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Results of a community survey on
environmental forecasting uses and needs



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LOCAL RESEARCH COORDINATOR:
JASON CARPENTER

ᓂᓂᓂᐱᖃ 2023
DECEMBER 2023

Full Inuktitut/English bilingual report will be
available in February 2024 at:
<https://straightupnorth.ca/community-wwic-uses-and-needs/>

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REPORT PREPARED BY:
NATALIE CARTER, JASON CARPENTER,
CHARLOTTE BUTTLE, GITA LJUBICIC,
REGENA SINCLAIR, EMMELIE PAQUETTE



66ᓂᖃ
ᐃᖃᐱᖃᓂᐱᖃ ᐱᓂᓂᐱᖃᓂᐱᖃ
Iqalungmiut Participated

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Photo: Alison Perrin

Thank you!

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We wish to acknowledge the 66 **Iqalungmiut** who participated in this survey between November 2019 and October 2020. Thanks to everyone for their time and sharing their experiences.

Andrew Maher
Blaine Heffernan
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Jeremy Fraser

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Jon Neely
Joseph Monteith
Jovan Simic
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Levi Nowdluq
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Mary-Lee Sandy-Aliyak

Michael DeMaio
Rhoda Ungalaq
Sean Qappik
Shamus Armstrong
Steve Pinksen
Tiivi Qiatsuk
Tony Lee
Torsten Diesel
William Flaherty

And 39 Iqalungmiut who asked to remain anonymous.

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We received tremendous support from our research partners at [SmartICE](#), [Arctic Eider Society](#), [Ittaq Heritage and Research Centre](#), [Environment and Climate Change Canada](#), [Carleton University](#), [Memorial University of Newfoundland](#), and [University of Ottawa](#). We would especially like to thank [Aqqumavvik Society](#) staff in Arviat for their support in coordinating survey activities across Nunavut.



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Photo: Jason Carpenter

ABOUT THIS PROJECT

Our research team includes Inuit, northern, and southern researchers who have worked together for many years in Nunavut communities. Over the years we have heard from Nunavummiut (people of Nunavut) that services providing information on weather, water, and ice conditions are not easy to use, access, or understand. We have also heard that the information is not always accurate for local conditions. This, along with increasingly unpredictable weather, and changing sea ice conditions, has made it harder and riskier for Nunavummiut to hunt and travel safely. We developed this project to learn how Nunavummiut are using environmental information to make decisions about safe travel on the land (including water and ice).

Our goal is to help improve the information that is available, and how it is communicated in northern communities. To accomplish this goal, we created a survey to get feedback from communities across Nunavut. Survey questions were developed together with input from all team members, as well as from environmental service providers, Inuit organizations, and northern governments and research organizations.

We work together according to the [Aajiiqatigingniq research framework](#), outlined by the Aqqiumavvik Society working with Elders from across Nunavut. This framework guides how we make decisions, and build consensus on our research approach and results. Surveys were facilitated by Local Research Coordinators working in their home communities. We also worked together in two collaborative analysis workshops to interpret survey results and decide on key messages for service providers and for Nunavut communities.

Ultimately, we hope that the results of this project will help service providers and decision-makers make their information more relevant and accurate for Nunavummiut, in support of safe travel.



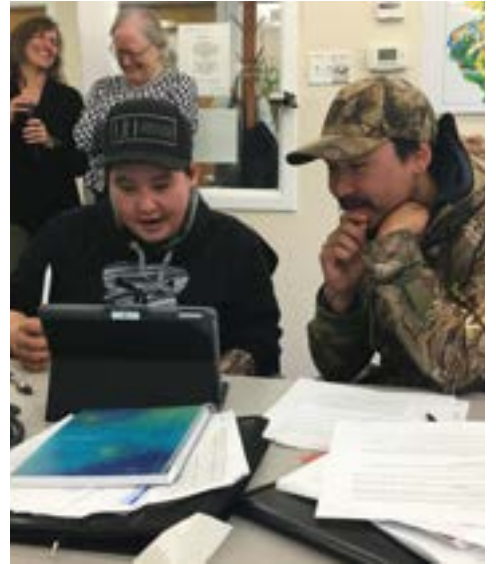
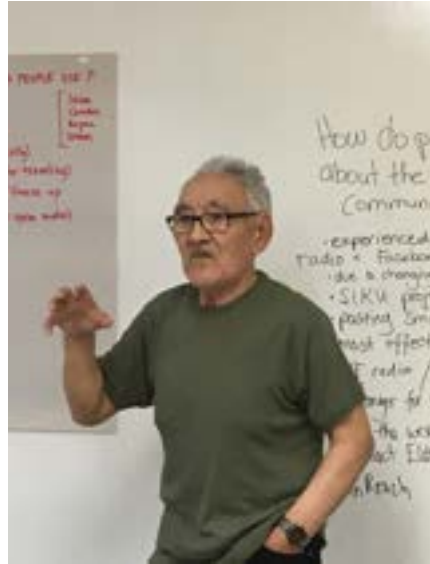
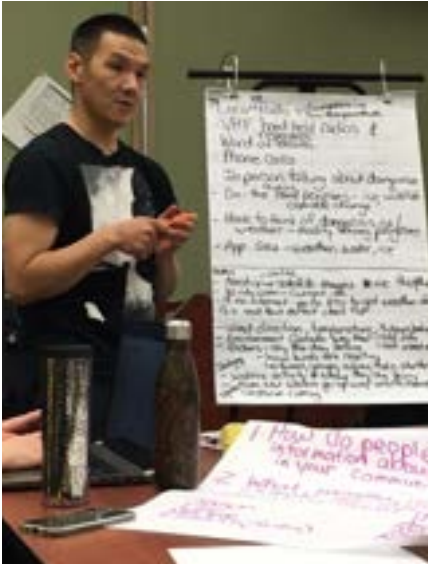
Collaborative analysis workshop in Arviat, Nunavut
(October 2021, photo: Gita Ljubicic)

ᑲᓗᓯᓖᑲᓕᓚᓗᓐ ᓄᓚᓕᓕᑦ PARTNER COMMUNITIES

ᑲᓚᓕᓕᑦ ᓄᓄᓚᓗᓐ ᓄᓚᓕᓕᑦ ᓄᓄᓚᓗᓐ: ᓗᓚᓗᓐ, ᓗᓖᑲᓄᓐᓗᑦᑕᓗᓖᑲᑦ, ᑲᓄᓖᓖᑲᓗᓐᓐᑦ, ᓗᓕᓕᓖᑲᑦ, ᓚᓖᑲᓖᓗᓖᑲᑦ, ᓗᓖᑲᓄᓗᓐ, ᓕᓖᓗᓕᓕᑲᑦ ᓗᓕᓗ ᓗᓂᓖᓗᓐᓐᑦ.

Our project involved 8 communities in Nunavut: Arviat, Cambridge Bay, Clyde River, Coral Harbour, Gjoa Haven, Iqaluit, Pond Inlet, and Sanikiluaq.





Photos: Natalie Carter and Gita Ljubicic

Training and collaborative analysis workshops with Local Research Coordinators, Elder mentors, and project partners between October 2019 and December 2022.

KEY PROJECT ACTIVITIES (2018 - 2022)

Timeline	Activities
December 2018	<ul style="list-style-type: none"> • collaborative project planning meeting at ArcticNet conference in Ottawa, Ontario
January - November 2019	<ul style="list-style-type: none"> • collaborative survey development (involving our project proposal team, Local Research Coordinators, and a number of external reviewers) <ul style="list-style-type: none"> ◦ this led to survey questions, wording, and options that were much more clear, relevant, and accessible for Nunavummiut ◦ it also means results can be more meaningful and impactful to researchers, northerners, and policy-makers
October - November 2019	<ul style="list-style-type: none"> • training sessions with Local Research Coordinators near Montreal, Quebec and in Iqaluit, Nunavut
December 2019 - March 2020	<ul style="list-style-type: none"> • Local Research Coordinators facilitated surveys in their home communities
March 2020	<ul style="list-style-type: none"> • surveys put on hold due to the COVID-19 pandemic (see page 4. for more details) <ul style="list-style-type: none"> ◦ we started working together on a plan for how to safely continue the project
June 2021	<ul style="list-style-type: none"> • Local Research Coordinators restarted survey facilitation <ul style="list-style-type: none"> ◦ this could only happen after public health and research license/ethics restrictions allowed it, and with local community organizations' support ◦ Local Research Coordinators also followed up with some earlier participants to clarify answers
October 2021	<ul style="list-style-type: none"> • collaborative analysis workshop in Arviat, Nunavut
November 2022	<ul style="list-style-type: none"> • Local Research Coordinators stopped facilitating surveys in their home communities
December 2022	<ul style="list-style-type: none"> • collaborative analysis workshop in Paris, Ontario, • presentations of refined results at ArcticNet conference in Toronto, Ontario

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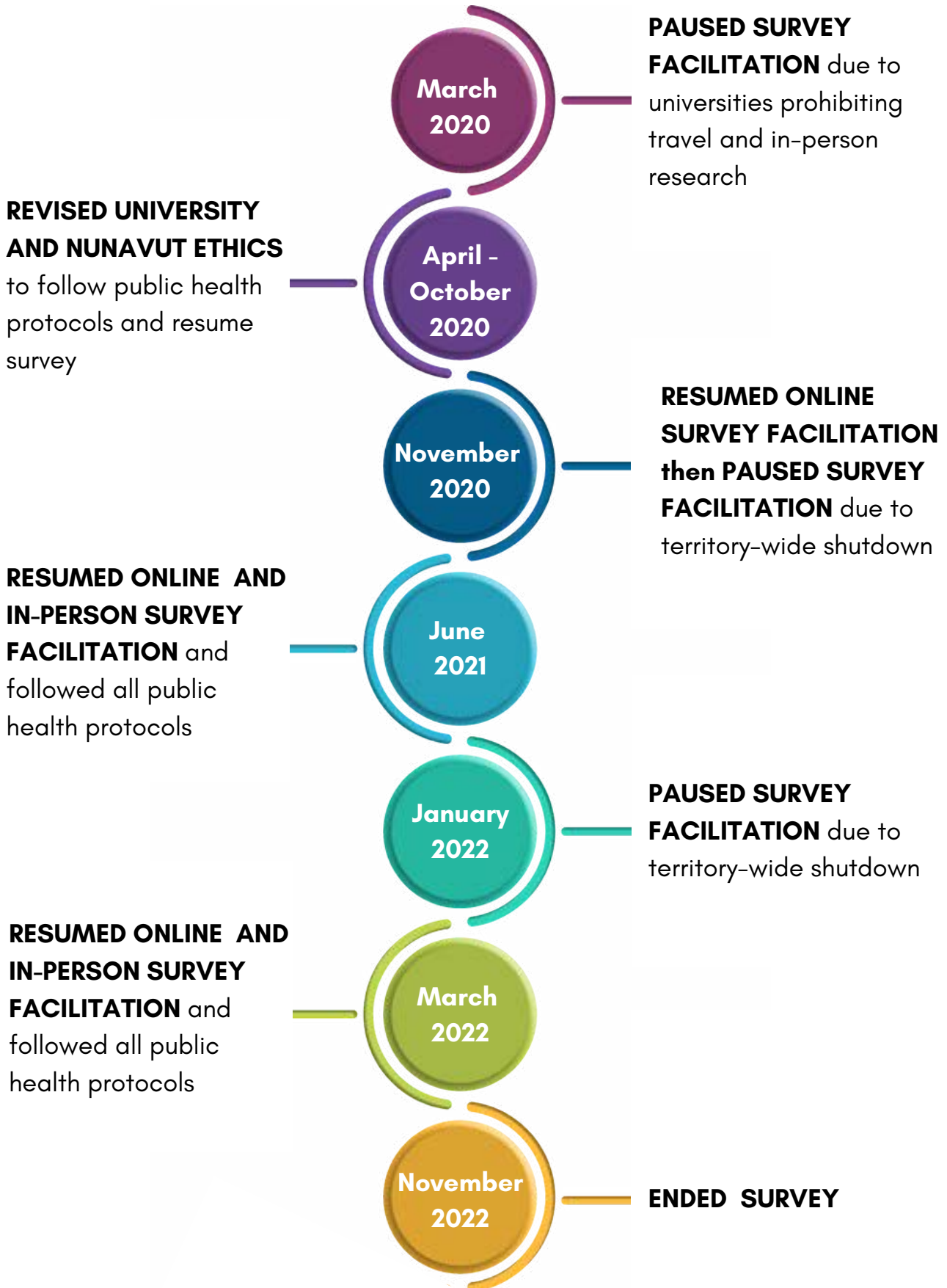
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SURVEY TIMELINE DURING THE COVID-19 PANDEMIC



SURVEY FACILITATION BY LOCAL RESEARCH COORDINATORS

In total, **19 Local Research Coordinators** were involved in the project, and they completed **360 surveys** across **8 communities** in Nunavut.

Local Research Coordinators invited community members to participate based on certain criteria. Specifically, we wanted to learn about uses and needs of weather, water, ice, and climate information and services from community members who were actively travelling on the land (including water and ice) in the last three years (since 2017). This included men and women of all ages and experience levels, and they could be experienced hunters, seasonal travellers, or people who just like to get out on the land.

Local Research Coordinators facilitated the surveys in English or Inuktitut based on participant preference. They used Qualtrics survey software to enter responses on iPads. They facilitated the survey in a community office or in participants' homes, based on individual comfort level. Some participants did the survey on their own using an online survey link, when COVID-19 pandemic public health restrictions prevented in-person surveys. Participants were compensated for their time. We obtained research ethics and license approvals before we started the survey.

For this report, we present the results based on survey answers from a total of 66 Iqalungmiut = 100%.



For more information about this report and the larger study please contact:

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Natalie Carter, McMaster University, carten7@mcmaster.ca

Gita Ljubicic, McMaster University, gita.ljubicic@mcmaster.ca

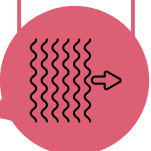
To access a Nunavut-wide report, and other community reports, please visit:

<https://straightupnorth.ca/community-wwic-uses-and-needs/>

KEY MESSAGES FOR SERVICE PROVIDERS

At the 2021 and 2022 collaborative analysis workshops, Local Research Coordinators developed twelve key messages for service providers:

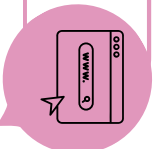
Provide more tide information that is specific to communities



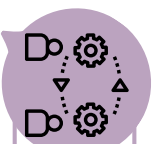
Create colour-coded visuals for ease of interpretation



Reduce number of pages and sites to go to when accessing online environmental products



Need more real time weather information (update more often)



Need more weather stations in key hunting areas



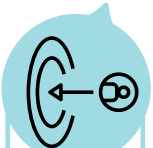
Faster and more affordable internet (address cost and subsidize northern InReach/SPOT subscriptions)



Expand support for community programs and leadership



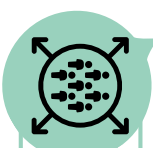
Continue to work on accuracy (short term forecast and more detailed wind information), leads to trust in products



Create forecast products that are easy to interpret and use (colour coded visuals)



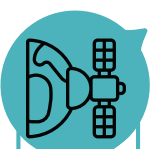
Increase awareness of local services and programs



Increase the number of VHF repeaters and cell towers (address calling for help)



Make ice charts and satellite images simpler to use (add links for tutorials)



KEY MESSAGES FOR SERVICE PROVIDERS

KEY MESSAGES FOR COMMUNITIES

At the 2022 collaborative analysis workshop, Local Research Coordinators developed seven key messages for community organizations:



UNDERSTANDING THE NUMBERS IN THIS REPORT

PERCENT

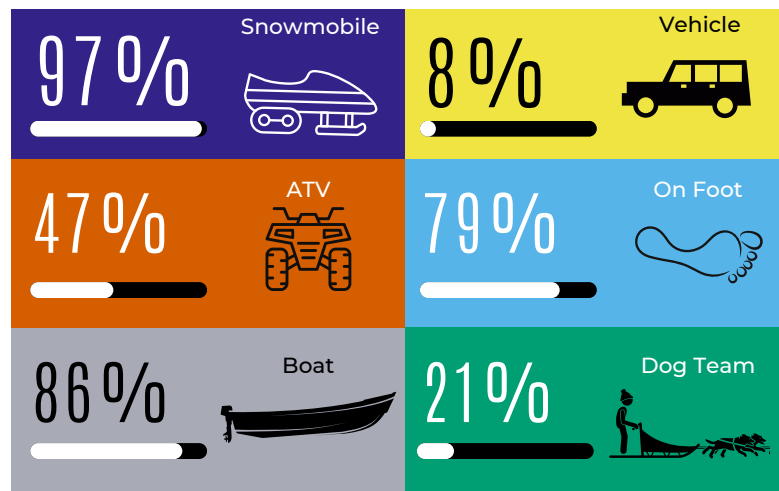
100% = all 66 participants

Most of the survey results in this report are shown as % (percent) where 100% means all 66 participants in Iqaluit who completed the survey.

Sometimes participants could choose more than one answer, so totals in some figures don't add to 100%.

