Photo credit: Neil Zeller

Status of Emergency Preparedness – A Focus on Critical Infrastructure Risk

2020 October 22

Emergency Management Committee of Council

#EM2020-1192

Agenda

I. Introduction

II. Comprehensive Emergency Management

III. A Focus on Risk – Critical Infrastructure

IV. COVID-19

V. Conclusion

VI. Q & A

Tom Sampson
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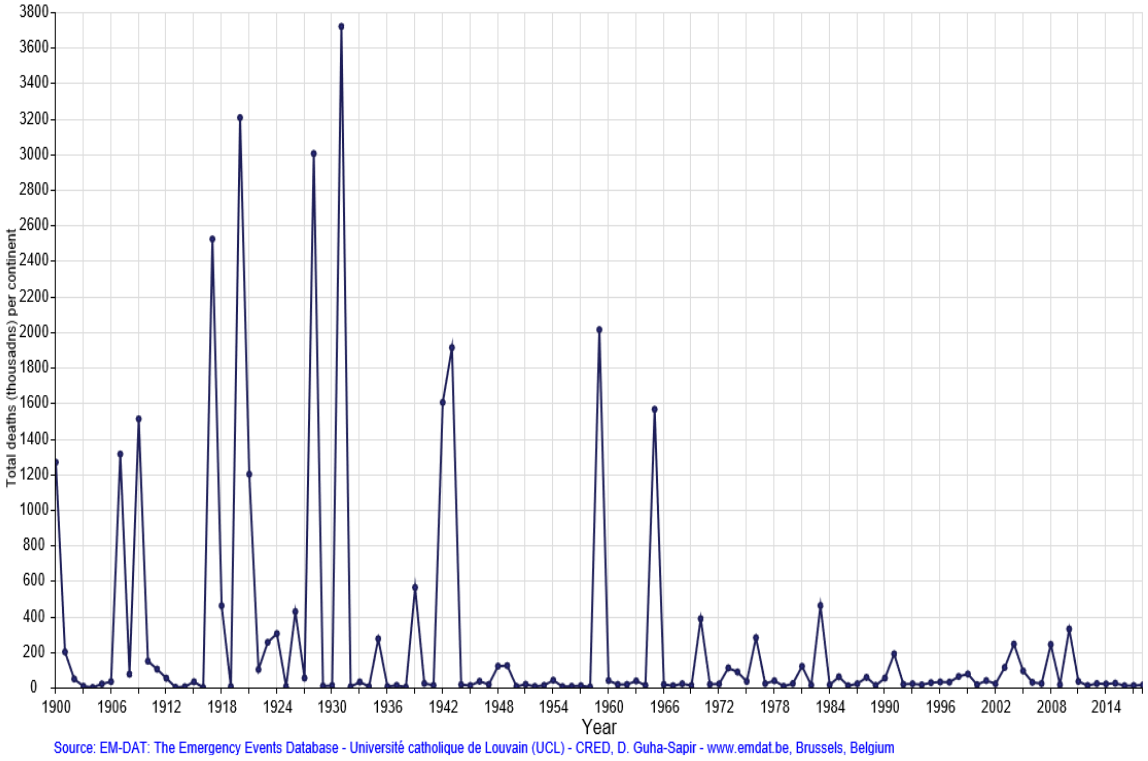
Leader, Disaster Risk Reduction

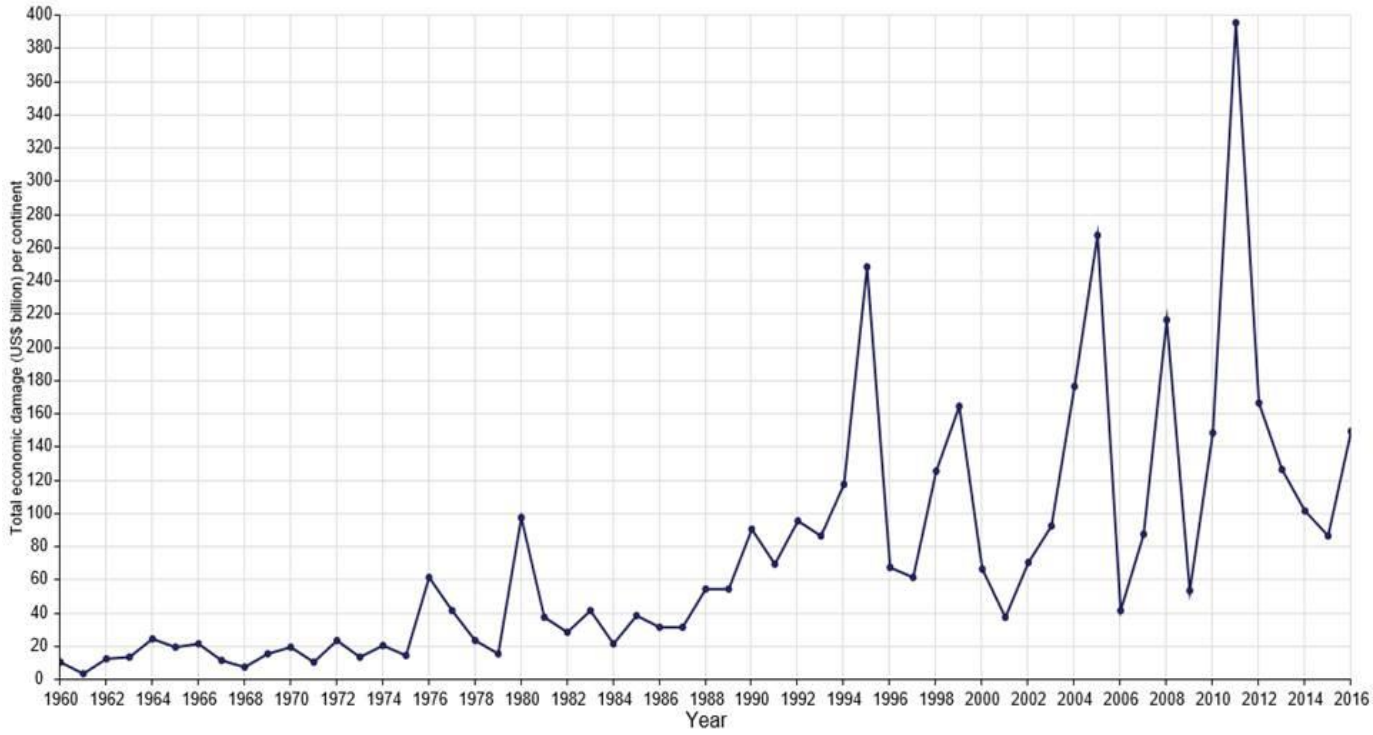
Kerrie Green
Planner, Calgary's Critical Infrastructure Network

