UNIVERSITY of Prince Edward ISLAND | Centre for HEALTH and COMMUNITY RESEARCH

Engaging Islanders in mapping climate-related social and health factors to build resilience to climate change on PEI

Final Report

October 22, 2025

Prince Edward Island CANADA

MSSU · USSM
Maritime SPOR SUPPORT Unit · Unité de Soutien SRAP des Maritimes

Strategy for Patient-Oriented Research | Stratégie de recherche axée sur le patient
SPOR · SRAP
Putting Patients First | Le patient d'abord

Canadian Institutes of Health Research | Instituts de recherche en santé du Canada

SIDR SECURE ISLAND DATA REPOSITORY

Table of Contents

Executive Summary

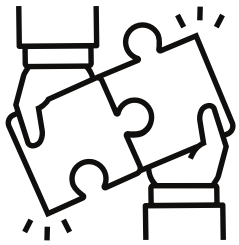
Project Activities: April 1, 2022 – September 30, 2025

This project examined how health and social factors influence people's ability to adapt to climate change, with the aim of creating spatial and story maps that support equity-informed climate adaptation decisions. By combining data with lived experience, we co-created maps in collaboration with members of the PEI public that aim to highlight both challenges and strengths across communities.

Meaningful *public engagement* was central to the project, grounded in the understanding that spatial maps are not value-neutral. Decisions often made behind the scenes by data scientists about what data to include, how to define and categorize climate sensitivity and adaptive capacity, and how this information is visualized all influence how maps are interpreted and used. Through this process, we learned that *no single set of maps can answer all questions*, and that incorporating lived experience and decision-maker needs is critical to ensuring these tools are relevant, credible, and effective.

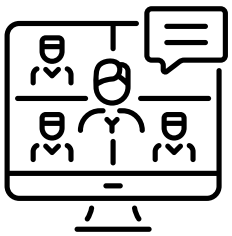
Key Project Highlights

Online spatial mapping tool; 1 story map



10 Public Partners Engaged

5 Decision-Maker Consultations (Provincial, Municipal)



1 Community Organization Webinar: 52 Attendees

6 Presentations; 1 manuscript (in progress)

Project Purpose

Recent climate policy developments in PEI signal a growing shift toward equity-centered climate action. *The Building Resilience: Climate Adaptation Plan* (2022) and the *2040 Net Zero Framework* (2022) emphasize the need to prioritize vulnerable communities in the face of climate change.

The Building Resilience plan outlines a comprehensive approach to adaptation, highlighting the importance of integrating social, health, and environmental factors. The *2040 Net Zero Framework* complements adaptation efforts with a commitment to long-term sustainability. Together, these plans underscore the critical need for equity-focused data to inform climate decisions and address the uneven impacts of climate change in PEI.

This project responds directly to that need. By identifying and mapping indicators that impact individuals' ability to adapt to climate change, we aim to co-create tools that support equity-informed decision-making.

