

Culture, Nature, & History: Identifying Sustainable Tourism Opportunities for the Burin Peninsula

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Photo: Point May, Burin Peninsula. Photo credits: Marie Louise Aastrup

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Executive Summary

This research investigates the opportunities for sustainable tourism development in the Burin Peninsula by carrying out a gap analysis based on current offers and opportunities. It couples this approach with a review of current tourism offers in the region to provide guidelines of future development of sustainable tourism in the Burin Peninsula.

In October 2019, as part of the Thriving Regions Program, the Harris Centre organized a workshop in the Burin Peninsula aimed at identifying priority themes for community development¹. This project was designed to reflect several of the community identified subthemes under the main theme “Realizing Our Tourism Potential”, which emerged as one of the key priorities identified during this first community workshop.

The average distance between accommodations and attractions for both the current and the potential network resulted to be 9 km. Of the current network paths, only 12% corresponded to a short walk (10 min.) from an accommodation, while 76% were within a short drive (15 min.).

The potential network showed an overall higher number of available paths between attractions and accommodations than the current network. In particular, the number of cultural attractions available within a 10 min walk increased by 250% when compared to the current network. The number of natural attractions available within a 15 min and a 30 min drive increased by 128% and 173%. Including all restauration opportunities resulted in the largest increase in available paths, which grew between 257% and 385% for all three distance criteria. These results indicate that there is a large potential for meeting all of the criteria indicated by accommodation providers.

Within the loop, however, most of the mapped attractions are located within a few communities: Marystown, Grand Bank, St. Lawrence, Burin. Other communities have one

¹ https://www.mun.ca/harriscentre/media/production/memorial/administrative/the-harris-centre/media-library/whatwedo/thrivingregions/Burin_TRRP_Workshop1.pdf

to a few offers, and many have no offers. There are numerous natural attractions, especially trails, that are underdeveloped and not advertised in the tourism website – especially in the southern loop. This highlights the potential for developing a network of trails. Similarly, not all cultural attractions and heritage sites are mapped and available to tourists. In particular, only one of the lighthouse sites is mapped in the province interactive map, and we suggest adding additional lighthouses and points of interest (e.g., the Tidal Wave Monument) to it. We identified different sites that could be readily added to the interactive map, as well as areas that could be developed and made accessible in the future. We identified two main types of potential attractions:

- 1) Monuments, hikes, and points of interest, or services that are not mapped, thus cannot be accessed by visitors when planning their trip. Including these assets would require little or no investment.
- 2) Natural attractions and points of interest that could be added to the tourism offer but are in need of restoration and maintenance. Adding these assets to the network would require investments.

Of all types of attractions, hiking trails are one of the most abundant undeveloped assets in the Burin Peninsula, showing the largest potential for growth.

Overall, we found that there are gaps in the tourism network in the region relative to:

- 1) The availability of online information on existing cultural and natural attractions
- 2) The availability of trails and other natural attractions
- 3) Accommodation offers and restauration opportunities are concentrated in a few communities, while large areas of the region only offer one of the two or none

Based on these findings, we suggest taking the following actions:

- 1) Plan for a more comprehensive tourism network in the region including ecological and culturally significant sites that are not currently “on the map” for visitors to the Burin Peninsula
- 2) Plan for an expansion of the current trail network. Hiking trails are the attraction with the largest number of potential assets in the region and one of the main attractions bringing visitors to the area
- 3) When planning, consider the geography of the Burin Peninsula and prioritize developing attractions that will:
 - i) Create new nodes in the tourism network
 - ii) Extend current nodes (i.e., the Marystown and Burin area, St. Lawrence, the Fortune-Grand Bank area) and create new connections between communities. In the short term, consider including additional local restauration businesses to the provincial interactive map, as current options are limited to six venues. In the long term, plan for increasing the availability of restauration options and promote the consumption of locally sourced products.

Introduction

The Burin Peninsula (Fig. 1) provides unique opportunities for the development of a large network of attractions combining Newfoundland and Labrador's unique rural culture and natural heritage. Projected towards the Grand Banks and facing both Placentia Bay and Fortune Bay, the Burin Peninsula is an ideal area for the development of whale and nature watching activities with a historical perspective, as the area includes former whaling stations (i.e., Little St. Lawrence and Rose Au Rue) as well as current and former fishing communities and extensive hiking trails. Ensuring successful sustainable tourism means providing authentic experiences where tourists can enjoy the natural history and local heritage of the area they visit.



Figure 1. The Burin Peninsula Region, showing the communities and areas considered for this study.

The province of Newfoundland and Labrador has conducted extensive research on the visitors' preferences and needs. In 2021, resident visitors to the province have traveled to almost all regions of Newfoundland with 42% of travel occurring on the Avalon Peninsula, 34% in the Western region; 30% in the Eastern region, and 27% in central². Both visitors from within and outside the province mainly seek natural attractions and the opportunity of trying local foods^{2,3}. The duration of stay is generally between two to four days and 77% of resident visitors travel for vacations and getaways².

Newfoundland's natural, cultural, and historical heritage is the "greatest assets of tourism development" in the province (Stoddart et al., 2017: 3). The Burin Peninsula offers a combination of activities that appeal to the vast majority of Newfoundland's tourists, as it is projected towards the Grand Banks providing access to both Placentia Bay and Fortune Bay, making it an ideal area for nature-oriented activities; and has extensive hiking trails (Town of Garnish, 2017) and community attractions, including museums (e.g., the Burin Heritage Museum House), boardwalks, and lighthouses (e.g., Little Burin Island).

By identifying missing connections in the current tourism network, our project addresses the issue of visitor attraction for the Burin Peninsula region. At the same time, tourism operators active in the region consider growing the industry as a means to promote community resilience and as a way to retain and attract workforce and investments. However, the realization of the Burin Peninsula's tourism potential is limited by both a lack of manpower in the industry (entrepreneurs, workers, and volunteers) as well as by the absence of an efficient network of operators promoting and supporting collaboration at a regional level (Stoddart et al., 2017). The latter in particular, is a barrier to the development of tourism in areas of the Burin Peninsula that are less known to visitors. For example, the province website only mentions four "hidden gems" and six attractions⁴ in the Burin Peninsula, even though the region encompasses more than 50 communities and over 350 km of roads.

² https://www.gov.nl.ca/tcar/files/Resident-Travel-Survey_Summer-2021_FINAL-Feb2022.pdf

³ https://www.gov.nl.ca/tcar/files/2016_Exit_Survey_Highlights_Report_FINAL_REVISED_June_2018.pdf

⁴ <https://www.newfoundlandlabrador.com>

The overarching goal of this research is to understand sustainable tourism demand and supply in the Burin Peninsula. Sustainable tourism encompasses activities which have low environmental impacts, allow tourists to experience local culture and ecology, is supportive of the local economy, and allows future generations to have equal chances to enjoy tourist destinations as we do today. Sustainable tourism includes various types of nature-based tourism such as ecotourism which is centered around the natural history and cultural heritage of an area (Fisher, 2014). We conducted a gap analysis based on three sources of information: an online questionnaire for tourism operators; the province interactive web map⁵; and a review of online listings of natural and cultural attractions for the Burin Peninsula.

The gap analysis compiles current tourism offers (types, numbers, location and provides a baseline for addressing any potential shortcomings in the current tourism scene, enhancing strong points of current tourism, and providing insights on the aspects of tourism that are directly relevant to the destination branding and marketing of the Burin Peninsula.

What is Sustainable Tourism?

Sustainable tourism encompasses activities which have low environmental impacts, allow tourists to experience local culture and ecology, is supportive of the local economy, and allows future generations to have equal chances to enjoy tourist destinations as we do today. Sustainable tourism includes various types of nature-based tourism such as ecotourism which is centered around the natural history and cultural heritage of an area¹. Sustainable tourism relies on engaging in local culture, consuming local products and cuisine, hiking, photography, bird watching and many other activities.

Our research is conceptualized within the sustainable tourism framework (Janusz & Bajdor, 2013). We understand sustainable tourism as a tourism type “(...) that takes full account of its current and future economic, social and environmental impacts, addressing

⁵ <https://www.newfoundlandlabrador.com/getting-here-and-around/interactive-map>

the needs of visitors, the industry, the environment and host communities” (United Nations World Tourism Organization, 2013:17⁶). Sustainable tourism relies on engaging in local culture, consuming local products and cuisine, hiking, photography, bird watching and many other activities. As rural communities represent “older ways of life and cultures that respond to the post-modern tourists’ quest for authenticity” (Iorio and Corsale, 2010:153), sustainable tourism initiatives can help retention and attraction of the workforce, provide new rural livelihoods through the production of local products, arts, and crafts, as well as through providing accommodation and tourist-guides (Ahebwa, 2013; Tao and Wall, 2009). Sustainable tourism can draw people away from activities harmful to biodiversity (Kiss, 2004), decrease vulnerability and increase skills (Simpson, 2007), and can enhance ecosystem services (Coad et al., 2008).

This research ties into the ongoing provincial effort in increasing tourism to the island. It adds to the overall knowledge of connectivity and tourism demands and supply in the Burin Peninsula, while also employing a new perspective on tourism in Newfoundland and Labrador. Newfoundland tourism has been researched from various perspectives (Stoddart & Graham, 2016; Stoddart & Nezhadhossein, 2016; Stoddart & Sodero, 2015; Stoddart & Vodden, 2017). Previous efforts have been invested in understanding the business owners and operators' vision of the benefits and challenges of tourism development in rural communities of Newfoundland (Stoddart et al., 2017).

Storytelling in tourism has been identified as a successful strategy for destination branding as it allows to develop destination identity and marketing of local attractions (Yavuz et al., 2016). We will draw on the existing literature relative to the role of storytelling in communication (Finkler & Leon, 2019; Korez-Vide, 2017; Yavuz et al., 2016), with a particular attention to its role in sustainable tourism (Korez-Vide, 2017); promote the historical and cultural heritage, and traditions of the place; promoting the natural environment; and reducing seasonality (e.g. by identifying off season activities).

⁶ <https://www.e-unwto.org/doi/pdf/10.18111/9789284415427>

Newfoundland & Labrador Tourism at a Glance

A study done by the Department of Tourism, Culture, Industry, and Innovation⁷ (2018) showed that pre-COVID 19 tourists in Newfoundland preferred walking in and around communities (75%), hiking (60%), whale watching (30%), and visiting National Parks (31%) as the four most sought-after outdoor recreation activities. The study indicated less interest in hunting (1%), biking (3%), and ATV/UTV touring (7%). For pre-COVID 19 tourists to the island, other sought-after experiences include trying the local cuisine (58%), wanting to explore rural communities and their surroundings (53%) with a preference for lighthouse sites (46%), and experiencing culture (51%) (Department of Tourism, Culture, Industry and Innovation, 2018).