Evolving Trends in Disaster Impact

Total Deaths caused by Natural Disasters: 1900 - 2018



Total Damage caused by Natural Disasters: 1900 - 2018



Emergency Management Priorities

1) Life Safety

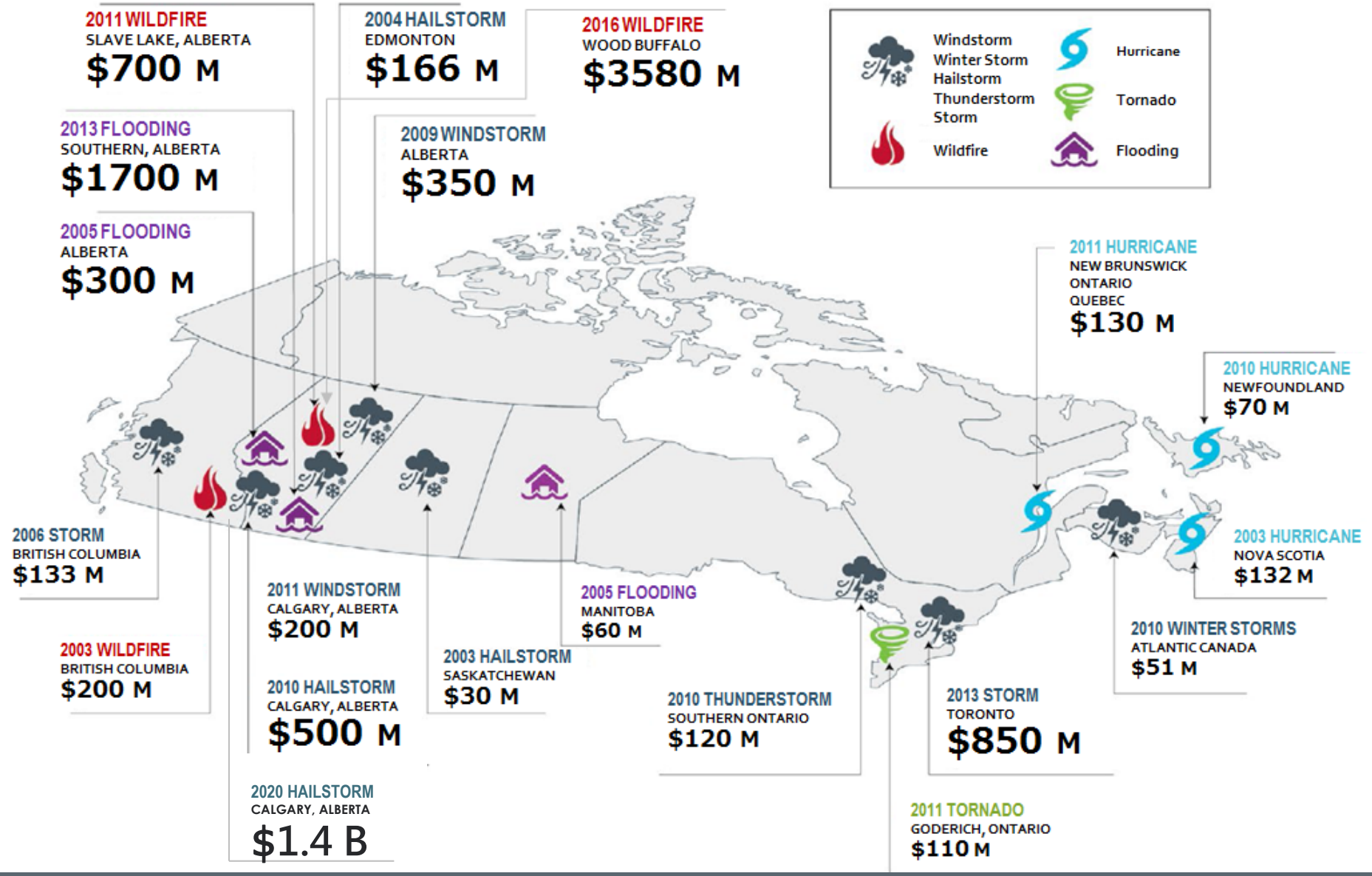
2) Critical Infrastructure

3) Environment

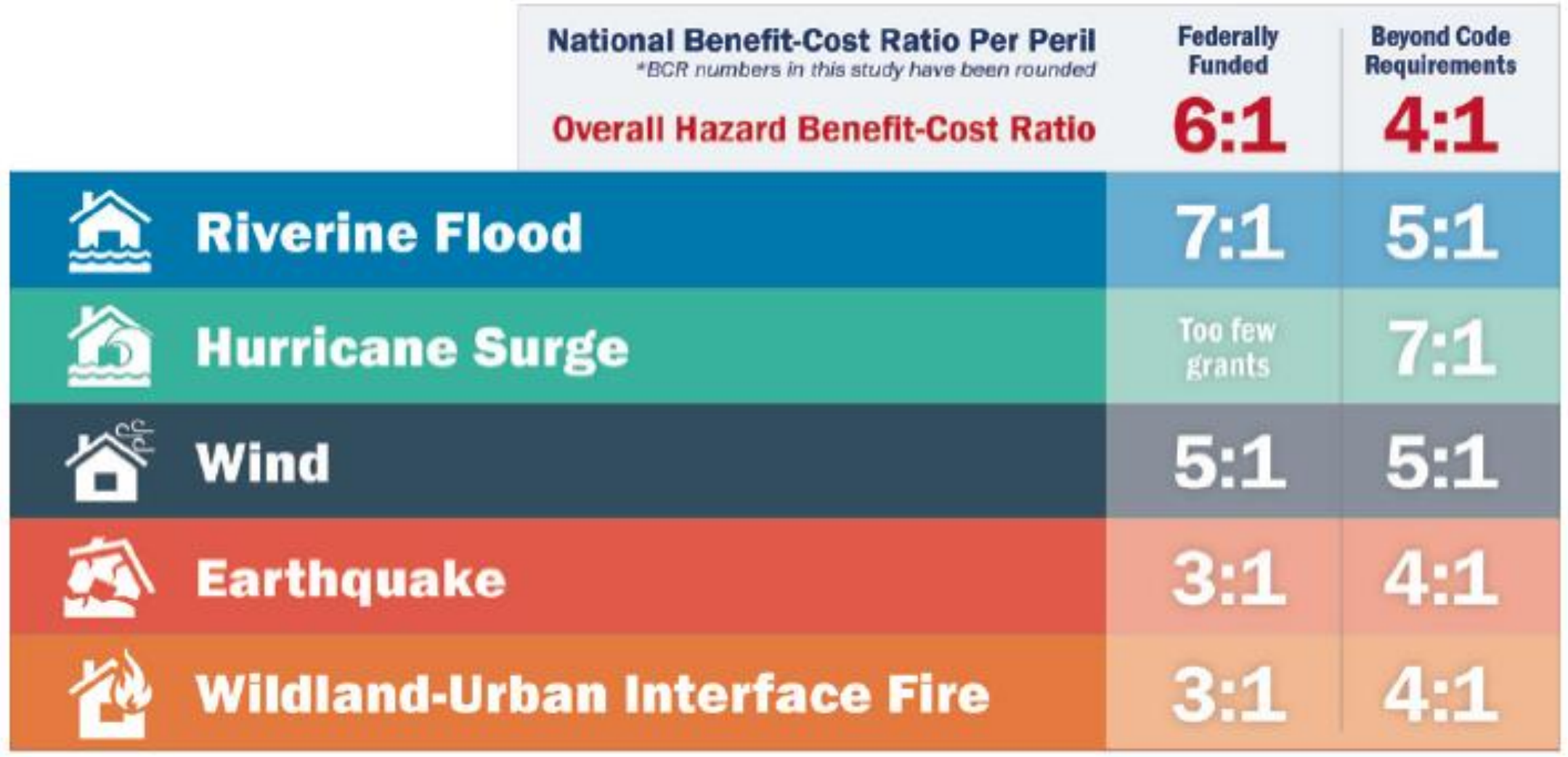
4) Economy

5) Cultural Heritage

National, Provincial and Local



Advantages to Risk Reduction



Source: NIBS Hazard Mitigation Saves: 2017 Interim Report

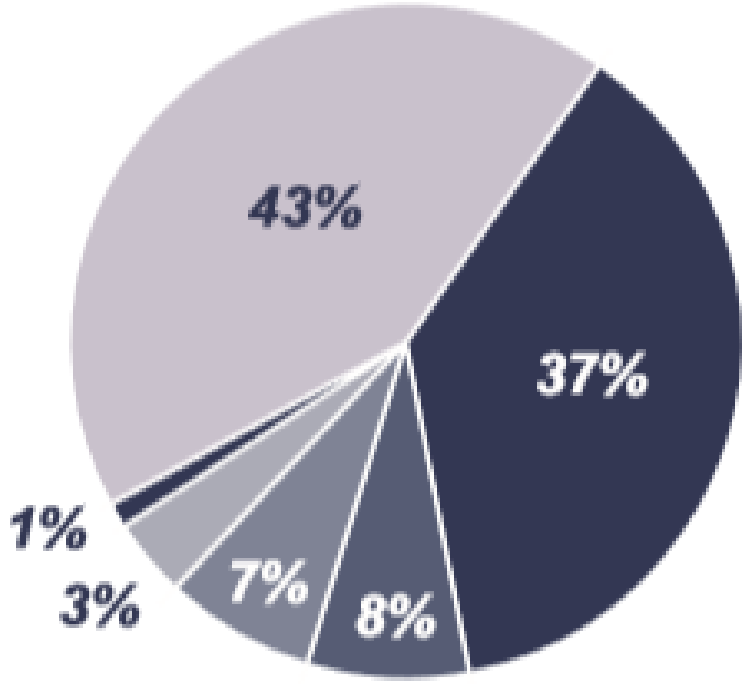
Advantages to Risk Reduction – Holistic ROI

Benefit: $157.9 billion

- 43% – Casualties & PTSD: $68.1
- 37% – Property: $58.1
- 8% – Additional living expenses & direct business interruption: $12.9
- 7% – Insurance: $10.5
- 4% – Indirect business interruption: $6.3
- 1% – Loss of service: $2.0