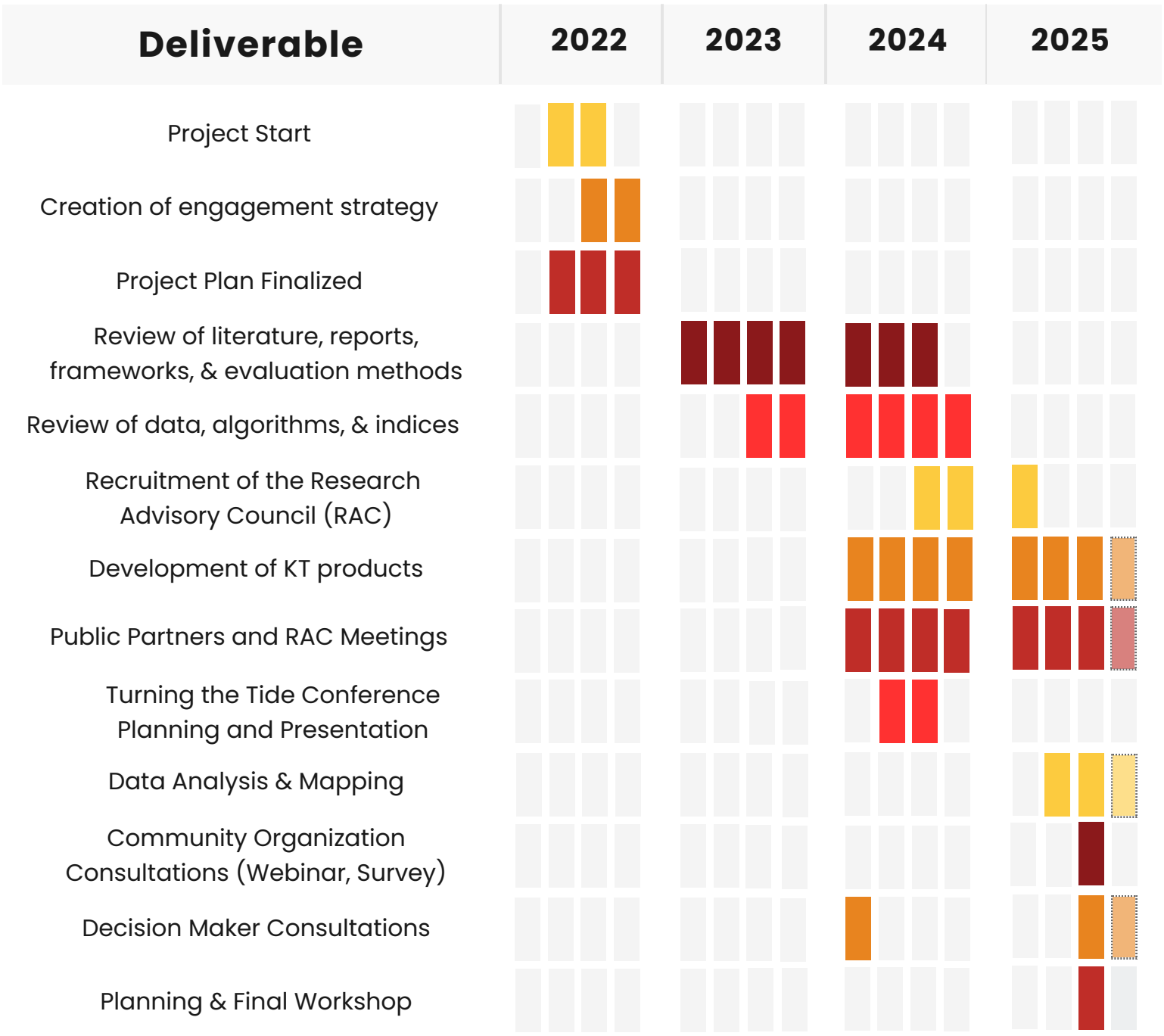
What We Did

- Used high-quality population data to map vulnerability across PEI.
- Engaged PEI residents (public partners, community organizations, and decision-makers) in shaping project activities and outputs.
- Created clear, actionable tools (like spatial and story maps) that help prioritize climate support where it's needed most

What We Contributed

- Accessible data to support equitable climate adaptation planning.
- Approach to engaging with members of the public to inform climate adaptation
- Embedded equity principles into data science and spatial mapping

Project Timeline



Phase 1: Finalize Project Plan

1A. Project Work Plan & Project Charter

- **Completed**. Created and finalized *(2022-2023)*

1B. Create Communications Plan

- **Completed**. Created & approved by UPEI & Government of PEI as per funding agreement.

Phase 2: Reviews

2A. Reviews of climate-related vulnerability terminology & frameworks, mapping/knowledge translation approaches, and public engagement and evaluation strategies

Completed. Informed indicator selection, mapping decisions, and story map development. Guided engagement with the CHCR team, RAC, and stakeholders. The Patient and Public Engagement Evaluation Tool (PPEET) was used to evaluate public engagement.

2B. Reviews of available vulnerability/marginalization data indicators, algorithms and indices

Completed. Key datasets (i.e., Canadian Marginalization Index (2021), Census (2021), Material and Social Deprivation Index (2021)) supported analysis and mapping. Administrative health data unavailable due to delayed access; a key dataset linking postal codes remains pending.

Phase 3: Public Consultations

3A. Formation of Research Advisory Council (RAC) Subgroups

- **1. Members of public/community organizations**
- 2. Government staff (provincial & municipal)/decision-makers

