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Projecting the Cost of the Disaster Financial Assistance Arrangements Program

OFFICE OF THE PARLIAMENTARY BUDGET OFFICER
BUREAU DU DIRECTEUR PARLEMENTAIRE DU BUDGET

The Parliamentary Budget Officer (PBO) supports Parliament by providing economic and financial analysis for the purposes of raising the quality of parliamentary debate and promoting greater budget transparency and accountability.

This report projects the cost of the Disaster Financial Assistance Arrangements (DFAA) program over 2025 to 2034 and provides a breakdown of costs across major disaster types including floods, wildfires, and storms.

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Table of Contents

Highlights

The Disaster Financial Assistance Arrangements (DFAA) program provides financial assistance to provincial and territorial governments following disasters caused by natural hazards. The program has provided more than $14 billion in support since its inception in 1970.

Federal costs under the program have increased rapidly. PBO projects that costs will increase further from $881 million per year, on average, over 2010 to 2024 to $1.8 billion per year, on average, over 2025 to 2034. Floods are projected to be the costliest type of disaster, with DFAA support averaging $1.2 billion per year over 2025 to 2034.

Earlier this year the Government announced that the DFAA program would be updated effective April 1, 2025. The updated DFAA program is expected to increase federal assistance by 3 to 4 per cent relative to support projected under the previous structure. This incremental cost is reflected in our projection.

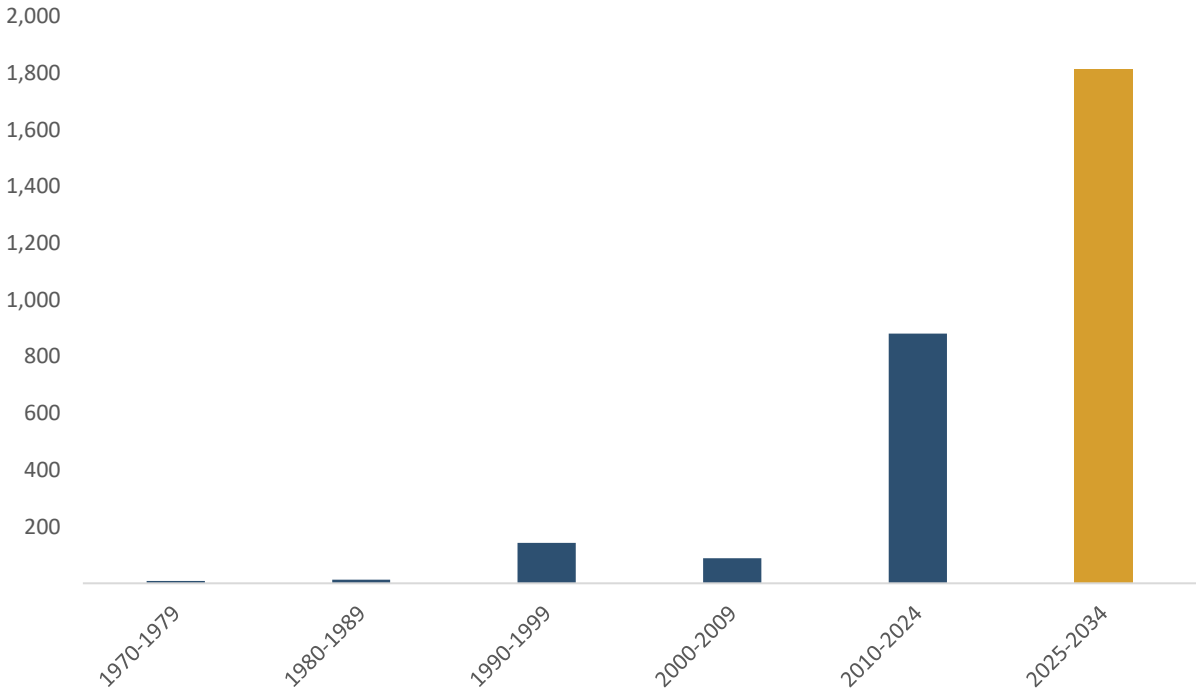
Summary

The Disaster Financial Assistance Arrangements (DFAA) program provides financial assistance to provincial and territorial governments following disasters caused by natural hazards. The program provided more than $14 billion to support disaster response and recovery across Canada since its inception in 1970. Most of the support was allocated for floods with wildfires and storms being the next most significant disaster types.

