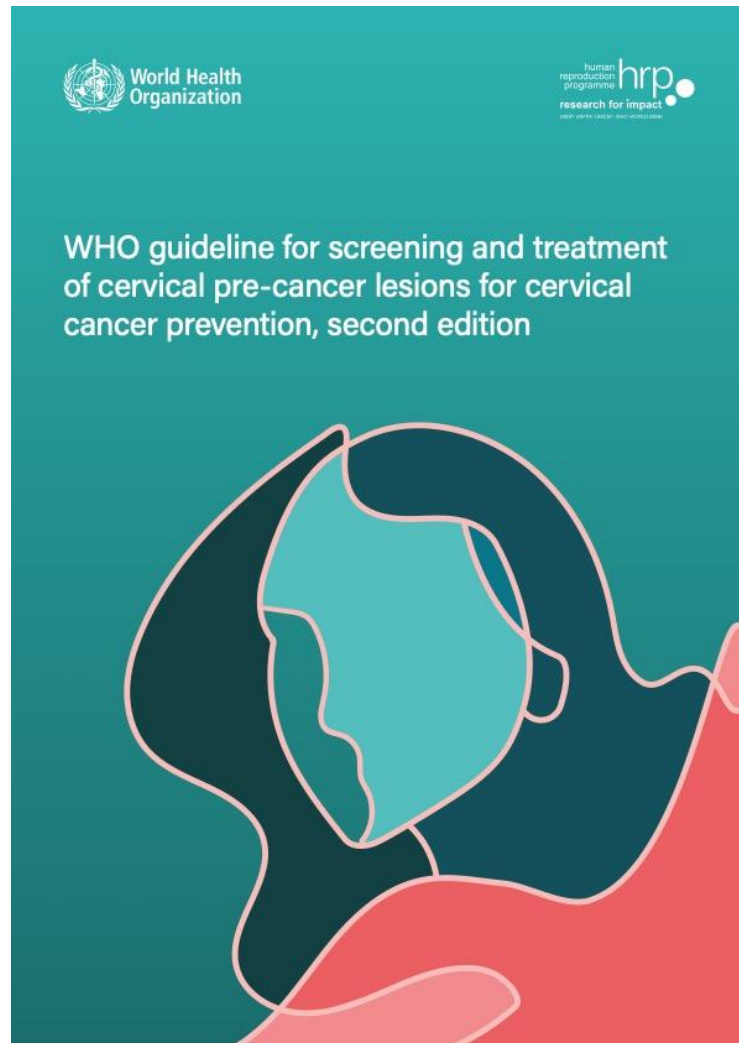- <u>Population</u> incidence of cervical cancer, number of tests, number of treatments for positive cases (whether false or negative cases) provided by the health care system

