

UNFC Mini Competition (for HEAD competition)

You are given environmental monitoring data for urban recreational water sites (beaches) of Toronto, including historical water quality measurements and weather information.

Your task is to build a data-driven analytical framework that helps answer:

Where and under what conditions are recreational waters more likely to become unsafe, and how should monitoring effort be prioritized?

This is an **open-ended challenge**. There is no single correct method. We are interested in how you translate the data into structured, defensible decisions.

Your Goal

Develop a quantitative analysis that:

- Distinguishes higher-concern vs lower-concern sites
- Builds a defensible scoring or ranking framework
- Identifies meaningful patterns and drivers
- Supports monitoring or advisory prioritization
- Produces evidence-based recommendations
- Interpretations and recommendations should be supported by your analysis and data evidence.

What You Should Deliver

Submit:

- A short technical **report**
- Your **codebase**

Your report can include:

- Your analytical approach (briefly described)
- The metrics or indices you designed
- Key patterns and signals you discovered
- How your ranking or prioritization is justified
- Stability / sensitivity checks if applicable
- Practical monitoring or operational recommendations
- Clear explanation of your reasoning

You may analyze at the site level, time level, or grouped/spatial level. Don't forget to justify your choice.

Data You May Use

You may use the provided datasets and optionally add other publicly available datasets. If you use additional data, clearly report the source and download link in your report.

Provided datasets (summary):

- **Beach Water Quality (City of Toronto Open Data):** Daily supervised beach samples with E. coli measurements, site identifiers, and geometry. Multi-year coverage.
- **Toronto Daily Weather (Open-Meteo Archive):** Daily precipitation and temperature (and optional wind fields) aligned by date for the same period.

The deadline is **Friday, February 13, 2026 at 2:00 PM**. Submissions received after this time will not be considered.

Submission

Your finalized submission **as a single zip file** must be sent directly to my email at omid.isfahan@unfc.ca.

Good luck!
Omid