A following study⁸ showed that 47% of Newfoundland and Labrador residents surveyed took an overnight pleasure trip in the 2020 summer season (June - October), out of which the majority (43%) were in-province trips. The majority (49%) of the residents who took a trip in the province were between 35-54 of age. Of the survey respondents who did not take a trip, the most prominent reason was not feeling safe travelling (21%). The most popular attractions for staycations during the 2020 summer season were visiting local restaurants (59%) and walking/hiking trails (45%), with walking and hiking being the most popular activity (48%).

Initial Objectives

To understand the supply and demand of tourism offers, this research originally targeted visitors, including both people traveling to and living in Newfoundland who are visiting the Burin Peninsula, and aimed at addressing the following four objectives:

Objective 1: Assessing current tourism offers in the Burin Peninsula through the review of online content.

⁷ https://www.gov.nl.ca/tcar/files/Annual_Performance_Report_2018_Final_June_-2019.pdf

⁸ https://www.gov.nl.ca/tcar/files/Resident_Travel_Survey_Dec2020.pdf

Objective 2: Understanding tourists' experiences (motivations and satisfaction) of their visit to the Burin Peninsula through a quantitative behavioral approach.

Objective 3: Developing a gap analysis of tourism in the Burin Peninsula based on findings from objective 1 and objective 2.

Objective 4: Based on the findings in the gap analysis, develop a story telling example of "The Burin Peninsula's hidden gems" to promote the Burin Peninsula's culture, nature, and history.

COVID-19 Adjustments

This research was initially envisioned as a human dimension study aimed at capturing tourists' needs and understanding their motivations for choosing the Burin Peninsula as a tourism destination. The original project involved developing and delivering a questionnaire to tourists visiting the Burin Peninsula, conducting an online review of tourism offers in the region, and using gap analysis to compare results from the two previous steps. The questionnaire was to be distributed during summer 2020.

Due to the COVID-19 pandemic in spring 2020, and the repeated outbreaks in the following months, we could not distribute the visitors' questionnaire as both tourism and the conduction of in-person research were not allowed under the preventive health measures in place at the time. In response to the situation, we redesigned the project and focused our research on understanding the needs of tourism operators and on identifying opportunities for further developing the tourism network of the Burin peninsula.

Updated Objectives

To overcome the challenges for conducting research at the height of the COVID-19 pandemic, we developed the following objectives:

Objective 1: Understanding how local business owners envision the tourism network of the Burin Peninsula

Objective 2: Creating a catalogue of current and potential tourism assets

Objective 3: Identifying gaps and opportunities for tourism development in the Burin Peninsula

Methods

To understand the tourism landscape of the Burin Peninsula and identify opportunities for sustainable tourism development, we took a mixed methods approach (Doyle et al., 2016). This involved a threefold approach consisting of an online survey focusing on sustainable tourism needs and COVID-19 responses among tourism operators in the Burin Peninsula; a database of current and potential tourism assets for the Burin Peninsula; and a spatial gap analysis of the tourism network in the Burin Peninsula, informed by the online survey results, the outcome of community workshops, and based on the assets dataset.

When applied to tourism, spatial network analysis provides insights into the distribution of current offers and the location of potential development opportunities. In the context of sustainable tourism development, mapping assets and evaluating their interconnectedness generates results that are relevant for regional planning, but also provides a tool for community stakeholders and local businesses for planning investments and developing hospitality initiatives (Omarzadeh et al., 2022). We merged the concepts of tourism network analysis with a participatory approach where community members and stakeholders were involved in project design and in defining the scope and details of the network analysis. As such, the products of this study are intended for use by community members and tourism businesses in the Burin Peninsula to support the sustainable growth of its tourism network.

Online questionnaire

Items in the online questionnaire were based on the available literature on tourism and tourism operators' needs, both generally and related to emergency (COVID-19) responses. We adapted items from Duman-Scheel et al. (2018), Poudel et al (2016, Stoddart & Vodden (2017), and (Raymond et al., 2010).

The questionnaire consisted of 5 different sections:

- 1) General information on the organization (e.g., type, size, years of operation)
- 2) Perceptions of tourism development, opportunities, and barriers to tourism development in the Burin Peninsula (e.g., opportunities for expansion; community benefits and detriments) and place attachment items
- 3) COVID-19 response in the short-term (e.g., expected impact on business in 2020 and in 2021; short-term changes in operation and structure)
- 4) Future scenarios (e.g., expected impact on business past 2021, long-term changes in operation and structure)
- 5) Demographic information (e.g., age, gender, job title)

We designed the questionnaire to get an understanding of tourism operators' priorities in terms of availability (e.g., presence/absence of a service; number of locations) and accessibility (e.g., distance; hours of operation) to tourist attractions (e.g., natural, cultural, and historical assets), activities (e.g., tour operators, festivals, dining and shopping), and services (e.g., transportation, health care). The priorities identified in the questionnaire results were then used to guide the design of a spatial analysis aimed at understanding the current tourism network of the Burin Peninsula and provide recommendations for its development considering upcoming changes to the tourism business in relation to the COVID-19 pandemic.

The questionnaire was assessed by Memorial University's Interdisciplinary Committee on Ethics in Human Research (ICEHR Approval 20210682-AR) and was implemented using Memorial University's Qualtrics online survey portal⁹.

⁹ <https://www.mun.ca/surveysolution/>

As the number of questionnaire respondents was particularly low, and since the changing conditions in which the different businesses operated under during the period 2019-2022, we were not able to collect enough data for providing reliable results relative to questionnaire sections 3 and 4. However, the responses provided in section 2 were used along with the feedback provided by community members during the online workshop¹⁰, to inform the network analysis, and to add potential attractions identified by accommodation users.

Gap Analysis

To map the tourism network in the Burin Peninsula, we recorded the geographical coordinates for different types of tourist infrastructure (accommodation, restaurants and cafes, museums etc.) that were publicly available.

The locations and details of all current accommodation offers, including campgrounds and RV sites, natural and cultural attractions, and restauration opportunities were obtained from the interactive map provided by the province of Newfoundland and Labrador¹¹.

To create a potential tourism network, we conducted an online review and mapped all additional assets that could be identified on large tourism websites (e.g., TripAdvisor¹², AirBnB); on local online resources (i.e., local businesses websites), and other mapping resources (e.g., google maps¹³, open street maps, AllTrails¹⁴; Lighthouse Friends¹⁵. The online locations were then added to the assets indicated by questionnaire respondents and workshop participants, as well as a number of locations identified by the researchers while traveling in the Burin Peninsula.

¹⁰ https://www.youtube.com/watch?v=AUUlcstQYiM&ab_channel=HarrisCentre

¹¹ <https://www.newfoundlandlabrador.com/getting-here-and-around/interactive-map>

¹² <https://www.airbnb.ca/>

¹³ <https://www.google.com/maps>

¹⁴ <https://www.alltrails.com/>

¹⁵ <https://www.lighthousefriends.com/index.html>

The network analysis compares the current and potential networks using a distance-based criteria: the distance between accommodations and one of three groups of attractions (natural, cultural, and restoration). The networks are built on three GIS datasets:

- Origins: point locations that indicate the beginning of a travel path. All networks shown here use available accommodations as path origins
- Destinations: point locations indicating the end of a travel path. Current and potential networks were generated for each one of three sets of destinations: Natural attractions; Cultural attractions; Restoration opportunities
- Roads: lines and edges defining possible routes between Origins and Destinations in a network. A map of roads in the Burin Peninsula was obtained from the National Road Network¹⁶ and used as the road template for developing the Burin Peninsula tourism networks (Fig. 2)

These datasets were used to generate all possible paths between accommodations and tourism assets.

To ensure the results reflected the priorities indicated by accommodation providers, paths between accommodations and attractions were assessed based on whether they met one or more of the following criteria:

- 1) Access to museums and other cultural attractions within a 10 min. walk. This included all the paths that had a length of 833 m or less (distance traveled in 10 minutes by a person walking at 5 km/hour).

¹⁶ <https://open.canada.ca/data/en/dataset/3d282116-e556-400c-9306-ca1a3cada77f>

- 2) *Access to hiking and natural sights within a short driving distance (max. 15 min. drive).* This included all the paths that had a length of 12.5 km or less (distance traveled in 15 minutes by car at 50 km/hour).
- 3) *Access to cultural attractions within a medium driving distance (20 - 30 min. drive).* This included all the paths that had a length of 25 km or less (distance traveled in 10 minutes by a person walking at 5 km/hour). This latter criterion was also used to set the maximum path distance.

These priorities were selected using the questionnaire results (see subsequent paragraphs). All analyses were conducted using Esri ArcGIS Pro® software. The tourism networks were generated and assessed using the Esri Network Analyst package.



Figure 2. The map shows the Burin Peninsula study area, defined by the dashed rectangle, and the road dataset used to generate the network paths between accommodations and tourism destinations (Figs. 12 & 13, and Appendix A).

Areas in a network showing a high density of paths between accommodations and attractions (i.e., a path is considered to be a trip between a single accommodation and a single attraction, and the length of each path is measured in kilometers) are well connected and meet the requirements for tourists indicated by questionnaire participants. Areas with a low density of paths have one or only a few attractions available within a 30 min. drive from an accommodation.

The maps only report the location of accommodation businesses listed in the provincial interactive map website and the network dataset only show the paths colored by their length (see Fig. 12 for an example), while specific origins and destinations were removed. All locations shown here are available to the public online, except for the locations suggested by questionnaire respondents and workshop participants. These community-identified locations were all considered as possible attractions to develop and included in the potential networks.

Results

Distances to Opportunities - Community Input

Survey respondents were asked to indicate the three most important attractions and facilities to be within:

- 1) Access to museums and other cultural attractions within a 10 min. walk
- 2) Access to hiking and natural sights *within* a short driving distance (max. 15 min. drive)
- 3) Access to cultural attractions within a medium driving distance (20 – 30 min. drive)

Respondents listed various museums as being the most important attraction to be within a 5 - 10 min. walking distance from. Other important attractions and facilities to be within walking distance of included cultural landscape features (e.g., monuments, fishing stages, historical towns) and restaurants and cafes. Other facilities and attractions that were listed included shopping, recreation facilities, and hiking.

Respondents listed hiking and natural sights as among the most important attractions to be within a 10 - 15 min. drive from. Cultural landscape features were ranked among the second and third most important attractions. Cultural landscape attractions and hiking were also considered to be the most important attractions to be within a 20 – 30 min. drive from, alongside organized outdoor recreation opportunities (excluding hiking) such as golfing.

In addition to the survey findings, the Harris Center hosted an online workshop with community members in April 2022¹⁷. During this session, the authors shared the initial findings and received feedback from community members. Community members

¹⁷ https://www.youtube.com/watch?v=AUUIcstQYiM&ab_channel=HarrisCentre

highlighted the importance of considering the whole peninsula as the network area, and in identifying opportunities for the area between Goobies and Marystown with a focus on geology and natural landscapes.

