

# Drinking Water Consumption Patterns and Changes Over Time in Rigolet, Nunatsiavut, Canada

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## Introduction:

### Water & Waterborne Illness in Northern Canada

Safe drinking water is essential for health, yet a large proportion of Inuit adults in Canada state concern over the quality of water at their home, and feel that it is contaminated at various times during the year<sup>1</sup>. One of the highest self-reported incidence rates of enteric illness (i.e. diarrhea and/or vomiting) in the global peer-reviewed literature occurs in Inuit communities in the Canadian Arctic and this may be, in part, due to consumption of contaminated water<sup>2</sup>. Perceptions of water safety and aesthetic appeal may influence a person's choice of drinking water source, such as tap water, untreated brook water, purchased bottled water, or other sources.

### Drinking Water in Rigolet, Nunatsiavut

Rigolet is located in Nunatsiavut, an Inuit land-claim region along the coast of Labrador, Canada. Rigolet has a population of 306 people<sup>3</sup>, with 95% self-identifying as Inuit. There are four sources of water available in Rigolet: chlorinated, unfiltered tap water; untreated brook water; purchased bottled water; and water from the advanced drinking water system (ADWS), which is filtered and disinfected. The ADWS was installed in January 2014 to address concerns over the safety of the municipal tap water. Residents bring containers to this station to fill and store for later use.



Old Graveyard Brook, where some residents collect drinking water.

Filling a water jug at the ADWS station in Rigolet.

## Research Goal & Objectives

**Goal:** Examine current and historical drinking water consumption patterns in the Inuit community of Rigolet, Nunatsiavut.

### Objectives

1. Investigate current patterns of drinking water consumption, including sources used and daily volume of water consumed.
2. Assess associations between household & demographic factors and water consumption patterns.
3. Investigate changes in water consumption over time.

## Methods

### Community Survey

This study used a subset of data from three cross-sectional census surveys conducted in Rigolet between 2012 and 2014. Survey dates were: September 2012, May 2013, & June 2014. Surveys were administered on iPads by local research associates. Data were collected on multiple topics of interest, including food security, drinking water consumption, and acute gastrointestinal illness (AGI).