10 Public Partners Engaged

Completed: RAC Recruitment

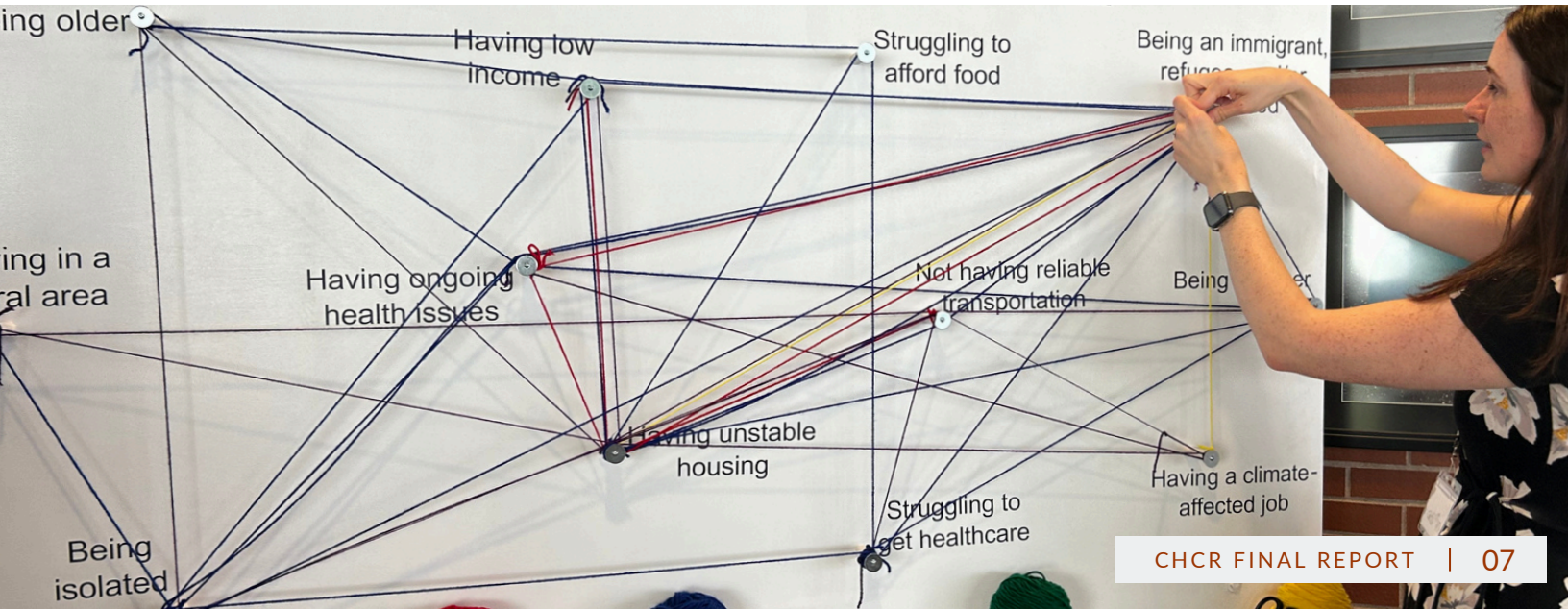
- Assisted by 2 Public Partners and 4 student volunteers
- 66 Applications; Adjudicated by 3 independent reviewers.
  - Goal: Diversity in experiences, locations, etc.
- 8 Public Partners recruited
- Each compensated $400 + Additional supports (e.g., mileage, childcare reimbursements)

3B. Consultations on indicator selection with RAC and other stakeholders

3C. Consultations on geographical boundaries

Completed: Consultations with the RAC and stakeholders informed both indicator selection and mapping approaches. Public Partners led discussions through storytelling, which helped identify relevant indicators based on lived experiences of climate change. Where data was lacking, gaps were noted.

The RAC also provided input on mapping elements such as boundaries, data breaks, and color choices. These topics were also explored in consultations with decision-makers and during project presentations.



Public Engagement: **Evaluation**

Evaluation Approach

We used the Patient and Public Engagement Evaluation Tool (PPEET) to assess and improve how we engaged Public Partners throughout the project. Over three time points across six months, we invited members of the Research Advisory Council (RAC) to complete an anonymous survey to better understand their thoughts and perspectives on role clarity, support for participation, inclusion, influence of approach, and overall satisfaction.

Key Survey Findings

Meaningful Participation

- 100% of respondents "agreed/strongly agreed" that that were able to express their views freely and that their input was heard.
- Participants praised a welcoming and inclusive environment.

Clear Purpose & Strong Support

- Respondents reported understanding of the project's goals and support to participation.
- Support improved or remained high across all three surveys.

Perceived Impact & Influence

Participants reported feeling that their contributions had influence and that the project could inform community action.

Desire for Visibility & Reach

Participants expressed interest in making the project more visible and reaching wider audiences.

"Meetings were organized around my schedule. It feels like being part of an inclusive, welcoming, and supportive team."