Federal costs under the program have increased rapidly. PBO projects that costs will increase further from $881 million per year, on average, over 2010 to 2024 to $1.8 billion per year, on average, over 2025 to 2034, primarily due to more frequent and severe disaster events (Figure 1).

Figure 1

Average annual cost of the DFAA program, millions of dollars



Source:
Public Safety Canada and Office of the Parliamentary Budget Officer.

Note:
The cost of the DFAA program in 2024 is estimated based on a partial year of data. The projection period covers 2025 to 2034.

Background

The Disaster Financial Assistance Arrangements program provides financial assistance to provincial and territorial governments to support response and recovery from large-scale disasters. Under the program, provinces and territories provide direct relief to Canadians and local governments impacted by the disaster, after which the federal government reimburses the affected provincial or territorial governments.[1] The Government projects that DFAA program costs will remain close to or surpass $1 billion.[2]

The DFAA program serves as a backstop for uninsured losses to ensure that provinces and territories have the fiscal capacity to effectively respond to and recover from disasters. To receive funding, the provincial or territorial Premier or their Minister responsible for emergency preparedness must send a letter to their federal counterpart requesting assistance within 6 months of the disaster. After submitting their letter provinces and territories have up to 5 years to submit final receipts for payment.[3]

Public Safety Canada provides guidelines for eligible response and recovery expenses and the associated cost-sharing under the program. Similar to a deductible in other forms of insurance, the DFAA program has an established financial threshold before the federal government will begin sharing the cost of assistance. As of January 1, 2025, the threshold is $3.84 per capita, meaning that the total deductible varies based on the population of the affected province or territory. The per capita threshold has been adjusted annually for inflation since 2015.

Prior to April 1, 2025, the DFAA program had an escalating cost-share based on the total cost of the disaster. Table 1 shows the escalating cost-share covered by the federal government for increasingly severe disasters. Under the previous program, provinces and territories could cost-share expenses to rebuild homes, businesses and infrastructure to their pre-disaster condition, with a provision for some mitigative enhancements.

Table 1
Cost-sharing formula prior to April 1, 2025

Eligible expenses per capita	Federal share of cost (%)
First $3.84	0
Next $7.70	50
Next $7.70	75
Remainder	90

Source:
Public Safety Canada.

Following a 2023 report by an independent advisory panel, the DFAA program was updated.[4] For eligible disasters beginning April 1, 2025, the DFAA program is divided into five funding streams, each with a constant cost-share percentage, regardless of the severity of the disaster. Table 2 shows the federal cost-share for each stream, depending on whether the affected area is a province or territory. Public Safety Canada estimates that the federal cost-share of the updated program will be 3 to 4 per cent higher compared to support projected under the previous structure.[5]

Table 2
Cost-sharing formula beginning April 1, 2025

Funding Stream	Federal share for provinces (%)	Federal share for territories (%)
Response	80	90
Homes and Small Business	80 (response) 70 (restoration)	90 (response) 80 (restoration)
Restoring Resilient Infrastructure	70	80
Relief and Recovery	90	90
Disaster Mitigation	90 (high risk) 50 (non-high risk)	100 (high risk) 60 (non-high risk)

Source:
Public Safety Canada.

In addition to the cost-share outlined in Table 2, the Homes and Small Business, and Restoring Resilient Infrastructure streams are eligible for up to 15 per cent in additional funding to rebuild homes and infrastructure in a way that will increase their future

disaster resilience. The updated DFAA program also includes a new Disaster Risk Reduction Incentive, which offers additional funding for expenses incurred prior to a disaster that lessen its impacts.[6]

The DFAA program is the main federal support for disaster recovery in Canada and includes funding for mitigation activities. The federal government also supports mitigation efforts through other programs such as the Disaster Mitigation and Adaptation Fund. The Disaster Mitigation and Adaptation Fund will provide up to $2 billion over 10 years to support infrastructure projects that could reduce future damages caused by natural disasters.[7] These programs are not part of the DFAA, and their costs will be incremental to the projected cost of the DFAA program.