Summary table: General population

Outcomes by different screening strategy

	Screening ages	Cervical Cx cases* (% reduction)	Cervical Cx deaths* (% reduction)	Pre-cancer treatments*	Additional pre-term deliveries due to pre-cancer treatment*	NNT to avert a cervical cancer death	Discounted lifetime cost (2019 $US)
No Screening	-	1,950 (-)	1,456 (-)	0	0	-	$3
Primary VIA (high sens)	3yrly, 30-50 yrs (7X)	1,046 (46%)	714 (51%)	147,349	180	199	$54
	5yrly, 30-50 yrs (5X)	1,181 (39%)	803 (45%)	120,442	139	184	$41
Primary VIA	3yrly, 30-50 yrs (7X)	1,194 (39%)	838 (42%)	137,172	167	222	$51
	5yrly, 30-50 yrs (5X)	1,351 (31%)	949 (35%)	111,915	127	221	$39
Primary HPV	5yrly, 30-50 yrs (5X)	851 (56%)	572 (61%)	50,179	88	57	$52
	10yrly, 30-50 yrs (3X)	1,048 (46%)	720 (51%)	40,090	74	54	$35
	10yrly, 35-45 yrs (2X)	1,237 (37%)	883 (39%)	18,528	28	32	$21
Cytology, colposcopy	3yrly, 30-50 yrs (7X)	1,101 (44%)	756 (48%)	20,922	43	30	$80
	5yrly, 30-50 yrs (5X)	1,200 (38%)	822 (44%)	18,516	34	29	$59
HPV, 16/18 triage	5yrly, 30-50 yrs (5X)	877 (55%)	591 (59%)	34,408	67	40	$51
	10yrly, 30-50 yrs (3X)	1,069 (45%)	737 (49%)	27,880	56	39	$34
	10yrly, 35-45 yrs (2X)	1,253 (36%)	897 (38%)	13,119	21	23	$21
HPV, VIA triage	5yrly, 30-50 yrs (5X)	940 (52%)	638 (56%)	30,186	61	37	$51
	10yrly, 30-50 yrs (3X)	1,144 (41%)	792 (46%)	24,239	51	37	$35
	10yrly, 35-45 yrs (2X)	1,318 (32%)	945 (35%)	11,621	18	23	$21
HPV, colp triage	5yrly, 30-50 yrs (5X)	940 (52%)	625 (57%)	33,265	64	40	$57
	10yrly, 30-50 yrs (3X)	1,141 (41%)	779 (47%)	26,633	54	39	$39
	10yrly, 35-45 yrs (2X)	1,308 (33%)	929 (36%)	12,398	20	24	$23
HPV, cytology triage	5yrly, 30-50 yrs (5X)	966 (50%)	648 (56%)	22,352	48	28	$61
	10yrly, 30-50 yrs (3X)	1,166 (40%)	799 (45%)	18,075	40	27	$42
	10yrly, 35-45 yrs (2X)	1,329 (32%)	947 (35%)	8,693	15	17	$25

*Outcomes represent total events over the lifetime of a cohort of 100,000 women

Summary table: General population

Outcomes per 100 000 women

	Screening ages	Cervical Cx cases* (% reduction)	Cervical Cx deaths* (% reduction)	Pre-cancer treatments*	Additional pre-term deliveries due to pre-cancer treatment*	
No Screening	-	1,950 (-)	1,456 (-)	0	0	
Primary VIA (high sens)	3yrly, 30-50 yrs (7X)	1,046 (46%)	714 (51%)	147,349	180	
	5yrly, 30-50 yrs (5X)	1,181 (39%)	803 (45%)	120,442	139	
Primary VIA	3yrly, 30-50 yrs (7X)	1,194 (39%)	838 (42%)	137,172	167	
	5yrly, 30-50 yrs (5X)	1,351 (31%)	949 (35%)	111,915	127	
Primary HPV	**5yrly, 30-50 yrs (5X)**	**851 (56%)**	**572 (61%)**	**50,179**	**88**	
	10yrly, 30-50 yrs (3X)	1,048 (46%)	720 (51%)	40,090	74	
	10yrly, 35-45 yrs (2X)	1,237 (37%)	883 (39%)	18,528	28	
Cytology, colposcopy	3yrly, 30-50 yrs (7X)	1,101 (44%)	756 (48%)	20,922	43	
	5yrly, 30-50 yrs (5X)	1,200 (38%)	822 (44%)	18,516	34	
HPV, 16/18 triage	5yrly, 30-50 yrs (5X)	877 (55%)	591 (59%)	34,408	67	
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HPV, colp triage	5yrly, 30-50 yrs (5X)	940 (52%)	625 (57%)	33,265	64	

Canada's
LOW-RISK ALCOHOL DRINKING GUIDELINES

For these guidelines, "a drink" means: ▶ ▶ ▶

Beer
341 ml (12 oz.)
5% alcohol content

Cider/ Cooler
341 ml (12 oz.)
5% alcohol content

Wine
142 ml (5 oz.)
12% alcohol content

Distilled Alcohol
(rye, gin, rum, etc.)
43 ml (1.5 oz.)
40% alcohol content

▶ YOUR LIMITS

Reduce your long-term health risks by drinking no more than:

- 10 drinks a week for women, with no more than 2 drinks a day most days
- 15 drinks a week for men, with no more than 3 drinks a day most days

Plan non-drinking days every week to avoid developing a habit.