What Worked Well

- Diversity of lived experiences represented
- Strong facilitation and communication
- Real-world relevance of outputs
- Inclusive meeting formats

"The RAC were very supportive of all views and perspectives. I did not once feel like I couldn't share."

Suggestions for Improvement

- Include more youth and seniors
- Earlier communication for events
- Increase access to datasets
- Expand storytelling and outreach to specific communities and wider public.

"Proud to be part of this small, diverse research group. Thank you for this learning opportunity."

Survey completion rate: 100% (Survey 1), 62.5% (Survey 2), 75% (Survey 3).

3A. Formation of Research Advisory Council (RAC) Subgroups

- 1. Members of public/community organizations
- **2. Government staff (provincial & municipal)/ decision-makers**

To strengthen our work, we conducted targeted consultations with municipal and provincial decision-makers throughout September. These conversations allowed us to explore the intersection of lived experiences and real-world policy needs specific to spatial mapping in this project.

What We Shared

We held targeted consultations with decision-makers at the municipal and provincial levels. During consultations, we presented:

- Our research and public engagement approach
- The process behind indicator selection
- Co-created spatial maps
- A proposal for a future self-serve spatial mapping tool using plain language prompts
- Our interactive story map, designed to visualize lived experiences alongside data.

Phase 4: Data Access and Analysis

4A. Preparation of REB submission & SIDR administrative health data access request

⊘ We drafted an REB submission and data access request but could not submit due to data unavailability. Mapping of health data is planned for the future. We submitted an REB proposal for our Turning the Tide Art Installation.

4B. Data Development

✓ **Completed**.. Key public datasets were identified, documented, and prepared for analysis, including:

- Canadian Index of Multiple Deprivation (2021)
- Census (2021)
- Material and Social Deprivation Index (2021)

4C. Data Analysis & GIS Mapping

✓ **Completed**. GIS mapping was conducted by SIDR Data Scientist Alexandra Ouédraogo. Dr. Josh MacFadyen (Canada Research Chair in Geospatial Humanities) provided guidance on the development of our online tools. Spatial maps were complemented by a story map co-developed with public partners.

GIS Mapping: Spatial and Story Maps

How Public Engagement Informed Selection of Indicators for Mapping

Our Public Partners played a key role in co-designing maps. Their lived expertise guided every step of the process. Public Partners began by sharing personal stories about how climate change is affecting them and people in their communities. These stories revealed patterns that shaped our understanding of what matters. We then created a list indicators from the stories we heard and categorized based on data availability (Fig. 1).

RAC Priority Scores	YES	MAYBE	NO
4.0	• Income	• Housing situation and/or unhoused • Access to health services	• Reliance on electric medical devices
3.5 to 3.9	• Age • Chronic diseases* • Heat-related illness episodes* • Single-parent/guardian households • Respiratory conditions*	• Employment/unemployment rates (not including seasonal work) • Infrastructure vulnerability related to electricity and/or heating • People living with disabilities • Access to emergency shelters & community supports	
3.0 to 3.4	• Immigration • People living alone • Diabetes*	• Commuting times to municipal services • Social isolation • Mental health indicators • Access to public transportation • Access to mental health services • Community-based emergency preparedness programs	• % income spent on heating/ electricity • Access to backup power • Access to caregiving supports • Seasonal employment/migrant workers
2.3 to 2.9	• Incorporated vs. unincorporated areas	• Food deserts • Multi-generational households	• % income spent on insurance • Community reliance on imported vs. local food

Figure 1. Complete list of indicators, prioritized by Public Partners

Final Selection of Indicators for Spatial Mapping

The final list of indicators was refined (see Fig 2) using feedback from Public Partners, and data availability and quality.

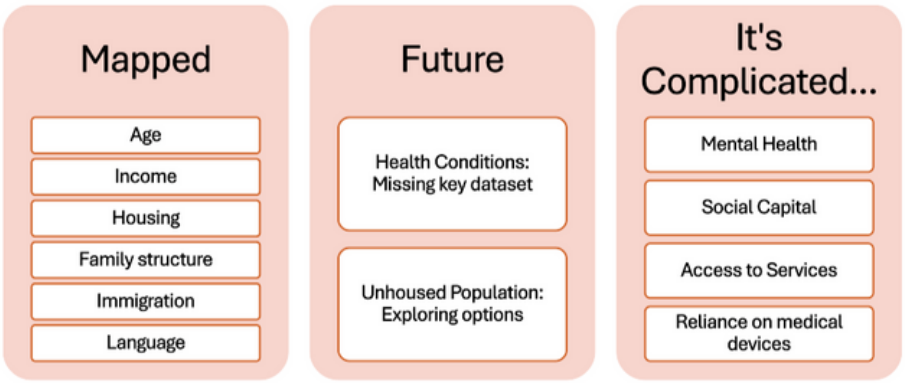


Figure 2. Left: mapped indicators | Middle: planned for mapping | Right: data unavailable

What was Created:

Online Spatial Mapping Tool
Hurricane Fiona Story Map

Access the Maps:

Scan the QR code to explore project outputs online.