billions 2016 USD

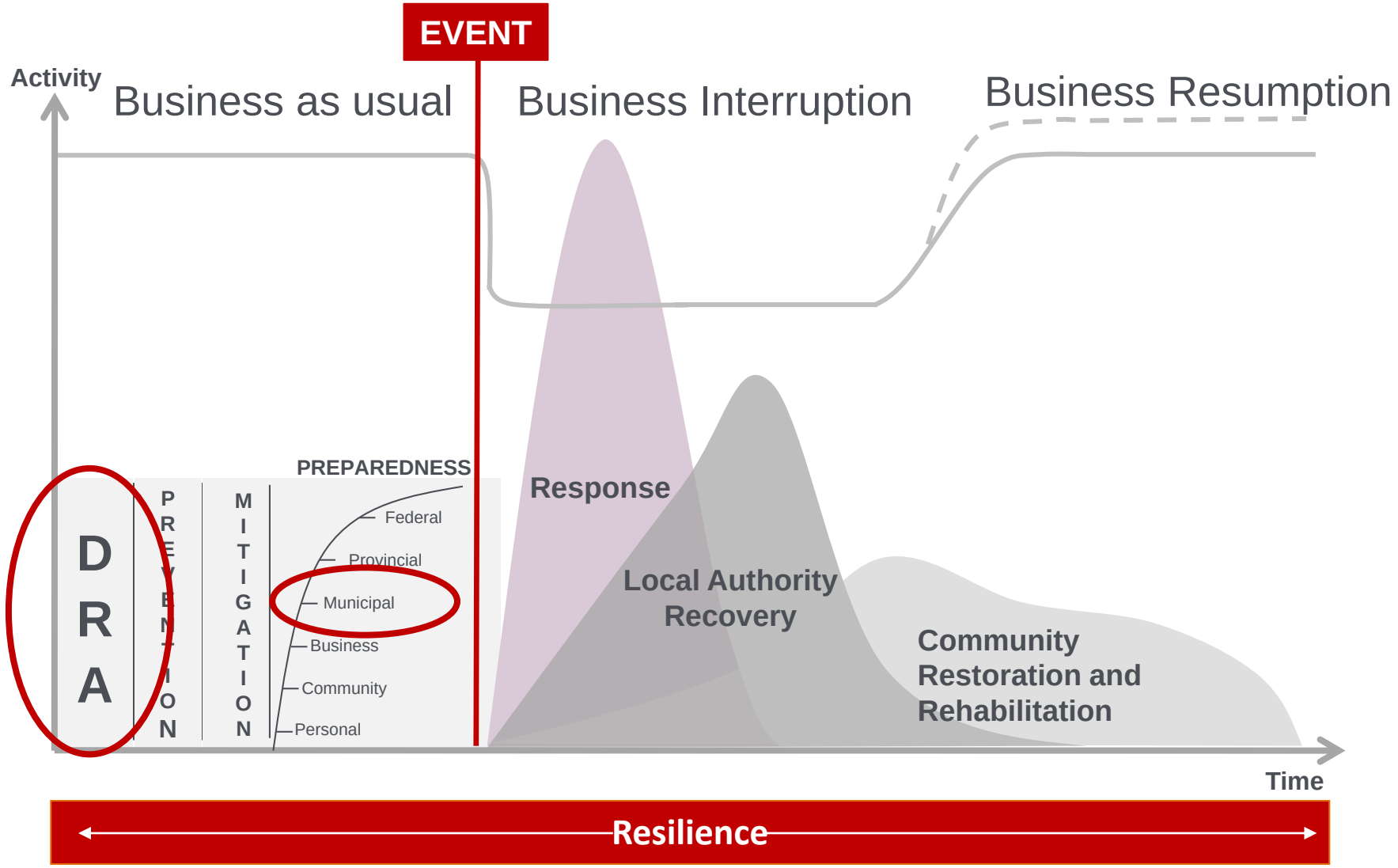
Cost: $27.4 billion



Overall = 6:1 Return on Investment

Source: NIBS Hazard Mitigation Saves: 2017 Interim Report

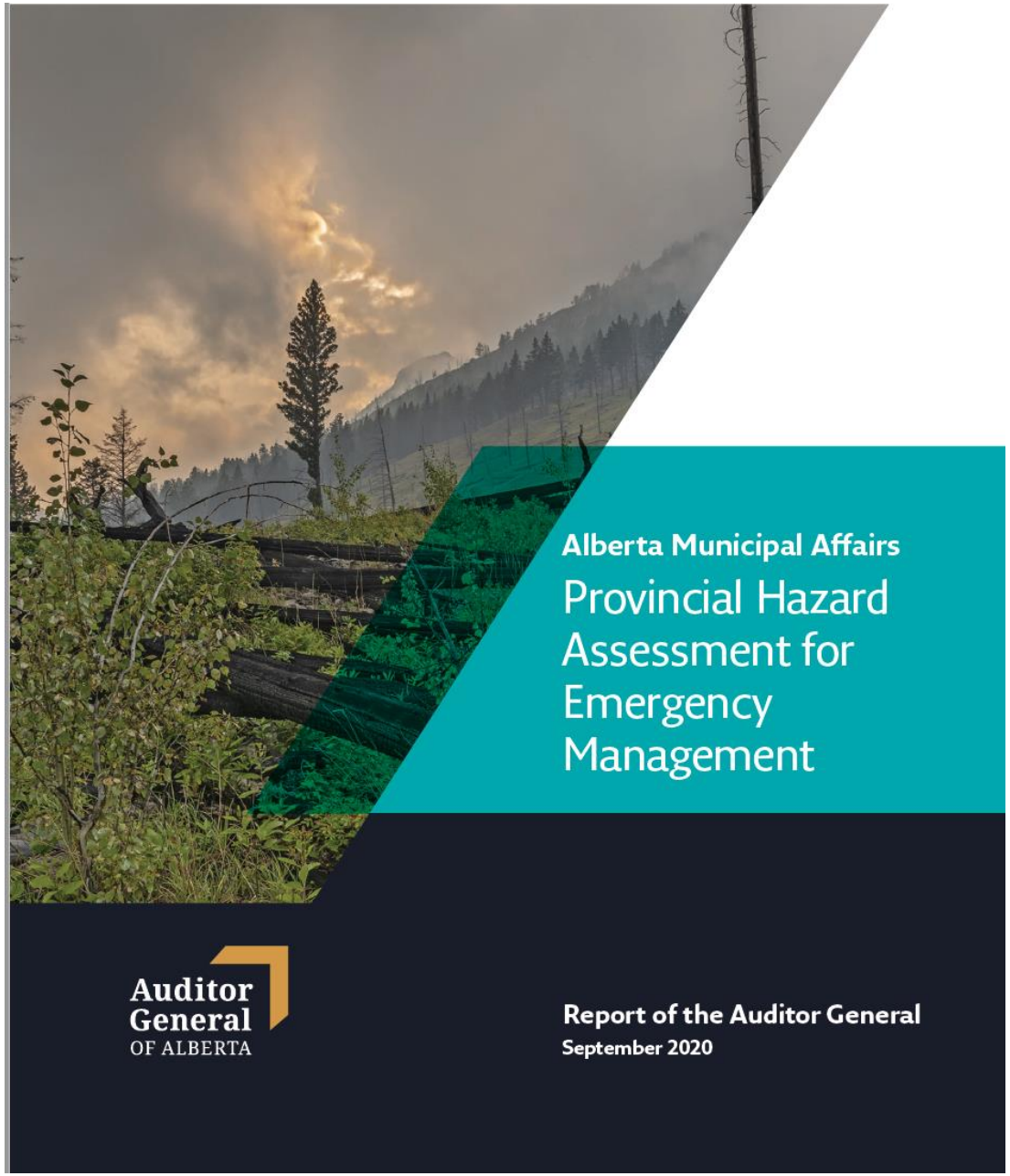
Comprehensive Emergency Management Model



Disaster Risk Assessment

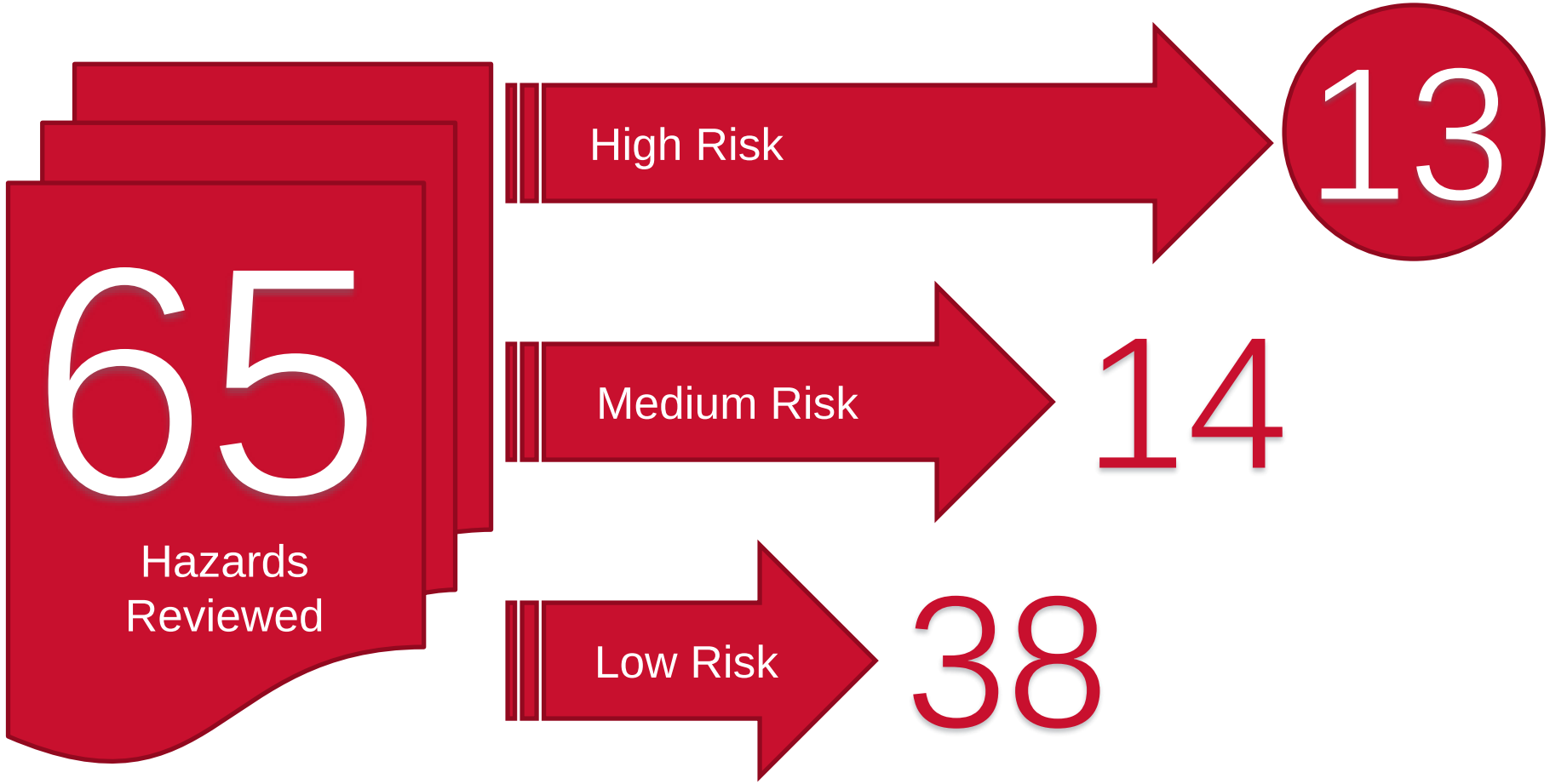
"Calgary's City Auditor found that Calgary had an effective disaster risk assessment process that supported its emergency mitigation and preparedness activities through the preparation, review and communication of the assessment."

