

Extreme Weather Risk

June 2024





Imagine a world where
your morning commute
is disrupted by a sudden
flash flood.....



where your conference plans change due to an unexpected heat wave....





where your insurance costs sky-rocket because of the increasing frequency of devastating wildfires



This is not a distant dystopia

Global News
https://globalnews.ca › news › grande-prairie
Grande Prairie evacuation ordered
May 12, 2024 — Meanwhile, evacuation also ordered in southern Quebec

The Weather Network
Severe storms move through parts of eastern
forces evacuation of

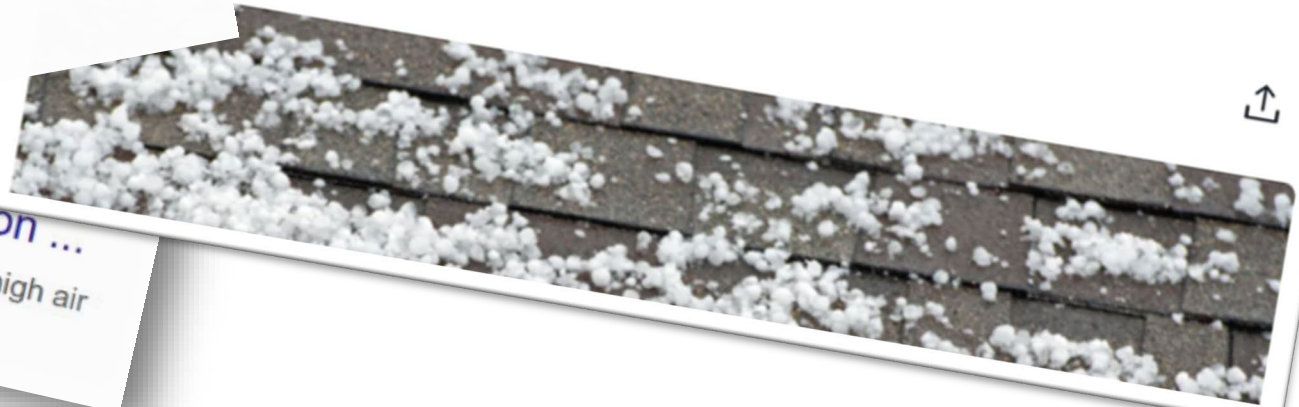
'Prolonged heat event' to bake the GTA this week