Mapping Tourism Opportunities for the Burin Peninsula

In our review of online tourism resources for the Burin Peninsula, we identified:

- 23 accommodation offers, including hotels, resorts, and camping opportunities
- 58 natural attractions, which included trails, parks and protected areas, and landscape features
- 33 attractions linked to the cultural and historical heritage of the Burin Peninsula, including heritage and historic sites, museums and theatres, and lighthouses
- 31 restauration services, including cafes, restaurants, pubs, and fast-food establishments

All accommodation offers were obtained from the interactive map provided by the province of Newfoundland and Labrador. We also included the 19 natural attractions, 14 cultural attractions, and six dining opportunities listed in the interactive map. The remaining locations, which represent opportunities for expanding the tourism offer for the Burin Peninsula, were compiled using different online resources including regional and community websites and tour operator pages; tourism websites; Google Maps; and public-GIS platforms.

This difference allowed us to create two distinct networks (Table 1): a current tourism network, showing the interconnectedness and gaps in the tourism offer based on the NL-Tourism interactive map; and a potential network, which includes available attractions and points of interest that are not mapped on the provincial website, but also locations for the development of new attractions.

Table 1. Summary of tourism assets for the Burin Peninsula study area. Current locations refer to the tourism opportunities listed in the provincial interactive map (<https://www.newfoundlandlabrador.com/getting-here-and-around/interactive-map>)

Asset	Type	Number of locations	
		Current	Potential
Accommodation	Hotel	7	-
	Resorts, cottages, & suites	7	-
	Bed & Breakfast	6	-
	Campsite	1	-
	RV Park	2	-
Nature	Trail	11	44
	Landscape	3	8
	Parks and Protected Areas	3	3
	View Park	1	2
	Ecomuseum	1	1
Culture	Heritage/History	6	16
	Lighthouses	1	5
	Museum/Theatres	7	11
	Renewable Energy	0	1
Restauration	Café	0	1
	Fast Food	1	11
	Pub	0	3
	Restaurant	5	16

Accommodation Offers

Accommodations in the region offer a variety of opportunities for tourists (Figs. 3 & 4), ranging from camping to resorts. Tourists visiting the Burin Peninsula can choose between multiple hotels and facilities, however, the camping opportunities in the area are limited. The majority of accommodations are located in a few communities (i.e., Swift Current, Marystown, Burin, St. Lawrence, Fortune, Grand Bank, Frenchman's Cove, Garnish), and all but two facilities are located in the south-western portion of the peninsula. The area of Marystown and nearing communities offers the highest variety of accommodation possibilities, missing only access to a camping ground. Similarly, the Fortune – Grand Bank area offers multiple accommodation options. Two regions are poorly served in terms of accommodation opportunities: a large area between the communities of Swift Current and Marystown, where no accommodations are available; and the southern portion of the peninsula, with a single opportunity listed in St. Lawrence.

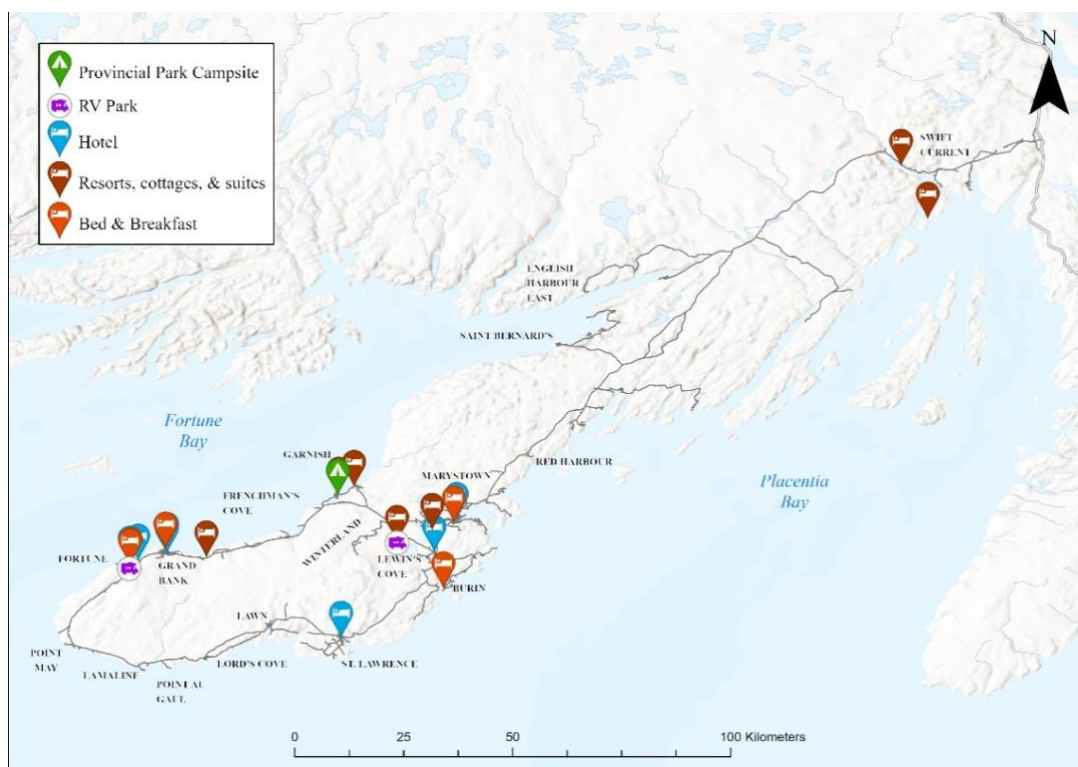


Figure 3. Distribution of accommodations within the Burin Peninsula study area. In the map accommodations are labeled according to five different types of offers: Hotels, Resorts & Suites, Bed & Breakfasts, campgrounds, and RV parks.

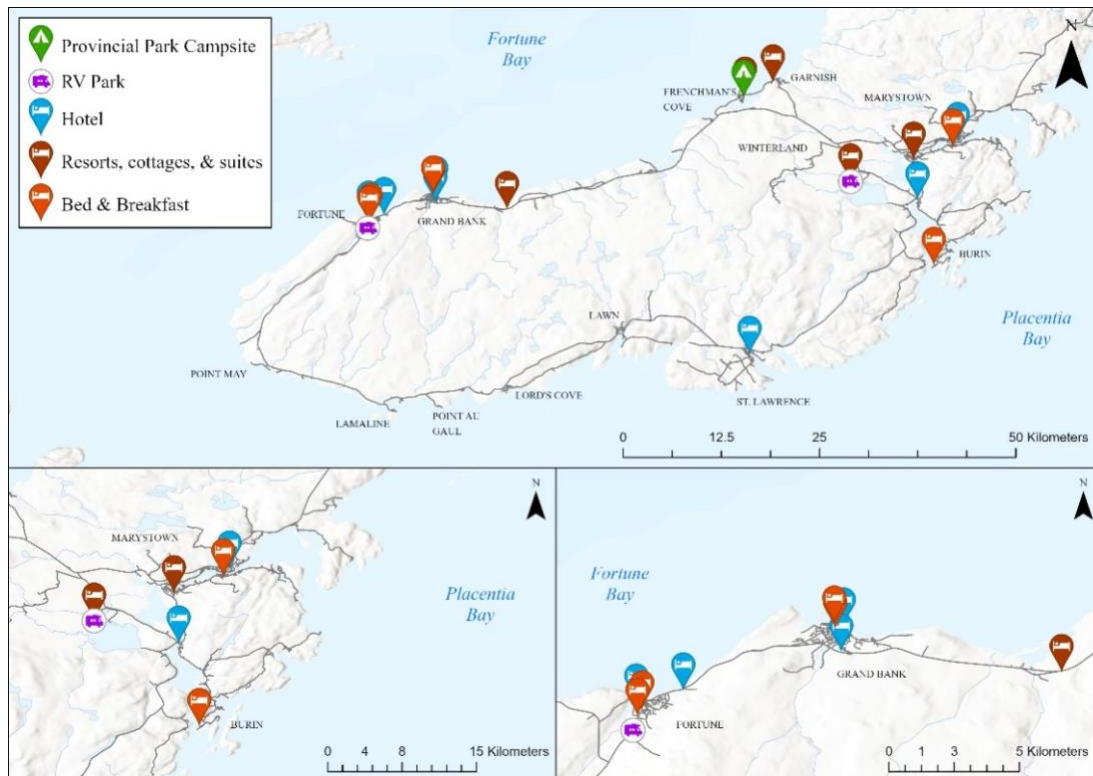


Figure 4. Detail of the southern portion of the Burin Peninsula (top), and insets showing the distribution of accommodations for the Marystown area and the Fortune – Grand Bank area.

Natural Attractions

The region of the Burin Peninsula offers multiple opportunities for expanding the current offer of natural attractions (Figs. 6 & 7). In particular, we identified 40 potential locations that could be integrated in the tourism network. The majority (32) are hiking trails and one is an ATV trail. Availability of hiking opportunities is one of the priorities identified by both tourists visiting Newfoundland and Labrador and the tourism business operator that responded to the online questionnaire. Restoring and maintaining a selection of these trails could be an accessible way of providing more hiking opportunities and, at the same time, increasing the overall connectivity of the trail system. Some of these trails may already be maintained but information on them is not easily available online. For example, the Winterland Ecomuseum and adjacent maintained trail could be included as part of the natural assets for the Burin Peninsula on the province interactive map¹⁸.

¹⁸ <https://www.newfoundlandlabrador.com/getting-here-and-around/interactive-map>



Figure 5 A serendipitous meeting with an otter while traveling in the south coast of the Burin Peninsula. Photo credits: Marie Louise Aastrup.

