



# Summary Report

The Impacts of Flooding Events on  
Mental Health in New Brunswick

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**MSSU · USSM**



## Project Title

The impacts of flooding events on mental health in New Brunswick

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## How to Cite This Product

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## Why is This Study Important?

Floods are devastating natural disasters – and as a result of climate change, they are expected to occur more frequently and become even more severe.

Being exposed to a flooding event can cause a lot of stress and uncertainty and lead to negative mental health outcomes such as anxiety, depression, and post-traumatic stress disorder (PTSD), as well as a greater need for health services. Understanding the extent of these mental health impacts is important, and being able to identify which groups are most likely to have their mental health impacted by flooding can help resources reach those most in need.

This report aims to help increase knowledge in this area by

- Characterizing the populations affected by flooding in New Brunswick.
- Determining which mental health outcomes are affected by flooding.
- Identifying high-risk population groups that may be more vulnerable to the mental health impacts of flooding.

Other research on this topic has focused on smaller, limited samples (i.e., only people who choose to respond to a survey) and simple statistical analyses that do not include adjustments to account for differences between groups of people.

By using population-wide administrative data and regression models that control for potential confounding factors, this report fills an important gap in the research, and its results provide insights of how exposure to flooding can impact mental health across a large population.



## How Was This Study Completed?

To undertake this study, researchers at NB-IRDT used federal flood map files and provincial property damage claims to identify geographic areas where flooding occurred during 7 major flood years in NB: 2005, 2008, 2012, 2014, 2015, 2018, and 2019. These data were linked with Citizen Data to define and describe populations residing in areas impacted by flooding - referred to as exposed populations. Linked mental health data were used to characterize mental health in the 1 year prior to and following each event.

This report compares outcomes in the year following flooding between exposed and unexposed populations. Mental health outcomes include health service use for mental illnesses, physician services for counselling/therapy, and death by suicide. In addition, alternate outcomes include Emergency Department and hospital service use, child school attendance, and youth withdrawal from post-secondary education. To identify vulnerable populations, impacts were examined in relation to several flood-related, sociodemographic, and health-related characteristics.



## Limitations

While reading the results on the next pages, it is important to remember there are certain limitations to this study. For instance, due to the inability to accurately define a flood-exposed population, the exposed cohort may include individuals who were not directly exposed to flooding. Therefore, this report likely underestimates the true impacts of flooding.

Because only hospital and physician services data were used to identify those experiencing mental health outcomes, estimates are likely undercounted, not considering those who did not receive health services for mental health. Finally, the study design used was not well suited for rare outcomes, such as PTSD or death by suicide. Impacts of flooding on suicide could not be examined using the same methodology.

## Key Findings: Overall Outcomes

Results suggest flooding is associated with an approximately

**10% increased risk** of

- **Health service use for mental illness**
- **Health service use for mood / anxiety disorders**
- **Emergency Department use**
- **Withdrawal from post-secondary education**

When compared to New Brunswickers who lived outside flooded areas.



To obtain these results, we divided New Brunswickers into two groups based on where they lived:

- ↳ **Exposed** New Brunswickers lived in an area that flooded during at least 1 flood year.
- ↳ **Unexposed** New Brunswickers lived outside flooded areas. We compared their outcomes with exposed groups and controlled for differences to see if the exposed were impacted differently.

### Within 1 Year After Flooding:

At **14.2%**, the use of health services for mental illness was the **most prevalent mental health outcome** for exposed New Brunswickers.

The majority of this service use was for mood/anxiety disorders (**9.8%**) and was primarily made up of physician visits.

**19.8%** of exposed New Brunswickers visited an Emergency Department.

**16.2%** of exposed youth withdrew from post-secondary education.

## Key Findings: Populations at Higher Risk

Exposed New Brunswickers at the **highest risk** of negative mental health outcomes due to flooding include:



- Those who experienced fewer floods (only 1 or 2 floods vs. 3 or more)
- Those with a property damage claim in their area
- Those in the most and least socioeconomically deprived areas
- Children and youth

## Populations at risk of alternate outcomes:

### Emergency Department Use

Emergency Department use was greater in those who:

- Experienced fewer floods (1-2)
- Had a property damage claim in their area
- Have a chronic condition
- Lived in the least socio-economically deprived areas

### Withdrawal from Education

Withdrawal from post-secondary education was greatest among youth who:

- Experienced more flooding events (3+ floods)
- Lived with others
- Lived in areas with the least ethnocultural diversity



**Among older adults, those who lived alone were also at higher risk of Emergency Department use.**



## Conclusions

This research provides among the most robust evidence on the population-level mental health impacts of flooding. While it supports the findings of survey-based studies on the same topic (that flooding **does** impact mental health), this report is similar to other population-based studies in that it finds smaller impacts on mental health. When noting these differences, it's important to note that survey-based studies may use selective sampling (i.e., interviewing only those who lived in a flooded area), while population-based studies like this are not selective - they include exposed and unexposed populations for comparison.

This report's findings also suggest the need for even more research in this area. For instance, the results of this study suggest children and youth are at a greater risk of negative mental health following exposure to flooding. More research should focus on these age groups, especially post-secondary students.

Emergency Department use is another area in need of more research to better understand the reasons for visits and dynamic patterns of use in the shorter term after a flood. Given the higher risk of hospital service use for physical illness in adults, older adults, and those with multiple co-existing conditions, a more detailed investigation of reasons for health service use would be informative.

Further research should also focus on impacts of flooding on prescriptions for antidepressants related drugs, as administrative data can provide access to this information, which would help us understand even more about the population-level impact of flooding.