Types of Disasters

Through the Disaster Financial Assistance Arrangements program, the federal government provides financial support to provinces and territories as they respond to and recover from a range of disasters caused by natural hazards. For this analysis, disasters were classified into four broad categories: floods, wildfires, storms, and other disasters.

Flooding is the most common disaster for which provinces and territories receive support under the DFAA program. The flood category includes spring floods caused by melting snow and ice, as well as damages caused by storms and heavy rainfall when the primary damage is flooding. For example, the November 2021 storm that washed out a section of the Coquihalla highway in British Columbia is classified as a flood.

Wildfires are less common than floods but are the second costliest disaster category under the DFAA program. Wildfires that move into urban areas, known as interface fires, are often the most damaging. Interface fires damage more homes, businesses and infrastructure than wildfires that stay confined to rural areas. The most prominent example of an interface fire is the 2016 Fort McMurray wildfire in Alberta.

Of the four categories, the storm category includes the widest range of disasters. It includes cyclonic storms such as hurricanes, storm surges, windstorms and tornadoes, rainstorms, and winter storms. The DFAA program has provided support for over 100 storms since 1970, with the costliest storm being the 1998 ice storm in Quebec.

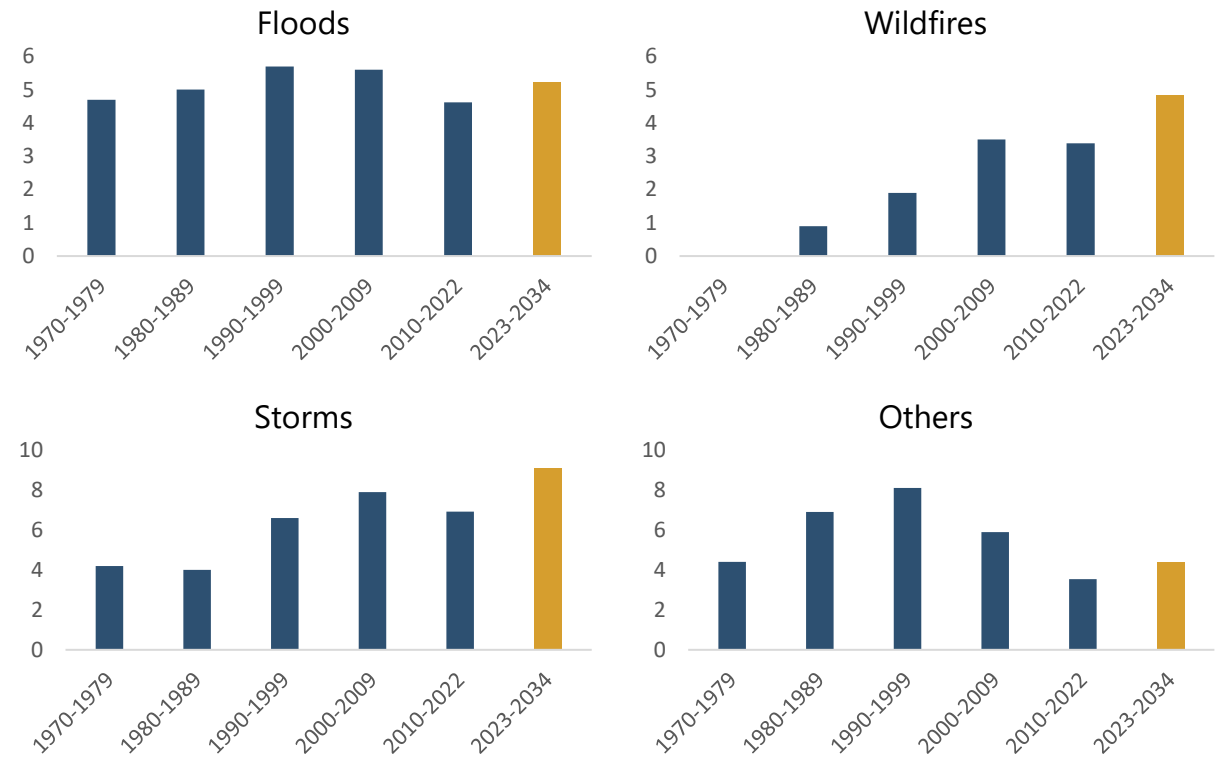
The other disaster category includes 12 rare events such as landslides and avalanches that do not fit into the three primary categories. More important, the other disaster category includes earthquakes, which are rare but have the potential to cause severe damages without warning. The possibility of a severe earthquake presents an upside risk to our projected cost of the DFAA program.