In addition to the trails and Ecomuseum, five landscape features could be included as natural assets:

- Trimms Beach in Grand Bank
- The Dock Beach in Marystown, east of Spanish Room
- Long Beach North-east of Garnish
- Cape Chapeau Rouge in St. Lawrence
- Salmonier River in Lamaline

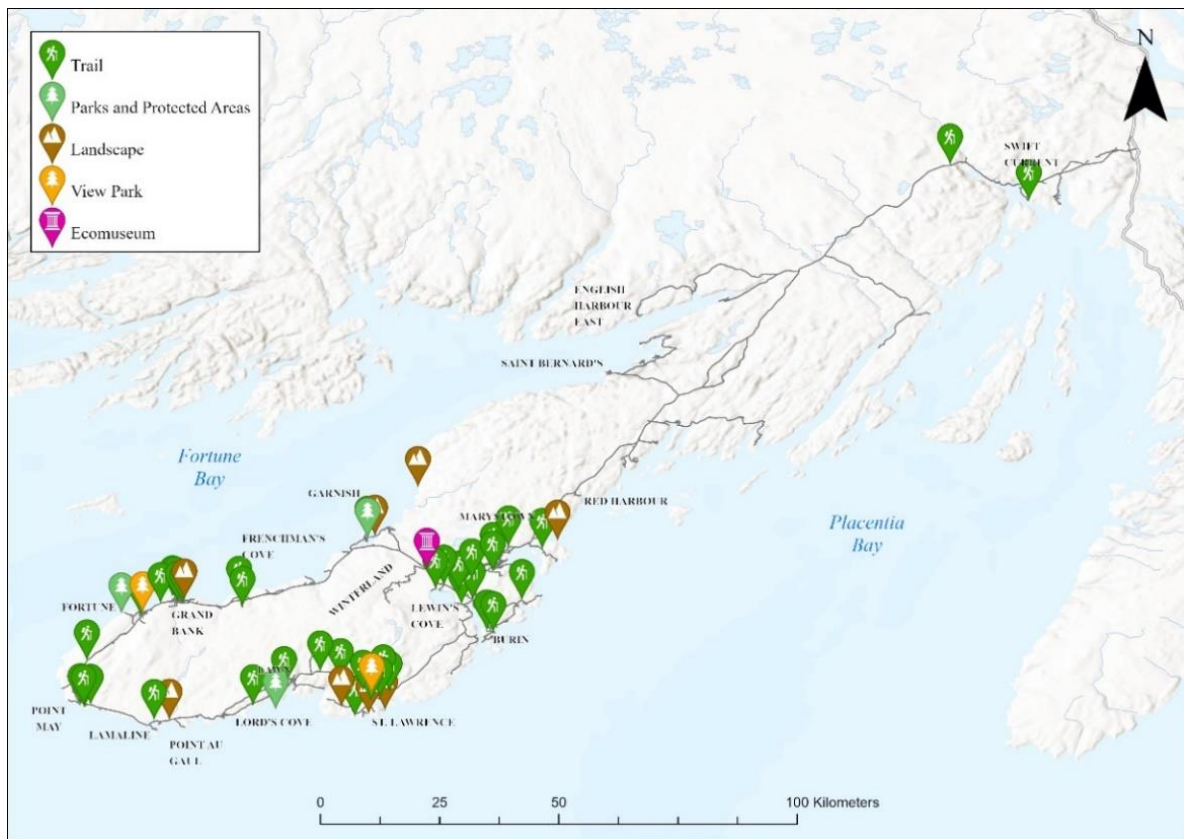


Figure 6. Natural attractions in the Burin Peninsula area. The map reports all attractions identified in this study labeled according to five general types: Trails, Parks and Protected Areas, Landscapes (i.e., natural features of the landscape), View Parks (accessible natural areas), and Ecomuseums.

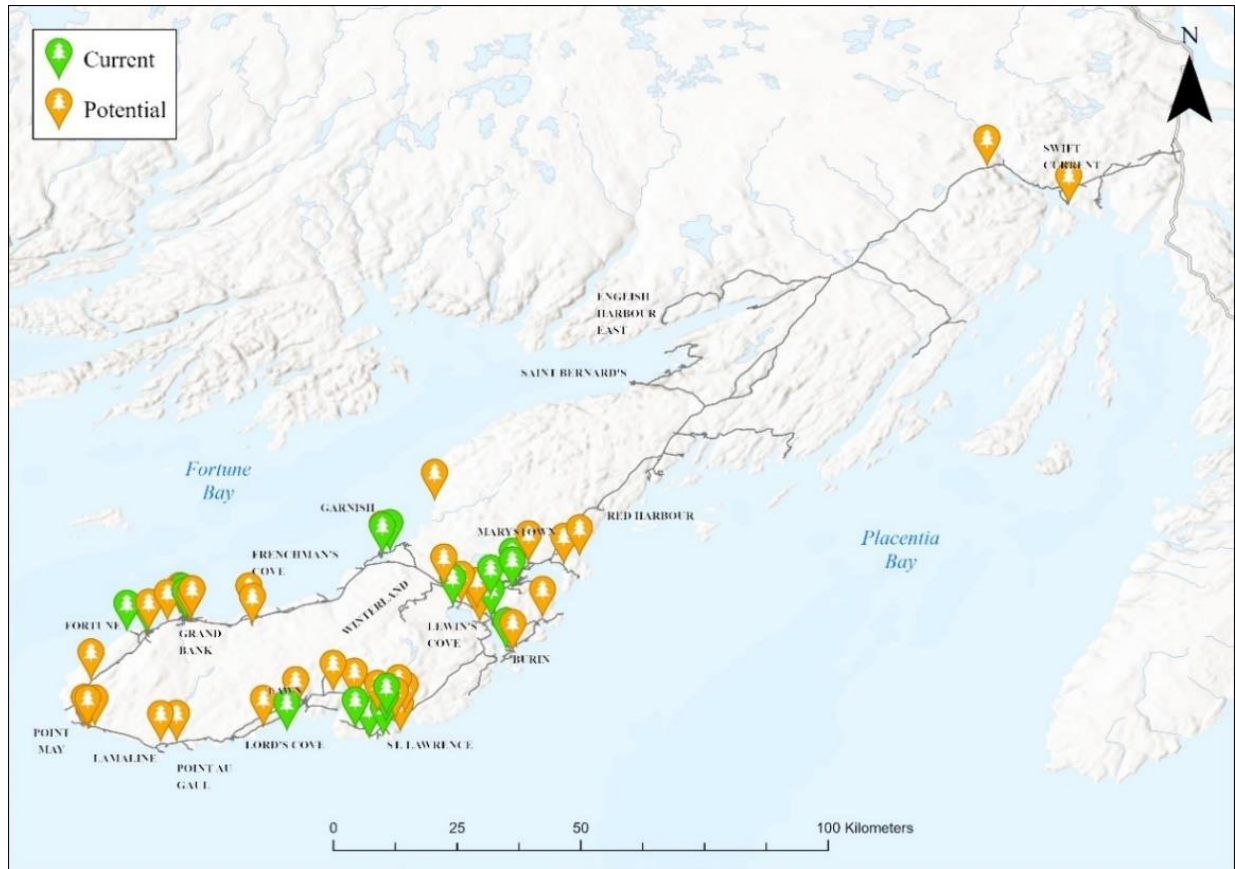


Figure 7. Natural attractions in the Burin Peninsula labeled as either belonging to the current or the potential tourism network. Locations in green are listed as natural attractions on the provincial online map. Locations in yellow are opportunities for developing the nature tourism network.

Cultural Attractions

Both the questionnaire and the online review allowed us to identify 18 cultural attractions that could expand the network if advertised (Figs. 9 & 10). A few examples are the Tidal Wave Monument in Burin, the multiple historical features of St. Lawrence, including the area of the former whaling station, and the heritage homes of Grand Bank.



Figure 8. One of the Burin Peninsula's many wonders: A small light house on the west coast of Burin Peninsula (top image). Photo credits: Marie Louise Aastrup. The tidal wave monument in Port au Bras, close to the town of Burin (bottom image). Photo credits: Simone Cominelli.

Lighthouses are one of the main attractions sought by tourists visiting the province. The Burin Peninsula region hosts six lighthouses, many of which can be reached by road (e.g., Garnish Lighthouse) or trail (e.g., Fortune Head Lighthouse, Allan's Island Lighthouse). In total, we identified five lighthouses that could be added to the one currently listed, located in Grand Bank.

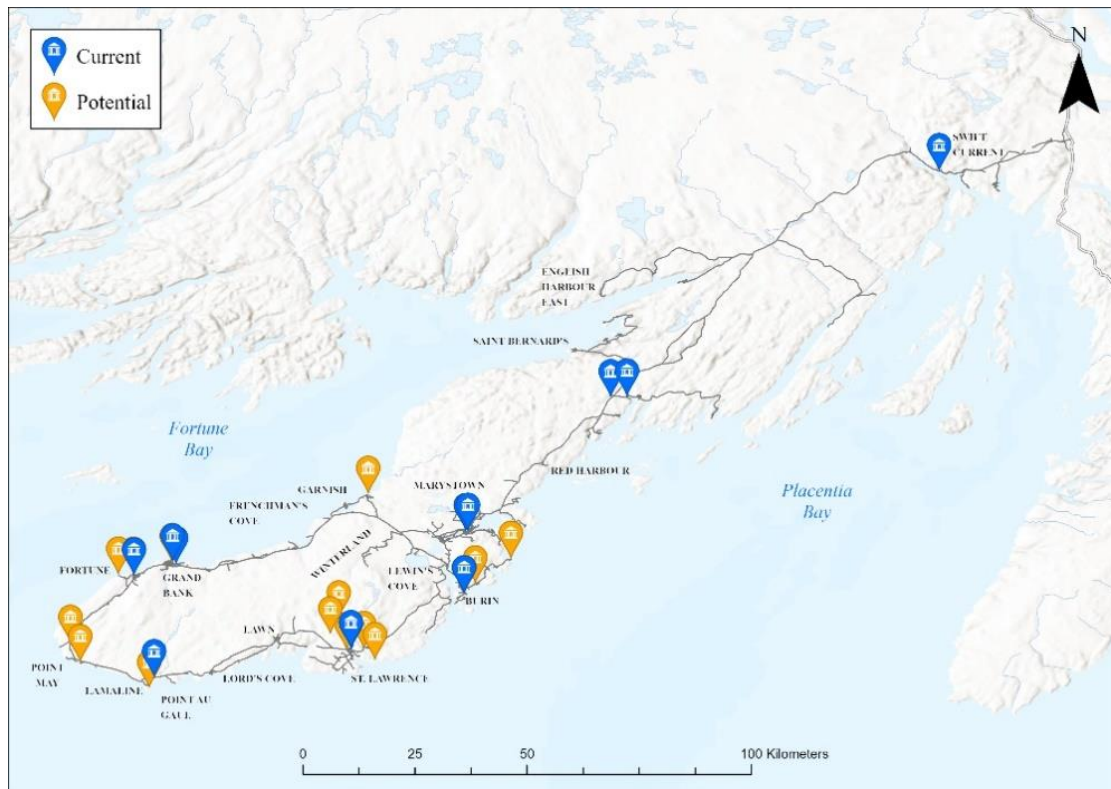


Figure 10. Cultural attractions in the Burin Peninsula are labeled as either belonging to the current or the potential tourism network. Locations in green are listed as natural attractions on the provincial online map. Locations in yellow are opportunities for developing the nature tourism network.

Restauration Opportunities

All of the 31 restauration opportunities are located in the southern loop of the Burin Peninsula, leaving a large gap between Swift Current and Marystown (Fig. 11). Of these, only five restaurants and a chain fast food are listed as available opportunities for dining in the Burin Peninsula.