▶ SPECIAL OCCASIONS

Reduce your risk of injury and harm by drinking no more than 3 drinks (for women)

▶ WHEN ZERO'S THE LIMIT

Do not drink when you are:

- driving a vehicle or using machinery and tools
- Taking medicine or other drugs that interact with alcohol
- Doing any kind of dangerous physical activity
- Living with mental or physical health problems
- Living with alcohol dependence
- Pregnant or planning to be pregnant
- Responsible for the safety of others
- Making important decisions

▶ PREGNANT? ZERO IS SAFEST

If you are pregnant or planning to become pregnant, or about to breastfeed, the safest choice is to drink no alcohol at all.

▶ DELAY YOUR DRINKING

Alcohol can harm the way the body and brain develop. Teens should speak with their parents about drinking. If they choose to drink, they should do so under parental guidance; never more than 1–2 drinks at a time, and never more than 1–2 times per week. They should plan

Summary of findings table:
outcomes important to public health decisions

Outcome	Number of studies (Number of participants)	Effect in people drinking at high risk level (per 100 000)	Effect in people drinking at low risk level (per 100 000)	Certainty of the evidence
Cancers				
Automobile accidents				
Crime				
…				

Summary of findings table:
absolute effects presented per population: 100 000

Outcome	Number of studies (Number of participants)	Effect in people drinking at high risk level (per 100 000)	Effect in people drinking at low risk level (per 100 000)	Certainty of the evidence
Cancers	5 non-randomised studies (42 456)	435	278 (234 to 332)	
Automobile accidents				
Crime				
…				

Summary of findings table:
baseline risks are population level & region specific

Outcome	Number of studies (Number of participants)	Effect in people drinking at high risk level (per 100 000)	Effect in people drinking at low risk level (per 100 000)	Certainty of the evidence
Cancers	5 non-randomised studies (42 456)	435	278 (234 to 332)	
Automobile accidents				
Crime		**Risk without intervention** X Risk Ratio = Risk with intervention **435 cancers** X 0.64 = 278 cancers		
…				

Outcome	Number of studies (Number of participants)	Effect in people drinking at <u>high risk level</u> (per 100 000)	Effect in people drinking at <u>low risk level</u> (per 100 000)	Certainty of the evidence
Cancers	5 non-randomised studies (42 456)	435	278 (234 to 332)	
Automobile accidents				
Crime				
…				

How certain are you about those numbers?

A systematic assessment of the certainty of the evidence

A systematic approach: GRADE

For randomised and non-randomised studies

- Are the studies poorly conducted? **Risk of bias**

- Are the results inconsistent across studies? **Inconsistency**

- Do the results not really apply to my question? **Indirectness**

- Are there too few people and wide confidence intervals? **Imprecision**

- Are we missing studies, or have selective studies? **Publication bias**

For NRS

- **Plus large effect, dose response, opposing confounding**

Cochrane Handbook, Chapter 14: Completing 'Summary of findings' tables and grading the certainty of the evidence
GRADE Handbook, https://gradepro.org/resources/#handbook

Decision makers want and need to know how certain the evidence is

- Research over the last 20 years

- Today just as important – maybe more so

Examples from National Collaborating Centre for Methods and Tools
Maureen Dobbins and team at McMaster University

Executive Summary for public health decision makers

- Background

- Key Points:
  - 3-5 main themes linked to certainty (GRADE)

- Overview of evidence and knowledge gaps

- What has changed since previous version

Executive Summary

Background

Food security is a state in which all people, at all times, have physical, social, and economic access to sufficient, safe, and nutritious food that meets their food preferences and dietary needs for an active and healthy life. Food security is a basic need that can be affected by changing economic and social conditions. *Food insecurity* is the inability to acquire or consume an adequate quality diet or sufficient quantity of food in socially acceptable ways, or the uncertainty that one will be able to do so. Household food insecurity is often linked with the household's financial ability to access adequate food. The influence of the coronavirus 2019 (COVID-19) pandemic and associated public health measures on food insecurity is described in this rapid evidence review.