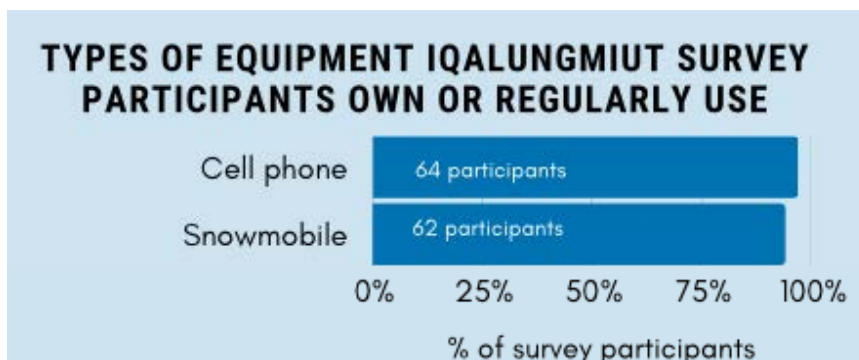
In this example **from p. 13**, participants could choose more than one method of transportation.

METHODS OF TRANSPORTATION SURVEY PARTICIPANTS USE TO TRAVEL ON THE LAND



COUNTS

Count = the number of participants giving that answer



Some of the charts show the results in percent and the **count** (actual number) of participants who gave that answer.

In this example **from p. 12**, cell phones are owned or regularly used by 97% of participants (64 participants).

UNDERSTANDING THE NUMBERS IN THIS REPORT (CONTINUED)

PARTICIPANTS

Participants = everyone (all 66 people) who did this survey in Iqaluit

RESPONDENTS

Respondents = only the participants who answered follow-up questions

There are some questions in the survey that not everyone answered.

Participants who answered "no" to a question would skip to the next section.

But participants who answered "yes" to the same question would be asked some *related follow-up questions*. When we show the results to follow-up questions, we call this group of participants "**respondents**", because they were the ones who answered the question.

CONTACTING OTHERS FOR HELP

In this example **from p. 26**, 99% of the participants said "yes I can call for help if I get stranded on the land".



If Iqalungmiut participants get stranded or have an accident on the land, 99% (out of a total of 66) can call for help.

Of the 65 **respondents** who can call for help, most would call a **family member** (74%), or a **friend** (69%).

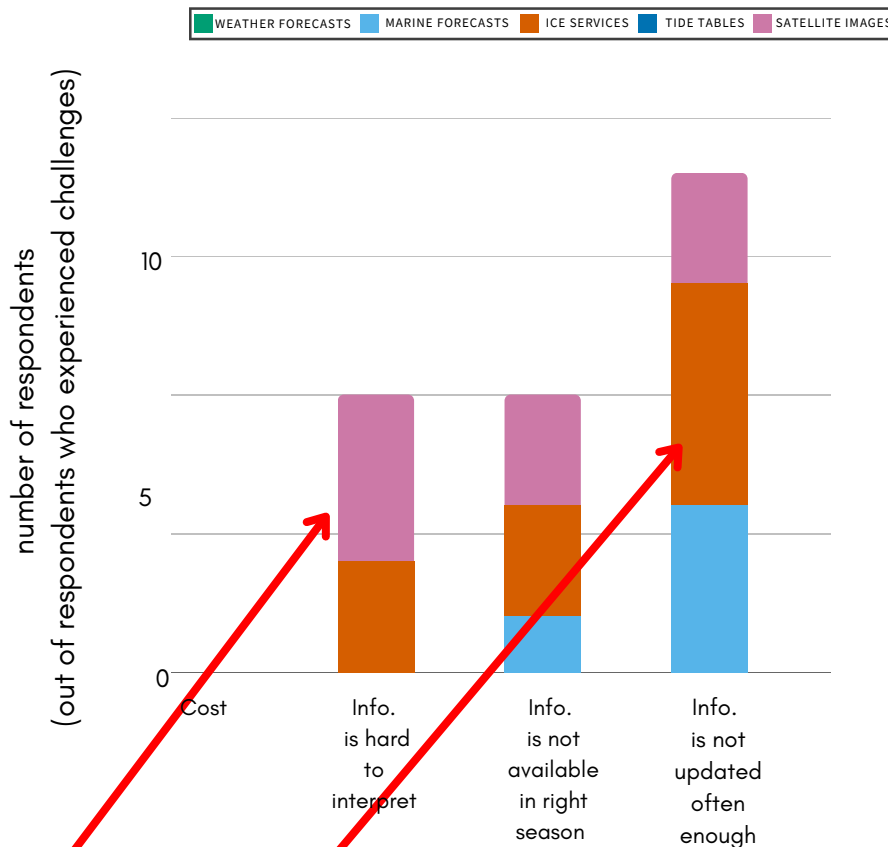
Only the participants who said "Yes, I can call for help", were asked the follow-up question, "Who, can you call for help?" This smaller group of participants who answered the follow-up question are called **respondents**. So the percent shown for respondents are out of the total who answered the question, and not the total of participants.

UNDERSTANDING THE NUMBERS IN THIS REPORT (CONTINUED)

RESPONDENTS

Respondents = only the participants who use forecasting products

REASONS WHY ENVIRONMENTAL FORECASTING INFORMATION IS DIFFICULT FOR IQALUNGMIUT RESPONDENTS TO ACCESS



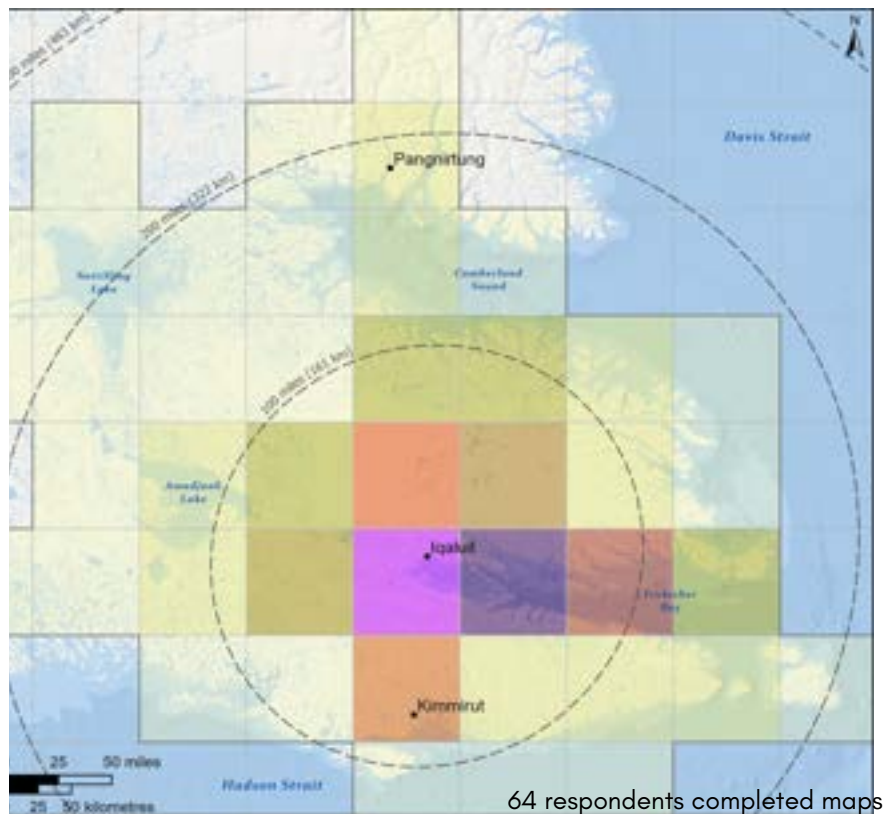
Some participants did not use every type of environmental forecasting information (i.e. weather forecasts, marine forecasts, ice services, tide tables, satellite images).

In this example from **p. 37**, of the respondents who said "Yes, I experience challenges when accessing satellite images",

3 of them experience challenges because the information is hard to interpret. Of the respondents who said "Yes, I experience challenges when accessing ice services", 4 of them experience challenges because the information is not updated often enough.

UNDERSTANDING THE MAPS IN THIS REPORT

TOTAL TRAVEL



Number of respondents who travelled in the selected area

MAP COLOURS AND LEGENDS

Each coloured box on the maps represents a certain number of respondents who travelled to that area, and all of the types of transportation they used to travel there (e.g. if a respondent went to an area by ATV and by snowmobile, it is counted as having travelled to the area twice).

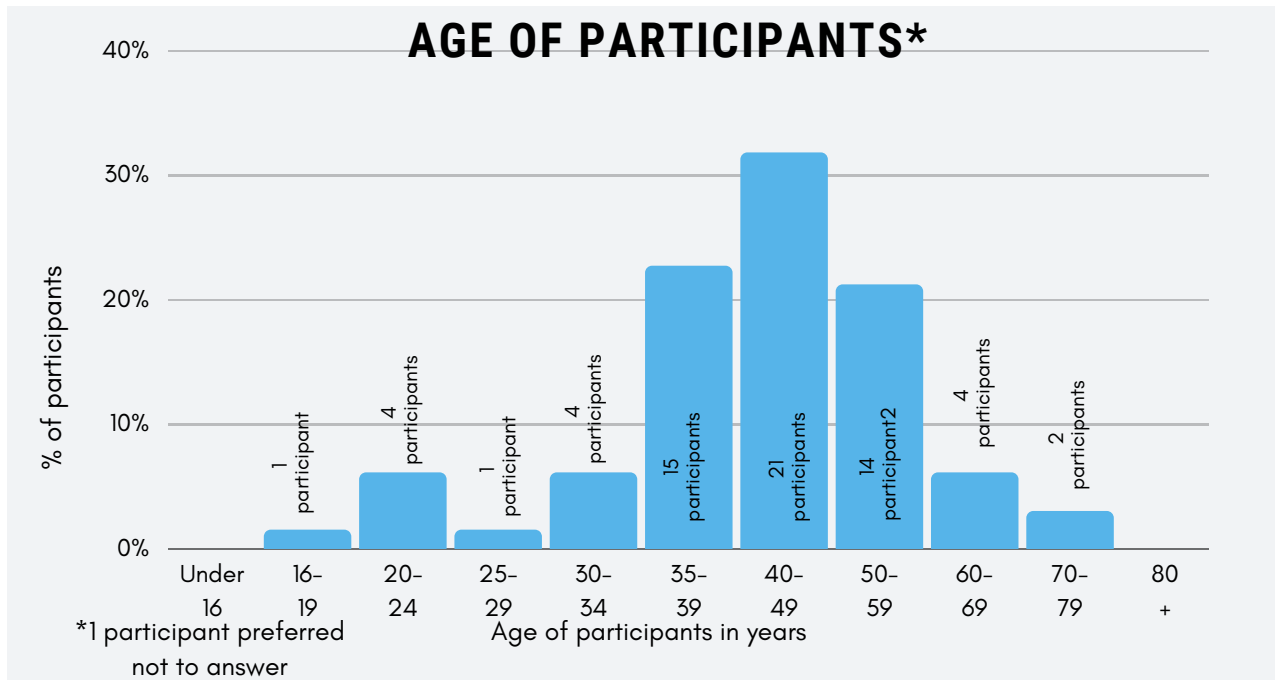
Darker/brighter colours = more respondents went there.

Lighter colours = less respondents went there.

Respondents = only the participants who completed maps

Some participants did not complete travel maps (due to technical issues and other reasons). When we show the maps, we call this group of participants "respondents", because they were the ones who completed maps.

IQALUNGMIUT SURVEY PARTICIPANT DEMOGRAPHICS



Survey participants ranged in age from 16 to 79 years, with the highest proportion being between 40-49 years old (32%). No one under the age of 16 or 80 years and older, participated in the survey.



82% of participants identify as male



18% of participants identify as female

Most participants identify as male (82%), and 18% identify as female.

52%

of participants identify as an Indigenous person



100%

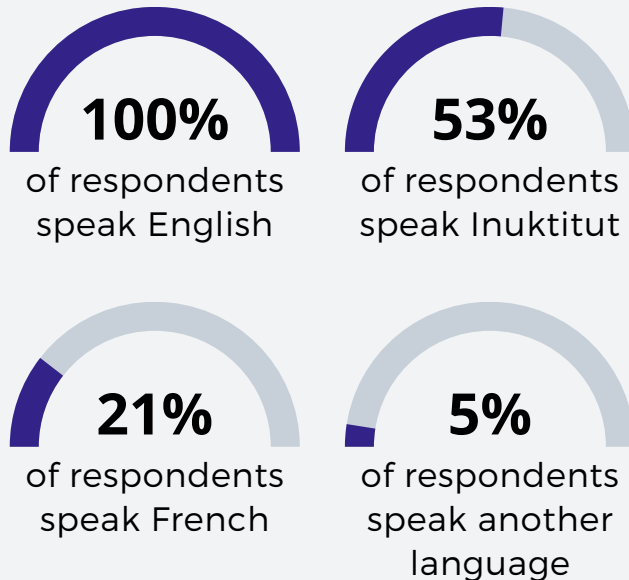
of Indigenous respondents identify as Inuit



Nearly half of participants identify as an Indigenous person (52%), and all Indigenous respondents identified as Inuit.

IQALUNGMIUT PARTICIPANT DEMOGRAPHICS (CONTINUED)

LANGUAGES SPOKEN*



*Participants could choose multiple languages

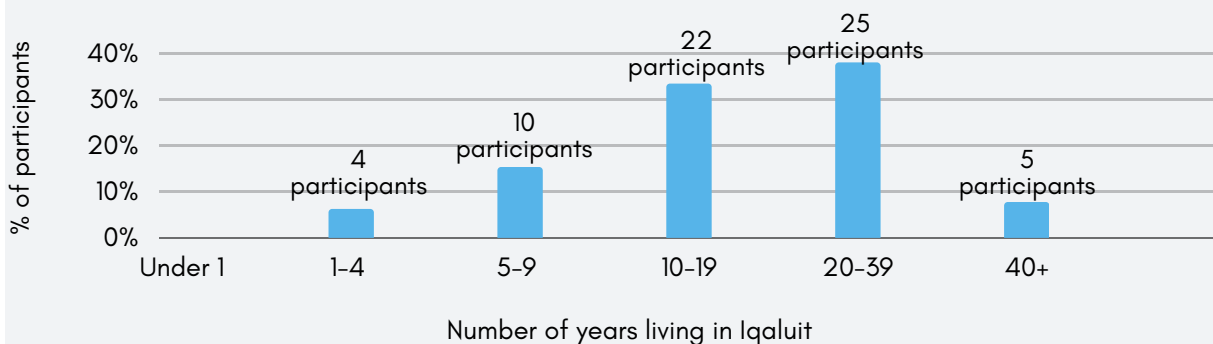
Participants were asked about which languages they speak.

All participants speak English, and most (53%) speak Inuktitut. Some respondents (21%) speak French, and a few (5%) speak another language (Serbian, Russian, Spanish).

It is important to understand how long participants have lived in Iqaluit as this relates to (although does not necessarily determine) how much experience they have with travel on the land, water, or ice.

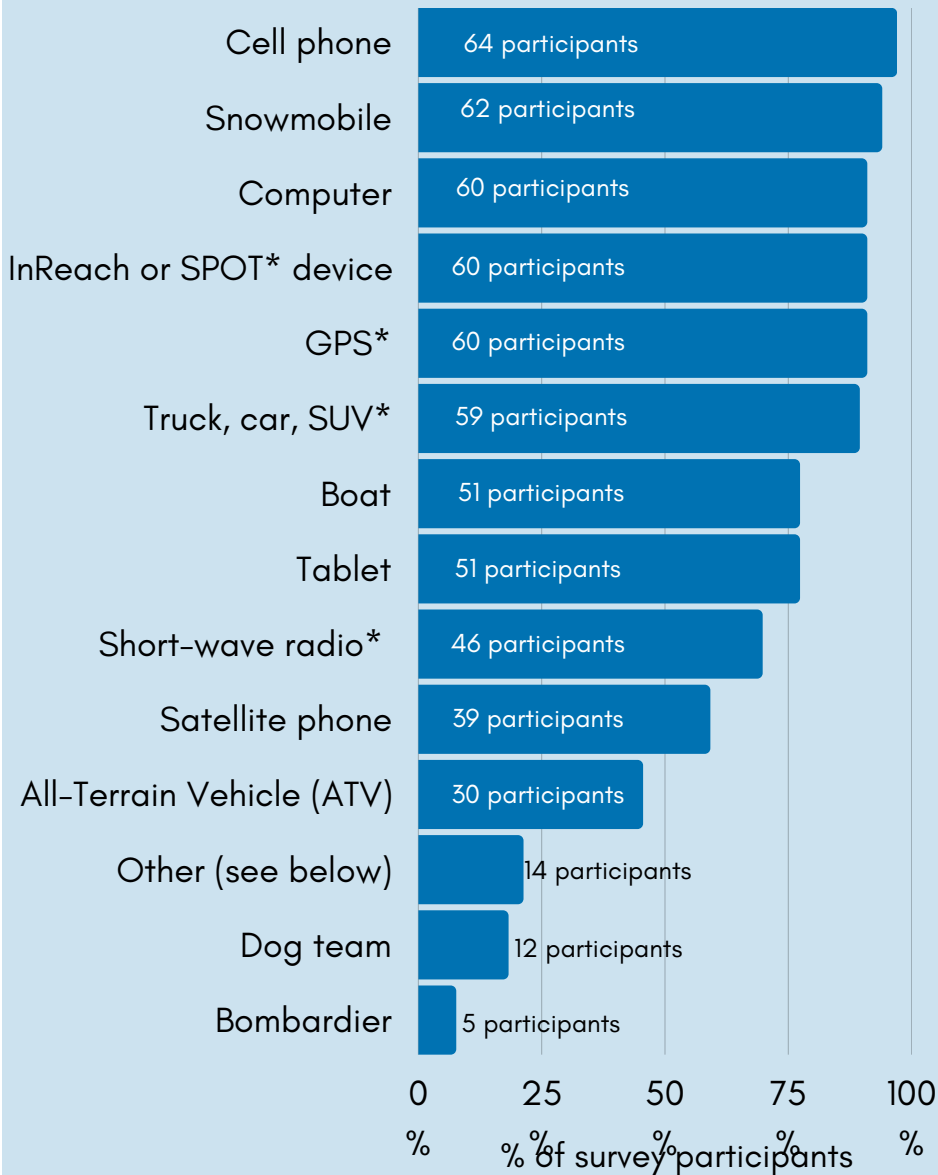
Most participants (79%) have lived in Iqaluit for 10 or more years.