Phase 5: Knowledge Translation (KT) and Evaluation

5A. Consultations with RAC on presentation products for data/maps to stakeholders
5B. Development of knowledge translation (KT) products
5C. End of grant workshop & evaluation

Completed. KT activities were completed as planned. Efforts focused on ensuring that findings and outputs are accessible and relevant to diverse audiences. Many KT activities also served as opportunities to gather feedback from public partners, community organizations, and decision-makers throughout the project. The following section outlines each KT activity and the products developed in response to the identified project KPIs.

Presentations: Highlights

CAHSPR: May 30, 2023
- Poster on project purpose and early design
- Gathered input from health services and policy researchers; national scope

Maritime Health Research Summit: Oct 24, 2024
- Poster on project goals and outcomes
- Shared with researchers, policy staff & public partners; regional scope

Charlottetown Seniors College: Nov 29, 2024
- Introduced project to older adults
- Gathered input on mapping priorities
- PEI Community Presentation

CHANGE Network: Feb 21, 2025
- Oral presentation on public engagement approach, provincial scope
- Gathered feedback on methods

KT at a Glance

- 4 Conference Presentations
- 2 Presentations to the Community
- 6 RAC Meetings
- Story Map
- Online Spatial Mapping Tool
- 1 Manuscript (in progress)

Presentations: Highlights (Continued)

Turning the Tide:
Island Imaginaries & Interdisciplinaries in Climate Change

Oral Presentation: June 18, 2025

Our team presented findings and approaches to public engagement to conference attendees.

The session highlighted how data and community engagement were used to explore climate vulnerability across PEI. The presentation emphasized the value of co-developing indicators and visual tools with community input to support equity-informed climate adaptation planning.

Art Installation: June 19, 2025

Our team also hosted an interactive art installation event, co-hosted with 4 Public Partners, which was open to the public. The installation featured 5 hands-on stations designed to share project outputs (e.g., maps) and gather feedback. This format provided a creative and inclusive space for dialogue, generating valuable insight from participants.

Community Webinar

September 10, 2025

Purpose: The webinar aimed to engage community organizations across PEI to share spatial maps from this project and start a dialogue on data needs within the community. We aimed to raise awareness, build capacity, and encourage collaborative action on using maps to support equity-informed decisions. We also received feedback on how spatial maps created in this project could be used beyond climate change adaptation.

72 Advanced Registrations
52 Attendees (Virtual)

Final Project Workshop

October 17, 2025

Purpose: The final workshop aims to present the project's key findings, engage participants in discussions on next steps, and gather input on how to apply project outputs to decision making across PEI. It provided a platform for collaboration between decision-makers, public partners, representatives from the community.

28 Advanced Registrations
28 Attendees (in-person)

"[This project] changed the way I think about this work. Climate change is often science-driven, but layering in qualitative data helps us better understand how decisions affect communities."

Final Project Workshop | Feedback & Experience

We hosted a project workshop to share our approach, showcase products, gather feedback, and explore future directions.

Attendees had the opportunity to get hands on with stations from the Turning the Tide conference, and the story map and interactive spatial maps.

Here's what we heard:

Story Map (Arc-GIS):

- *"This tool helps identify what key vulnerabilities exist, the **stories that are told could be used to help us better prepare, respond, and adapt.**"*
- Powerful, accessible, and grounded data in personal stories.
- Stories enhanced the data that is presented in the maps.
- *"Reading the stories on the map help when I am trying to share adaptation knowledge. **Having stories to connect actual human experience to scientific data/models/research makes everything relatable, real, and relevant."***

*"This storytelling approach to climate data is **much more resonant and relatable for the broader Island community**. [It's a] really valuable way to demonstrate and understand the real impact of climate change on people's lives."*

Stringing the Story About Climate Change on PEI Station:

- Interactive and engaging tool to encourage people to think about intersectionality.
- An accessible way to engage with and include a greater diversity of people who are impacted by the research in it.