Page 19 of 24

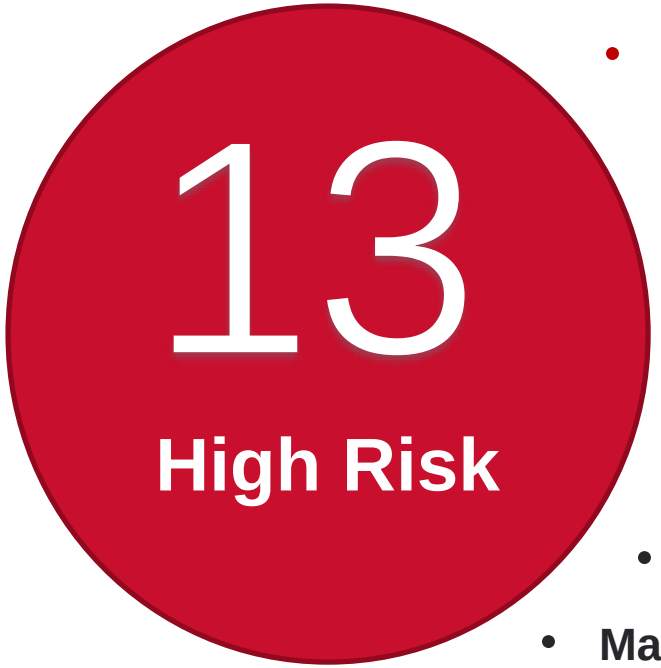


Disaster Risk Assessment

2018 Disaster Risk Assessment (DRA)



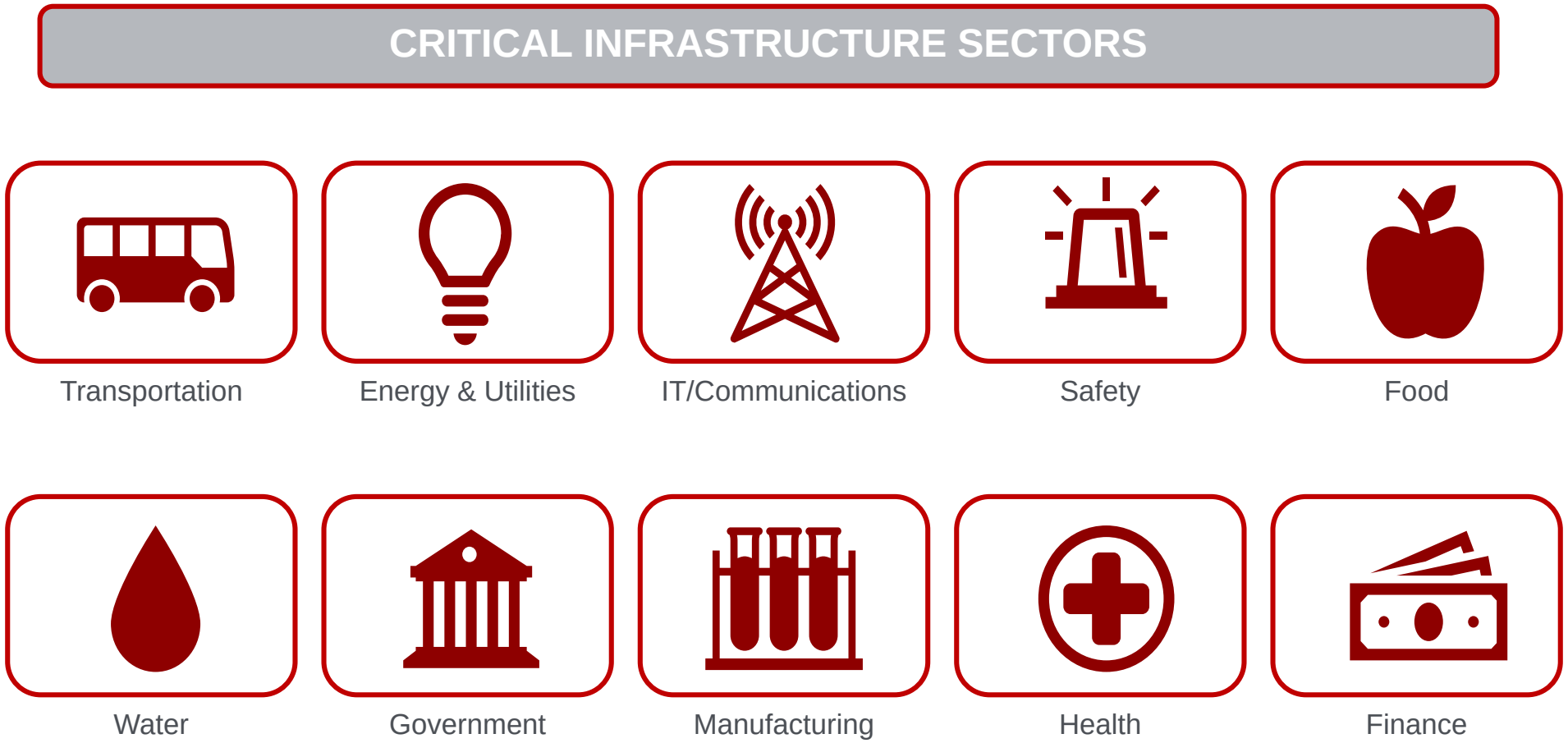
High Risk Disasters in Calgary



- Extreme cold
- Major rail incident
- Severe storm - blizzard
- Major dam breach – Bow River
- Severe storm - winter storm
- Catastrophic riverine flooding Elbow River (1:100)
- **Major critical infrastructure failure or disruption**
- Catastrophic riverine flooding Bow (1:100)
- Severe storm - heavy rainstorm
- **Mass casualty incident***
- **Major hostage incident***
- **Major drought**
- Tornado

* special consideration when determining likelihood for police/security threats

What is Critical Infrastructure?



Introduction to Critical Infrastructure Risk

Risk Level: High **Likelihood: Likely** **Risk Trend: Increasing** **Consequence: Moderate**

Factors to Consider…

- Multi-jurisdictional
- Interdependencies and interconnected systems
- Increasing complexity and technological dependence
- Vulnerable to other hazards

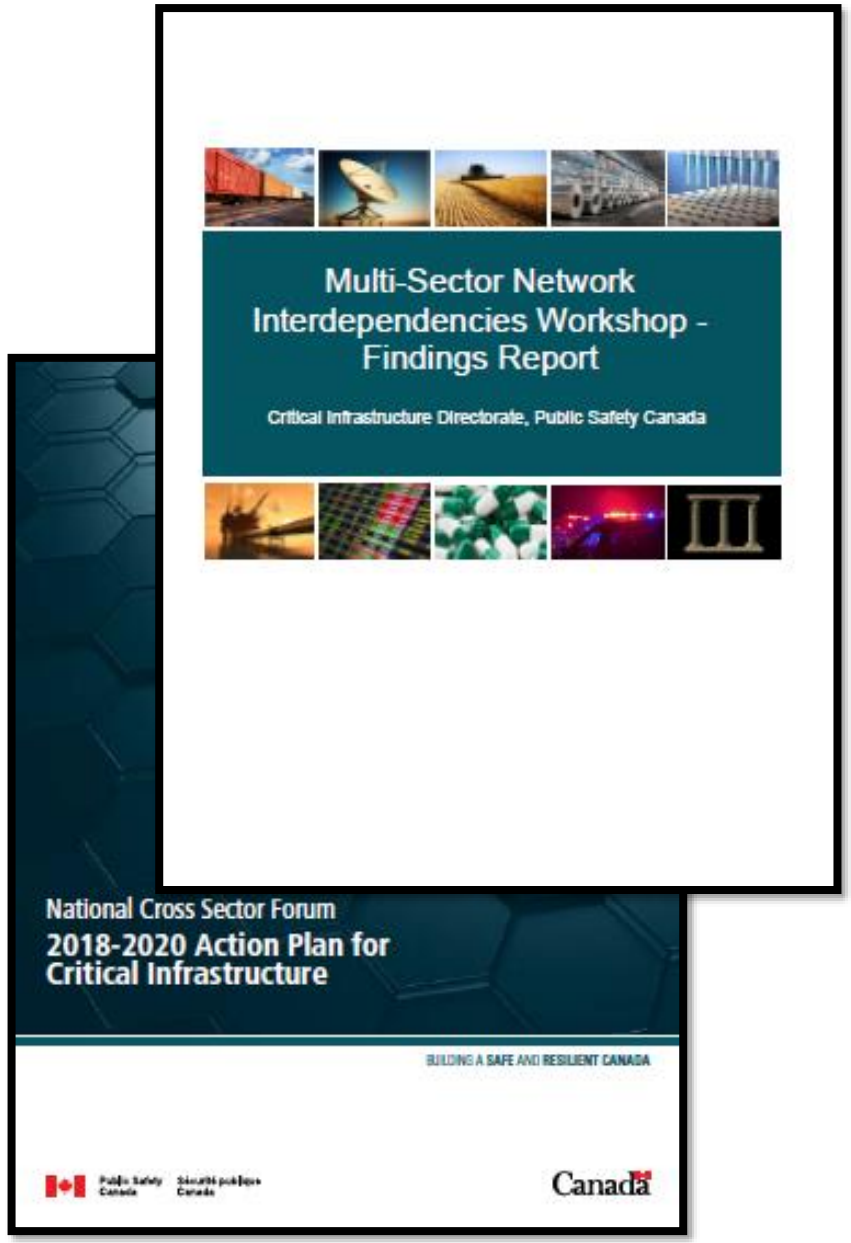
Building Resilience

Public Safety Canada's National Critical Infrastructure Strategy (2009) noted 3 key focuses to build resilience:

1. Build Partnerships

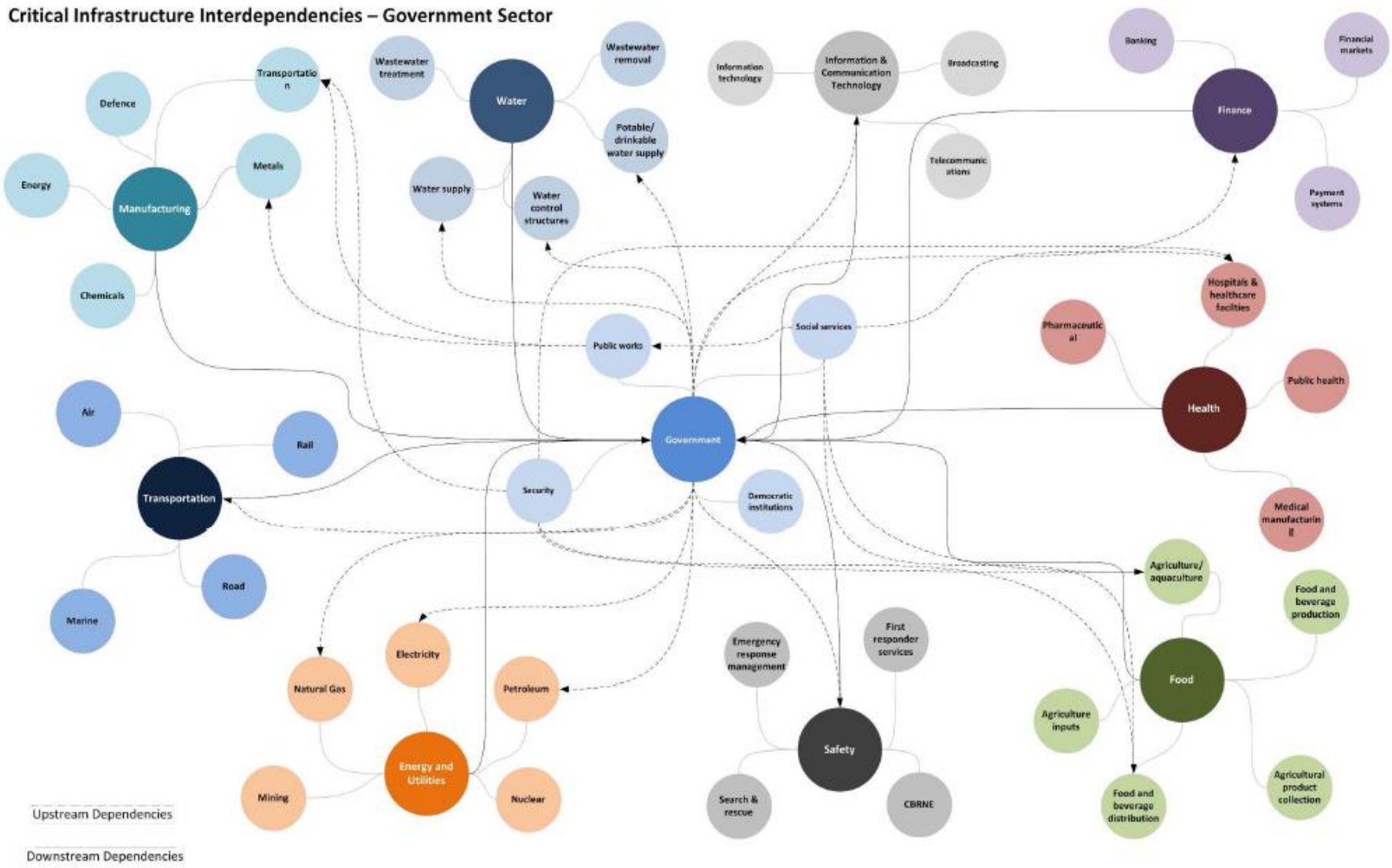
2. Implement an all-hazards risk management approach;