LENGTH OF TIME SURVEY PARTICIPANTS HAVE LIVED IN THE COMMUNITY



TRAVEL EQUIPMENT

TYPES OF EQUIPMENT IQALUNGMIUT SURVEY PARTICIPANTS OWN OR REGULARLY USE



* GPS: Global Positioning System; SUV: Sport Utility Vehicle; SPOT: Satellite Personal Tracker; Short-wave radio e.g. CB, SBX, VHF



BOAT SIZES RANGED FROM

14 - 45
FEET

100%

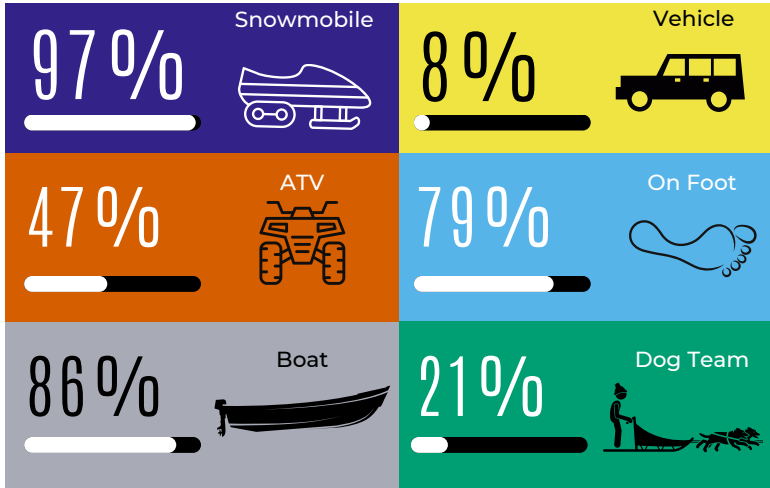
OF PARTICIPANTS HAVE
ACCESS TO THE INTERNET
IN THEIR HOME

Cell phones and snowmobiles are the types of equipment most often owned or regularly used by participants, followed by computers, inReach or SPOT devices, and GPS. Participants who answered "Other" also use chart plotters, sonars, depth finders and sounders, and side-by-side ATVs with dump box.

All participants have access to the internet in their home. This is important to know because it affects what kinds of information they might be able to access.

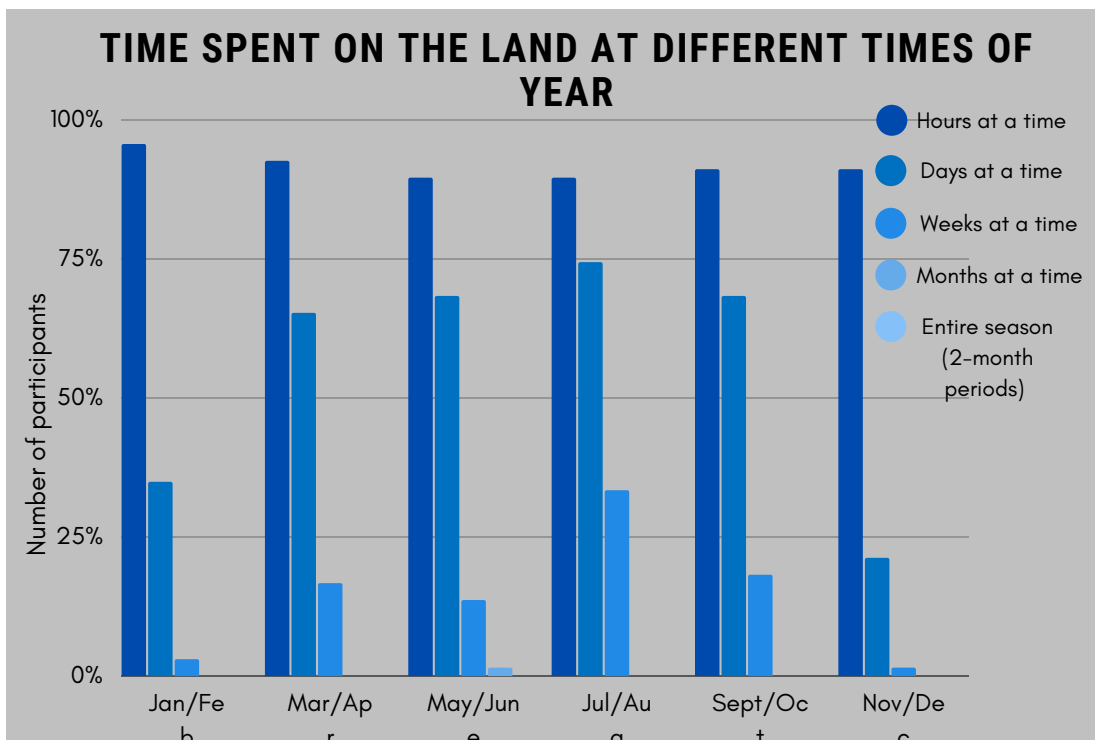
TRAVEL HABITS

METHODS OF TRANSPORTATION SURVEY PARTICIPANTS USE TO TRAVEL ON THE LAND



When survey participants travel, snowmobile is the most common method of transportation used. This is followed by boat, and on foot. Participants also travel by ATV, vehicle (truck, car, SUV), and dog team.

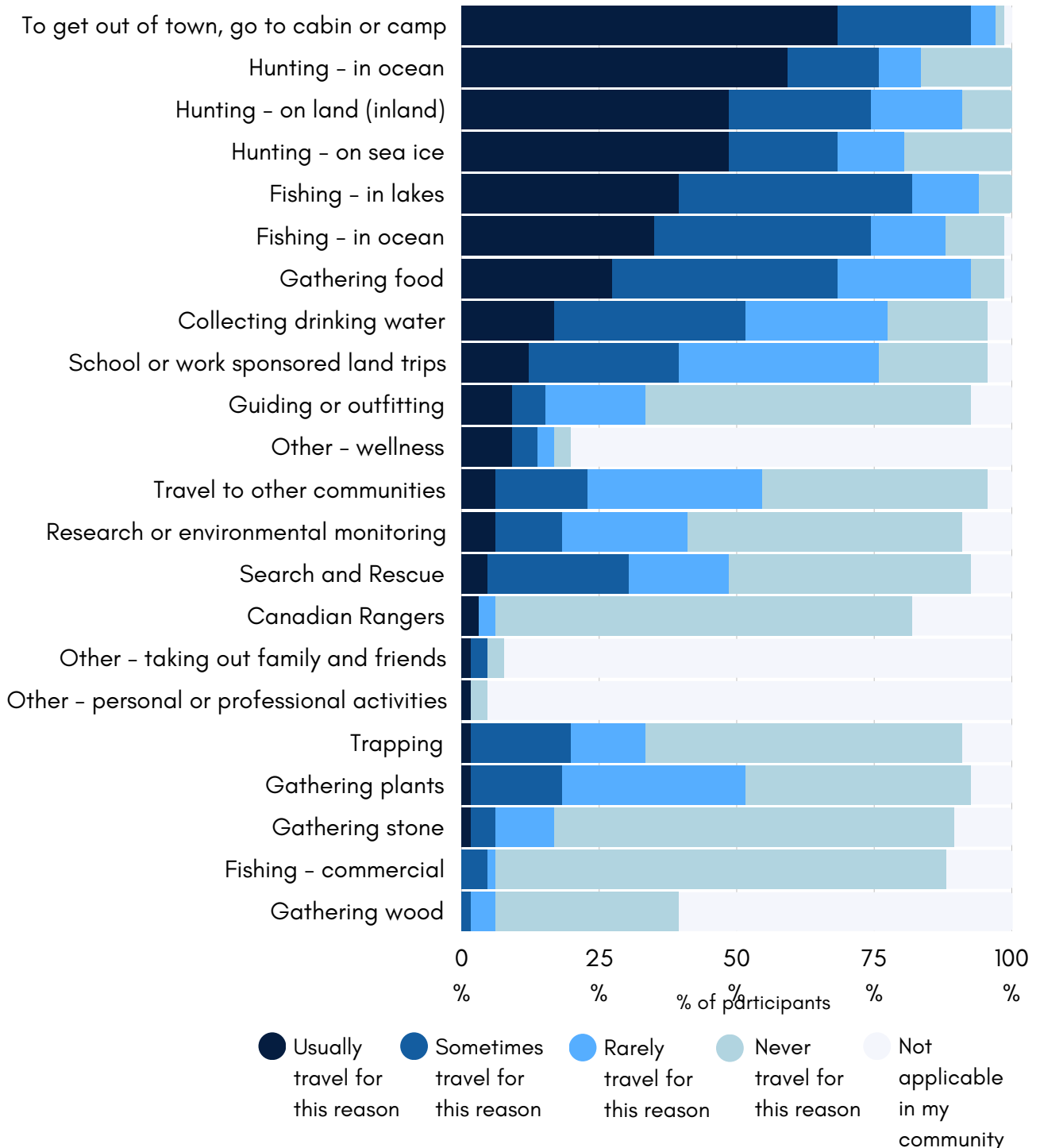
Survey participants use different types of transportation at different times of year. Snowmobiles, ATVs, boats, vehicles, on foot, and dog teams are used all through the year.



In different times of year, survey participants spend different lengths of time on the land. Most commonly, participants are on the land for hours or days at a time. In July and August the number of participants that are out on the land for weeks at a time, increases. Some travel for longer periods of time.

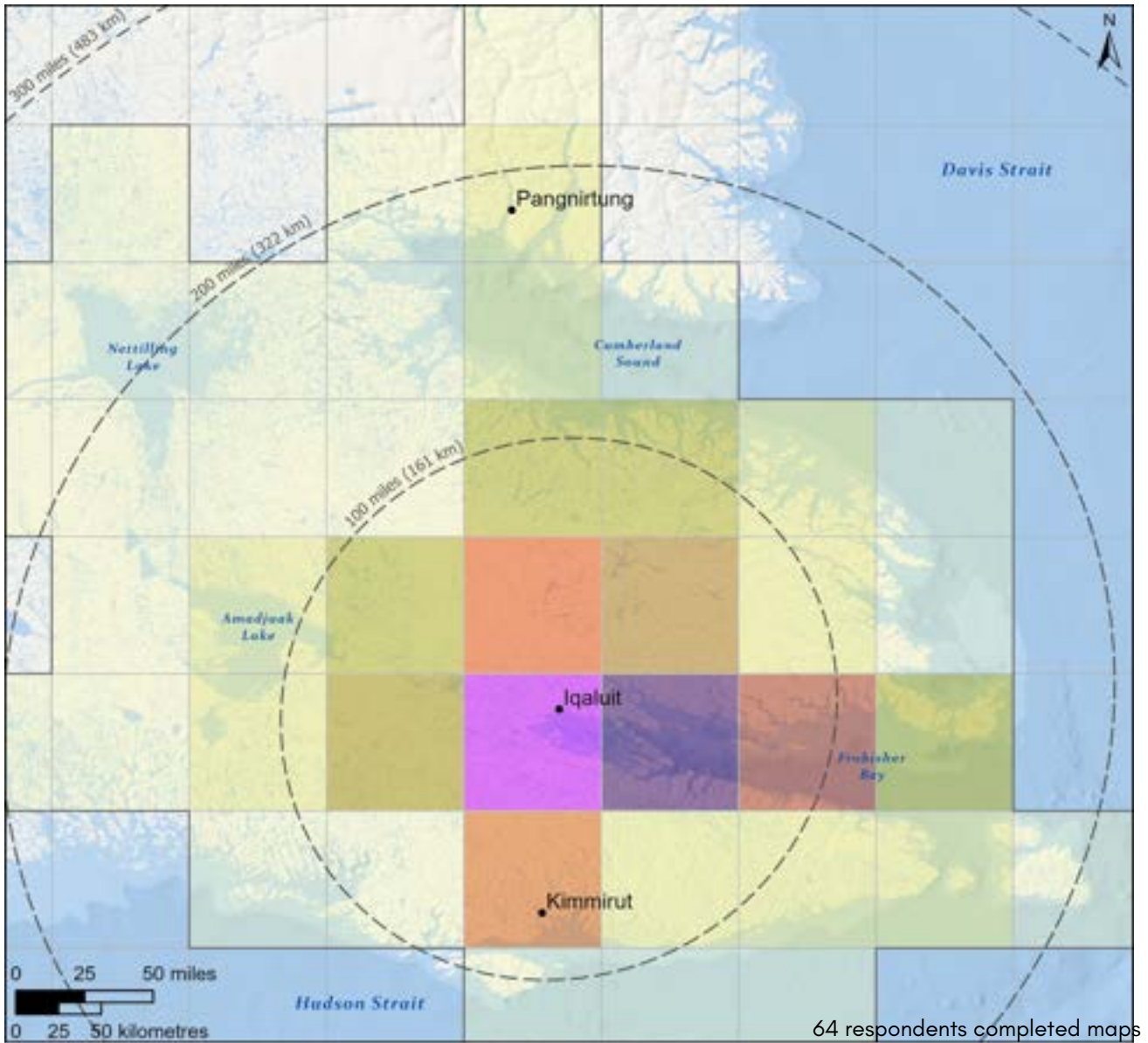
TRAVEL HABITS

REASONS IQALUNGMIUT USUALLY TRAVEL ON THE LAND



Survey participants travel on the land, water, and ice for many reasons. Most often they travel to get out of town/go to a cabin or camp hunt in the ocean, on land, or on sea ice. Those who said "Other" travel for clam digging, dog sledding, exercise, hiking, kiting, mapping sea ice with a drone, mental health, kayaking, photography, practicing Inuit Qaujimagatuqangit, skiing, fat biking, and mobile journalism

WHERE IQALUNGMIUT RESPONDENTS TRAVEL (TOTAL TRAVEL)



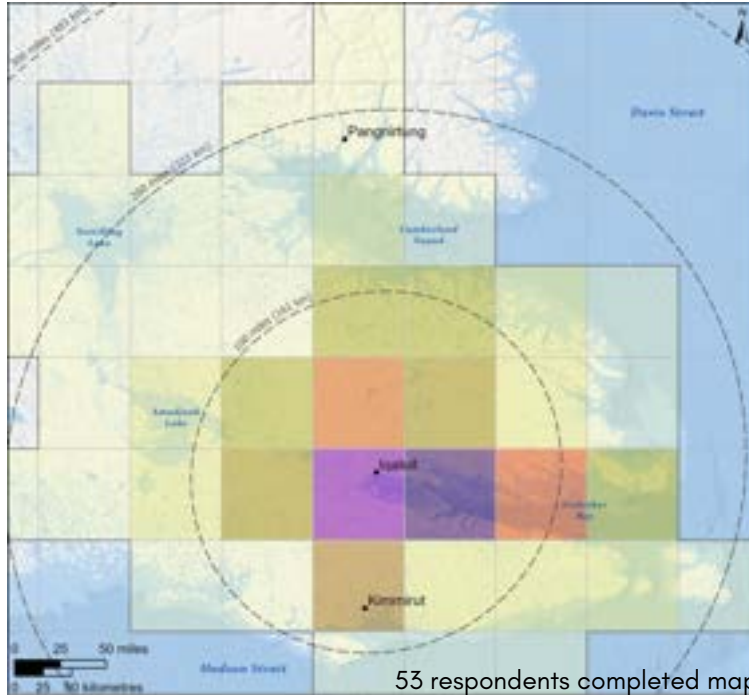
Number of respondents who travelled in the selected area