This rapid review was produced to support public health decision makers' response to the COVID-19 pandemic. This review seeks to identify, appraise, and summarize emerging research evidence to support evidence-informed decision making. This rapid review includes evidence available up to May 5, 2021, to answer the question: **What is the prevalence of household food insecurity in North America as a result of COVID-19 and associated public health measures?**

What has changed in this version?
- This version is an update of a previous rapid evidence review released on December 18, 2020, with a specific focus on prevalence of household food insecurity in North America in this version.
- More studies are available that provide a comparison to pre-pandemic prevalence rates, confirming the earlier findings of increased prevalence of food insecurity during the pandemic, especially among low-income households and households with children.

Key Points
- Food insecurity appears to be more prevalent during the COVID-19 pandemic than before the pandemic, particularly among low-income populations across studies that included comparisons to pre-pandemic levels. Change in prevalence of food insecurity in the general population ranged from -2.8% to 4.1% in Canada and -0.7% to 26.2% in the United States. Change in the prevalence of food insecurity among low-income populations ranged from 10% to 47%. The overall certainty of this evidence is very low (GRADE), and findings are very likely to change as more evidence accumulates.
- The studies included in this review do not describe in detail the food insecurity experiences of all specific populations who live with social and structural inequities. In particular, citizen representatives who contributed to this rapid review noted gaps in knowledge related to Indigenous or racialized communities, newcomers, refugees, social assistance recipients, single parents, and people with disabilities. Knowing the specific populations who experience food insecurity, and the factors associated with their situations, should allow for a more nuanced and specific policy response. Further research is required to build understanding of the prevalence and impact of food insecurity and to ensure representation of these populations in decision making.

GRADE - evidence for intervention effects, prognosis and diagnosis

Outcome	Studies included		Overall certainty in evidence (GRADE)
	Study design	n	
COVID-19 transmission within schools/daycares (including number of cases, cases per population, and secondary attack rates)	Syntheses	4	⊕⊕⊕◯ Moderate[1]
	Observational	42	
Impact of IPAC measures on COVID-19 transmission within schools/daycares (including number of cases, cases per population, and secondary attack rates)	Syntheses	3	⊕⊕◯◯ Low[2]
	Observational	7	
COVID-19 transmission in the community (change in number of cases, and cases per 100,000 before) after school re-opening)	Syntheses	3	
	Quasi-experimental	18	
COVID-19 transmission within camps (including number of cases, cases per population, and secondary attack rates)	Observational	6	

[1]In the GRADE approach to quality of evidence, **observational studies,** as included in thi quality evidence, and this assessment was upgraded to **moderate** based on the large ef
[2]In the GRADE approach to quality of evidence, **observational studies,** as included in thi quality evidence. No additional up or downgrades were made.
[3]In the GRADE approach to quality of evidence, this assessment was downgraded due t imprecision of effect estimates.
[4]In the GRADE approach to quality of evidence, **observational studies,** as included in thi quality evidence. No other upgrades or downgrades were made.