3. Advance the timely sharing and protection of information among partners



Source: Public Safety Canada (2009)

Interdependencies and Evolving Impacts



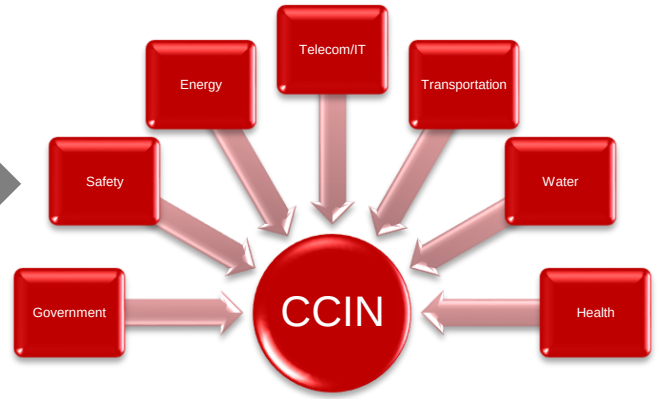
Calgary

Secondary Consequential Event

Primary Trigger Event		Human-induced and technological threats					Natural hazards							
		CI Failure	Major Rail Incident	Major Dam Breach Bow River	Major Hostage Incident	Major Mass Casualty Attack	Catastrophic Flooding Bow River	Catastrophic Flooding Elbow River	Extreme Cold	Major Drought	Severe Blizzard	Severe Heavy Rainstorm	Severe Winter Storm	Tornado
Human-induced and technological threats	CI Failure	4	2	1	1	1	1	1	1	0	0	0	0	1
	Major Rail Incident	3	4	2	1	1	1	1	0	0	0	0	0	1
	Major Dam Breach Bow River	4	4	4	1	1	3	3	0	1	0	1	0	1
	Major Hostage Incident	1	1	1	1	3	1	1	0	0	0	0	0	1
	Major Mass Casualty Attack	1	1	1	1	1	1	1	0	0	0	0	0	1
Natural hazards	Catastrophic Flooding Bow River	3	3	3	1	1	1	1	0	0	0	1	0	1
	Catastrophic Flooding Elbow River	3	3	1	1	1	1	1	0	0	0	1	0	1
	Extreme Cold	2	1	1	0	0	0	0	1	0	1	0	1	0
	Major Drought	2	0	0	0	0	0	0	0	1	0	1	0	0
	Severe Blizzard	0	2	0	0	0	0	0	1	0	1	0	1	0
	Severe Heavy Rainstorm	3	3	3	0	0	3	3	0	0	0	1	0	1
	Severe Winter Storm	3	3	1	0	0	0	0	1	0	1	0	1	0
	Tornado	3	3	2	0	1	1	1	0	0	0	1	0	1

Calgary Critical Infrastructure Network

- Alberta Health
- Calgary Airport
- Water
- CEMA
- Chamber of Commerce
- TransAlta
- EMS
- Fire
- Police
- Roads
- City Clerks
- Waste and Recycling
- ENMAX
- ATCO
- TELUS
- Shaw
- Transit



- Coordinated
- Collaborative
- Cooperative
- Cohesive

Calgary Critical Infrastructure Network: Action plan

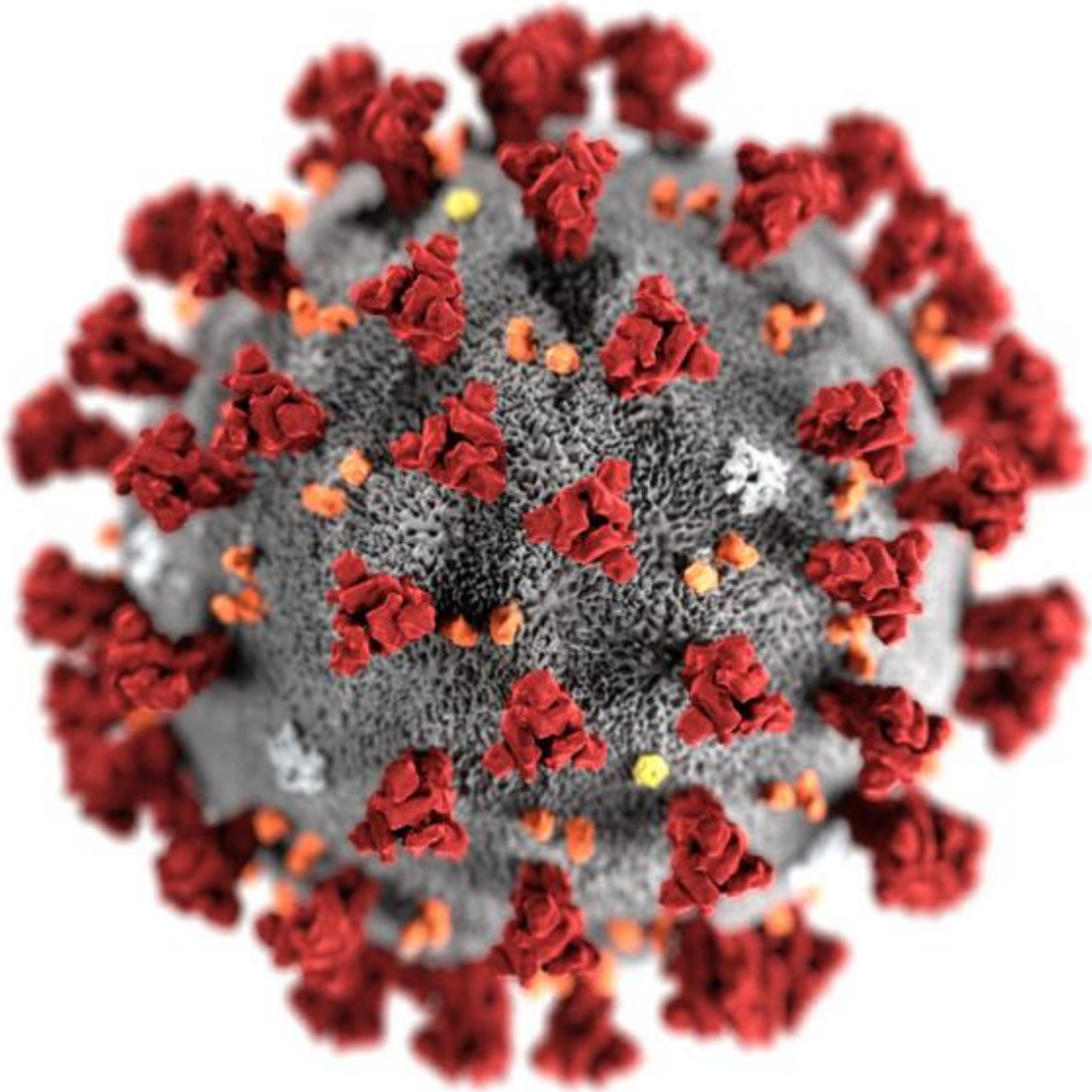
1. Facilitate cross-sector education

2. Develop communication tools

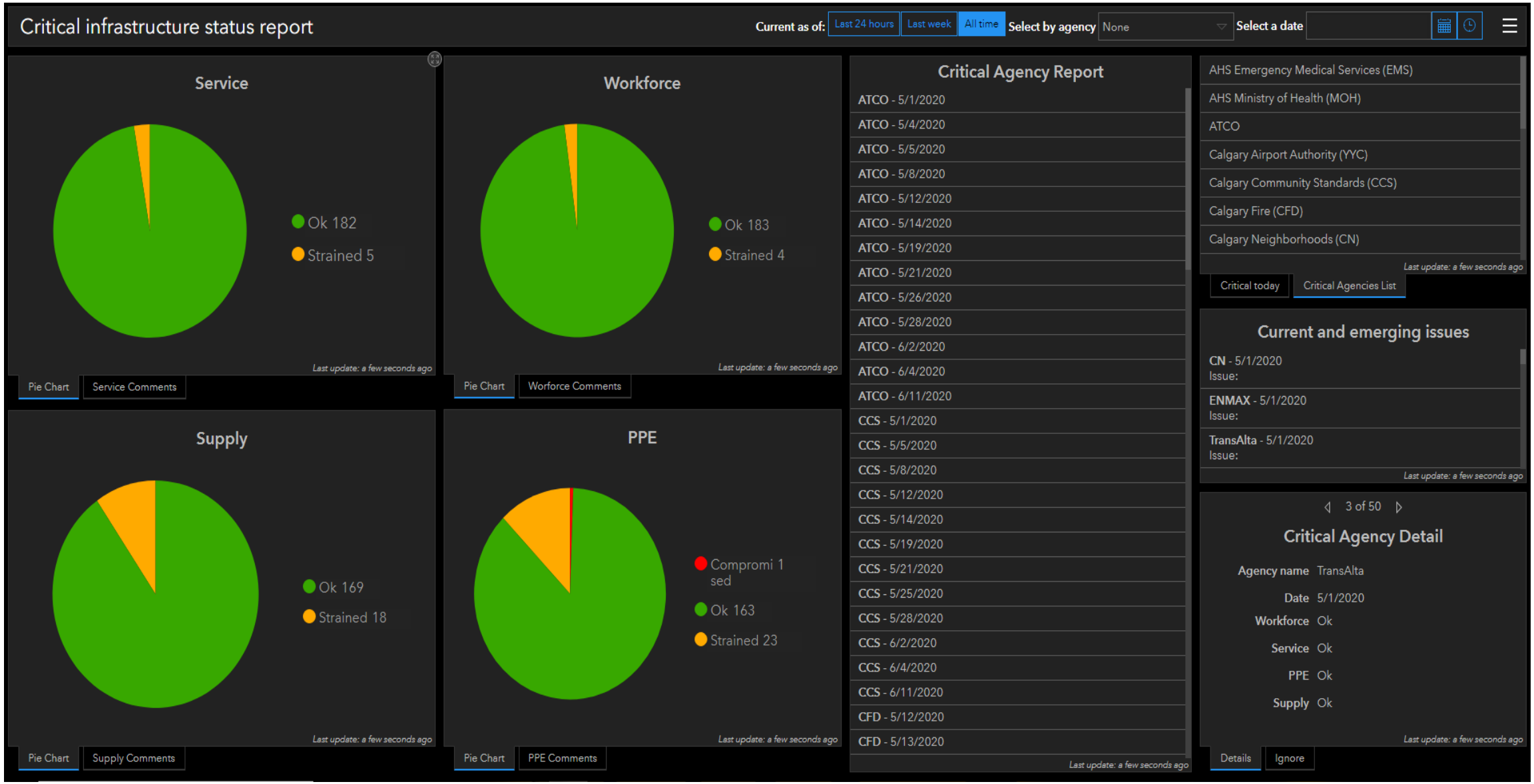
3. Develop a common understanding of Critical Infrastructure