To access full page maps visit

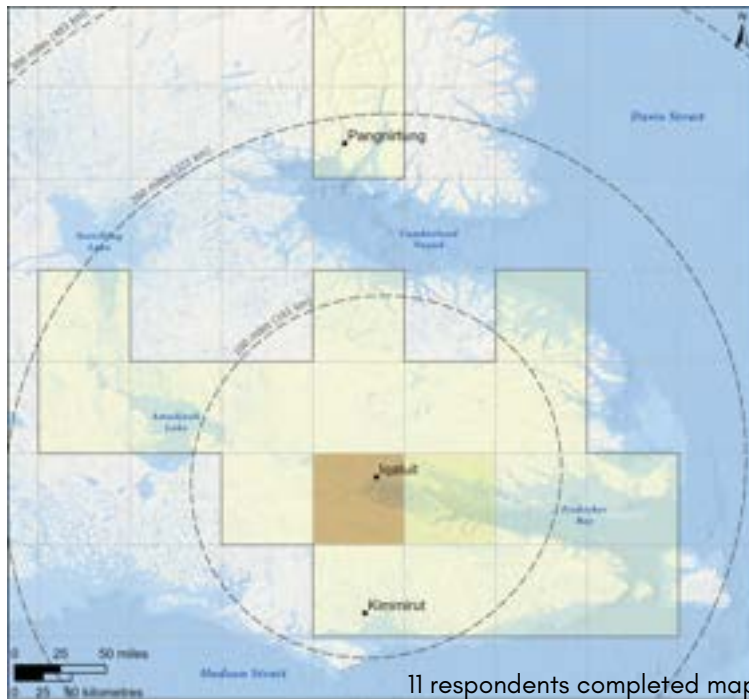
<https://straightupnorth.ca/community-wwic-uses-and-needs/>

WHERE IQALUNGMIUT MEN AND WOMEN RESPONDENTS, TRAVEL

TRAVEL BY MEN



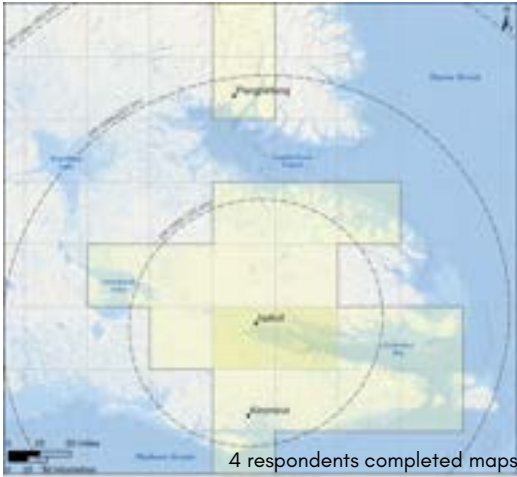
TRAVEL BY WOMEN



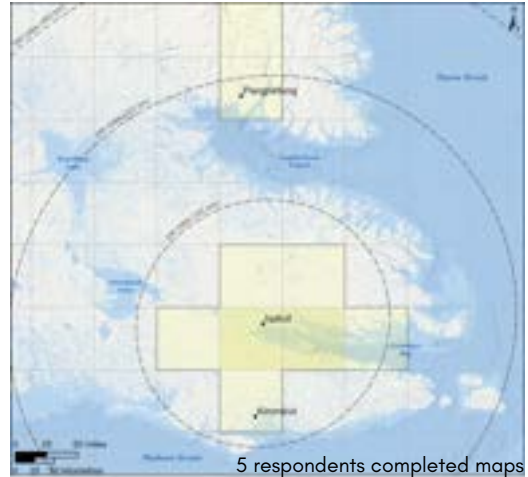
Number of respondents who travelled in the selected area

WHERE IQALUNGMIUT RESPONDENTS TRAVEL (BY AGE)

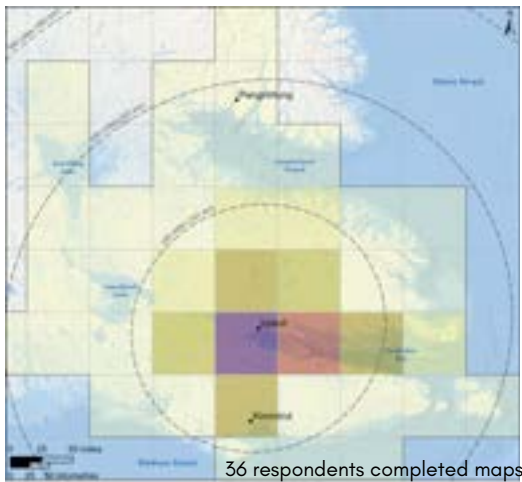
AGES 16 TO 24 TRAVEL



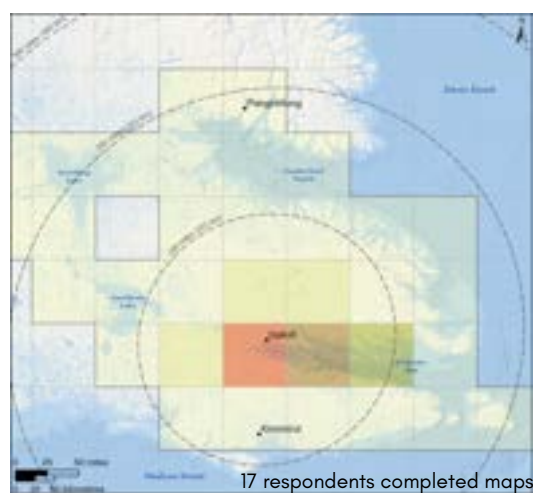
AGES 25 TO 34 TRAVEL



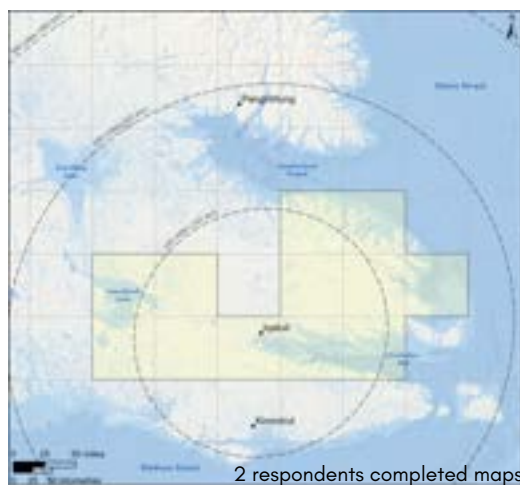
AGES 35 TO 49 TRAVEL



AGES 50 TO 69 TRAVEL



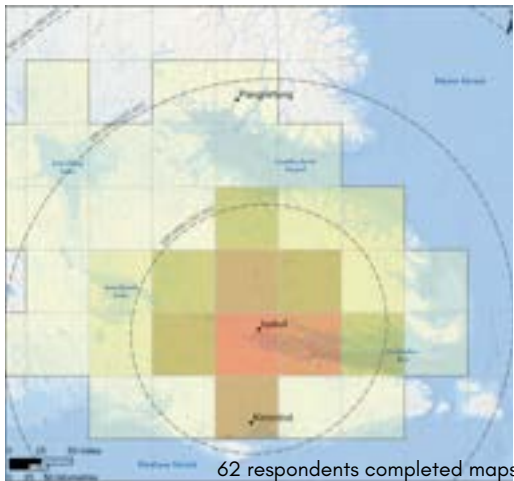
AGES 70 AND ABOVE TRAVEL



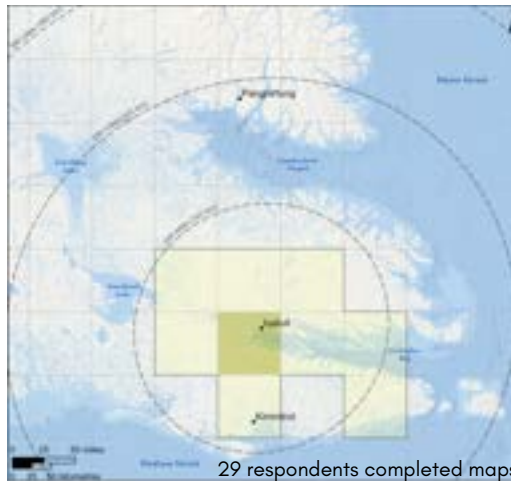
Number of respondents who travelled in the selected area

WHERE IQALUNGMIUT RESPONDENTS TRAVEL (BY MODE OF TRAVEL)

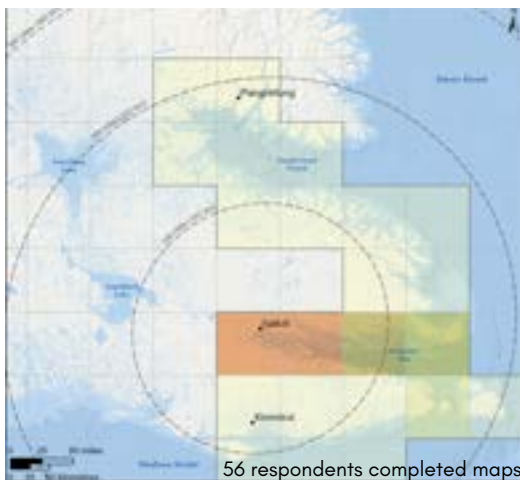
SNOWMOBILE TRAVEL



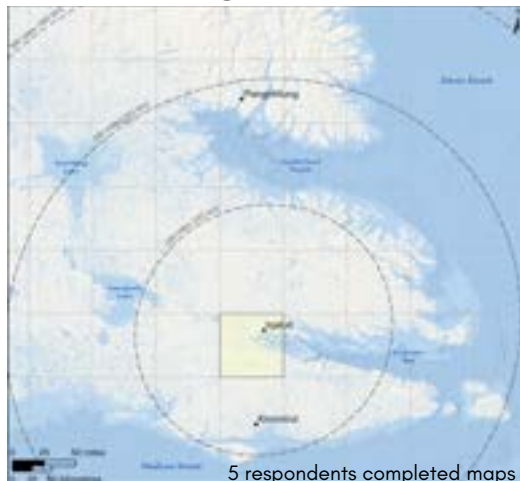
ATV TRAVEL



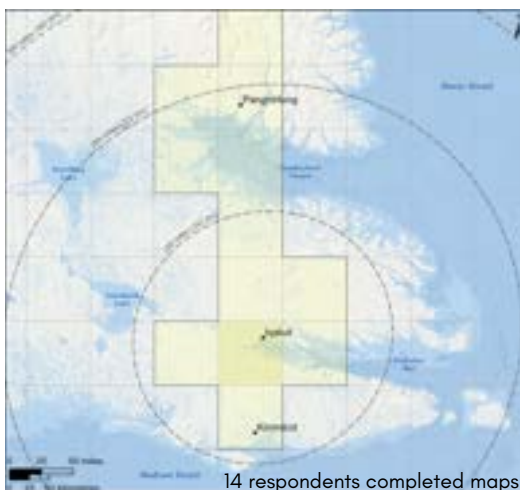
BOAT TRAVEL



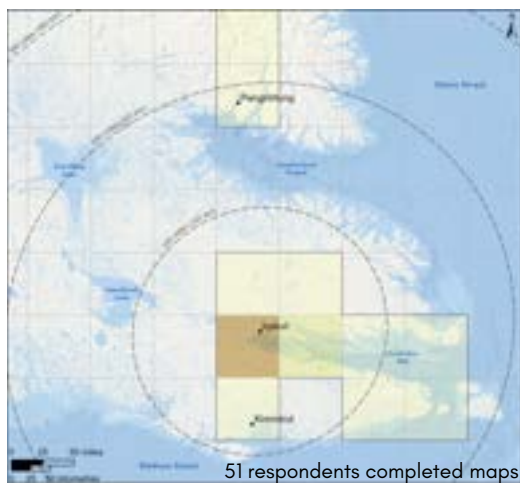
VEHICLE TRAVEL



DOG TEAM TRAVEL

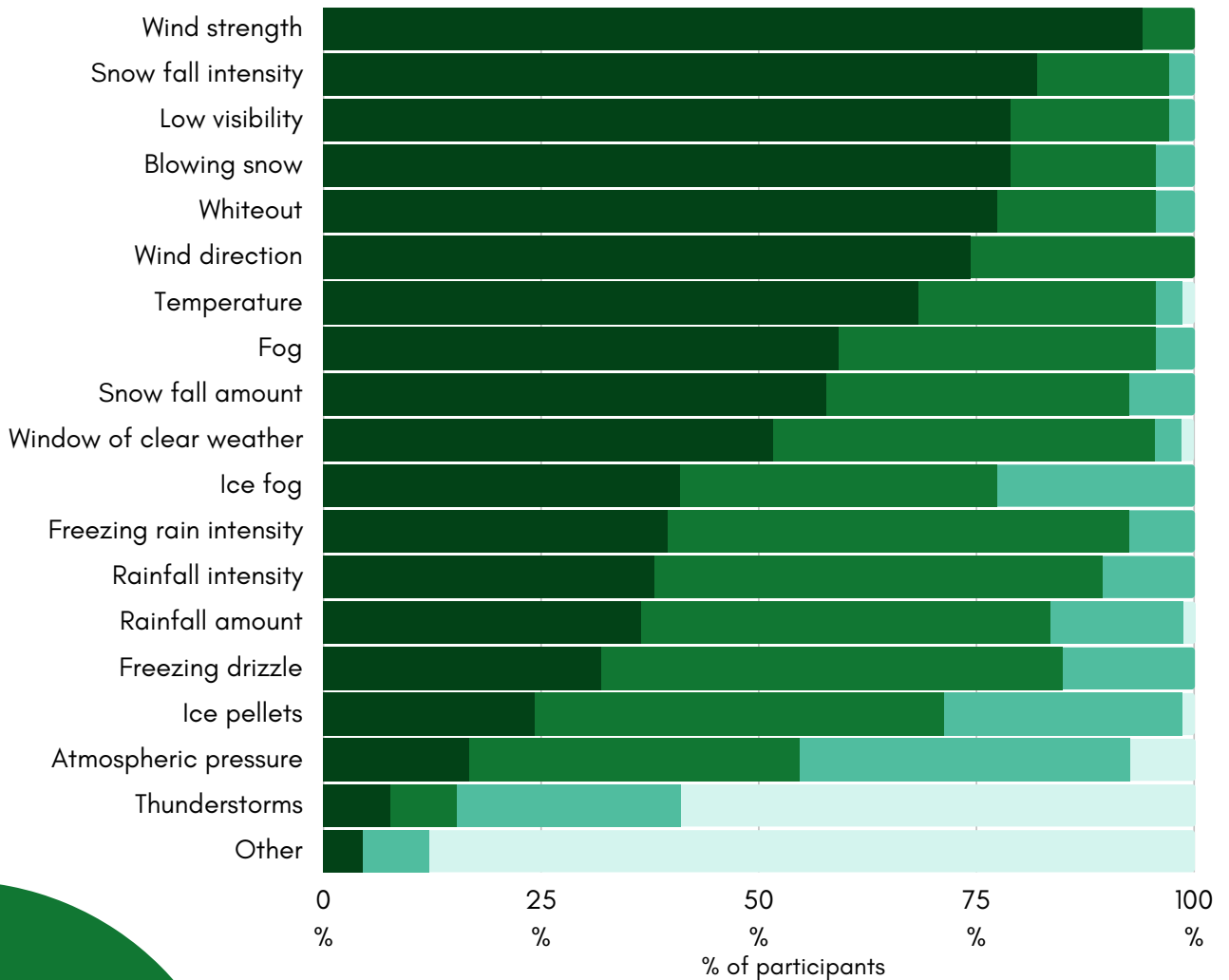


ON FOOT TRAVEL



Number of respondents who travelled in the selected area

WEATHER CONDITIONS IQALUNGMIUT PARTICIPANTS CHECK BEFORE THEY TRAVEL



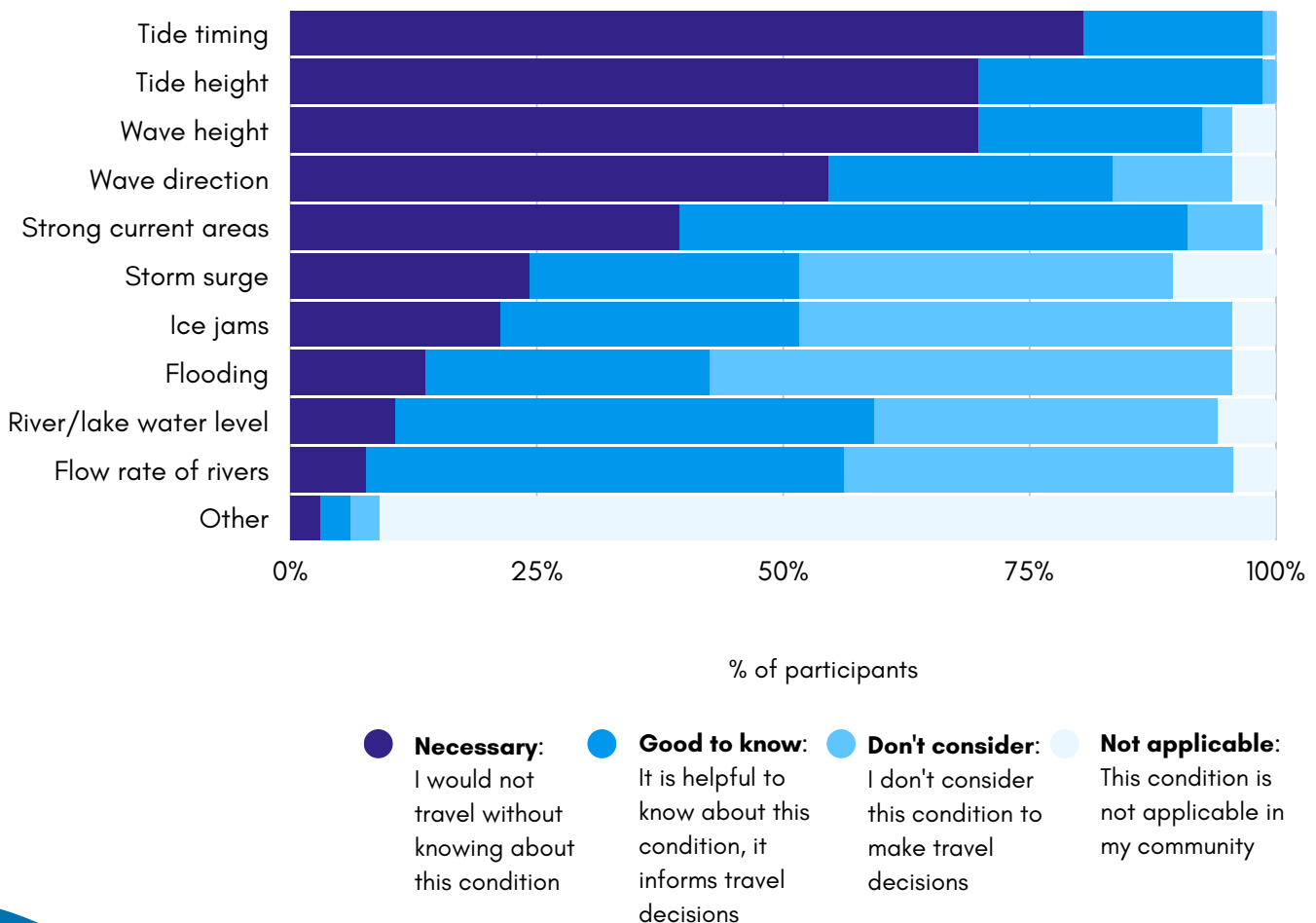
- Necessary:**
 I would not travel without knowing about this condition
- Good to know:**
 It is helpful to know about this condition, it informs travel decisions
- Don't consider:**
 I don't consider this condition to make travel decisions
- Not applicable:**
 This condition is not applicable in my community

Iqalungmiut participants check many types of weather conditions before they travel on the land, water, sea ice and snow. Wind strength, snow fall intensity, low visibility, blowing snow, and whiteout are the weather conditions most commonly considered necessary to check before travelling. Those who said "Other" also check blizzard warnings.