Photo Gallery (Photo Voice):

- Evoked strong emotions and relatability.
- A powerful way to inform research, policy, and community action.

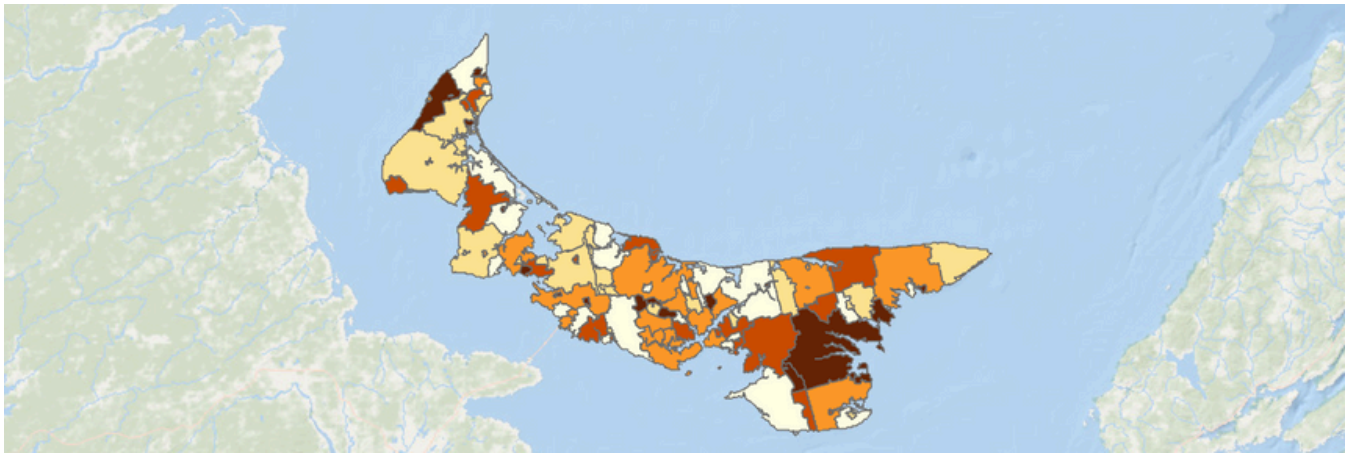
*"This form of storytelling is incredibly effective and important. **Photos trigger memories, promote empathy, and bring humans and nature to the forefront of the data."***

Final Project Workshop | Feedback & Experience

Interactive Spatial Map Platform (Arc-GIS Experience)

- Desire to see data at more granular levels of geography.
- *"User-friendly and **relatively easy to use** for users of all abilities".*
- Mobile view could be improved.
- Visuals were praised, suggestion to ensure color accessibility.
- Useful for funding applications, outreach, resource planning, and service delivery.
- Desire to see overlaps of indicators (intersectionality) or multiple maps in one view.
- Interest in adding an indicator suggestion feature on the SIDR website.
- Adding local context (e.g., fishing villages) would be helpful.
- Should be advertised and accessible to communities and municipalities.
- Useful to have the descriptions of each map and interpretation.

"This tool helps me understand the data.
This could be helpful when determining communities that may need extra support during weather events."



*"Absolutely amazing to see this data visualized. Not something you would be able to perceive by just existing on PEI. **Very eye opening and in many cases unexpected.**"*

*"I like the community research council aspect of the project. I think this is a **really adaptive model of climate engagement**."*

*"The community based approach and including "softer" data from stories is excellent and **inspires me to incorporate this method in my own work**"*

Final Project Workshop | Feedback & Future Directions

Project Impact

- Shifted participant perspectives on engagement and the importance of combining data with lived experience; and sparked interest in using project tools to better target programs and services.
- Seen as a model for equitable, community-based climate adaptation.
- Highlighted that traditional methods can be inaccessible and discourage participation. This project *"reminds us to **put the people first** in our projects and plans".*
- *"Fosters a desire to to fill those gaps in the system to provide community and climate resiliency in the face of climate change".*
- *"**Inspires me to map differently**".*

Future Directions

- Add context to maps (e.g. local services) and allow future public input on the story map.
- Use formats like the story map to create policy briefs for decision-makers.
- The interactive mapping tool could be expanded to include more data sources, which could complement climate-related surveillance tools and be applied to other sectors.
- Broaden access and visibility of project tools.
- Reach out to community organizations

*"In many ways, we deliver a number of programs and services that would benefit from **both data-drive and lived experience informed, equity driven decision making**. Understanding the geospatial distribution of social inequities in our community will help better inform where, and who, we are tailoring our programs and resources."*

*"The story map is **POWERFUL**."*

"This experience and relationship based approach is what we need to meaningfully engage with each other and the public on this interconnected issue."