Heat warning in place as it will feel like 40 and above most days this week

CBC News · Posted: Jun 17, 2024 6:08 AM EDT | Last Updated: 1 hour ago



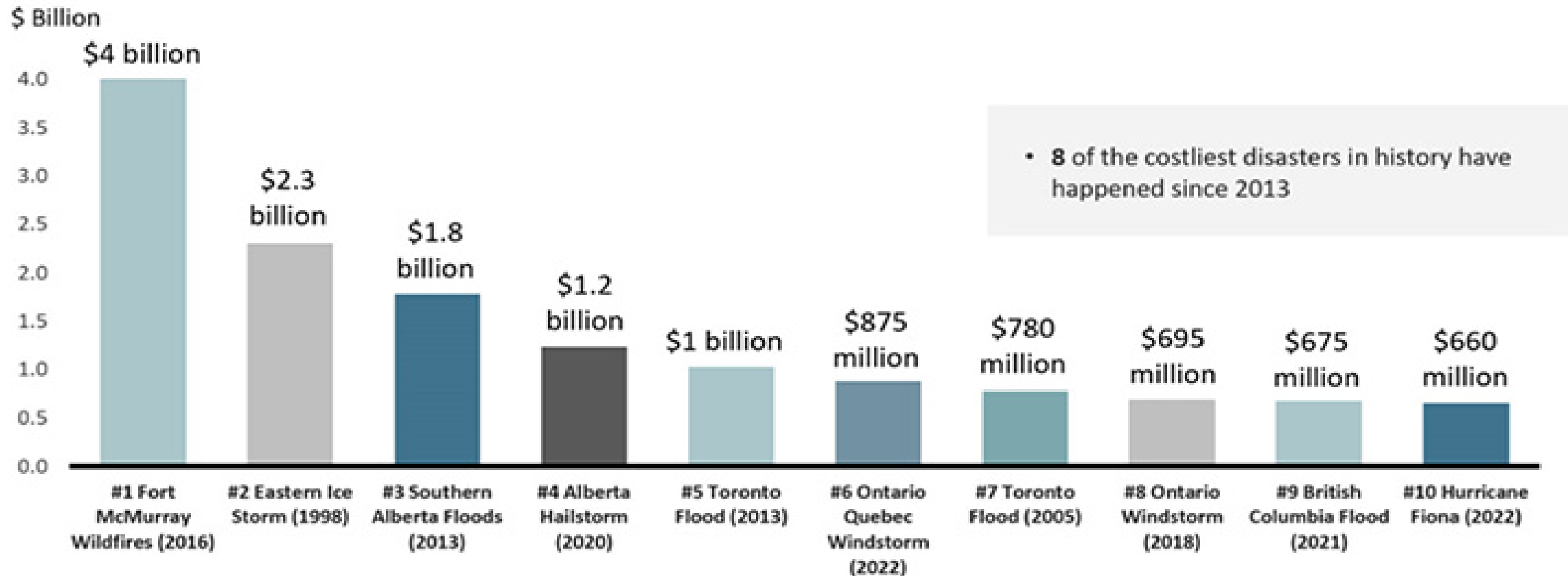
By [Name]
Posted June 17, 2024



... wildfire smoke pollution ...
... Ontario and Quebec is leading to high air ...
... most of Ontario in the next few days ...

What are we going to talk about

Canada: Top 10 Natural Disasters for Insurance Payouts



Losses exclude Loss Adjustment Expenses

Source: IBC Facts Book, PCS, CatIQ, Swiss Re, Munich Re & Deloitte

Values in 2021 \$ CAN

Natural Catastrophes

Canada: Insured Catastrophic Losses in 2023





Wildfire



Wildfire Underwriting

Definition: Wildfire is an uncontrolled, destructive fire that spreads quickly over woodland vegetation or brush.



- The **wildland urban interface**, or where human development meets or intermingles with the natural environment.
- Having wildland fuel (forests, grasses), next to built fuels (man-made infrastructure) create complex conditions for the spread of fire, more so than strictly an isolated wildfire or structure fire.

Wildfire Specific Underwriting, why now?

Consequence of Climate Change:

- Summers are longer and hotter
- Vegetation is dryer for longer
- Less precipitation due to the warmer temperatures

Causes of wildfires:

Lightning 60%



Human Activity 40%



Damages Caused by wildfires

Primary:

- Fire

Secondary:

- Smoke Damage
- Flash Flooding
- Mudslides
- Sprinkler/Water Damage
- Damage from resulting Power Outages

Which Canadian Cities are most at risk of wildfires?

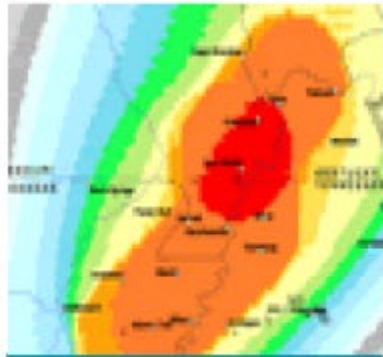


Most cities in Ontario remain safe compared to their western counterparts, though the following rank as potential risks, per the study:

*risk scores were calculated by using the two key metrics across the critical fire season months from May to September: the Forecast Severity Rating (FSR) and the Forecast Severity Anomaly (FSA) - both retrieved from the Monthly and Seasonal forecast by the Canadian Wildland Fire Information System