WEATHER

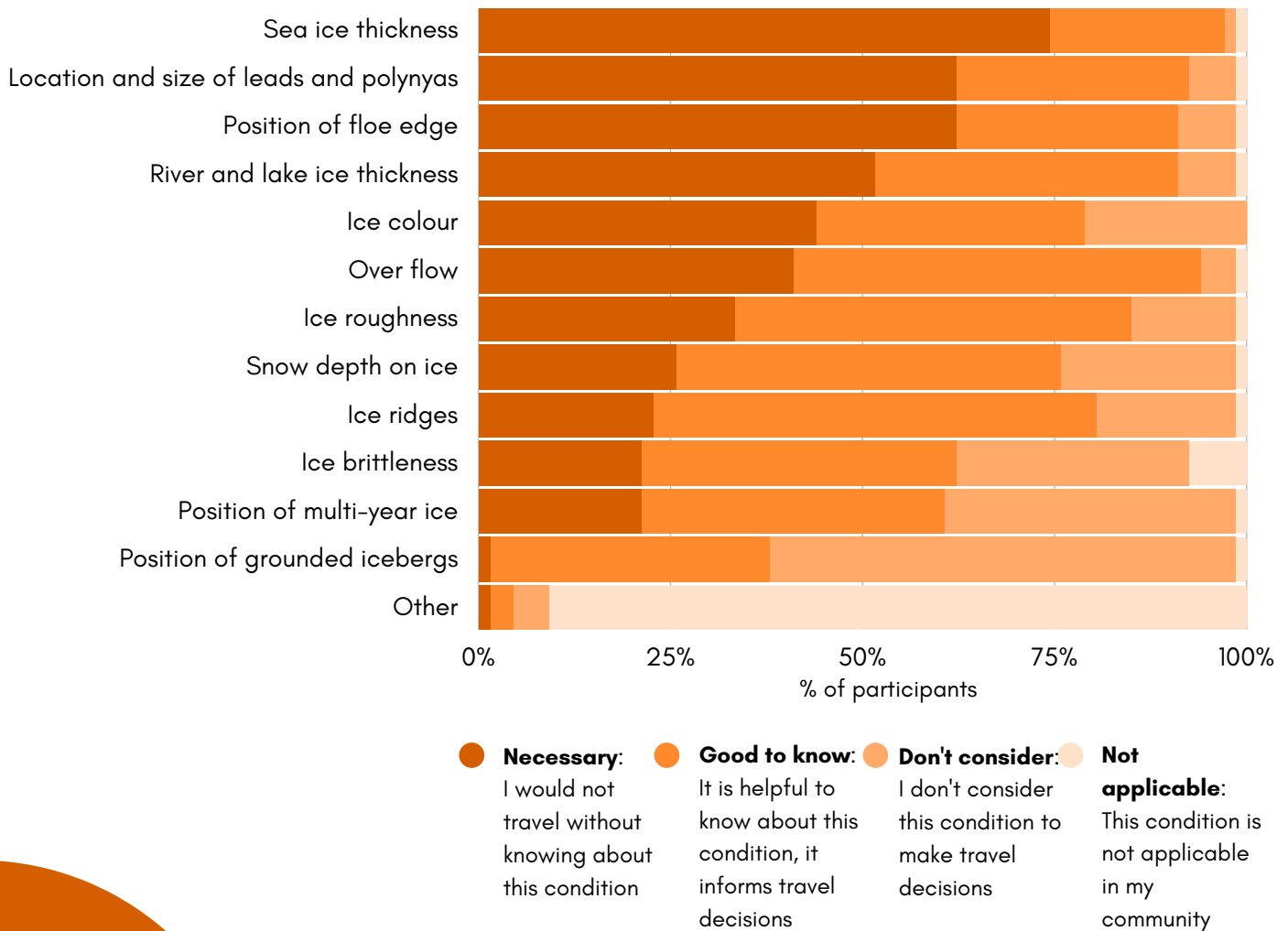
WATER CONDITIONS IQALUNGMIUT PARTICIPANTS CHECK BEFORE THEY TRAVEL



Iqalungmiut participants check many types of water conditions before they travel on the water. Tide timing and height, and wave height and direction are the water conditions most commonly considered necessary to check before travelling. Those who said "Other" also check slush and overflow on rivers and lakes.

WATER

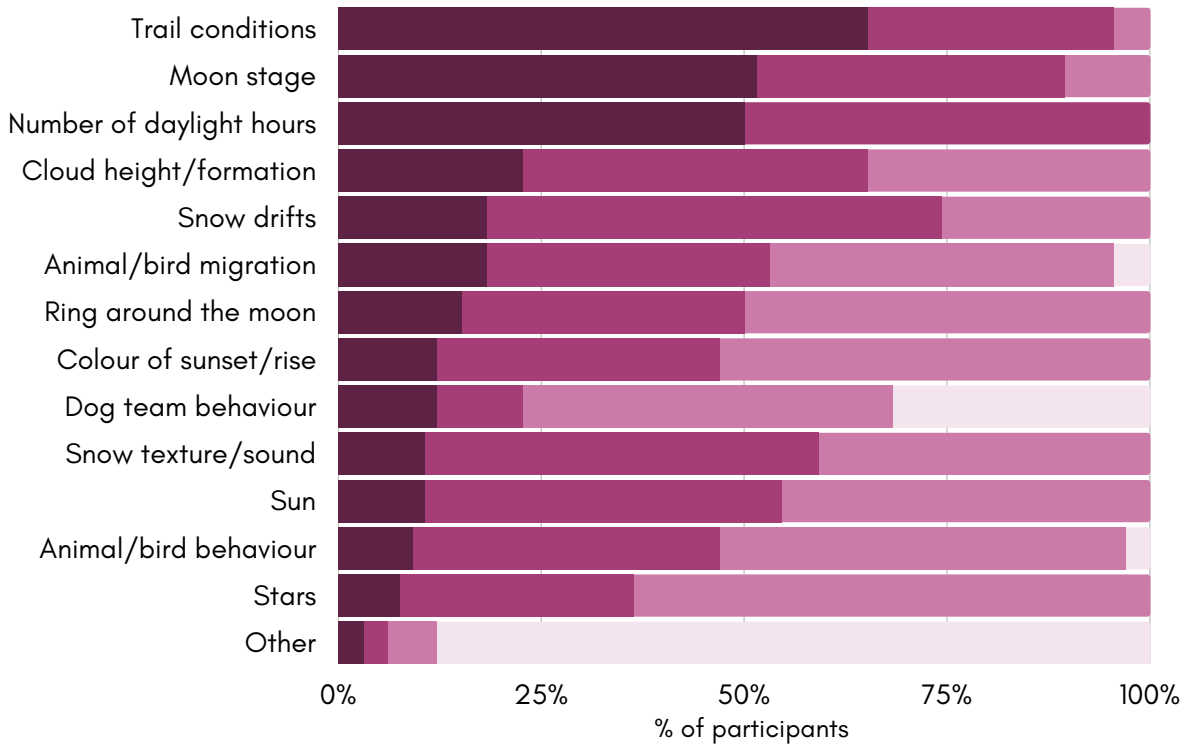
ICE CONDITIONS IQALUNGMIUT PARTICIPANTS CHECK BEFORE THEY TRAVEL



Iqalungmiut check many types of ice conditions before they travel on the land. Sea ice thickness, location and size of leads and polynyas, position of the floe edge and river and lake ice thickness are the ice conditions most commonly considered necessary to check before travelling. Those who said "Other" also check snowing conditions (if flakes are small or large).

ICE

OTHER ENVIRONMENTAL CONDITIONS IQALUNGMIUT PARTICIPANTS CHECK BEFORE THEY TRAVEL

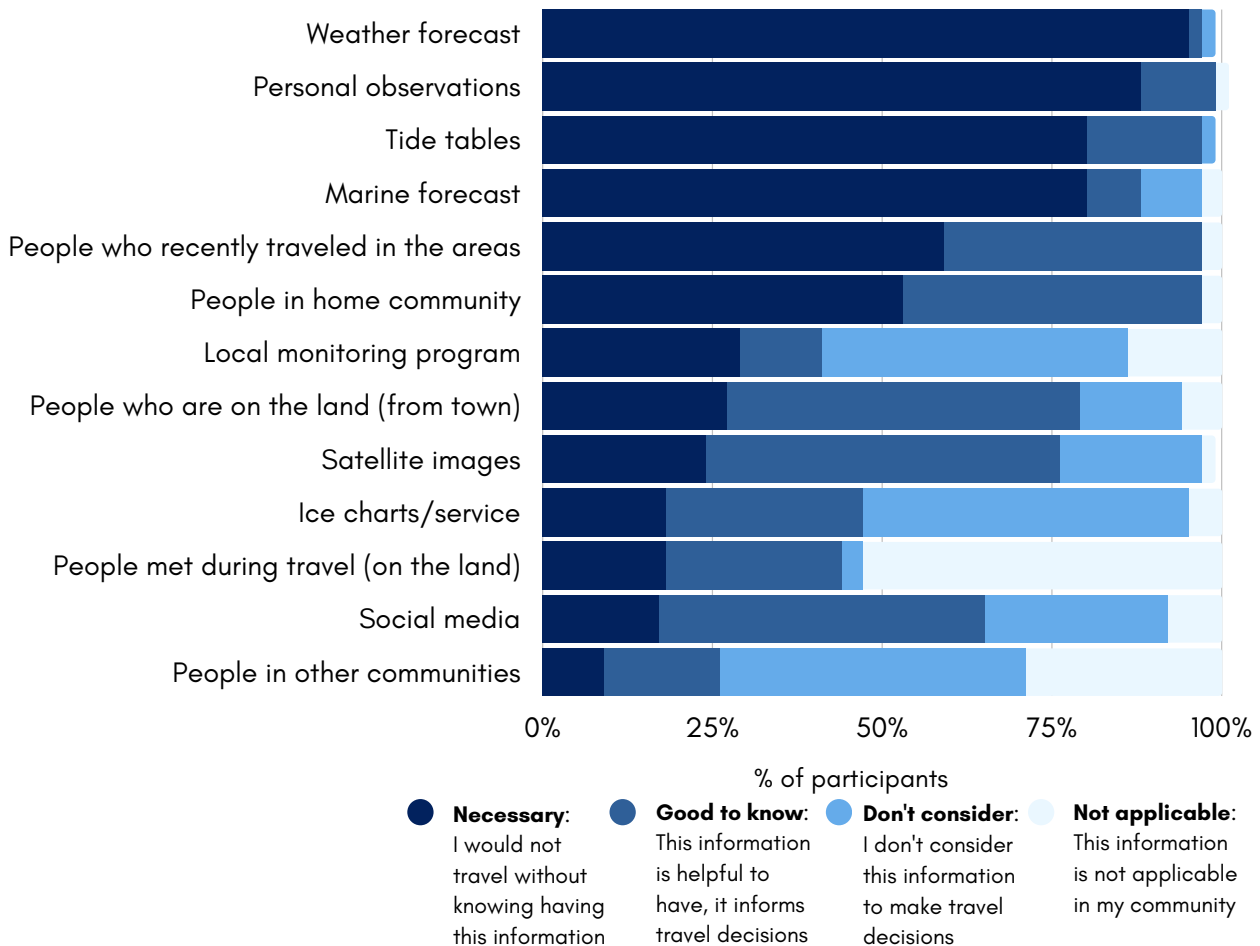


- **Necessary:**
 I would not travel without knowing about this condition
- **Good to know:**
 It is helpful to know about this condition, it informs travel decisions
- **Don't consider:**
 I don't consider this condition to make travel decisions
- **Not applicable:**
 This condition is not applicable in my community

Iqalungmiut check many other environmental conditions before they travel on the land. Trail conditions, moon stage, and number of daylight hours are the most important environmental conditions to check before travelling. Participants who said "Other" also check humidity and frost, winds on higher mountain peaks and ranges, as well as polar bear reports around town.



INFORMATION SOURCES IQALUNGMIUT PARTICIPANTS USE WHEN PLANNING A TRIP

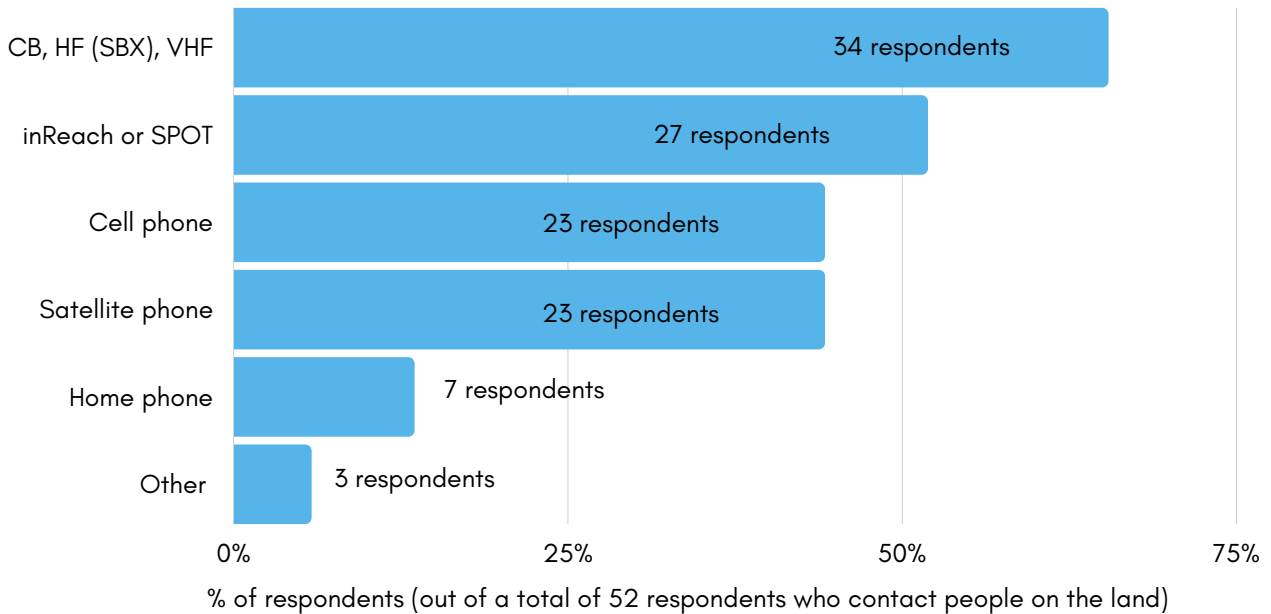


When planning a trip, Iqalungmiut participants access many sources of information before they travel on the land. Weather forecast, personal observations, tide tables, and marine forecast are information sources that participants most often consider necessary to check. A few (9%) participants consider it necessary to contact people in Kimmirut, Kinngait, Pangnirtung, and Qikiqtarjuaq, before they travel.

While on the land and when deciding to return home personal observations, talking to people met during travel on the land, people who recently traveled in the areas, weather forecast, and tide tables are the information sources that are used most by Iqalungmiut participants.