"As a Public Partner on this project, I initially had no idea what my role would look like. But it quickly became clear that this was a truly collaborative effort. Our stories and lived experiences shaped the direction of the work. What stood out most to me was how every member of the council was heard equally and supported throughout the process, creating a strong sense of trust and collaboration. It was a great experience and I'm genuinely looking forward to seeing how this work grows and creates impact in the future."

Nabiha Shafqat, Public Partner

Changes to Activities

This project was grounded in collaborative design (co-design) with members of the public. Through this process, partners helped shape the project's direction and priorities.

Our initial plan was to develop a single set of spatial maps to support decision-making. However, engagement with partners revealed that how spatial data is prepared, defined, and presented must always reflect the specific context and purpose it serves.

Decisions about what indicators to include or how to group data are not neutral: they influence how maps are interpreted and used. A universal map set cannot capture the diverse questions, needs, and lived experiences of different users. Misinterpreting spatial data without understanding its construction can even cause unintended harm.

This insight shifted our approach. Instead of producing fixed outputs, we created example spatial maps and began developing an interactive online mapping tool. This tool enables users to generate maps using selected indicators, while building capacity in data literacy and map interpretation. The current prototype focuses on mapping uneven impacts from Hurricane Fiona, with opportunities to expand functionality in the future to ensure maps remain user-friendly, meaningful, and context-aware.

Co-design discussions also revealed that even when maps are co-developed, final products can become disconnected from the lived experiences that informed them. To address this, we developed a story map, a tool that reconnects spatial data with the voices and realities of PEI communities. **This evolution reflects the essence of co-design: as relationships strengthen and understanding deepens, both the process and outputs naturally evolve.**

Limitations

Several challenges noted in the interim report affected the project's early phases:

- **Delays to Data Access:** Unexpected delays finalizing agreements between UPEI, the Department of Health & Wellness, and Health PEI meant SIDR was not operational as planned. A key dataset containing postal code information was not received by project conclusion; limiting mapping of health data.
- **Hurricane Fiona**: Closures and recovery efforts limited staff capacity and paused recruitment. Despite these setbacks, the storm highlighted the urgent need to engage and identify vulnerable populations in PEI.

Since then, the team has strengthened capacity with the hiring of a Research Scientist (Summer 2024) and a Data Scientist (Winter 2025).

What We Heard

Throughout the project, we listened carefully to feedback from Public Partners, Community Members, and Government Decision-Makers. This feedback shaped key decisions within the project in several ways:

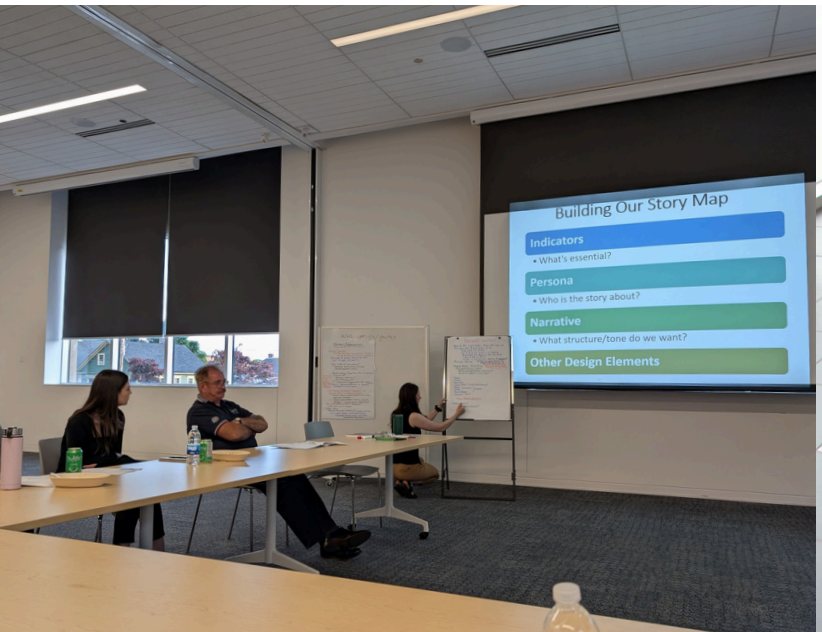
From Public Partners

Our engagement with the Research Advisory Council brought critical perspectives to this work to contextualize data. We heard and observed many things that directly influenced our work, including:

- Hurricane Fiona emerged as a powerful, shared reference point for understanding climate change impacts. It made climate change more relatable and urgent.
- Partners emphasized the importance of social capital, intersectionality, and day-to-day realities often missing from census or administrative data.
- Their stories directly shaped the development of our interactive story map, which highlights fictionalized personas inspired by real experiences.
- The photovoice activity, presented at the Turning the Tide conference, captured emotional and visual narratives tied to challenges and resilience related to climate change.