Results

PBO modelled the frequency, severity and level of financial assistance for the four disaster categories independently. The Canadian Disaster Database provides detailed information on disasters that have occurred in Canada over 1900 to 2022. The four types of disasters follow different trends in frequency over time, with the average number of floods per year remaining relatively constant while the average number of wildfires and storms has increased significantly. The pattern for other disasters is less clear, with an increase in frequency over 1970 to 1999 followed by a decrease over 2000 to 2022. Figure 2 summarizes the historical and projected trends by category over 1970 to 2034.

Figure 2

Average annual frequency by disaster type, number of events



Source:
Public Safety Canada and Office of the Parliamentary Budget Officer.

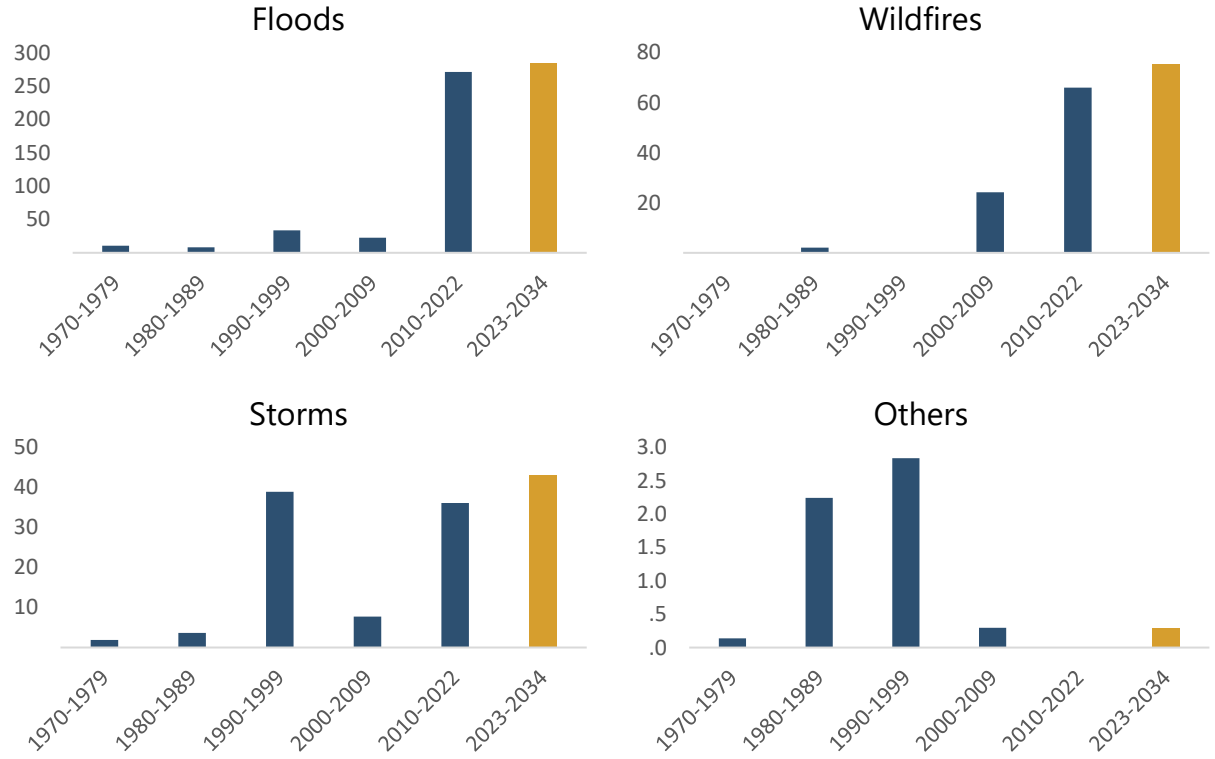
Note:
The projection period covers 2023 to 2034.