GRADE CERQual – evidence from qualitative research – perceptions, views, attitudes

Key Finding (Consideration for parents)	Number of studies contributing to this finding		GRADE-CERQual assessment of confidence in the evidence	Explanation of GRADE-CERQual assessment
	Study design	n		
Trust, or lack of trust, in health care providers or government	Syntheses	8	Moderate confidence	Minor concerns regarding methodological limitations, relevance
	Single	7		
Perceived safety of vaccines	Syntheses	6	Moderate confidence	Minor concerns regarding methodological limitations, relevance
	Single	7		
Satisfaction with amount and sources of information about vaccination	Syntheses	6	Moderate confidence	Minor concerns regarding methodological limitations, relevance
	Single	8		
Risk assessment of disease versus vaccination	Syntheses	4	Moderate confidence	Minor concerns regarding methodological limitations, relevance
	Single	7		
Parental choice and preference for alternative health approaches	Syntheses	6	Moderate confidence	Minor concerns regarding methodological limitations, relevance
	Single	13		

Users want to know how certain it is

Work with Cochrane plain language summaries

RISK COMMUNICATION

Presenting the Results of Cochrane Systematic Reviews to a Consumer Audience: A Qualitative Study

Claire Glenton, Dr. Philos., Nancy Santesso, RD,
Elin Strømme Nilsen, Cand. Philol., Tamara Rader, N
Helen Dilkes, MEd

(Med Decis Making 2010;30:566–577)

Journal of Clinical Epidemiology

Journal of Clinical Epidemiology 68 (2015) 182−190

A summary to communicate evidence from systematic reviews to the public improved understanding and accessibility of information: a randomized controlled trial

Nancy Santesso[a,*], Tamara Rader[b], Elin Strømme Nilsen[c], Claire Glenton[c], Sarah Rosenbaum[c], Agustín Ciapponi[d], Lorenzo Moja[e,f], Jordi Pardo Pardo[b], Qi Zhou[a], Holger J. Schünemann[a,g]

Numbers and summary statements helpful

Summary of the Findings.

What was measured	With other models of care	With midwife led care[a]	Quality of the evidence[b]	What happens with midwife led care
Women who have a C-section (14 studies, 17674 women)	15 out of 100	1 less woman will have a C-section (from 2 to 0 fewer)	⊕⊕⊕⊕ high	Little to no difference in the number of women who will have a C-section
Birth with procedures such as forceps or vacuum (13 studies, 17501 women)	14 out of 100	1 less woman will have a procedure (from 2 to 0 fewer)	⊕⊕⊕⊕ high	Little to no difference in the number of women who will have a procedure (such as forceps or vacuum)
Preterm birth <37 weeks (8 studies, 13238 women)	6 out of 100	2 fewer women will have a preterm baby (from 2 to 1 fewer)	⊕⊕⊕⊕ high	Slightly fewer women will have a preterm birth
Satisfaction with care (10 studies, 11802 women)	The majority of studies found higher satisfaction with midwife led care		⊕⊕⊕⊖ moderate	Probably higher satisfaction

Cochrane Handbook, Chapter 15

Level of certainty for public health interventions

Often low or very low

- Decision makers must use the best evidence available to make decisions

- If low or very low, then recommended actions are often not strong because we are not certain about the effects of the recommendation

Why is it often low or very low?

Why is evidence for public health decisions often low or very low?

Complex interventions
- Hard to determine what part is specifically ca
- Hard to tease out if an intervention that was interventions will have the same effect when
- Concern about applicability to other settings
- INDIRECTNESS

Study designs
- Often few randomised controlled trials (not f
- Non-randomised studies often at risk of bias data)
- RISK OF BIAS

Can we fix these concerns?

Often not

It still means we are not certain in the results and we need to communicate concerns to decision makers and other users

Points to consider

- **Individual/Clinical versus public health perspective** – choose outcomes and present evidence for those outcomes

- **Summary of findings** – clear information about effects and use appropriate population baseline risks

- **Certainty of evidence** – important for decision makers to understand, interpret and then communicate along with effects

Cochrane Methods

2021 Cochrane Methods Symposium: Evidence synthesis in public health and complex interventions
Session 2: Evidence synthesis in public health: challenges and opportunities