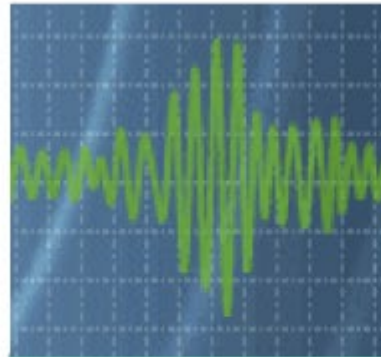
Exposure Management

Catastrophe Modelling



Generate
Stochastic
Events

Create a set of
representative
EQ events and
associated
*long-term
probabilities*



Assess Event
Hazard

Calculate the
ground motion of
each event at all
sites



Apply Exposure

Apply *exposure
characteristics*



Calculate
Damage

Calculate the
average *damage*
and associated
variability



Quantify
Financial Loss

Calculate the
financial impact
for all
participants and
generate metrics

Key outputs:

1. Average (or Anticipated) Annual Loss, known as AAL
2. Probable Maximum Loss, known as PML

Exposure Management

Details Exposure Adjustments Loss Pricing Notes
Export Nofby Teams Not bound Entity GCS Currency CAD Tolerance Set GCS_Tolerance_2

Exposures

Name	Loc Cnt	Exposure Value	Bound
Commercial_Property	335,901	1,889,172,934,502	--
Commercial_Property Gross ex...	334,353	493,560,700,475	--
Commercial_Property Gross inc...	334,353	492,378,155,174	--

Aggregate Monitoring

Exp by Area

Name	Loc Cnt	% of Loc	TIV	% of EXP
Canada	335,791	99.97%	1,889,090,992,449	100.00%
United States	109	0.03%	79,909,553	0.00%
Oman	1	0.00%	2,032,500	0.00%

Exp by Modifier

Name	Loc Cnt	% of Loc	Exposure	% of EXP
Braced Steel Frame	21,772	6.48%	232,481,057,043	12.31%
Broadcast Towers	4,274	1.27%	2,338,189,496	0.12%
Concrete Dams	1	0.00%	443,054	0.00%
Conventional Bridges (< ...	11	0.00%	264,051,438	0.01%
Conventional Bridges (< ...	31	0.01%	11,308,101	0.00%
Ductile Rc Frame (Distrib...	582	0.17%	5,303,807,910	0.28%

Aggregate Monitoring

Locations FR
Select Location

Reports

Report	Per	Gross Exc Reins	Gross Inc Reins	Loss
BC_Wildfire_July5_2021	FR	-	-	-
BC_Wildfire_July20_2021	FR	-	-	-
01_Lytton_BC_Wildfire_05_July_2021	FR	-	-	-
Merrit_Fire	FR	-	-	-
Hilton Hotel	FR	-	-	-
005_Osgoode Station	FR	-	-	-
BC_Wildfire_April_2023	FR	-	-	-
2023_May_09_Evansburg_WF	FR	-	-	-
May28_Tantallon_WF	FR	-	-	-
South_Chapais_QC_Wildfire_Jun2023	FR	-	-	-
CentennialLake_ON_Wildfire_June2023	FR	-	-	-
Vernon Fire BC July 5th 2023	FR	-	-	-
Eagle_Bluff_Aug01_WF	FR	-	-	-
NT_WF_Aug_16_2023	FR	785,687,955	781,390,935	-