4. Engage in training & exercises

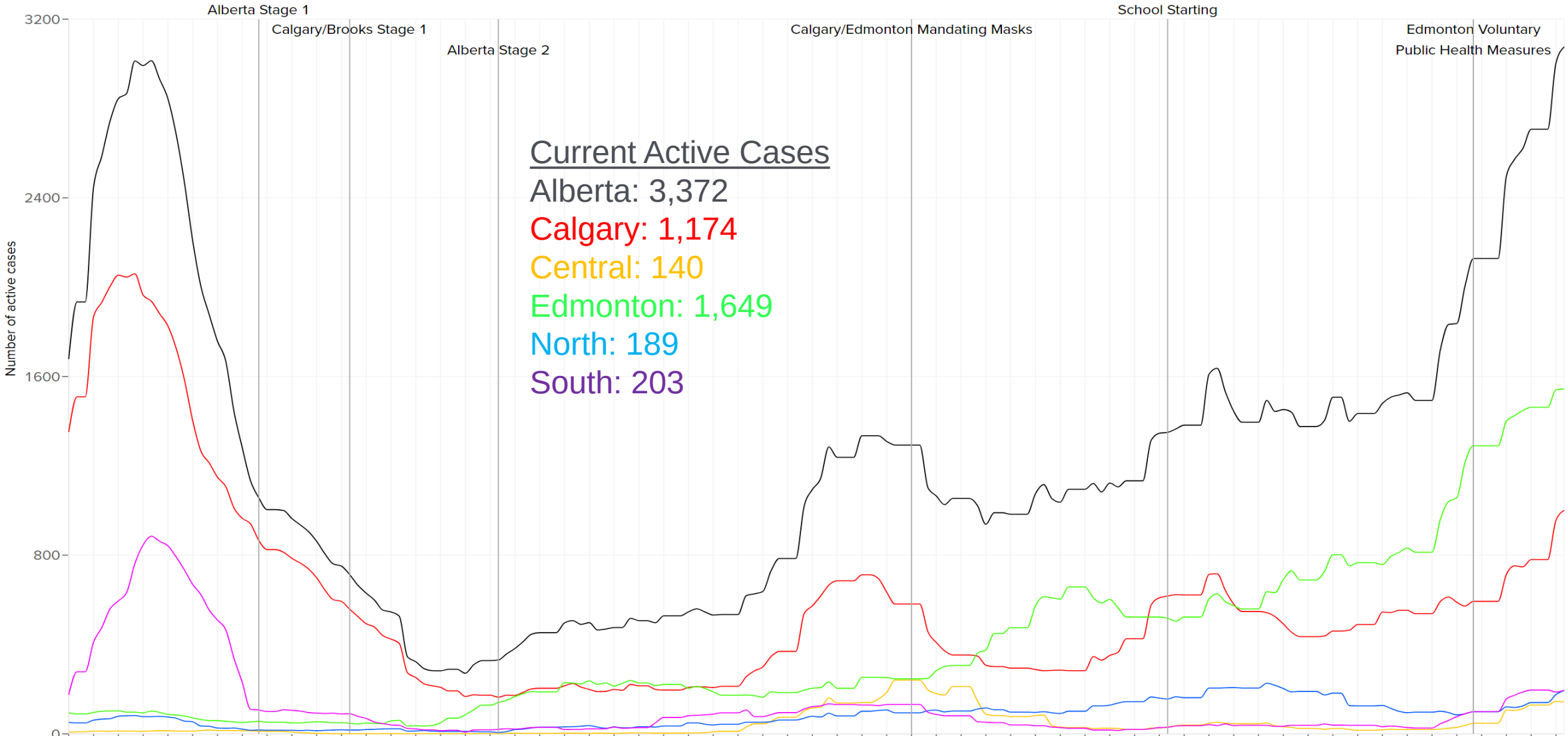
Calgary Critical Infrastructure Network in COVID