Improving access to local foods, including local restaurants (with take out options), cafes, dining rooms, and other local businesses as part of the available dining would help improve tourists' experiences and them with the opportunity of exploring community living in rural Newfoundland, also in the off-season.

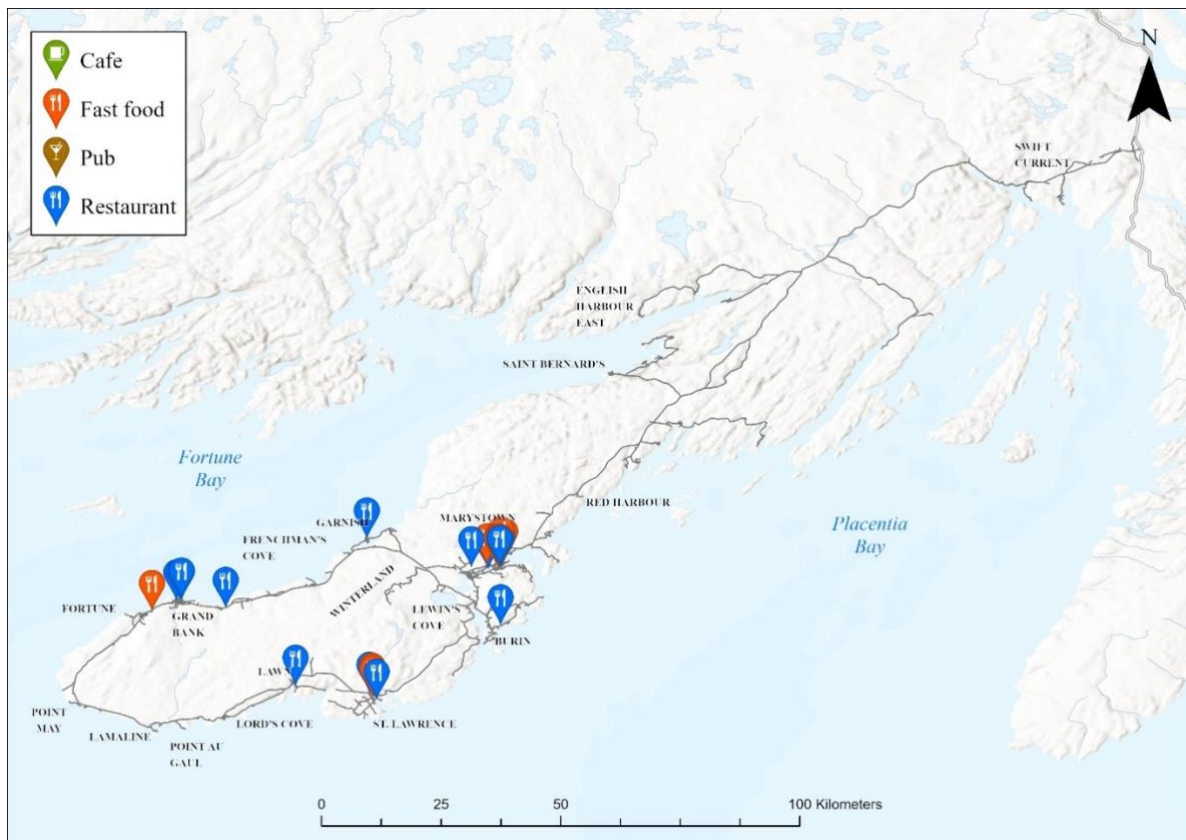


Figure 11. Restauration opportunities in the Burin Peninsula.

Mapping the Tourism Network

In total, we generated six networks, two for each group of attractions: a current network, solely based on the offers listed on the provincial interactive map; and a potential network, which included all the attractions identified during the review of online material and indicated by questionnaire respondents. Here, we only show the current and potential networks based on their distance to natural attractions (Figs. 12 & 13). The remaining network maps are shown in Appendix A.

All three types of attractions, natural, cultural, and restauration generated similar results and show a network with three main nodes for tourism:

- The Marystown and Burin area
- St. Lawrence
- The Fortune-Grand Bank area (Figs. 12 & 13, and Appendix A).

Currently, a large portion of the Burin Peninsula does not have attractions that are within a 30 min. drive (i.e., a distance of 25 km travelled at 50 km /hour) from an accommodation point. Expanding this network to include the southern portion of the peninsula, as well as the communities distributed along the drive between Swift Current and Marystown would increase attractiveness for visitors and create a sense of continuity in their experience.

The average distance between accommodations and attractions for both the current and the potential network resulted to be 9 km. Of the current network paths, only 12% corresponded to a short walk (10 min.) from an accommodation, while 76% were within a short drive (15 min.). General statistics and a summary of network paths by type of attraction and distance criteria are shown in tables 2 and 3.

Table 2. Summary statistics for the current and the potential tourism networks. The table reports average, median, and the standard deviation of the calculated distances between accommodations and attractions.

Distance between accommodations and attractions (km)						
Assets	Current			Potential		
	Average	Median	Std. Dev.	Average	Median	Std. Dev.
Natural	9	9	7	10	10	7
Cultural	9	9	8	9	10	7
Restaurant	10	10	8	8	8	7

Table 3. Summary of the current and potential networks according to accommodation providers' priorities (see Methods: Gap Analysis). The table reports the number of paths meeting one of the three conditions, as well as the percentage increase between the current and the potential networks.

Assets	Conditions	Number of paths meeting a condition		
		Current Network	Potential Network	% Increase
Natural	10 min. walk (0.83 km) ¹	9	17	88.9
	15 min. drive (12.5 Km) ²	64	146	128.1
	30 min. drive (25 km) ³	82	224	173.2
Cultural	10 min. walk (0.83 km)	6	21	250.0
	15 min. drive (12.5 Km)	43	117	172.1
	30 min. drive (25 km)	56	144	157.1
Restaurant	10 min. walk (0.83 km)	7	25	257.1
	15 min. drive (12.5 Km)	26	126	384.6
	30 min. drive (25 km)	36	157	336.1
ALL	10 min. walk (0.83 km)	22	63	186.4
	15 min. drive (12.5 Km)	133	389	192.5
	30 min. drive (25 km)	174	525	201.7

The potential network showed an overall higher number of available paths between attractions and accommodations than the current network. In particular, the number of cultural attractions available within a 10 min walk increased by 250% when compared to the current network. The number of natural attractions available within a 15 min and a 30 min drive increased by 128% and 173%. Including all restauration opportunities resulted in the largest increase in available paths, which grew between 257% and 385% for all three distance criteria.

These results indicate that there is a large potential for meeting all of the criteria indicated by accommodation providers (see methods section). The current network of natural attractions could be significantly expanded, generating new connections from Marystown to Frenchman's Cove and Garnish, between Lawn and St. Lawrence, while increasing the available destinations in the Fortune and Grand Bank area. To a lesser degree, including potential cultural attractions as part of the tourism network results in a higher number of available paths, however, the paths are mainly occurring within the three main nodes identified for natural attractions. Cultural attractions that are located too far away from an accommodation "fall" outside of the network, highlighting gaps in the accommodation offer. For example, the Point May area has no accommodations or dining opportunities available to visitors but hosts several natural and cultural attractions. One of the successful aspects of the East Coast trail is that hikers have many options along the way to resupply, take a break from their trip, and enjoy exploring communities. A similar model could be beneficial for the Burin Peninsula region.

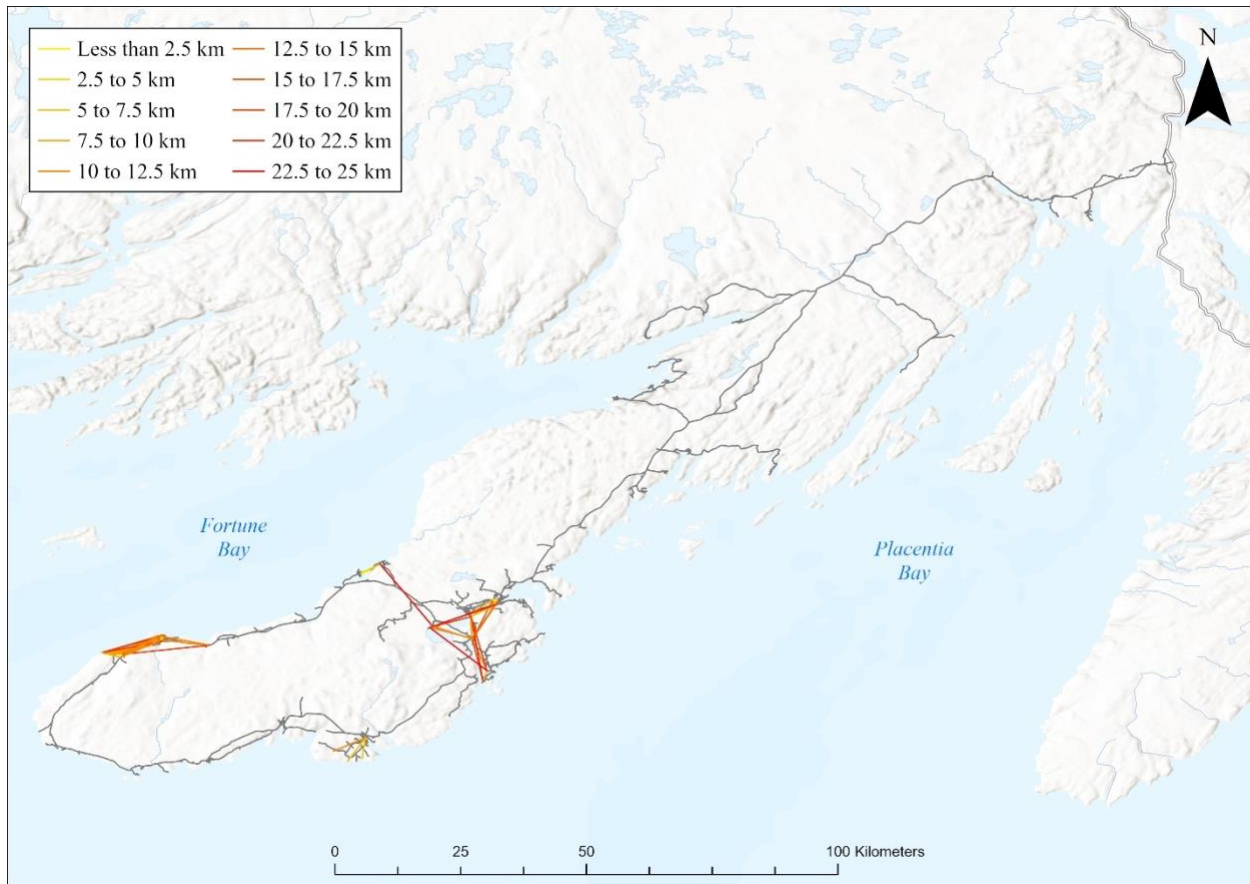


Figure 12. Current network of paths between accommodations and natural attractions. Each line represents one possible link between an accommodation and a natural attraction (e.g., trails, parks, landscape features). Every path is ranked based on its length, and the network favors shorter paths. Light colours (e.g., yellow) indicate short paths, while dark colours indicate paths that are close to the 25 km threshold used for the analysis. The current network only includes natural attractions that are listed on the provincial interactive map (<https://www.newfoundlandlabrador.com/getting-here-and-around/interactive-map>).