"Maps are effective at giving information to people who may not completely understand the issue... It is shorthand for where a thing is happening."

— Public Partner (Survey 1)



From Community

From community engagement at the Turning the Tide conference, webinar, and follow up survey, one message was clear: **People want tools that reflect their realities and empower action.**

Across all engagement opportunities, community members emphasized a need for:

- Community-specific insights and data; and
- Actionable, accessible, and relevant mapping tools.

Survey responses from community organizations indicated a broad range of potential applications for spatial and story maps beyond climate change. Organizations reported use of maps for program planning and evaluation, grant applications, policy advocacy, demonstrating community needs and impact, client support, and public education and outreach.

Attendees at our art installation event shared a desire to see their communities reflected on maps; this informed a decision to include community level information on interactive maps moving forward.

"Having access to these maps would be significant to community organizations. They help demonstrate where the need is at a community level, and the impact of their work."

– Quote from Community Organization survey

"Program planning, grant applications, explaining issues to the community, proving that a legislative change is needed... these maps help us show what we've always known."

– Quote from Community Organization survey

From Government

Consultations with municipal and provincial government staff provided valuable insights into how spatial tools can support real-world decision-making, emergency planning, and public communication. **During consultations we heard:**

- Strong support for a user-friendly, plain-language tool to reduce barriers to spatial mapping to improve equitable decision-making and public communication tool.
- Desire for greater data granularity at the community-level, beyond broad census boundaries.
- Emphasis on the need for guardrails and other considerations to avoid misuse or misinterpretation of spatial maps created from an online custom mapping tool.
- Emphasis on the importance of mapping intersectional vulnerabilities (e.g., through overlays) and highlighting using narratives from lived experiences.
- Interest in co-design of story maps through engagement with the public as a way to support decision-making, and as a way to increase transparency and communicate policy decisions back to the public.
- Feedback on the relevance of outputs from this project beyond climate change adaptation.

Recommendations for Future Action

Identify & Address Data Gaps
Engagement highlighted several important indicators for which data is currently lacking. A future priority is to work with communities and sectors to continue to identify data gaps and advocate for data collection.

Tailoring Spatial Maps
Maps and data products need to be designed for specific users and contexts. A single mapping approach won't meet all needs. Future work should explore tailored, plain-language, decision-oriented tools.

Recognizing Social Capital
Social capital (relationships, networks) was identified through this project as essential but hard to quantify. It requires infrastructure and long-term investment. This is a priority area for future discussion.

Embedding Equity
Sustained, meaningful engagement at every stage is essential. Recognizing and integrating lived experience provides critical insight. Equity must be embedded to ensure actions genuinely reflect community needs and priorities.

Build Data Literacy & Capacity
Many participants expressed interest in using data but identified barriers to understanding and applying it. Future priorities include building capacity, especially with an equity lens, to enable broader use.

Data Access
Across sectors, people have a strong need for data but do not have access, or struggle with equity considerations. There is strong interest in doing this work differently. A Learning Health System approach could support collective progress.

Risks and Access Considerations
All data used in this project is publicly available, and no concerns were raised during engagement. However, making spatial maps accessible may pose risk. Benefits must be weighed against potential harm; Broader community engagement should explore these issues

Continue Conversations on Community Data Governance
We engaged a diverse range of voices, but no group can speak for all. A future priority is to engage in deeper conversations around community data governance, ownership, and decisions.

Project Team and Acknowledgements

This project was supported by funding from the Canadian Institutes of Health Research (CIHR)'s Strategy for Patient Oriented Research (SPOR), the Province of PEI Climate Challenge Fund, and the Maritime SPOR SUPPORT Unit (MSSU).

We sincerely thank our Public Partners for their invaluable insights and contributions throughout the project. Thanks also to the student volunteers whose dedication helped advance our work.

Finally, we acknowledge the participation and commitment of the many community organizations and government decision-makers who provided important feedback to enhance the project's impact.

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