Create Report Run

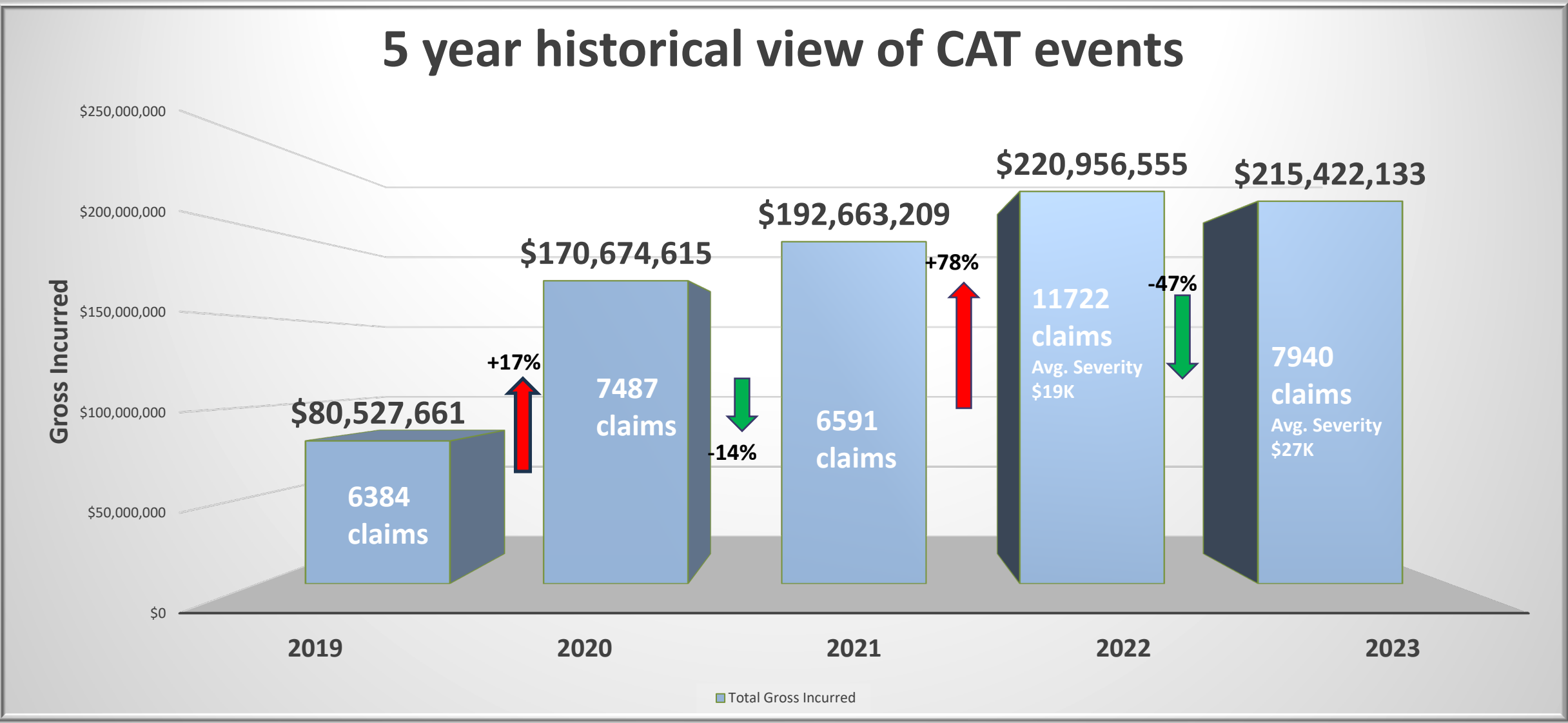
PML Max Event Results

Locations (846) Completed Total Net Loss 781,390,935 Show Policy Details

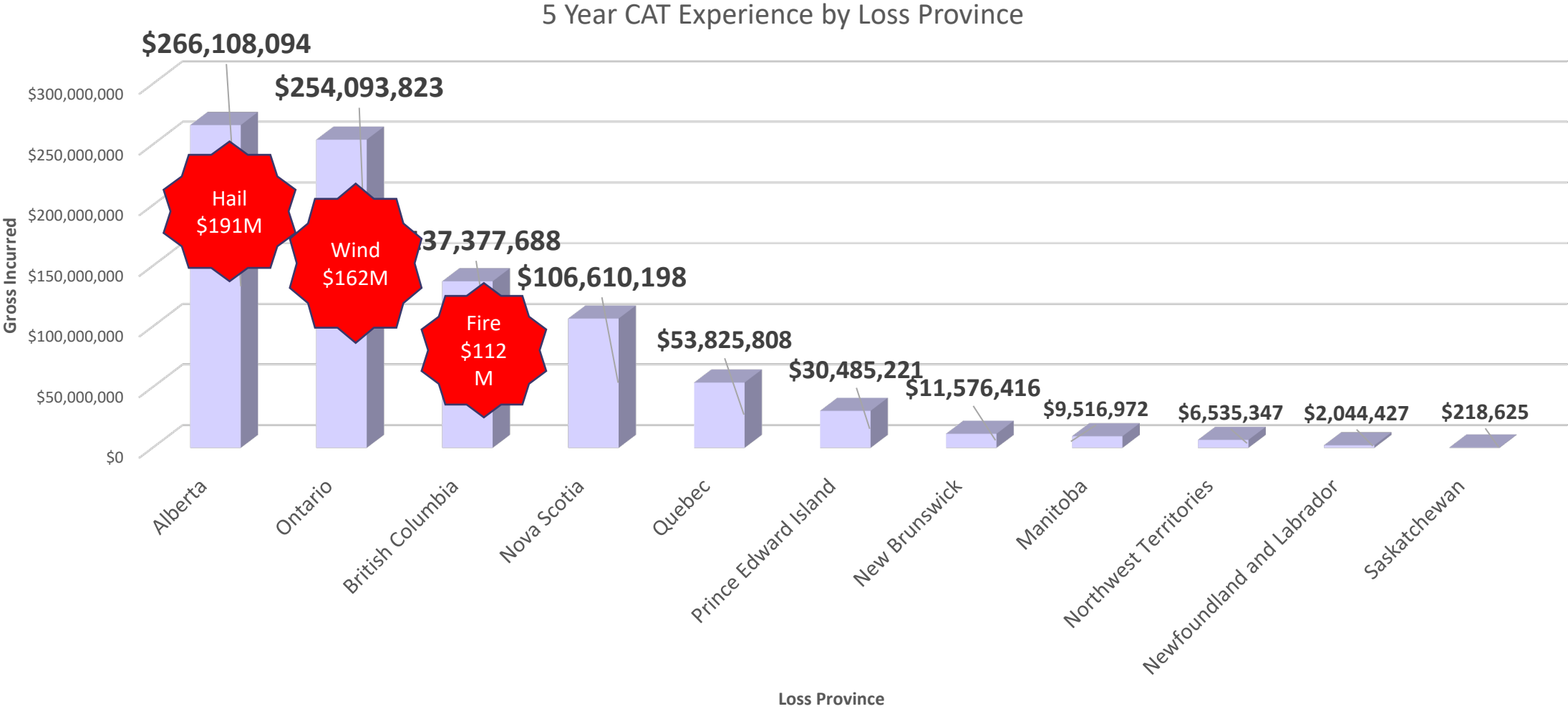
Name	Ext Ref	Event Name	TIV	Ground Up	Gross Exc Reins	Gross Inc Reins	Net Loss	Net Loss Line	Net Line	Limit	Excess
Commercial_October_2023			2,736,050,540	2,736,050,540	785,687,955	781,390,935	781,390,935	0			
Default		NT_WF_Aug_16_2023 (N...	2,736,050,540	2,736,050,540	785,687,955	781,390,935	781,390,935	0	0.00%	CAD 0.00	CAD 0.00

Extreme Weather is unpredictable

5 year historical view of CAT events



Extreme Weather is unpredictable!



How are we working in eliminating some of the uncertainty and unpredictability?

CAT Modelling

Phase 1 Purpose

To predict the ultimate number of claims for winter storms in the first few days

- Current approach: Experience-based judgment by the CAT team
- Proposed approach: Experience-based & **Data-driven** prediction

Benefits

1. Decision support tool that can inform the business on the magnitude of the CAT
2. Support early detection of CAT's

How are we working in eliminating some of the uncertainty and unpredictability?