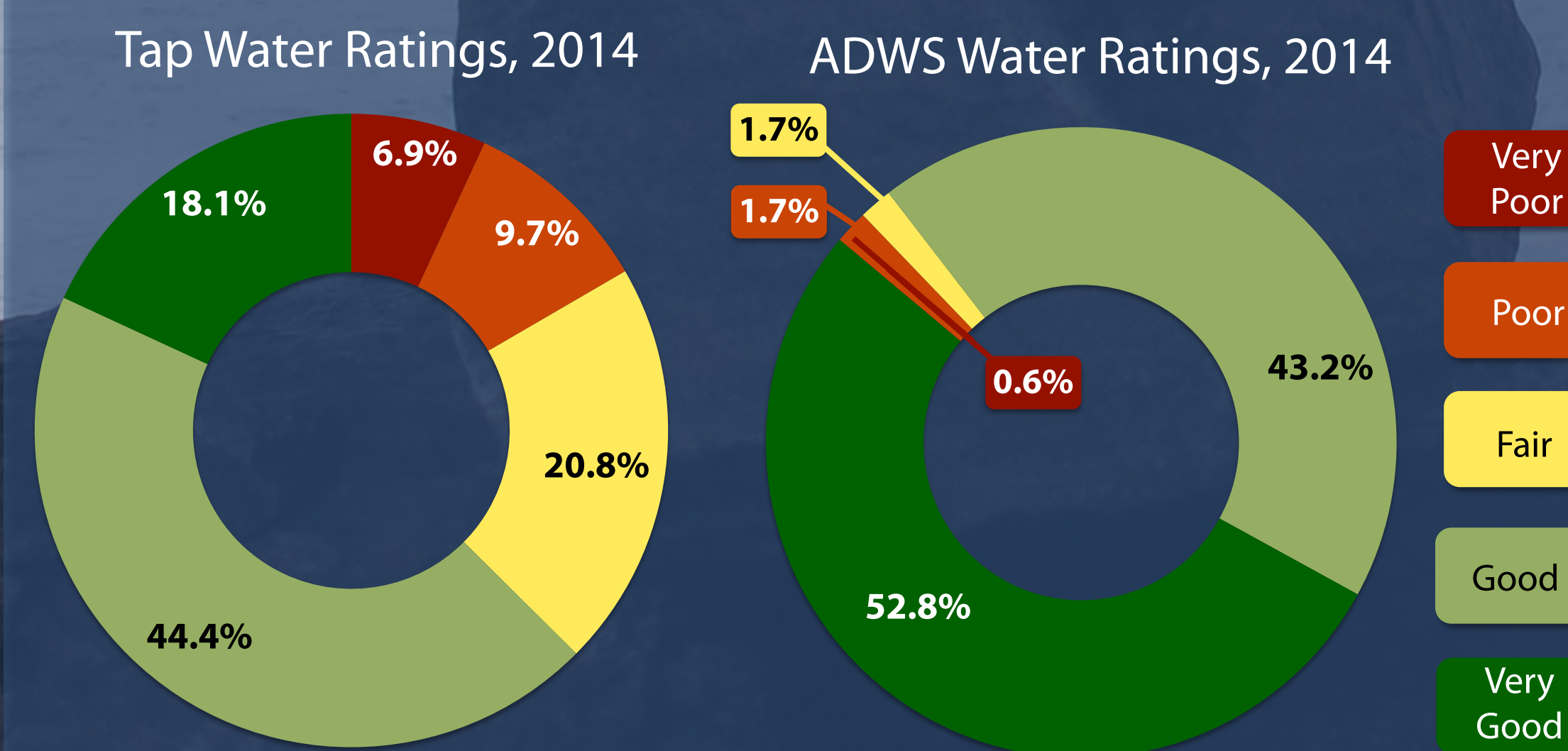
### Statistical Analysis

STATA 13 I/C was used to produce descriptive statistics and perform univariable logistic regression to examine factors associated with usage of various drinking water sources.

## Preliminary Results

### Current consumption patterns

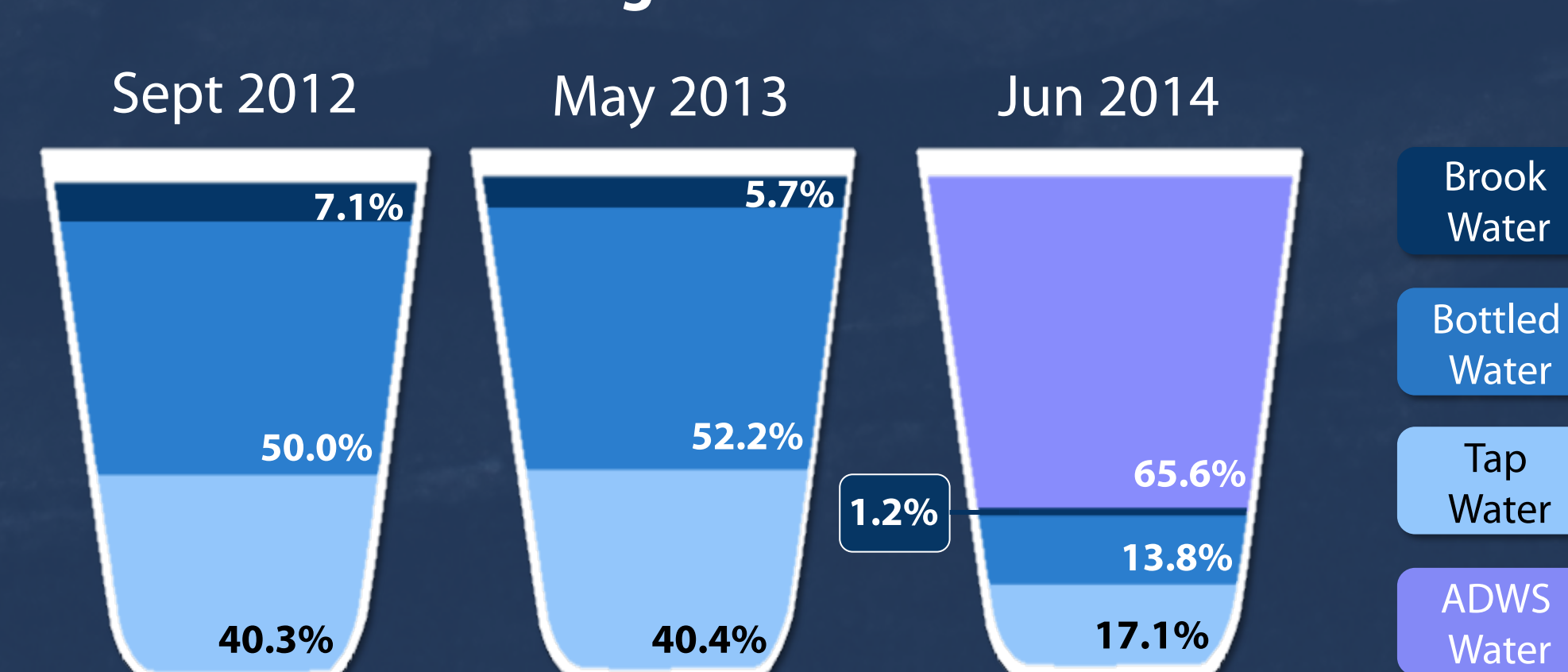
- ▶ The median amount of water consumed per day was two 500mL servings (1L).
- ▶ Women had **1.87** times greater odds of drinking bottled water than men (95% CI 1.09-3.22).
- ▶ **65.8%** of residents used the ADWS as their main source of drinking water (95% CI 59.7-71.5%).