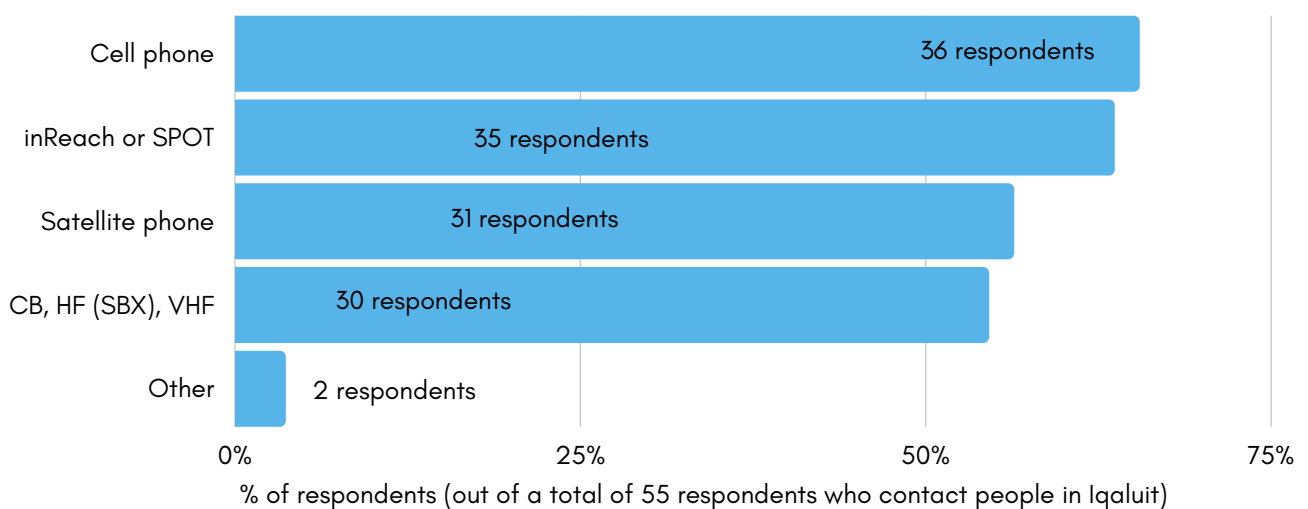
CONTACTING COMMUNITY INFORMATION SOURCES

Contacting people on the land while in Iqaluit



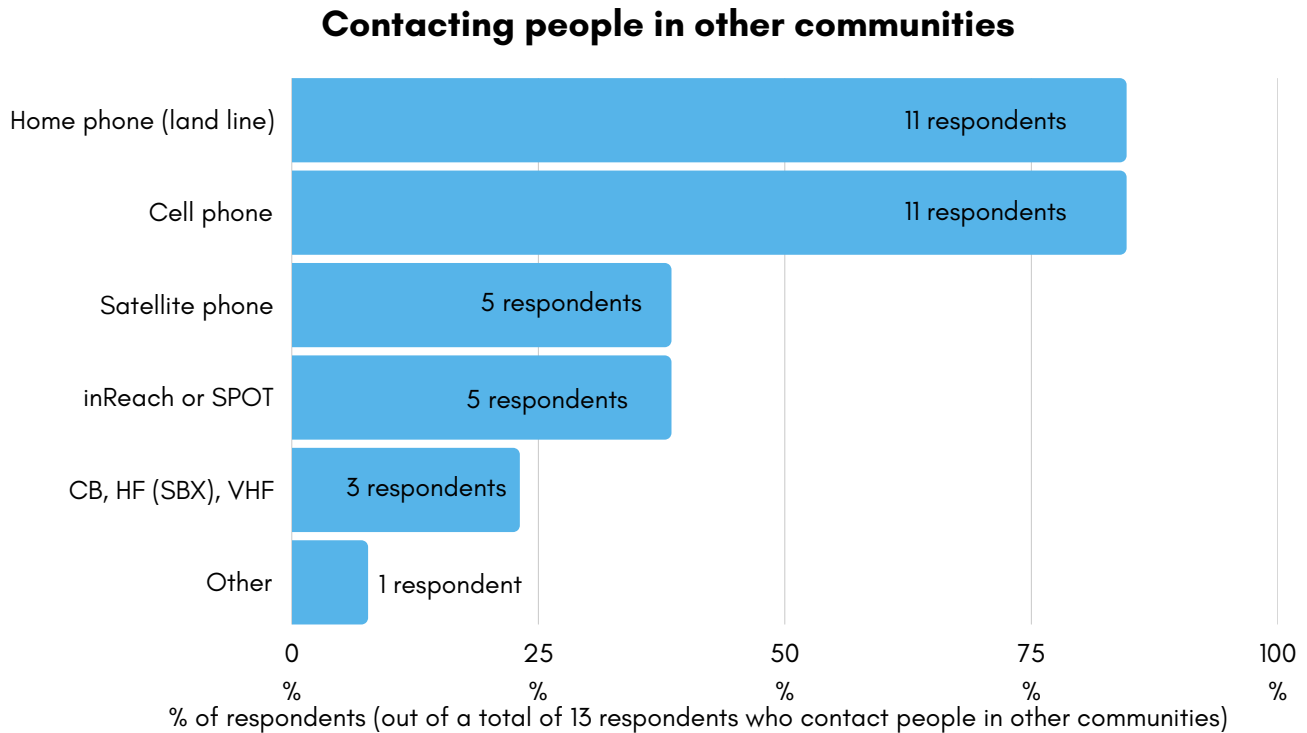
Respondents who contact people on the land to ask about environmental conditions while they themselves are in Iqaluit mostly use short-wave radios (CB, HF (SBX), VHF), and inReach or SPOT. Those who said "Other", use Facebook, drive over in person, or get someone else to call .

Contacting people in Iqaluit while on the land



Respondents who contact people in Iqaluit to ask about environmental conditions while they themselves are on the land use cell phones, inReach or SPOT, satellite phone, and short-wave radios (CB, HF(SBX), VHF). Those how answered "Other" use Facebook messenger.

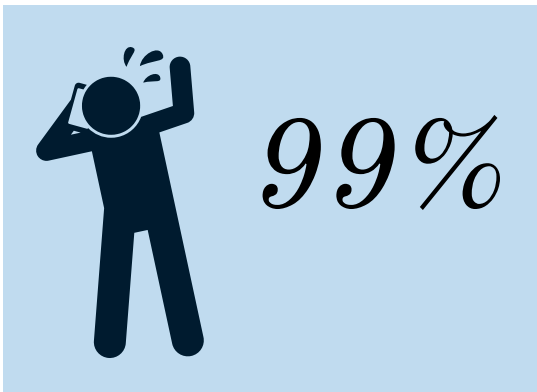
CONTACTING COMMUNITY INFORMATION SOURCES (CONTINUED)



Respondents who contact people in other communities to ask about environmental conditions mostly use home phones (landline) and cell phones to contact them. Those who said "Other" use social media.

The other communities contacted are: Kimmirut, Kinngait, Pangnirtung, and Qikiqtarjuaq.

CONTACTING OTHERS FOR HELP

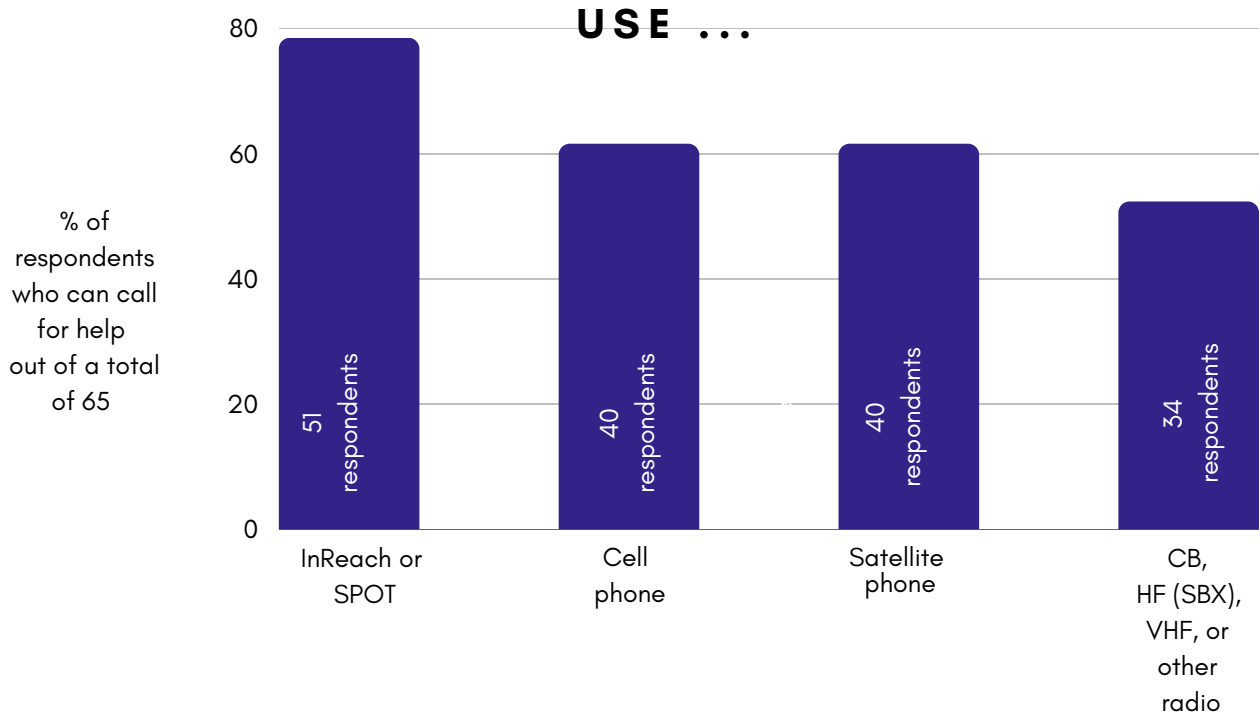


If Iqalungmiut participants get stranded or have an accident on the land, 99% (out of a total of 66) can call for help.

Of the 65 respondents who can call for help, most would call a **family member** (74%), or **friend** (69%). Some would call **Nunavut Emergency Management** (20%), or **Local Search and Rescue** (20%). About 14% would call for help using **inReach or SPOT**, 8% would call the **RCMP**, 5% would call a **co-worker**, and 2% would call the **Hunters and Trappers Organization**.

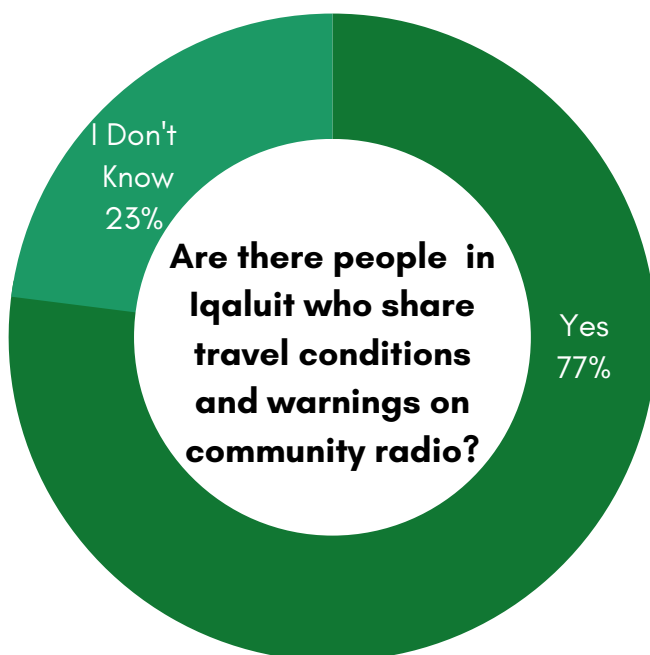
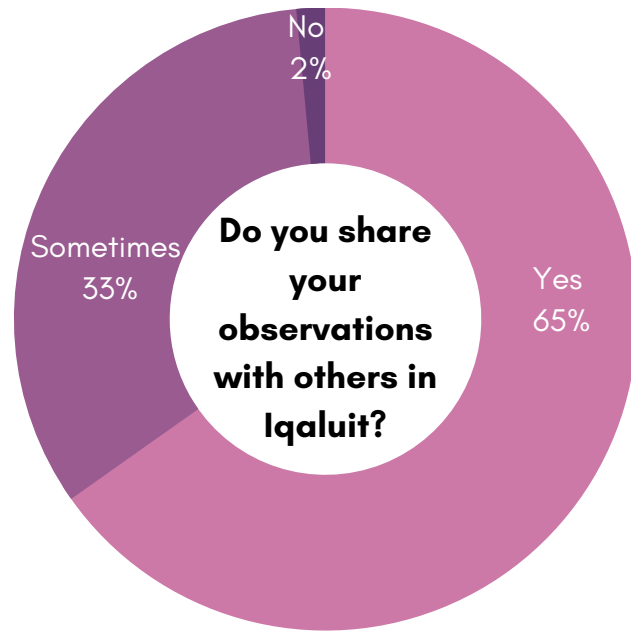
Of the respondents who can call for help, most respondents use an inReach or SPOT device (79%), or cell phone (62%), or satellite phone (62%).

TO CALL FOR HELP IQALUNGMIUT RESPONDENTS USE ...



SHARING OBSERVATIONS OF WEATHER, WATER, ICE, OR SNOW CONDITIONS WITH OTHERS IN IQALUIT

The majority (98%) of the participants share their observations of weather, water, ice, or snow conditions with others in Iqaluit.

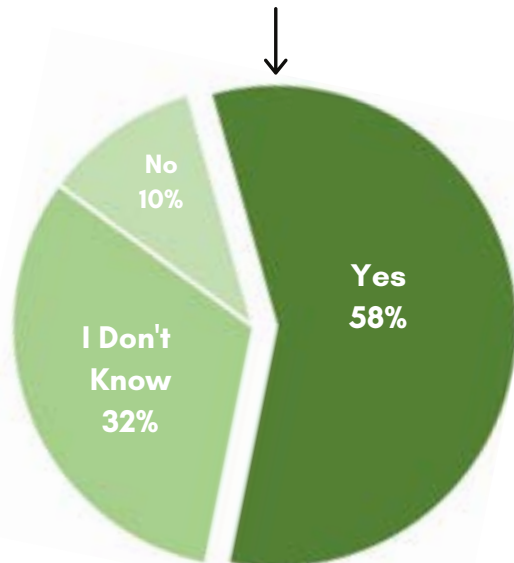


Most (77%) participants said there are people regularly going on community radio in Iqaluit, or CB/HF(SBX)/VHF radio, to share warnings or provide advice about weather, water, or ice conditions.

Some participants (23%) did not know if people regularly go on community radio in Iqaluit, or CB/HF(SBX)/VHF radio, to share warnings or provide advice about weather, water, or ice conditions.

GATHERING TO TALK ABOUT TRAVEL CONDITIONS WITH OTHERS IN IQALUIT

Are there places in Iqaluit where people tend to meet and talk about recent travel conditions?



Of the 38 participants who answered "yes there are places"

21 (55%)

go to these places to listen or ask for advice

7 (18%)

go to share observations or advice

Most (58%) participants said there are places in Iqaluit where people tend to meet and talk about recent travel conditions, or weather, water, ice and other environmental conditions.

Of the 38 participants who said there are places where people meet, some go to those places to listen or ask for advice (55%), and a few go to those places to share observations or advice (18%).

PLACES IQALUNGMIUT GATHER TO TALK ABOUT TRAVEL CONDITIONS

- Around town
- Bars and pubs
- City office/garage
- Coffee shop
- Causeway and breakwater
- Hunters and Trappers Organization
- Nunavut Parks office

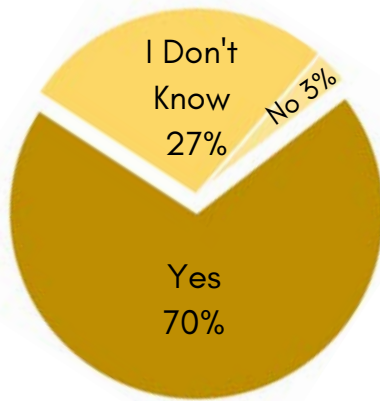


- On the land
- Post office
- Public gatherings
- Sled dog yard
- Stores and gas stations
- Wildlife office
- At work



SOCIAL MEDIA IQALUNGMIUT USE TO SHARE TRAVEL CONDITIONS

Do Iqalungmiut use social media to talk about travel conditions?



Of the 46 respondents who said "yes"

43 (94%)

use the information shared over social media

There were 46 Iqalungmiut participants who identified being aware of social media pages or groups where people share observations or advice about weather, water, and ice conditions mentioned using Facebook.

It is important to note that some respondents have their own knowledge of the weather, water, ice, and snow conditions so do not check social media for this information.