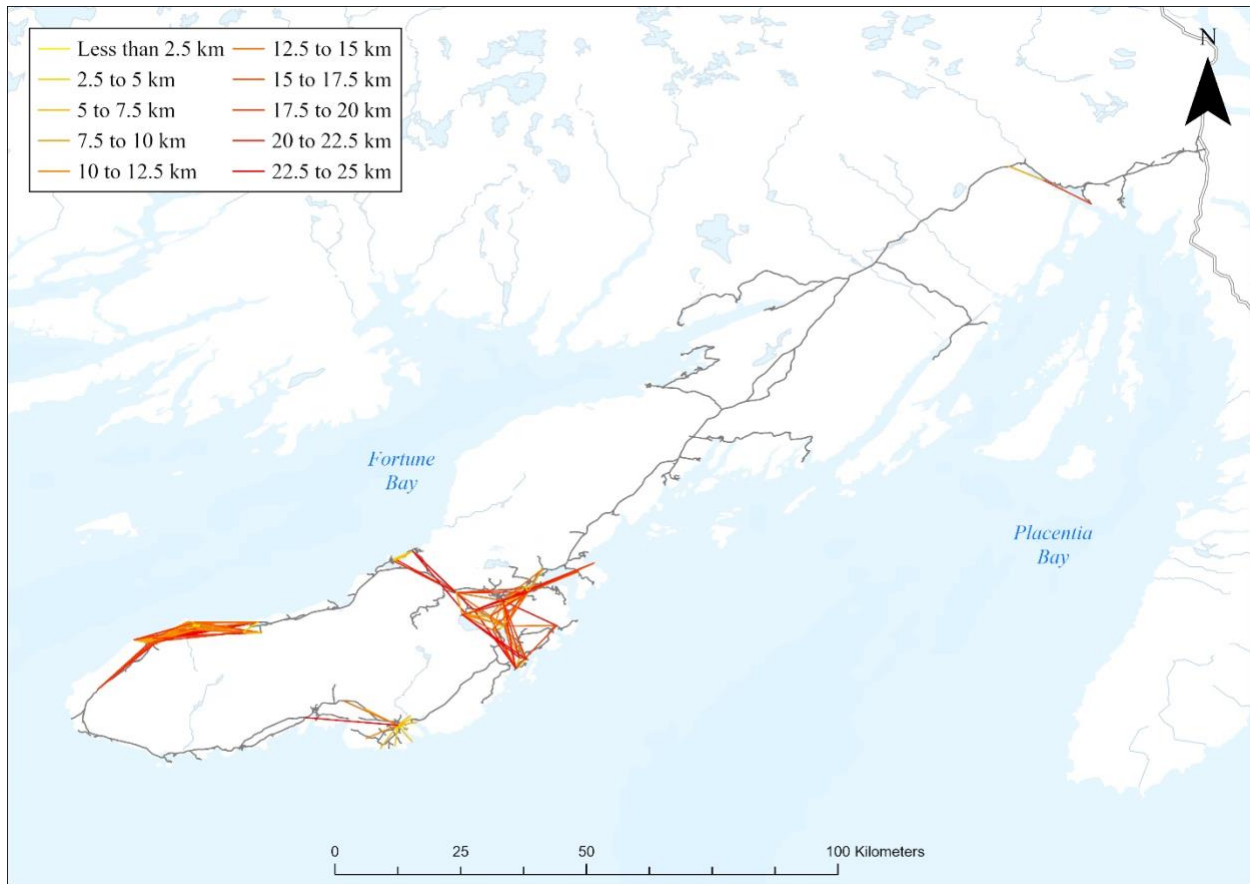


Figure 13. Potential network of paths between accommodations and natural attractions. Each line represents one possible link between an accommodation and a natural attraction (e.g., trails, parks, landscape features). Every path is ranked based on its length, and the network favors shorter paths. Light colours (e.g., yellow) indicate short paths, while dark colours indicate paths that are close to the 25 km threshold used for the analysis. The potential network includes information from the provincial interactive map (<https://www.newfoundlandlabrador.com/getting-here-and-around/interactive-map>), AllTrails (<https://www.alltrails.com/>), Google Maps, and sites suggested by questionnaire respondents.

Discussion

Highlights

- Gaps in the network highlight areas where there is potential for developing new attractions, which would improve the overall tourism network
- The core of the tourism network is located in the southern portion of the peninsula. The distribution of accommodations and attractions is uneven in the region. Most attractions and accommodations are located in the southern portion of the peninsula, along the coastal loop starting in Marystown
- Within the loop, however, most of the mapped attractions are located within a few communities: Marystown, Grand Bank, St. Lawrence, Burin. Other communities have one to a few offers, and many have no offers
- There are numerous natural attractions, especially trails, that are underdeveloped and not advertised in the tourism website – especially in the southern loop. This highlights the potential for developing a network of trails
- Similarly, not all cultural attractions and heritage sites are mapped and available to tourists. In particular, only one of the lighthouse sites is mapped in the province interactive map, and we suggest adding additional lighthouses and points of interest (e.g., the Tidal Wave Monument) to it. We identified different sites that could be readily added to the interactive map, as well as areas that could be developed and made accessible in the future

The results of this project constitute the first steps towards the creation of a catalogue of assets for the Burin Peninsula, potentially using community mapping. Community mapping is one of the most promising tools for planning the sustainable development of rural communities while fostering equitable participation and allowing the preservation of historical and cultural heritage (Vergara-Perucich & Arias-Loyola, 2021). In community

mapping, the collective knowledge of community members, combined with Geographic Information Systems allows the creation of asset databases providing a valuable tool for community based-tourism development. Asset-based community development (Dolezal & Burns, 2015) has been shown to support the preservation of historical heritage – especially architectural heritage (Gretzel et al., 2009), to be instrumental in the evaluation of ecosystem services provided by cultural landscapes (Plieninger et al., 2013), and allows for the creation of comprehensive catalogues of both natural and cultural development opportunities (Omarzadeh et al., 2022; Wu & Pearce, 2014).

The trend in tourism over the course of the pandemic has implications for emerging tourism sites like the Burin Peninsula. The preferences for local dining and hiking reported in both 2018 and for tourists in 2020, indicates that promoting hiking and dining opportunities in the region can be a potential strategy for enhancing tourism in the Burin Peninsula. Our analysis of the tourism network shows that all the three attraction types considered have potential for being expanded (Tab. 1). We identified two main types of potential attractions:

- 3) Monuments, hikes, and points of interest, or services that are not mapped, thus cannot be accessed by visitors when planning their trip. Including these assets would require little or no investment.
- 4) Natural attractions and points of interest that could be added to the tourism offer but are in need of restoration and maintenance. Adding these assets to the network would require investments.

Of all types of attractions, hiking trails are one of the most abundant undeveloped assets in the Burin Peninsula, showing the largest potential for growth. Trail networks have been a successful way of engaging and attracting visitors in different regions of the province. For example, the East Coast Trail network connects many communities of the Avalon Peninsula and attracts visitors for both short and long trips. Recently, Rockcut Trails opened a network of trails and launched a website for the promotion of natural and cultural

heritage in Twillingate. Heritage homes and historical sites were the second most promising group of potential assets, and adopting model similar to the Rockcut network, but tailored to the needs of the Burin Peninsula, could be a successful solution for bringing visitor's attention to the culture of the region while meeting the current demand for hiking opportunities. There are several restaurants that are not included as part of the current restauration opportunities. We suggest ensuring that multiple restaurants offers – providing a range of dining experiences – are included in the provincial interactive map.

In conclusion, the results presented here highlight how the whole region of the Burin Peninsula has a high potential for becoming a hub for community tourism oriented towards enjoying natural environments and learning about the culture of rural Newfoundland.

A note on data availability

All the datasets shown in this report can be obtained by contacting the main author (Simone Cominelli, sc2835@mun.ca). Available data includes all of the tables containing the mapped current and potential attractions (Figs. 6,7,9,10, & 11), the network analysis results for each one of the six networks presented in this report (Tables 1, 2 & 3; Figs. 12 & 13, and Appendix A), and a prototype story-map promoting winter tourism in the Burin Peninsula based on material collected by the authors while traveling in the region.

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Appendix A: Tourism Network Maps for Cultural Attractions & Restauration Opportunities