Public Safety Canada provided information on federal support under the DFAA program over 1970 to 2024. The dataset includes total provincial and territorial costs for each disaster and the costs that were reimbursed by the federal government under the DFAA program. Total costs were adjusted for inflation using the price deflator for non-residential structures and the average cost per disaster was calculated using the disaster frequency in the Canadian Disaster Database.

For the three primary categories, the average real cost per disaster increased significantly since 2010, indicating that individual floods, wildfires and storms are causing more damage over time (Figure 3). The increasing severity of individual disasters could be explained by factors such as more powerful disasters, increases in population, or increases in infrastructure density in high-risk areas.[8] We project that real costs per disaster will increase further over the next decade, but at a slower rate than the growth observed between 2010 and 2022.

Figure 3

Average real cost per disaster, millions of 2024 dollars



Source:
Public Safety Canada and Office of the Parliamentary Budget Officer.

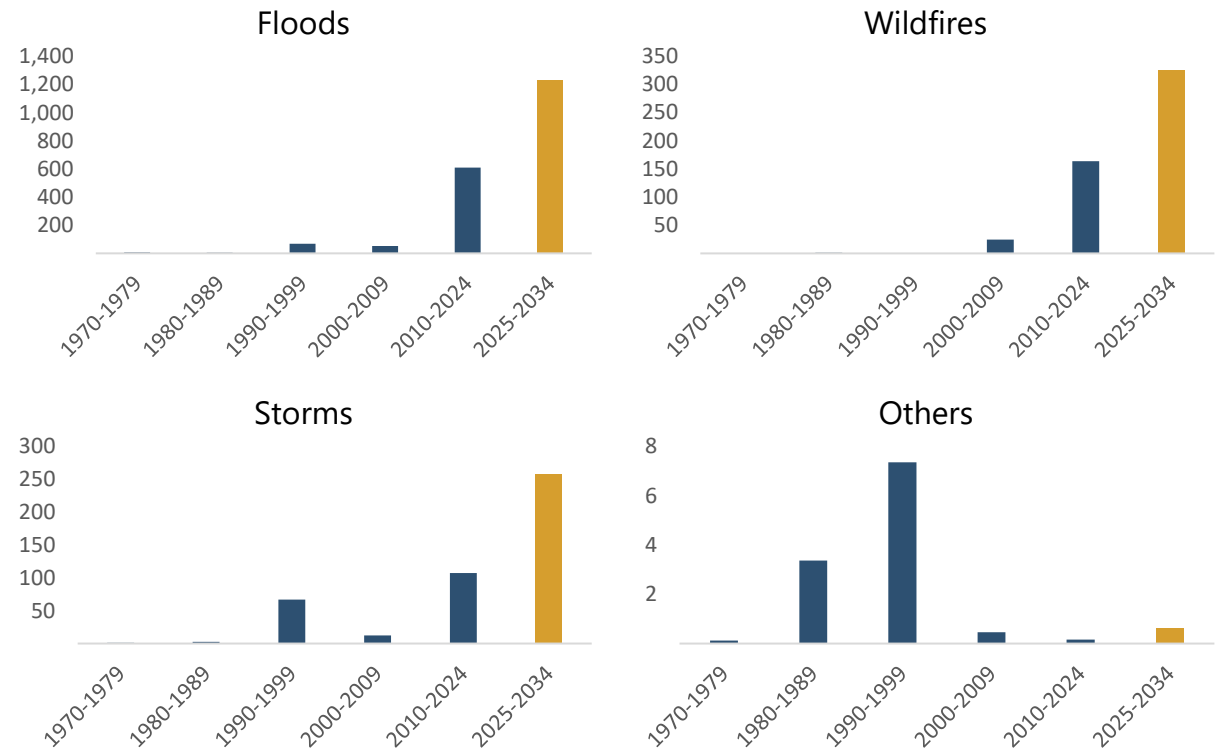
Note:
The projection period covers 2023 to 2034.

PBO projected average annual support under the DFAA program using the projected frequency, severity and level of support for each type of disaster. Figure 4 shows that DFAA costs have increased significantly since 2010 and are projected to increase further to $1.8 billion per year, on average, over 2025 to 2034.