### Ratings of Water Sources:

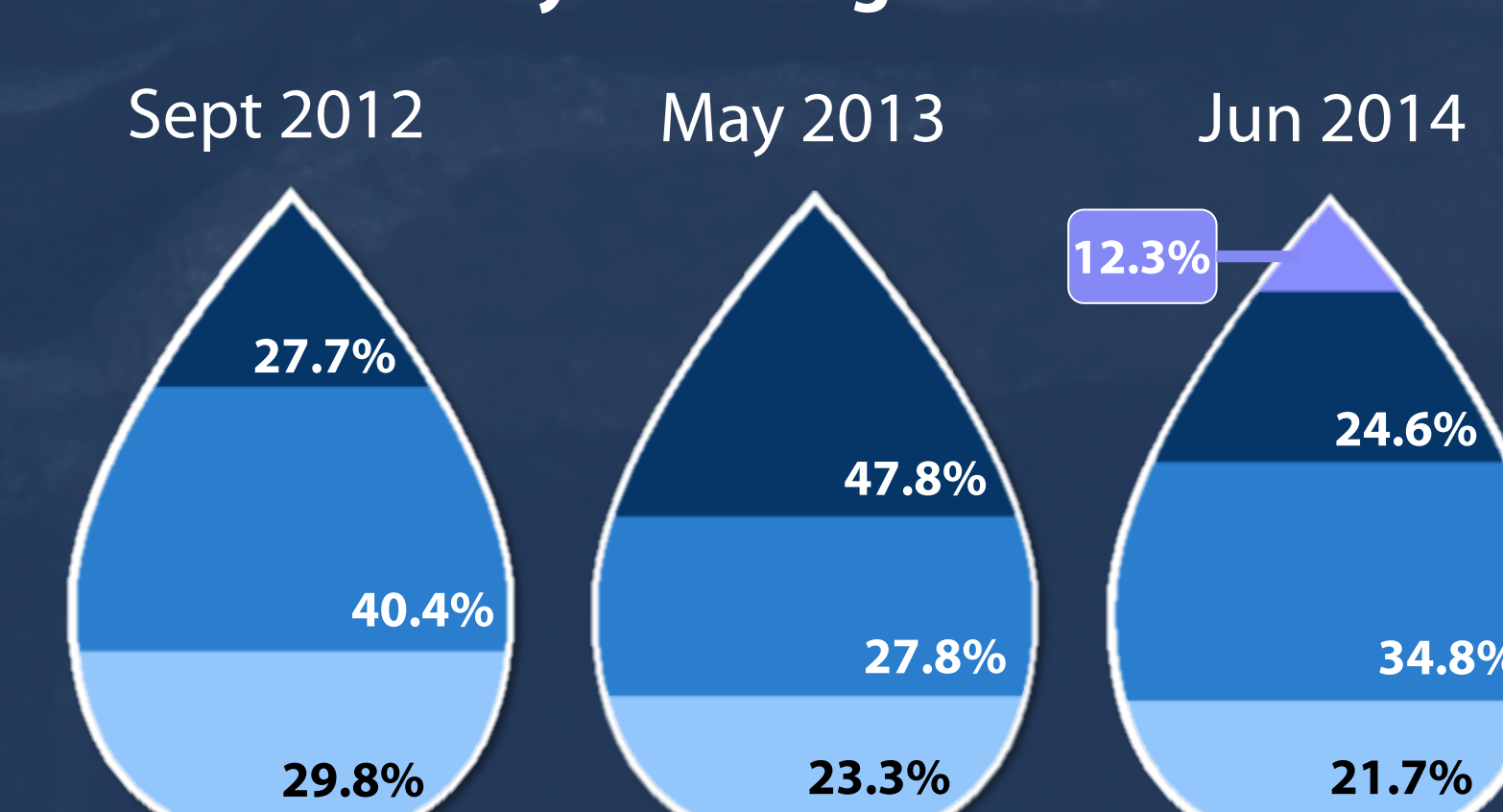
- ▶ **96.1%** of those who consumed water from the ADWS rated it as "good" or "very good" (95% CI 91.9-98.1%).
- ▶ **62.5%** of people rated their tap water quality as "good" or "very good" (95% CI 50.5-73.1%).