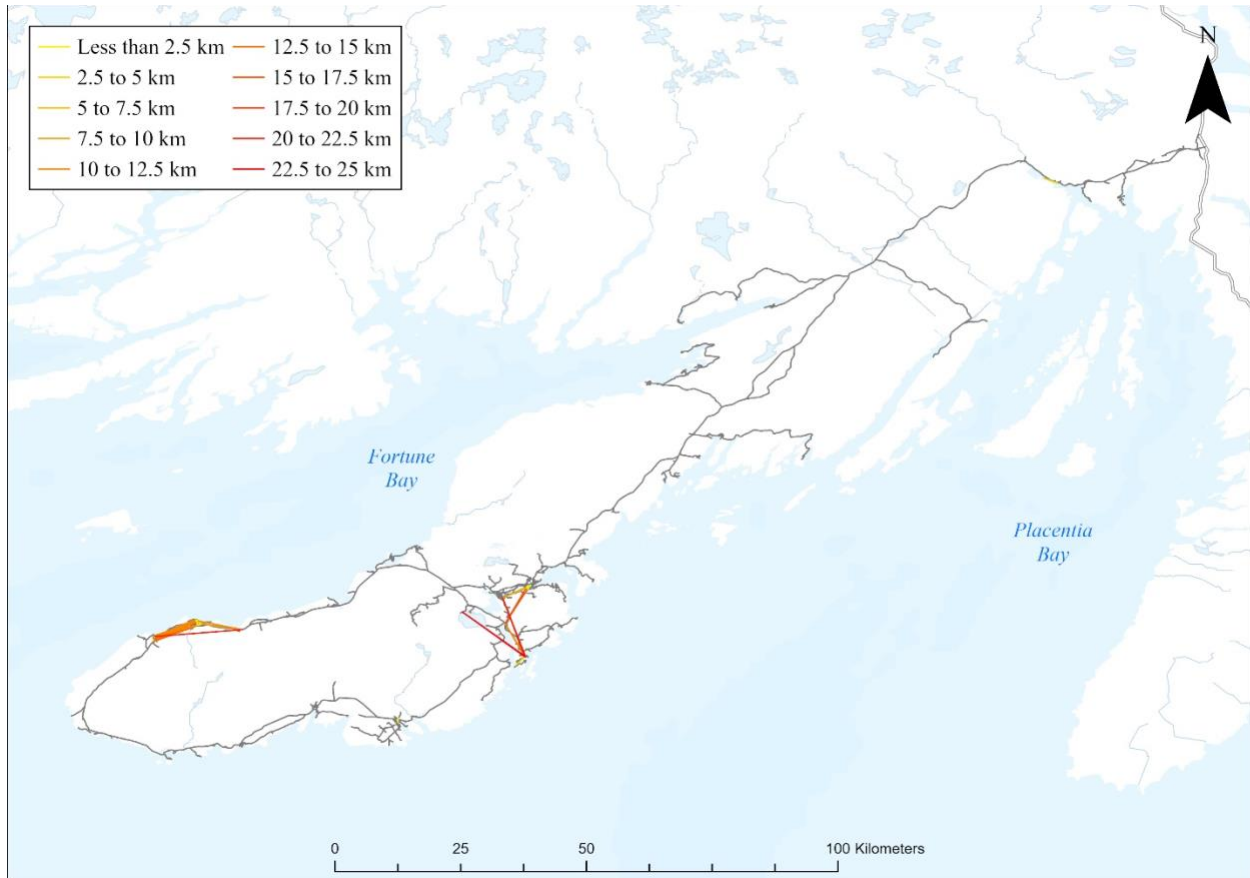


Figure A1. Current network of paths between accommodations and cultural attractions. Each line represents one possible link between an accommodation and a cultural attraction (e.g., museums, heritage homes, lighthouses). Every path is ranked based on its length, and the network favors shorter paths. Light colours (e.g., yellow) indicate short paths, while dark colours indicate paths that are close to the 25 km threshold used for the analysis. The potential network includes information from the provincial interactive map (<https://www.newfoundlandlabrador.com/getting-here-and-around/interactive-map>).

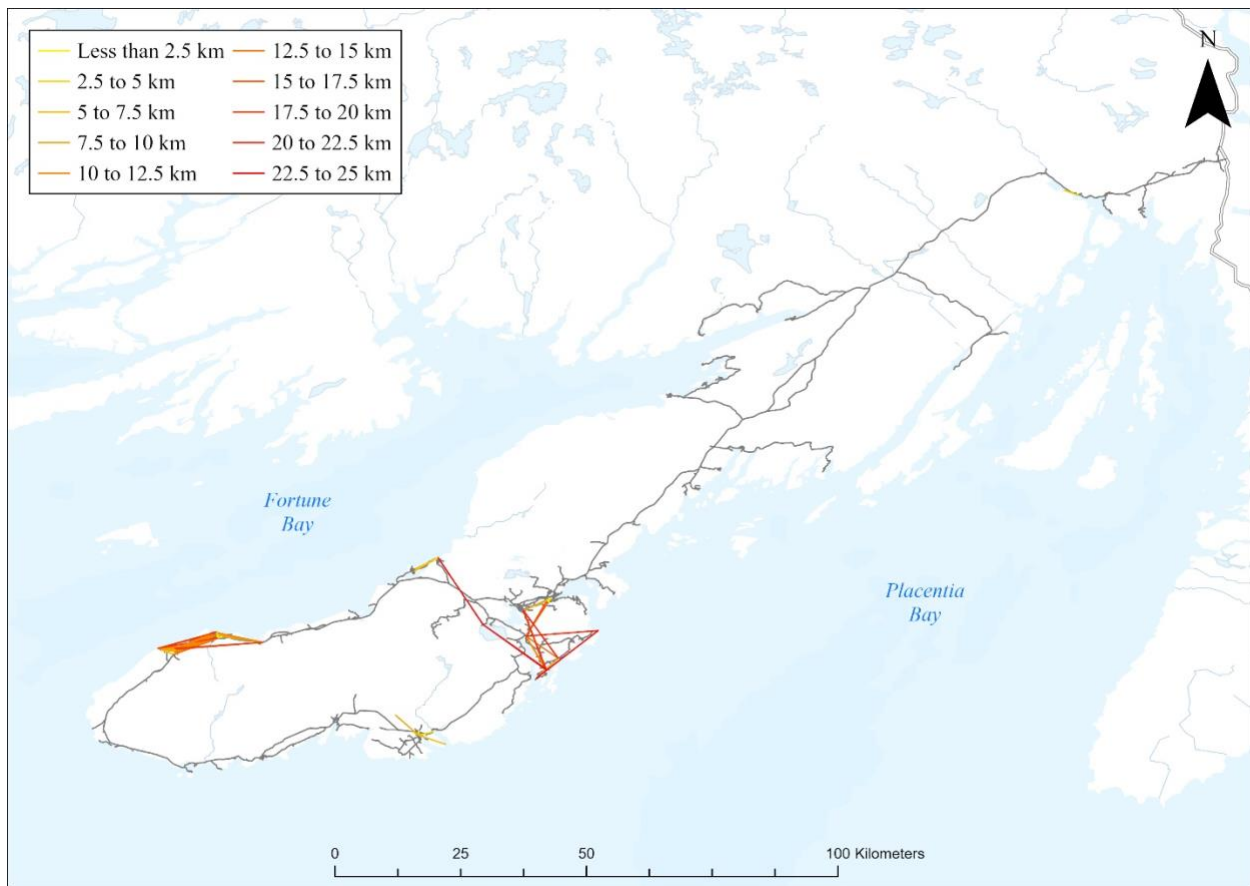


Figure A2. Potential network of paths between accommodations and cultural attractions. Each line represents one possible link between an accommodation and a cultural attraction (e.g., museums, heritage homes, lighthouses). Every path is ranked based on its length, and the network favors shorter paths. Light colours (e.g., yellow) indicate short paths, while dark colours indicate paths that are close to the 25 km threshold used for the analysis. The potential network includes information from the provincial interactive map (<https://www.newfoundlandlabrador.com/getting-here-and-around/interactive-map>), (<https://www.alltrails.com/>), www.lighthousefriends.com, multiple business websites that offer tourism information, and sites suggested by questionnaire respondents.

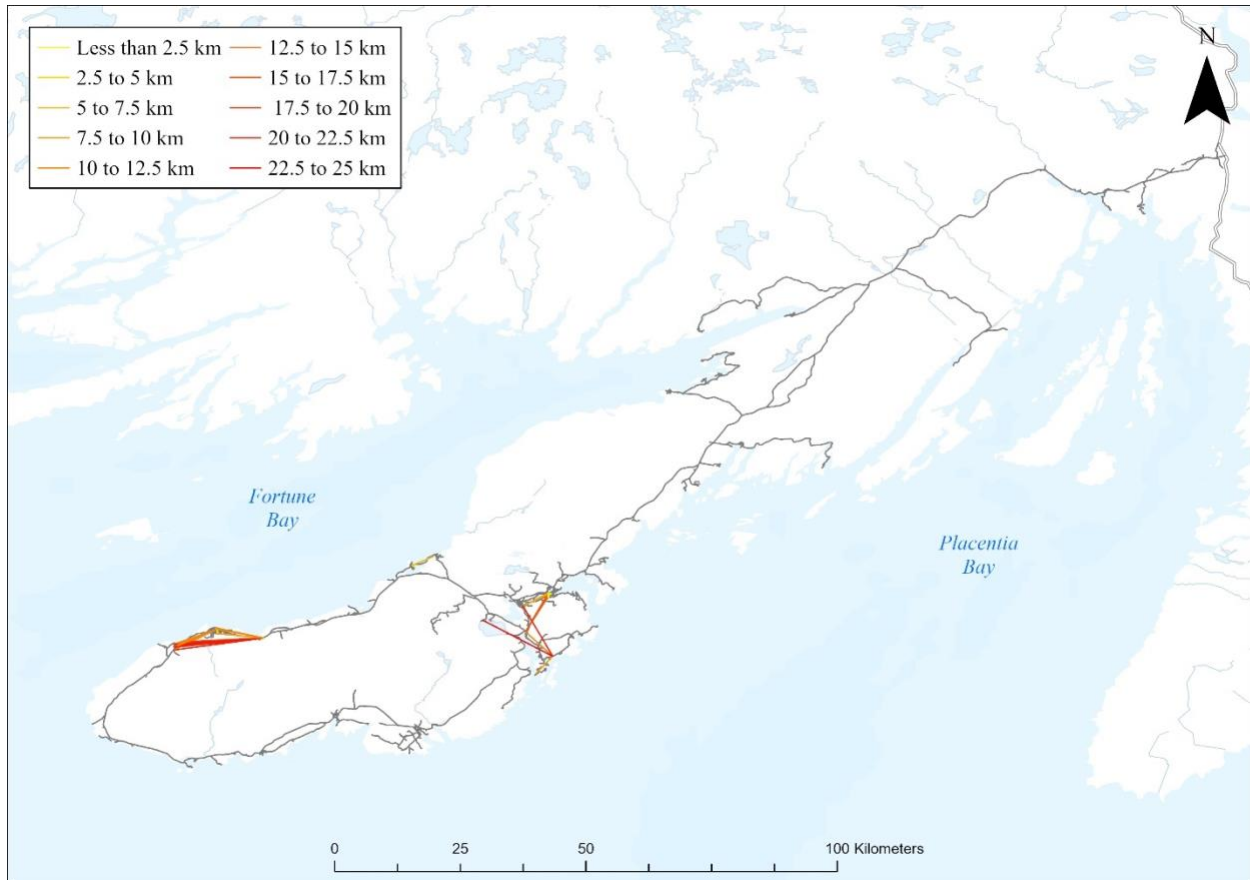


Figure A3. Current network of paths between accommodations and restauration opportunities. Each line represents one possible link between an accommodation and a restauration venue (e.g., restaurants, cafes, diners). Every path is ranked based on its length, and the network favors shorter paths. Light colours (e.g., yellow) indicate short paths, while dark colors indicate paths that are close to the 25 km threshold used for the analysis. The potential network includes information from the provincial interactive map (<https://www.newfoundlandlabrador.com/getting-here-and-around/interactive-map>).