Commonly used social media

Facebook

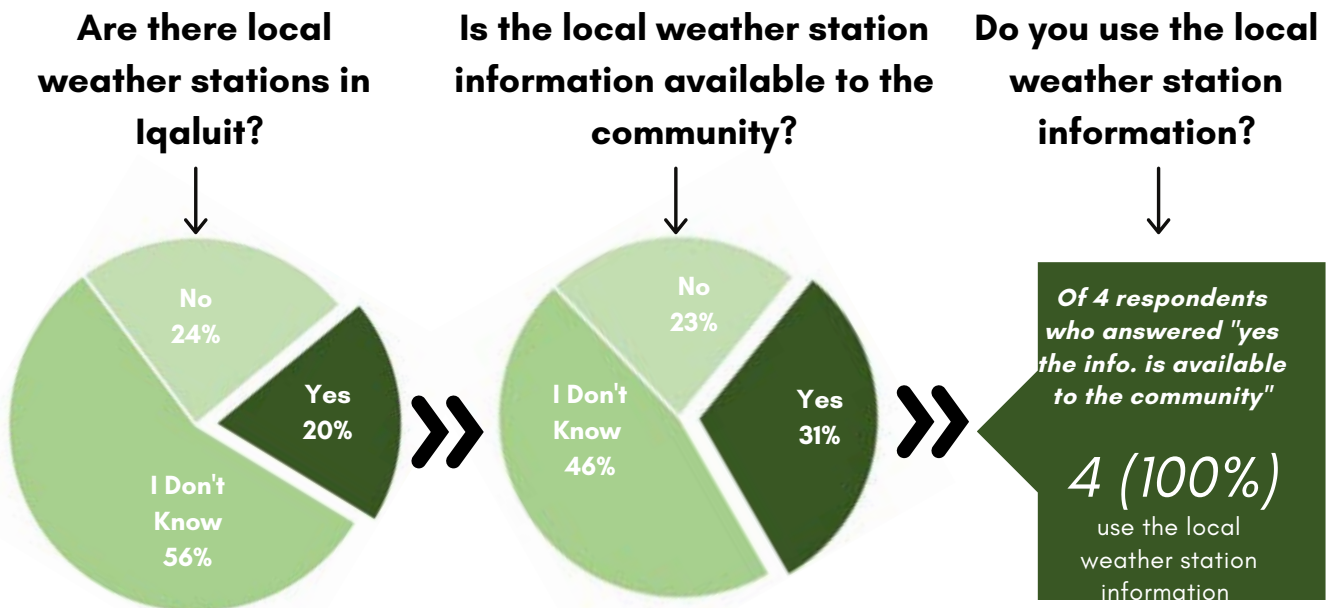
- Iqaluit Public Service Announcements
- Personal Feed
- Nunavut Hunting Stories of the Day
- Iqaluit Ajjinguat- Photos of Iqaluit
- Iqaluit Dog Teams
- Amaruq Hunters and Trappers Association

Topics include

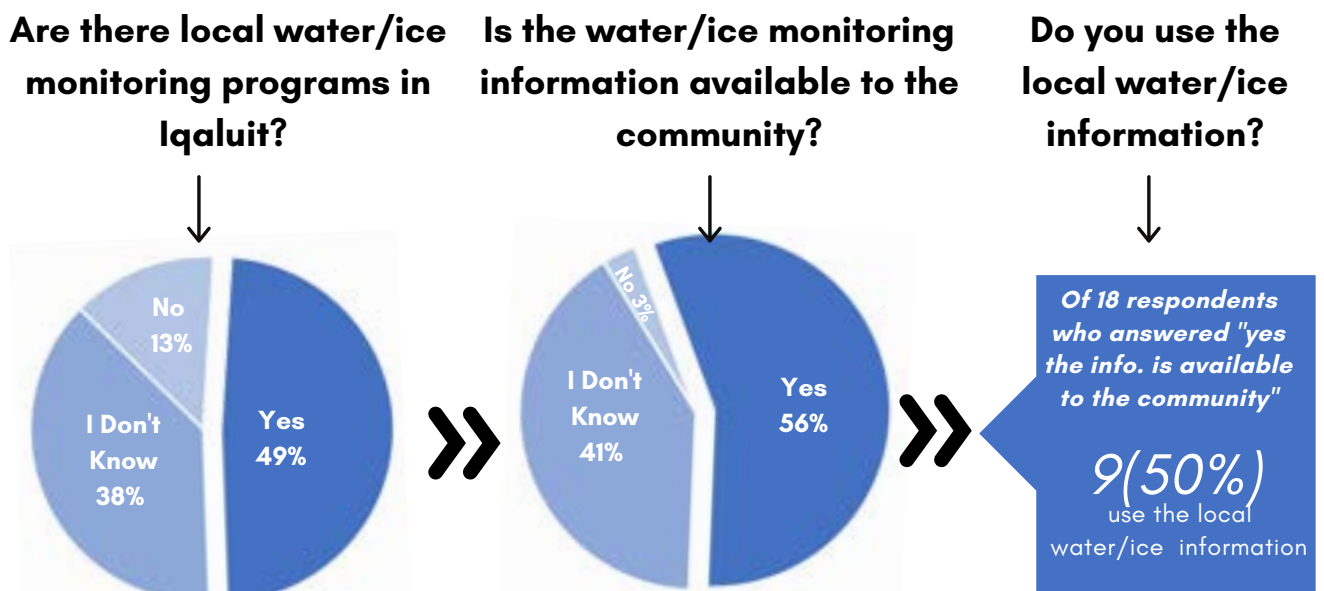
- Blizzard conditions
- Ice conditions
- Snow conditions
- Trail conditions
- Water conditions (waves)
- Weather conditions
- Polar Bear Sightings



COMMUNITY MONITORING PROGRAMS

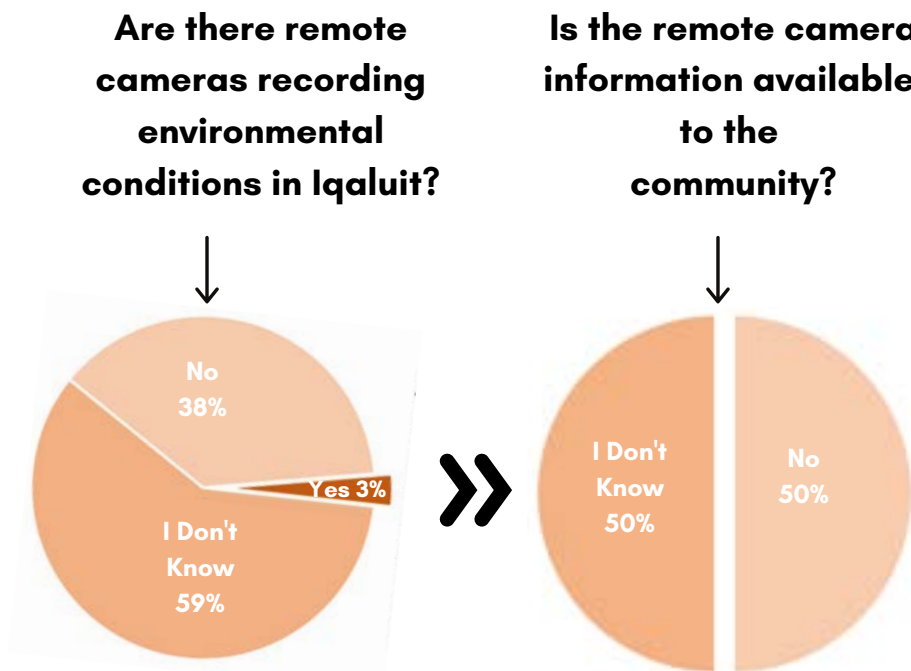


When asked about local weather stations it is notable that 37 participants said that they do not know if there are local weather stations and 29 said that local weather stations do or do not exist. Of the 13 participants who said there are local weather stations, 4 said the information is available in Iqaluit, and all 4 said they use the information.



When asked about local water and ice monitoring programs it is notable that 32 participants said that local water/ice programs exist and 25 said that they do not know. Of the 32 participants who said there are local water/ice monitoring programs, 18 said the information is available in Iqaluit, and 9 said they use the information.

COMMUNITY MONITORING PROGRAMS (CONTINUED)



Remote cameras are cameras placed in areas where a photographer cannot be at the camera to take photos. Remote cameras often have a self-timer built into the camera so photos can be taken at specific times. An example is a remote camera mounted somewhere near a floe edge. A built-in timer is set to take a photo at noon each day.

When asked about remote cameras, it is notable that 39 participants said that they do not know if there are remote cameras around Iqaluit, and 2 participants said there are remote cameras. Of the 2 participants who said that there are remote cameras, 1 said the remote camera information is not available in Iqaluit, and all 1 did not know if it is available or not.

SmartICE is a partner in this project, and through them we know there are local monitoring programs in Iqaluit, including SIKU and SmartICE. However, survey responses suggest that community members are not widely aware of these programs, or they did not associate them with the way the questions were asked in the survey.

COMMUNITY MONITORING PROGRAMS (CONTINUED)

Iqalungmiut identified several community-based monitoring programs that are run by a number of organizations. A wide range of conditions are monitored related to weather, water, and ice.

LOCAL WEATHER STATIONS	PROGRAM PROVIDER	WHAT IS MONITORED
Carleton University meteorology station (snowmelt hydrology research station)	Murray Richardson	Temperature, relative humidity, wind speed, wind direction, atmospheric pressure, eddy covariance (vapour flux), snow accumulation

LOCAL WATER/ICE PROGRAMS	PROGRAM PROVIDER	WHAT IS MONITORED
SmartICE	Glen Williams, Trevor Bell, Memorial University	Sea ice thickness, snow pack on ice, multi-year versus new ice, historical travel corridors
SIKU (SmartICE information)	Arctic Eider Society (based in Sanikiluaq)	Sea ice thickness, dangerous areas, changing ice thickness, danger spots, tides, environmental changes

LOCAL REMOTE CAMERAS	PROGRAM PROVIDER	WHAT IS MONITORED
Program name unknown	Arctic UAV/Tibo	Ice formation and breakup. Arctic UAV has posted some drone photos and videos over the past few years, on Facebook, to highlights areas of thinning/rotting ice, and open water. They don't do it regularly, and they don't do it everywhere.

PRODUCTS AND ACCESSING ENVIRONMENTAL FORECASTS

Along with community sources of information, to decide if it is safe to travel Iqalungmiut use a wide range of weather and marine forecasts, and ice charts/services from polar service providers.

WEATHER FORECAST PRODUCTS USED

- Accuweather (<https://www.accuweather.com>)
- Aurora forecast (<https://auroraforecast.com>)
- Environment Canada (<https://weather.gc.ca>)
- inReach
- EOSDIS Worldview (NASA) (<https://worldview.earthdata.nasa.gov>)
- NAV CANADA's Aviation Weather
- Navionics app
- Norwegian Meteorological Institute - YR (<https://www.yr.no>)
- Spot Wx (<https://spotwx.com>)
- Twitter
- Weather app on phone
- Weather Channel/Network
- Weather Underground (<https://www.wunderground.com>)
- Windy (<https://www.windy.com>)

MARINE FORECAST PRODUCTS USED

- Environment Canada (<https://weather.gc.ca/marine>)
- InReach
- Windy (<https://www.windy.com>)
- YR (<https://www.yr.no>)

ICE CHARTS/SERVICES USED

- Canadian Ice Services
- EOSDIS Worldview (NASA) (<https://worldview.earthdata.nasa.gov>)

PRODUCTS AND ACCESSING ENVIRONMENTAL FORECASTS (CONTINUED)

Along with community sources of information, to decide if it is safe to travel Iqalungmiut use a wide range of tide table and satellite image products from polar service providers.

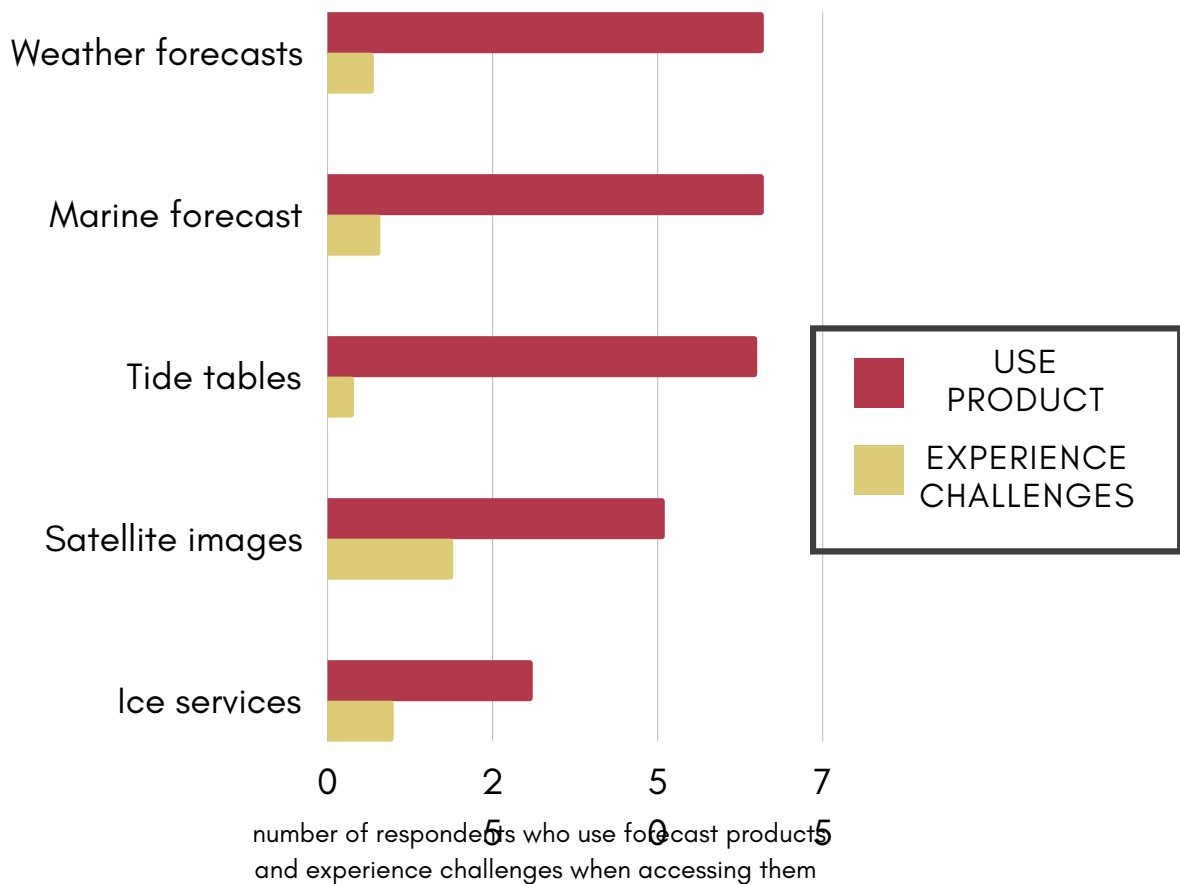
TIDE TABLE PRODUCTS USED

- My Tide Times app
- Printed Tide Tables from Wildlife Office
- Fisheries and Oceans Canada Tides.gc.ca
- Tide-forecast.com

SATELLITE IMAGE PRODUCTS USED

- Environment and Climate Change Canada (https://weather.gc.ca/satellite/index_e.html)
- EOSDIS Worldview (NASA) (<https://worldview.earthdata.nasa.gov>)
- FATMAP app
- Garmin MapSource
- Google Earth
- NASA MODIS (includes Rapid Fire) (<https://modis.gsfc.nasa.gov>)
- ViewRanger (now Outdooractive) (<https://www.outdooractive.com>)
- Windy (<https://www.windy.com>)

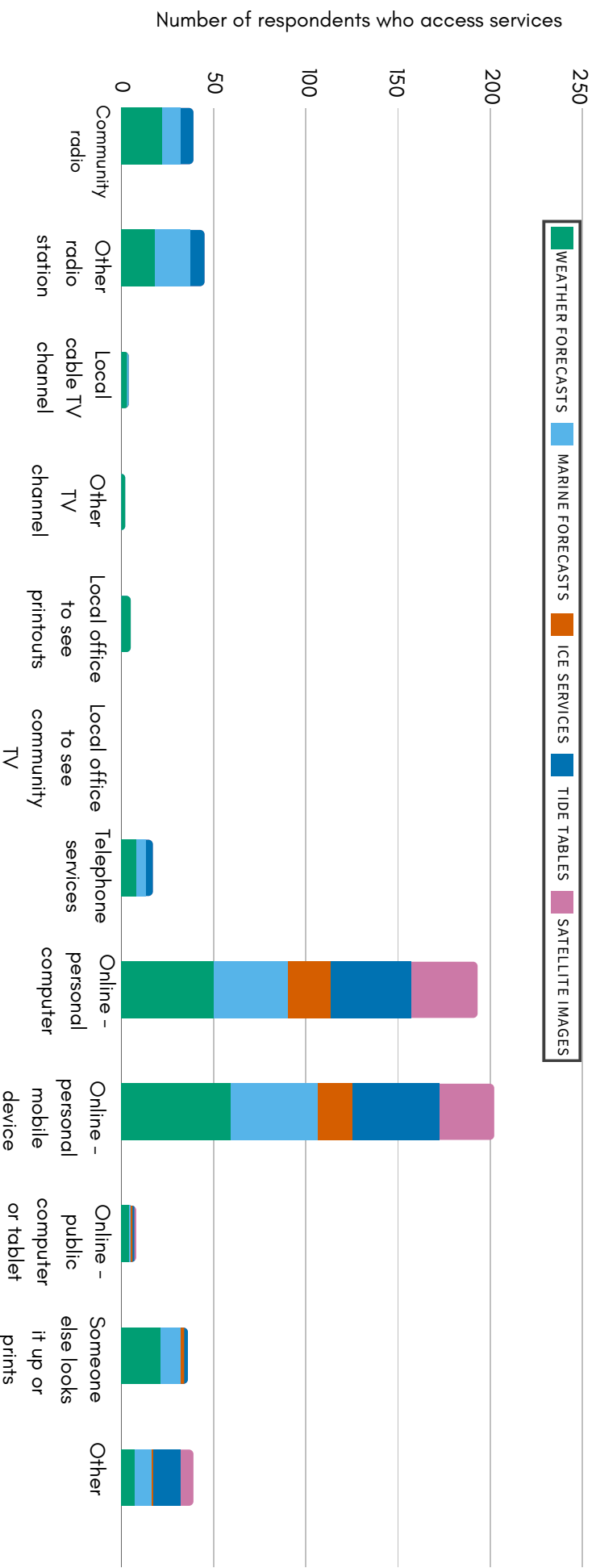
PRODUCTS AND ACCESSING ENVIRONMENTAL FORECASTS (CONTINUED)



Of the forecasting products used, respondents most often rely on weather forecasts, marine forecasts, and tide tables, followed by satellite images, and ice services.