Calgary Critical Infrastructure Network: COVID Dashboard

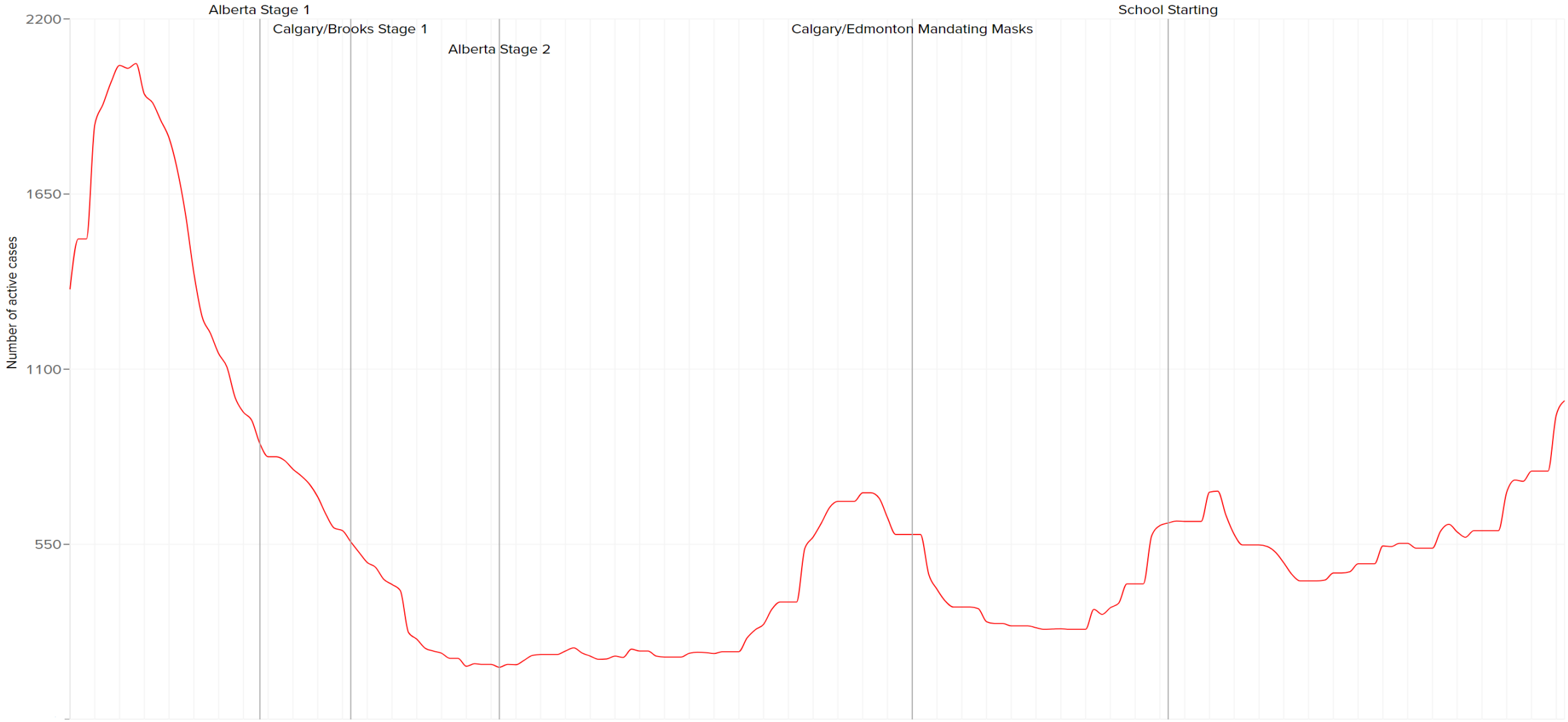


COVID-19 Update: Calgary / Alberta Active Case Comparison



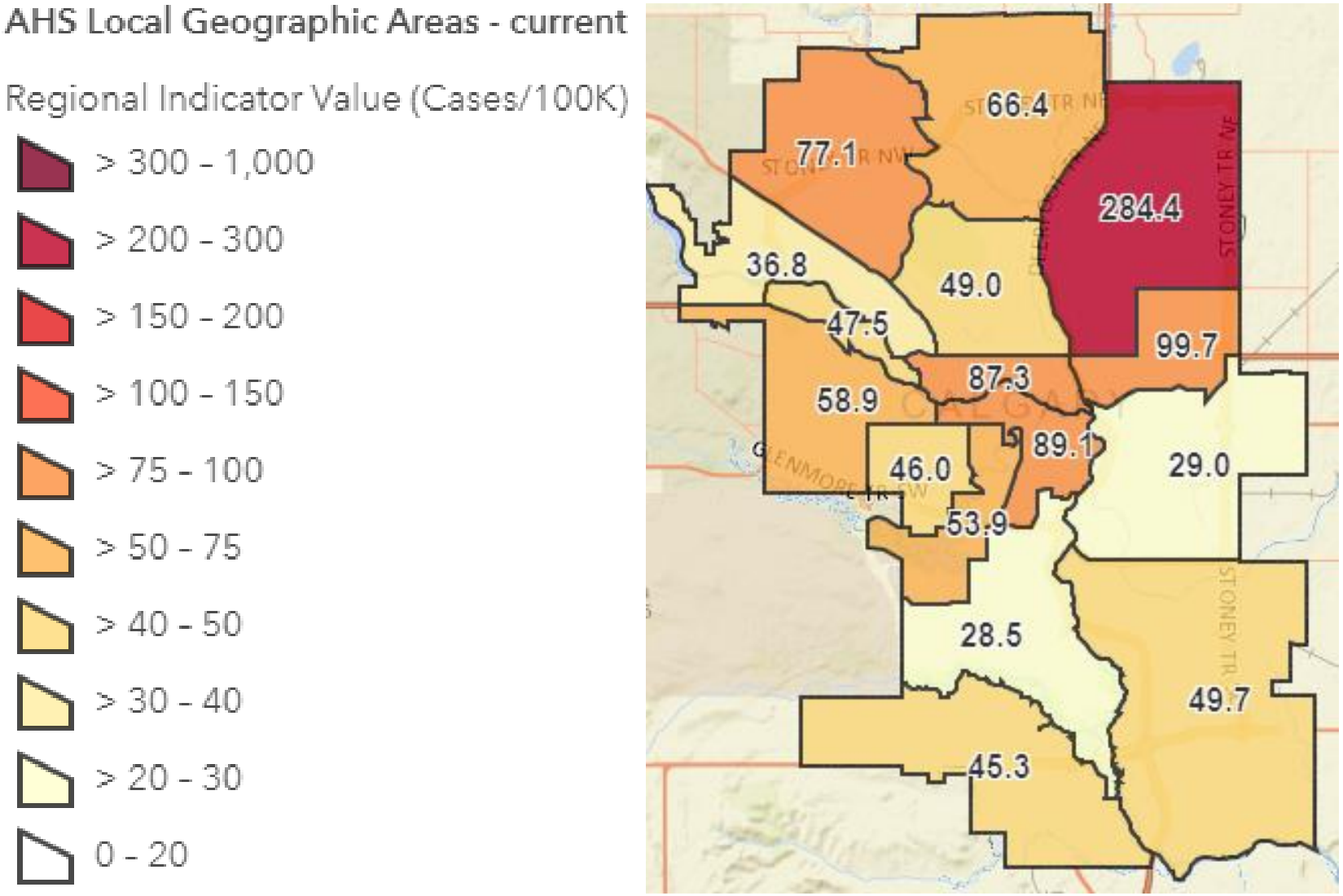
Source: University of Calgary: https://www.chi-csm.ca/

COVID-19 Update: Calgary Active Cases



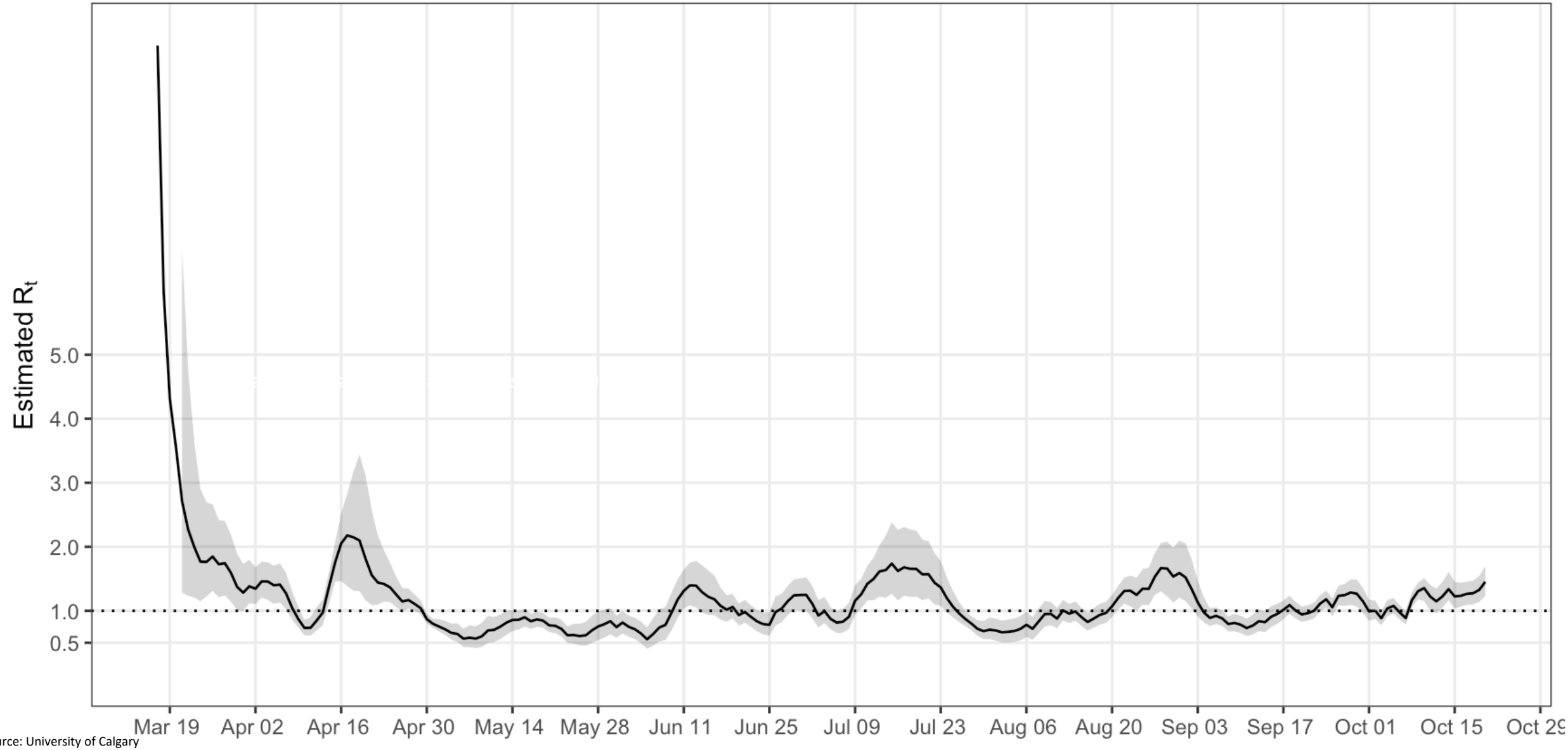
Source: University of Calgary: https://www.chi-csm.ca/