Scope: Personal and Commercial Property risks Canada wide.

Data: 3 Models were trained on 18 winter storms from 2017-2022 to help predict 4 events in 2023/24

Results

- Approach 3 provided the most promise
- Focus on retraining the model with 2023 & 2024 events to predict 2025 Winter storms

Expansion to other CAT events this year

- Flood
- Hail
- Hurricane
- Wildfire

**Approach #3:
Linear Regression
Model**


Data: Historical reported claims, size, distribution by region and day, loss dates, CATIQ

Model: Linear Regression

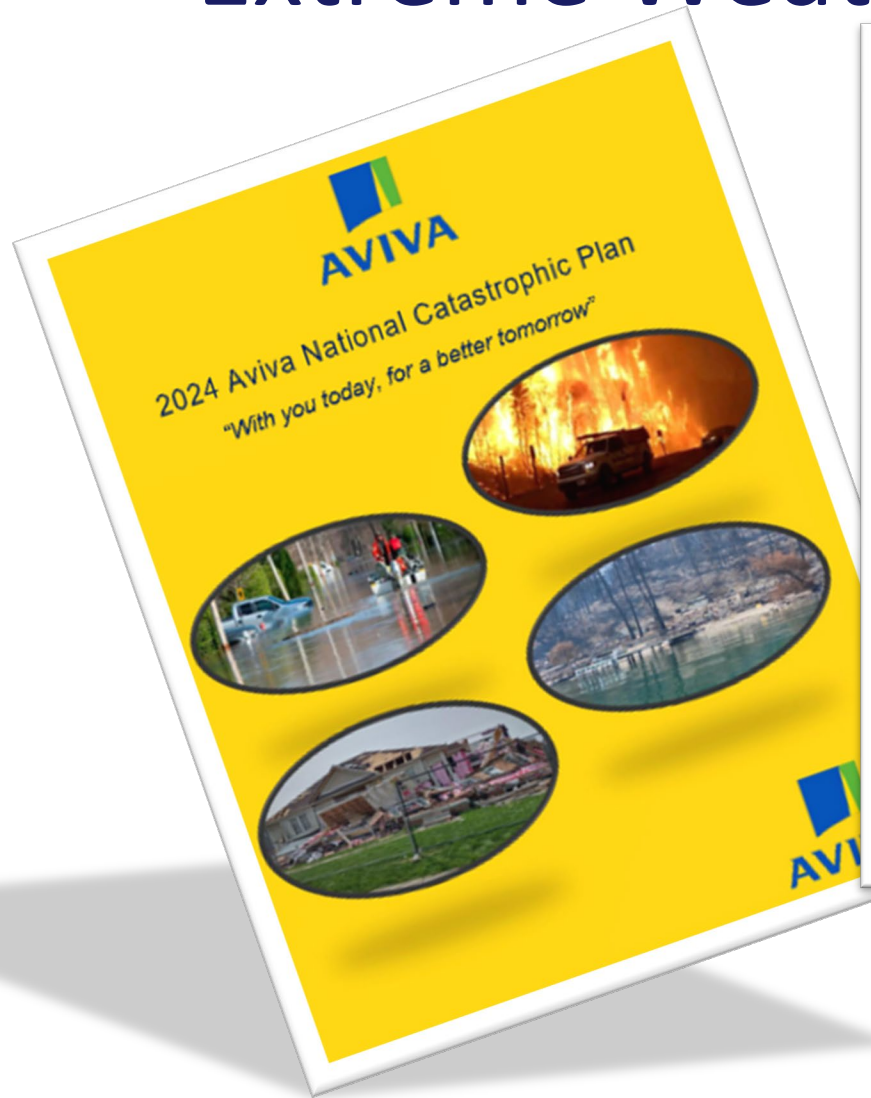
Ranking: #1

Performance*

- Day 1: Average error 30% (50% max)
- Day 2: Average error 20% (35% max)
- Day 3-6: Average error 10% (20% max)



Extreme Weather(Catastrophe) Planning!