Flooding is projected to remain the costliest type of disaster, with projected federal costs of $1.2 billion per year, on average, over 2025 to 2034. This is followed by wildfires and storms with projected costs of $325 million per year and $258 million per year, on average, respectively. Other disasters are not projected to have significant annual costs but remain a key source of uncertainty due to the possibility of a major earthquake.

Figure 4

Average annual cost of the DFAA by disaster type, millions of dollars



Source:
Public Safety Canada and Office of the Parliamentary Budget Officer.

Note:
The cost of the DFAA program in 2024 is estimated based on a partial year of data. The projection period covers 2025 to 2034.

Appendix A: Methodology

The model for projecting the federal cost of disaster financial assistance has three primary components: the frequency of disasters, the average cost incurred per disaster, and the share of total costs paid by the federal government.

The frequency of disasters is measured using the Canadian Disaster Database (CDD), which includes information on more than 1,000 disasters that have occurred in Canada since 1900.[9] We categorized disasters over 1970 to 2022 into either floods, wildfires, storms, or other disasters to facilitate the analysis. The average number of annual disasters were projected by disaster category over 2023 to 2034 using a linear model:

$$\text{Number of disasters} = \alpha_1 + \beta_1 \cdot \text{Year}$$

The average cost incurred per disaster is defined as the total provincial and territorial costs submitted to Public Safety Canada as part of their application for support. It is important to note that the total cost excludes private costs covered by insurance, since the DFAA program does not reimburse insured damages. Total provincial and territorial costs were converted to real costs (in 2024 dollars) using the price deflator for non-residential structures over 1970 to 2024. The real cost per disaster is calculated as the real annual cost divided by the number of disasters in the same year within the CDD. The average cost per disaster was also projected over 2025 to 2034 using a linear model:

$$\text{Real cost per disaster} = \alpha_2 + \beta_2 \cdot \text{Year}$$

The model to project real costs accounts for trends in the frequency and severity of disasters, resulting in a model that is quadratic over time[10] [11]:

$$\begin{aligned}\text{Real costs per year} &= \text{Number of disasters} \cdot \text{Real cost per disaster} \\ &= (\alpha_1 + \beta_1 \cdot \text{Year}) \cdot (\alpha_2 + \beta_2 \cdot \text{Year}) \\ &= (\alpha_1 \cdot \alpha_2) + (\alpha_1 \cdot \beta_2 + \alpha_2 \cdot \beta_1) \cdot \text{Year} + (\beta_1 \cdot \beta_2) \cdot \text{Year}^2 \\ &= \alpha_3 + \beta_3 \cdot \text{Year} + \beta_4 \cdot \text{Year}^2\end{aligned}$$

The real cost per year is then reflated to nominal costs per year based on the projection of the price deflator for non-residential structures from PBO's September 2025 Economic and Fiscal Outlook.

Over the projection period the federal share of total costs is assumed to be equal to the average share paid by the federal government for disasters over 1994 to 2023. Since the DFAA program did not undergo substantial changes since 1994, a linear trend was not applied to the federal share. PBO adjusted the average federal share to account for the changes to the DFAA in 2025 using confidential information from Public Safety Canada. The projected federal cost by category is then calculated as:

$$\text{Federal cost per year} = \text{Total cost per year} \cdot \text{Average adjusted federal share}$$

Our modelling approach provides a framework to assess independent explanatory factors such as trends in disaster frequency and disaster damage, the impact of inflation and the impact of changes to the DFAA program for each of the disaster categories.