### Main Drinking Water Sources



Significant decreases in use of tap, bottled, and brook water occurred after the arrival of the ADWS ( $p < 0.05$ ).

### Secondary Drinking Water Sources



Secondary drinking water sources remained relatively consistent after the arrival of the ADWS

### Changes over time:

- ▶ Consumption of tap, brook, & bottled water decreased significantly after the installation of the ADWS.
- ▶ Secondary sources of drinking water remained relatively constant despite the addition of the ADWS.

## Discussion & Next Steps

Main sources of drinking water changed significantly over time, yet secondary water sources remained consistent. Although originating from the same surface water source (a local lake), ratings of ADWS water were more frequently rated as "good" or "very good" than tap water; further analysis is required to understand these perceptions, and the degree to which aesthetic appeal and perceptions of safety influence choice of drinking water.

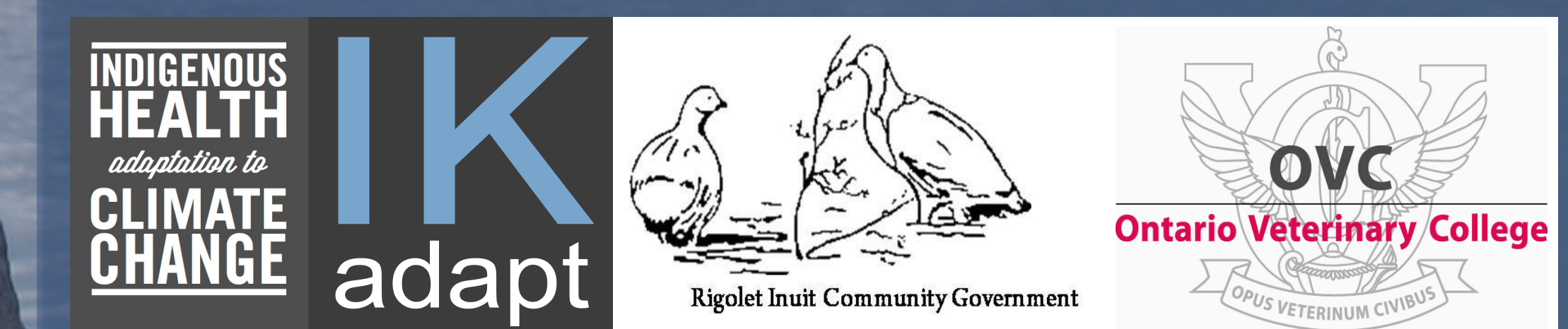
Next steps include linking the surveys by individual ID to assess individual changes and patterns of drinking water consumption over time. Multivariable regression models will be used to identify potential factors contributing to daily volume of water consumption and use of various water sources.



Rigolet, Nunatsiavut

## Acknowledgements

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## Poster Presenters



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## References

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