1. Predict

Review forecast material & gather intelligence

Size

Wind speed, Hail size, Rainfall amount, Wildfire activity

Scale

Geography – City vs Remote Exposure

Type

Wind, Water, Hail, Wildfire

2. Plan

Send email a/o SMS Alert to Key Stakeholders

Alert Types

Alert 1: Event monitoring for potential CAT, further intelligence required

Alert 2: CAT declared in anticipation/event reaches 500 claims or \$5M incurred

Property Operations to assess resource levels

3. Prevent

Consider preventative messaging

External Comms – Customer
Local BD Team – Broker

Assemble front line Customer Messaging

Communications validated by CAT Lead

4. Deploy

Go Live CAT
Commence Daily Call x 2

CAT Lead Roundtable
All others invited as FYI
only
Call details logged

All operational area plans deploy

A CAT event is...

An event or series of events where the nature or duration is such that ordinary claims handling processes and resources need immediate change and/or strengthening, so that customer service and claims control is maintained. This typically will exceed \$5m or 500 claims, however a CAT could be declared outside of these thresholds

In Canada, the most likely type of major incident is adverse weather (flood, wind, hail or wildfire). While every event is different, through our expertise, experience and proactive planning, we have installed a combination of preparedness and agility into AVIVA's CAT process in Canada.

Do you remember?

- **May 21st, 2022**
- The Canadian Derecho storm.
- Aviva received 6545 claims from this one event – 40% of our monthly volume in over 72 hrs
- **How can a claims operation manage this?**
- **Executing our CAT deployment strategy – that's how.**
- Staff across all line of business undergo mandatory CAT training prior to CAT season
- This allows us to optimize internal resources and minimize outsourcing of claims.
- Internal staff are trained to assist with key tasks such as, Telephone assistance, First contact calls to customers, Setting up claims, assigning emergency contractors to assist with temp repairs, issuing advance payments to customers.




What are we doing to help customers mitigate and manage risks

Posts Replies Media Likes

Aviva Canada @AvivaCa... · 2024-05-28

👏 We've partnered with @WDSfire to help protect our customers in Alberta & BC this wildfire season, at no added cost. To learn more, listen to Aviva's Shauna Mamini's conversation with @staceybrotzel and @1DarylMcIntyre on @630CHED at.aviva.ca/4axwJ76



Aviva Canada @AvivaCa... · 2024-04-15

In an op-ed published in the @calgaryherald, Aviva's Susan Penwarden sounds the alarm bells on wildfires, calling for a holistic approach to protecting Canadians from wildfire risk. 🔥 [! at.aviva.ca/4axxU7p](https://at.aviva.ca/4axxU7p)





What is Aviva doing to achieve our net zero supply chain by 2030 goal?



Supplier Engagement Strategy

Procurement Process

Aviva asks for our suppliers to agree to set science-based targets and have those targets validated by SBTi or relevant industry equivalent.

Net Zero Supplier Summit

Annual event to engage Aviva Canada suppliers on net-zero action with a second-day session for Auto and Property Claims suppliers.

Net Zero Supplier Accelerator Program

No cost program for Aviva Canada suppliers to provide education and support to measure emissions, set science-based targets and create emissions reduction plans. Includes webinars, tools, resources and 2 consulting hours with Upswing Solutions.



Thank you!

Questions?

Time for Trivia?

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What was the costliest "Extreme Weather" event for P&C Insurers

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**What was the single most costly
"Extreme Weather Event" in 2023**

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What is Aviva's definition of a Wildfire?

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What are some of the consequences of climate change?

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We know that Fire is a primary cause of damage from wildfires however, what is a secondary cause of damage to property?

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Which Canadian City is at the Highest Risk this 2024 Wildfire Season

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