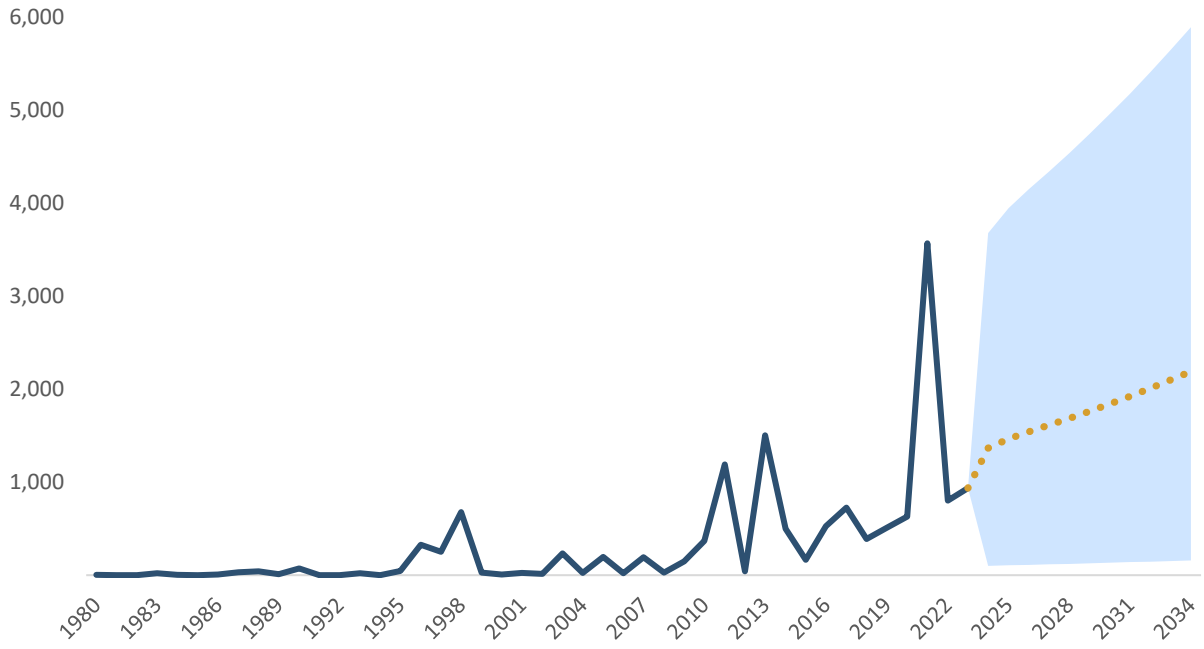
Appendix B: Sensitivity Analysis

Disasters caused by natural hazards are unpredictable and there are large year-to-year fluctuations in their frequency and severity. When faced with uncertainty, multi-year averages can provide a useful basis for fiscal planning. That said, given the high degree of uncertainty surrounding disaster frequency and severity it is also informative to consider a broader range of possible outcomes.

Figure B.1 presents the projected annual cost of the DFAA program over 2025 to 2034 with an approximate 80 per cent confidence interval.[12] The confidence interval shows that there is a high degree of uncertainty in the costs in a given year, reflecting the large year-to-year fluctuations observed over 1980 to 2024.

Figure B.1

Annual cost of the DFAA program, millions of dollars



Source:

Public Safety Canada and Office of the Parliamentary Budget Officer.

Note:

The cost of the DFAA program for 2024 is estimated based on a partial year of data. The projection period covers 2025 to 2034.

Notes

[1] For more information, see: About the DFAA, Public Safety Canada.

[2] For more information, see: 2024 Report on the Government of Canada's Climate-Related Financial Risk Management.

[3] Public Safety Canada provisions spending in its annual Departmental Plan, which forecasts DFAA payments in the current and following fiscal year. These amounts are determined based on expected payments to provinces and territories for past disasters. For later years, Public Safety Canada provisions a (notional) amount of $100 million.

[4] For more information, see: Modernizing the DFAA, Public Safety Canada.

[5] This information was shared as part of Information Request 0842, though further details remain confidential.

[6] For more information, see: How the DFAA program works, Public Safety Canada.

[7] For more information, see: Disaster Mitigation and Adaptation Fund, Housing, Communities and Infrastructure Canada.

[8] For more information, see: What's Driving the Boom in Billion-Dollar Disasters? A Lot, Pew Research.

[9] For more information, see: Canadian Disaster Database, Public Safety Canada.

[10] This assumes that the number of disasters and the real cost per disaster are uncorrelated.

[11] This is consistent with the methodology developed in: Assessing Canada's disaster baselines and projections under the Sendai Framework for Disaster Risk Reduction: a modeling tool to track progress, Natural Hazards (2019).

[12] The approximate 80 per cent confidence interval is calculated nonparametrically using percentage deviations from the fitted model over 1980 to 2023.

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