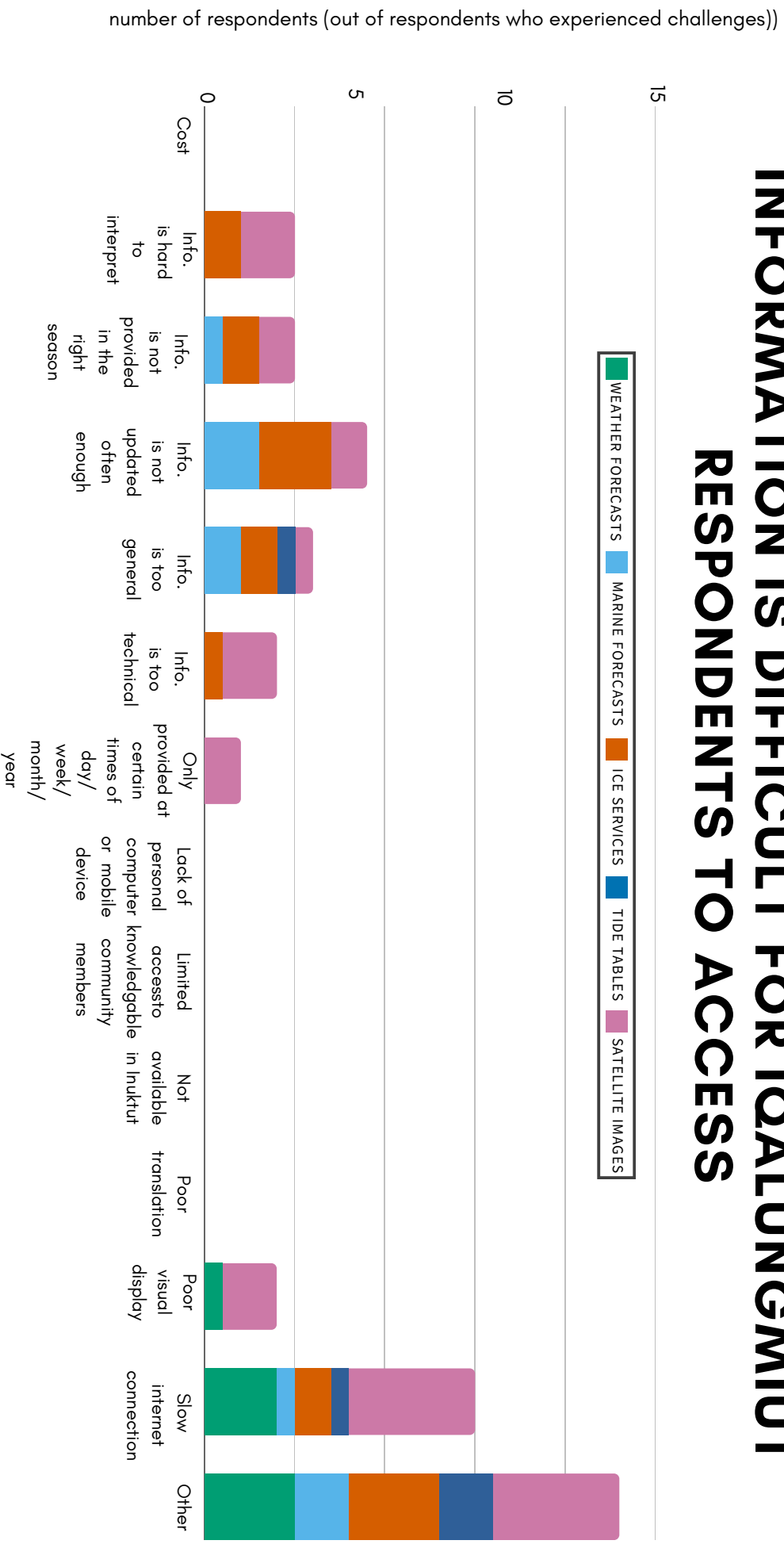
Of the 100% of participants who use **weather forecasts**, 11% experience challenges when accessing them. Of the 100% of participants who use **marine forecasts**, 12% experience challenges when accessing them. **Tide tables** were used by 98% of participants and of these, 6% experienced challenges. **Satellite images** were used by 77% of participants, 137% of whom experience challenges when accessing them. **Ice services** were used by 47% of participants and of these, 32% experience challenges when accessing them.

WAYS THAT IQALUNGMIUT RESPONDENTS ACCESS POLAR SERVICES



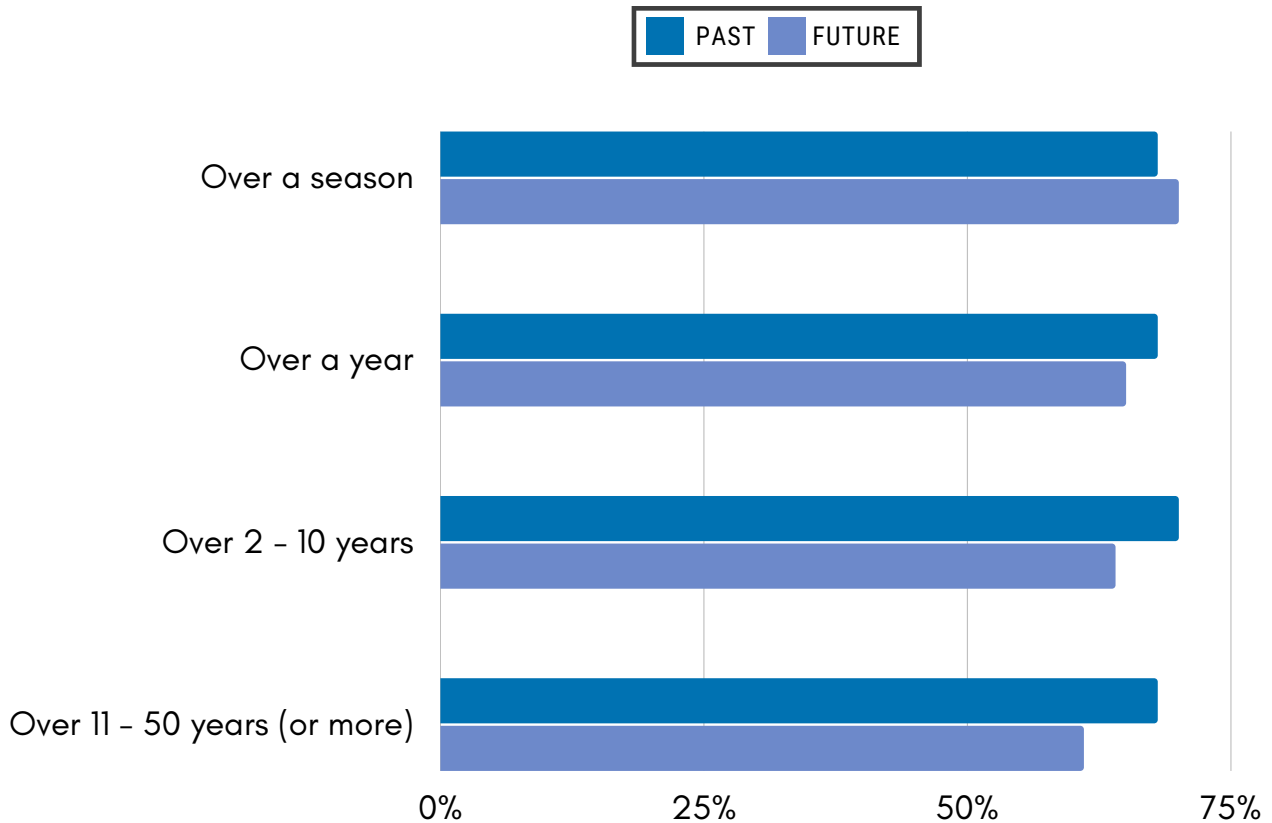
Iqalungmiut respondents access environmental forecast products in a range of ways, and mostly by going online using a personal mobile device or personal computer. Those who said "Other" access weather forecasts using Delorme(now Garmin), iReach, a satellite phone, or their work desktop. They access marine forecasts using Delorme(now Garmin). They access tide tables by carrying a print out with them (which for some, is printed by the Wildlife Office), using a GPS to calculate tide levels, or by taking a screenshot of the page and carrying it with them. They access ice services through work notifications. And they access satellite images through friends or colleagues who send them images, work notifications provided by Canadian Coast Guard and Fisheries and Oceans Canada, or using their workplace desktop computer.

REASONS WHY ENVIRONMENTAL FORECASTING INFORMATION IS DIFFICULT FOR IQALUNGMIUT RESPONDENTS TO ACCESS



Iqalungmiut respondents identified a number of reasons why information is difficult to access. To summarize the main challenges: Respondents who said "Other" said **weather forecast** information is not accurate enough, the forecast duration is insufficient, and maps/images are not oriented in the right direction. They said **marine forecasts** are not accurate enough, and the information is only provided seasonally. They also said **ice charts/services** are not accessible when travelling on the land, water, and sea ice. They also said the ice charts/services are hard to find sometimes, the images are not always clear due to clouds, the information is not provided for the area of interest (the inner bay), and the scale is not good. For **tide tables**, they said that different sources provide different information, and they would like to be able to access seasonal tide charts. They said **satellite images** are not accessible while respondents are out on the land, water, and ice; cloud cover prevents clear, updated images and can make interpretation difficult; it is difficult to remember which websites to use; and it is difficult to navigate through layers to get to the image of interest. **Information that is not updated often enough** creates a challenge for accessing marine forecasts, ice services/charts, and satellite images. These survey results do not necessarily mean that there are no challenges in other areas.

INTEREST IN INFORMATION ABOUT PAST AND FUTURE ENVIRONMENTAL CHANGES

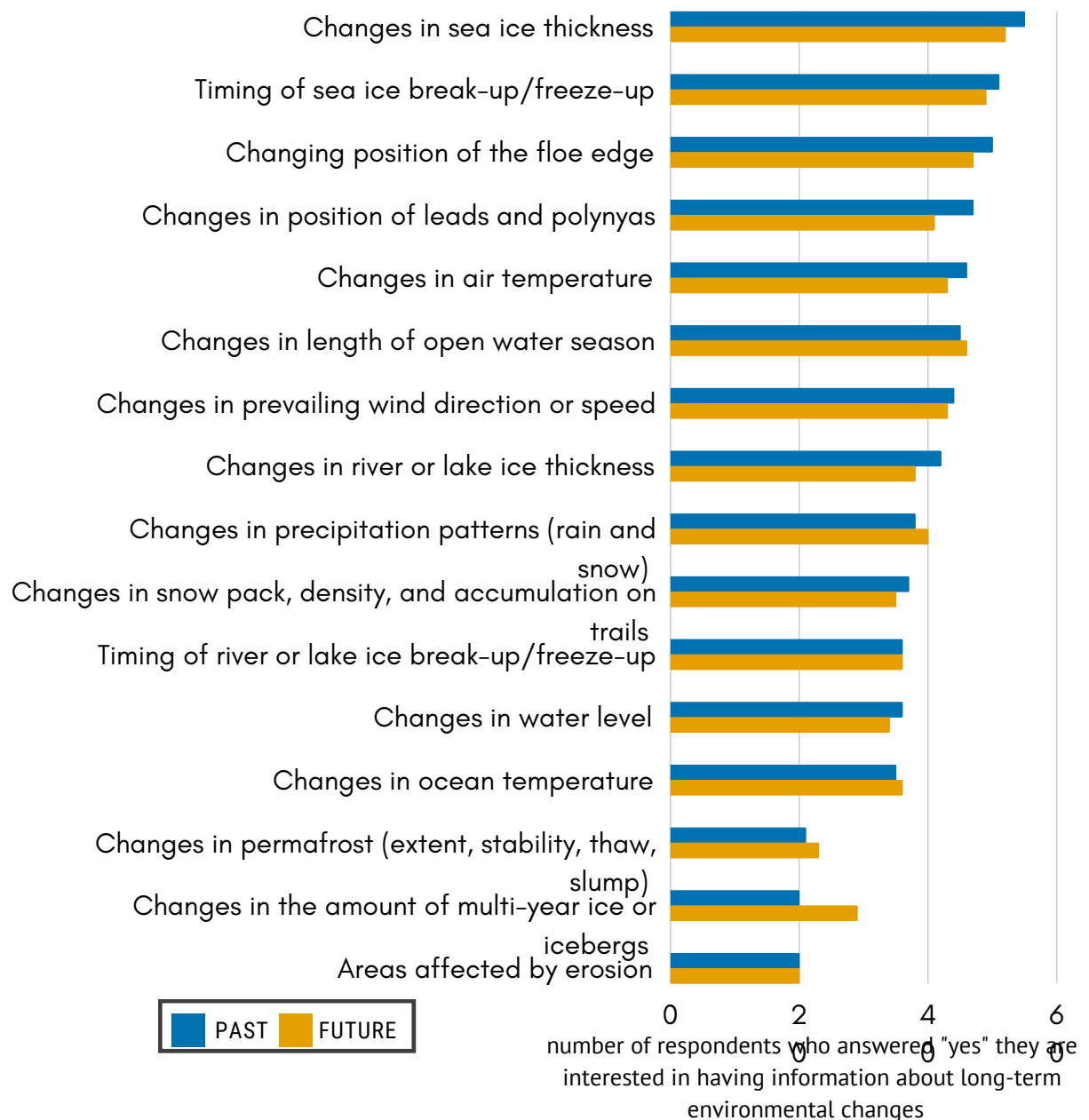


% of participants who said "yes" they are interested in having information about long-term environmental changes

Slightly more participants are interested in information about past changes to weather, water, or ice conditions (related to climate change) than are interested in forecasting or predictions over a year, over 2-10 years, and over 11-50 years or more. However, slightly more participants are interested in information about future changes over a season than are interested in past changes over a season.

INTEREST IN LONG-TERM ENVIRONMENTAL CHANGES

INFORMATION ABOUT PAST OR PRESENT CHANGES FOR MAKING DECISIONS



More respondents are interested in having information about past environmental changes than are interested in predictions of change. Common topics of interest include changes in sea ice thickness, timing of sea ice break-up/freeze-up, and changing floe edge position. Respondents who answered "Other" said past changes in ocean currents, magnetic fields around the North Pole, and changes in the atmosphere and other layers around the earth. They also expressed interest in past and future changes in tide levels.

INTEREST IN TRAINING

Respondents who said they were interested in receiving training on survival skills and navigating the land (43 participants), observing and understanding environmental conditions (47 participants), local environmental monitoring programs (33 participants), and accessing or using social media pages or groups (20 participants), were invited to describe the kinds of training they are interested in. Respondents were also asked to share about who they would like to learn from, and environmental conditions they would like to learn more about. The points below were organized by report writers to group them into similar topics.



Improving Navigation Skills

- Identifying/mapping navigational hazards, and trails/routes
- Learning how to wayfind, navigate, and map
- Navigating in bad weather
- Traditional navigating including by sun and stars



Developing Safety and Survival Skills

- Boat safety
- First aid
- Search and rescue training
- Traditional land and survival skills
 - On land and water
 - Outdoor skills
 - Shelter building
 - Uses of plants



Increasing Knowledge of Environmental Conditions

- Learning about sea ice including observing/interpreting ice thickness
- Locations and movements of leads and polynyas
- College land programs (Environmental Technology Program)



Strengthening Hunting and Inuit Cultural Practices and Skills

- Learning more about Inuit Qaujimajatuqangit and Inuktitut
 - Inuit Qaujimajatuqangit principles
 - Terminology
 - Animal behaviour/movements
- How to sew

INTEREST IN TRAINING (CONTINUED)



Gaining Familiarity with Technology

- How to use and interpret satellite images
 - NASA Worldview
 - Earthdata
- How to use and interpret ice charts/data
 - Canadian Ice Service
 - SmartICE
- How to use and interpret weather and marine forecasts
- How to use specific web sites
 - Navionics
 - SIKU
 - AIS
- General/basic computer training
 - Computers
 - Websites
- How to use personal devices and GPS
- Learning proper equipment use, maintenance and repair
 - Small engine repair
 - How to properly use electronic devices



Connecting to Local Programs and Services

- Learning about local monitoring programs
 - Remote weather stations
 - SmartICE

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Iqaluit, Nunavut



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Jason Carpenter

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Results of a community survey on environmental
forecasting uses and needs

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DECEMBER 2023