COVID-19 Update: Local Geographic Areas



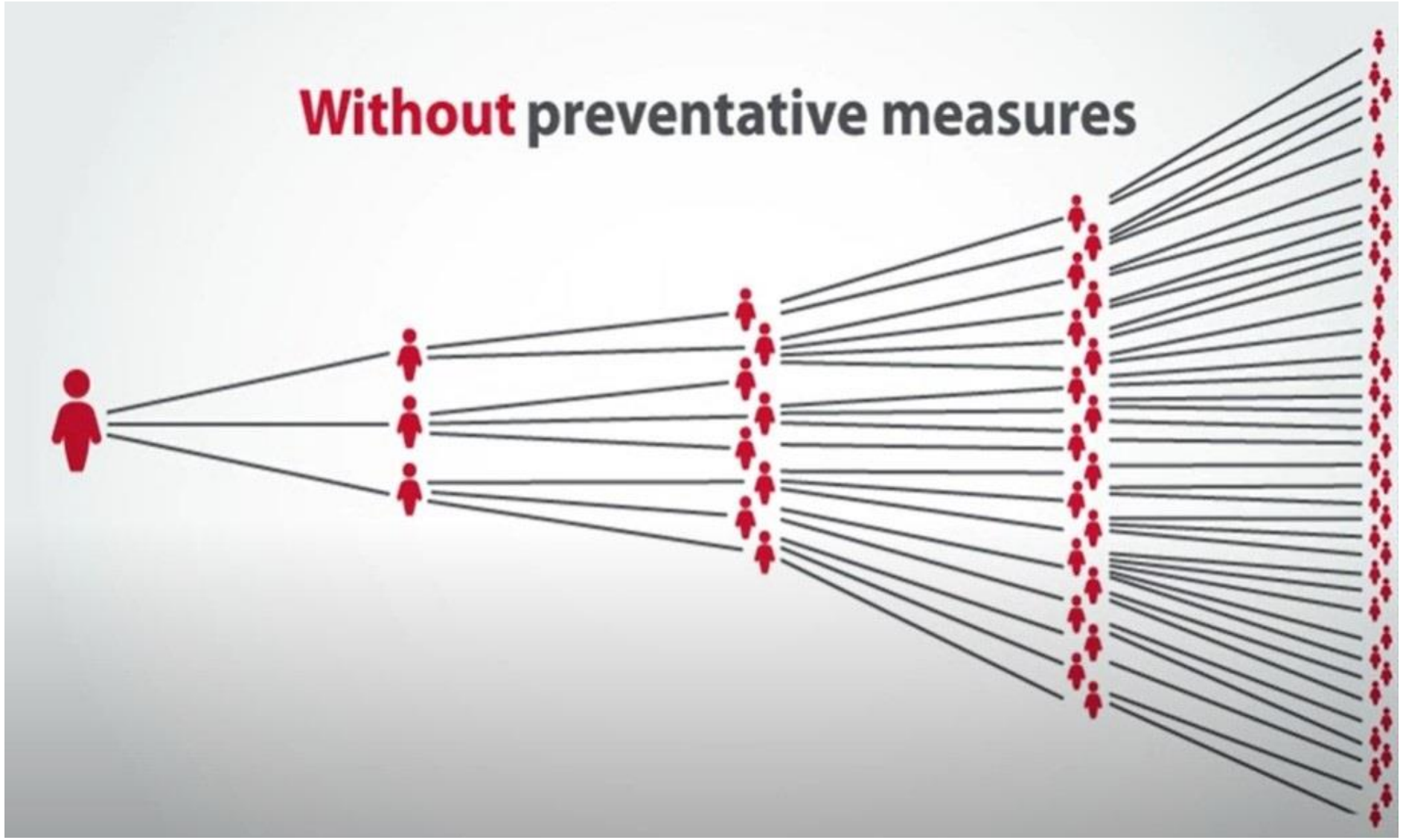
Source: City of Calgary

COVID-19 Update: Reproductive Rate of Transmission

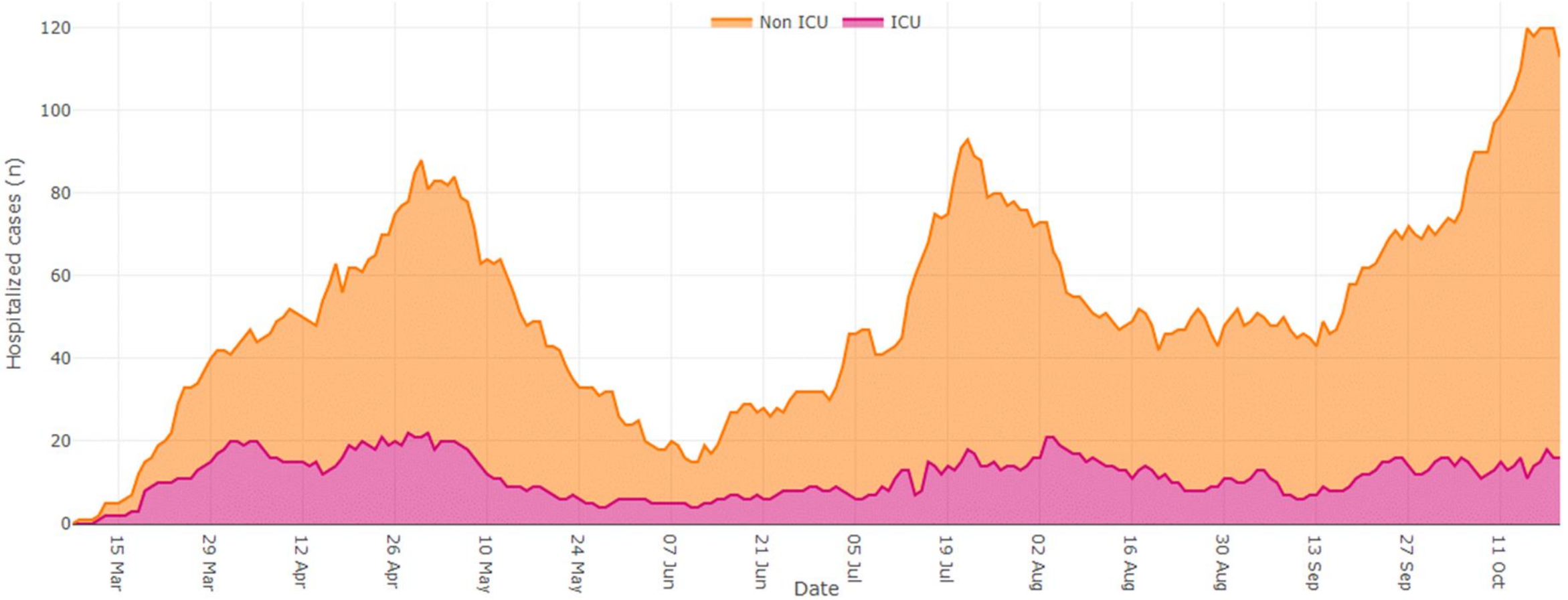


Source: University of Calgary

Our Collective Role in Transmission



COVID-19 Update: Hospitalizations in Alberta



Source: Government of Alberta: https://www.alberta.ca/stats/covid-19-alberta-statistics.htm

COVID-19 Update: COVID-19 Response Plan

LEVEL 1: WATCH

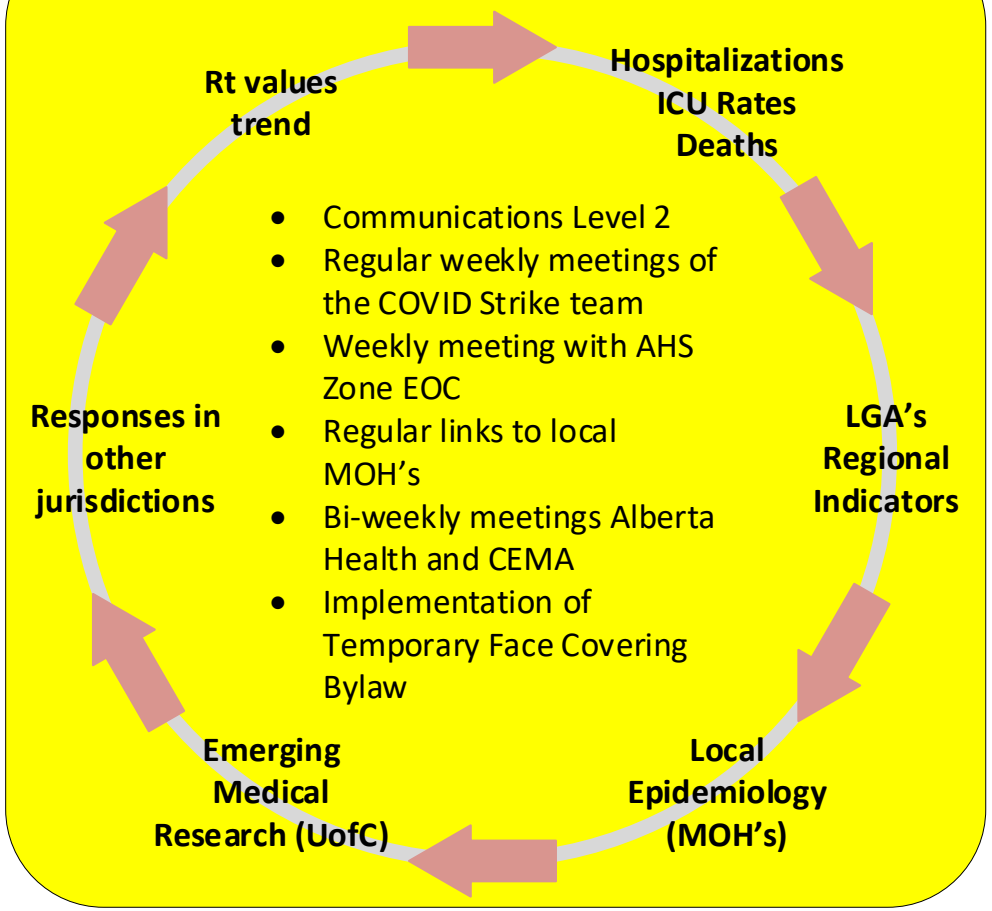
Communications Level 1

Monitoring emerging events for situational awareness

Monthly meetings with regional, provincial and national partners

Business continuity across Agency

LEVEL 2: ENHANCED WATCH



LEVEL 3: RESPONSE

Communications Level 3

Opening of virtual EOC

Consider implementation of SOLE

Service decisions on City owned and operated facilities

Ensure continuity of essential services

LEVEL 4: COMPLEX RESPONSE

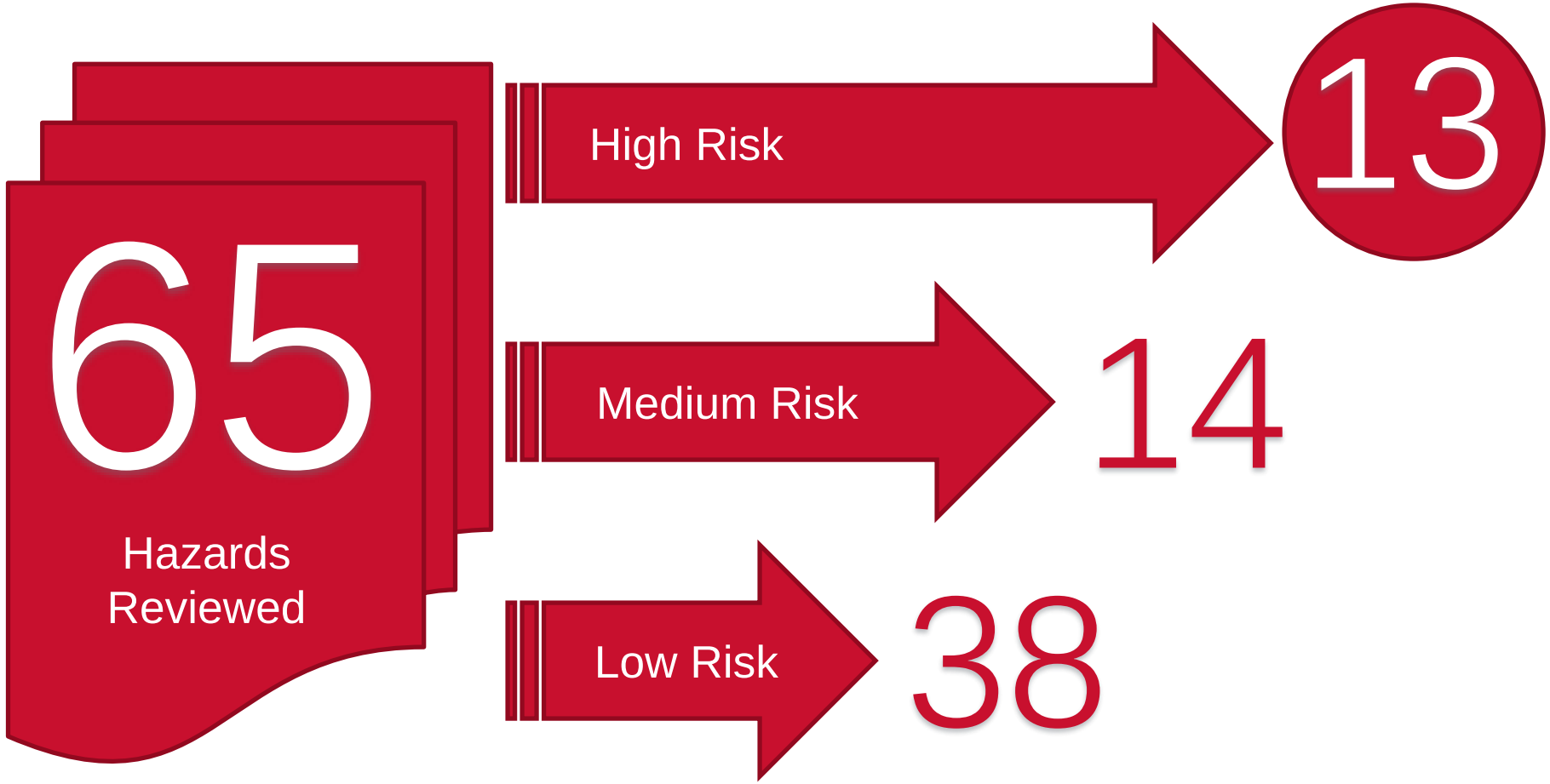
Communications Level 4

Regional or Provincial Chief Medical Officer of Health Orders

Government of Alberta orders

Implementation of State of Local Emergency

2018 Disaster Risk Assessment (DRA)



Calgary Emergency Management Agency

Collaboration & Coordination