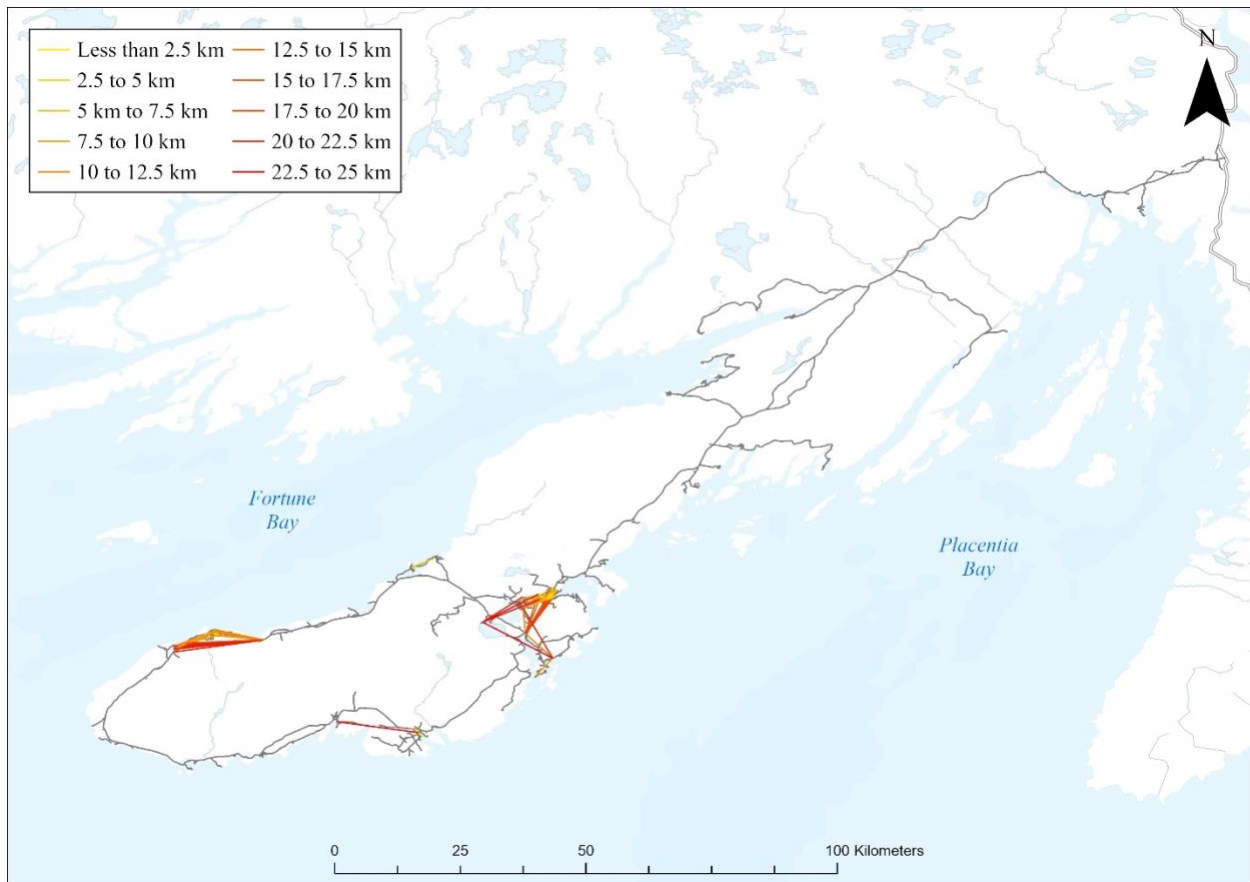


Figure A4. Potential network of paths between accommodations and restoration opportunities. Each line represents one possible link between an accommodation and a restoration venue (e.g., restaurants, cafes, diners). Every path is ranked based on its length, and the network favors shorter paths. Light colours (e.g., yellow) indicate short paths, while dark colours indicate paths that are close to the 25 km threshold used for the analysis. The potential network includes information from the provincial interactive map (<https://www.newfoundlandlabrador.com/getting-here-and-around/interactive-map>) and Google Maps.

Appendix B: Path Length Statistics

The following graphs show the distribution of paths between accommodations and tourism attractions. Each graph corresponds to one of the six network maps included in this report (Figures 10 and 11; and Appendix B) and shows the number of paths according to their length with a maximum distance of 25 km.

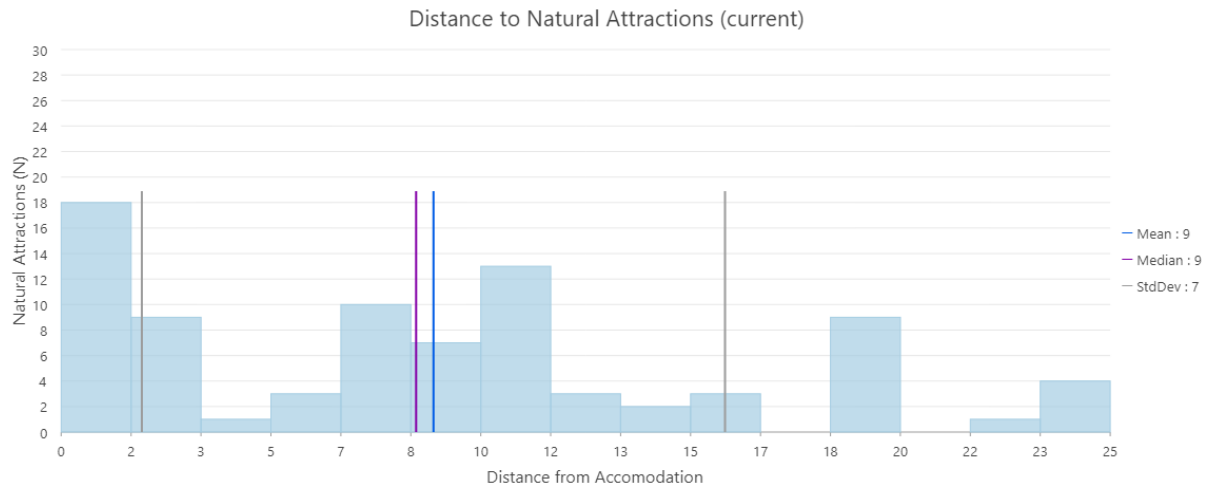


Figure B1. Summary of path length for the current network of natural attractions (Figure 10). A tall bar close to the left of the graph indicates a high number of short paths between accommodations and natural attractions (e.g., less than 2 km in length). while a tall bar close to the right indicates a high number of long paths (close to the 25 km limit). The graph also reports mean, median and standard deviation relative to path length.

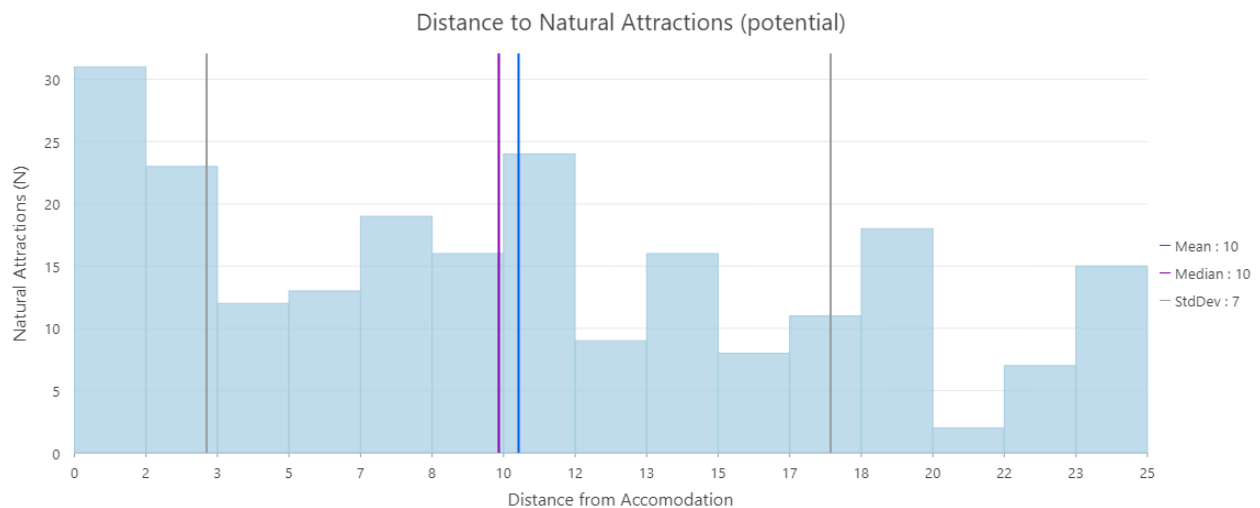


Figure B2. Summary of path length for the potential network of natural attractions (Figure 11). This graph includes all offers, both current and potential. A tall bar close to the left of the graph indicates a high number of short paths between accommodations and natural attractions (e.g., less than 2 km in length) while a tall bar close to the right indicates a high number of long paths (close to the 25 km limit). The graph also reports mean, median and standard deviation relative to path length.

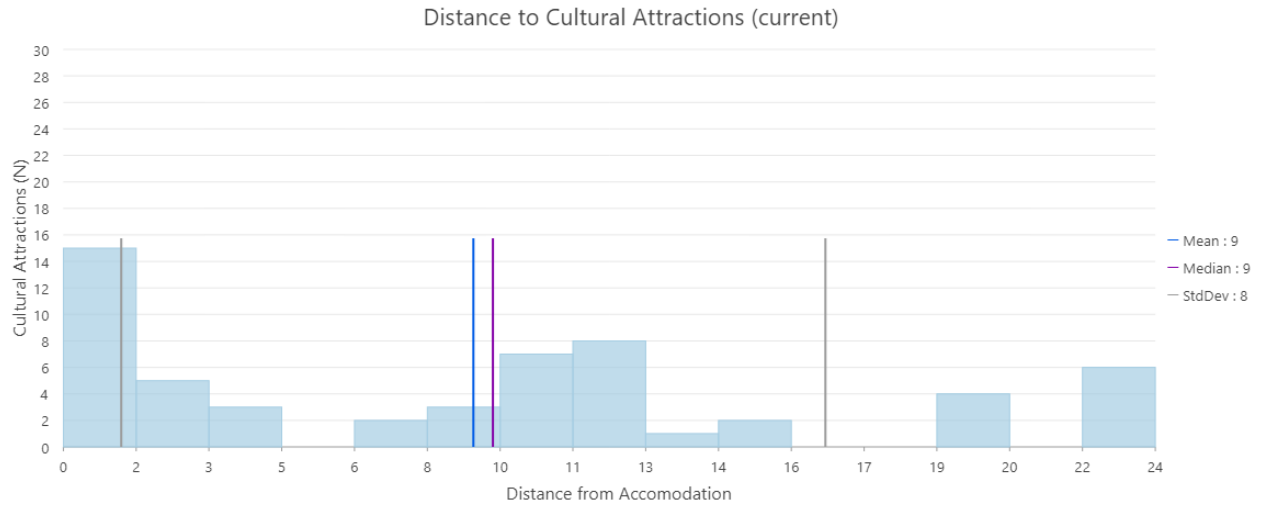


Figure B3. Summary of path length for the current network of cultural attractions. A tall bar close to the left of the graph indicates a high number of short paths between accommodations and cultural attractions (e.g., less than 2 km in length). while a tall bar close to the right indicates a high number of long paths (close to the 25 km limit). The graph also reports mean, median and standard deviation relative to path length.

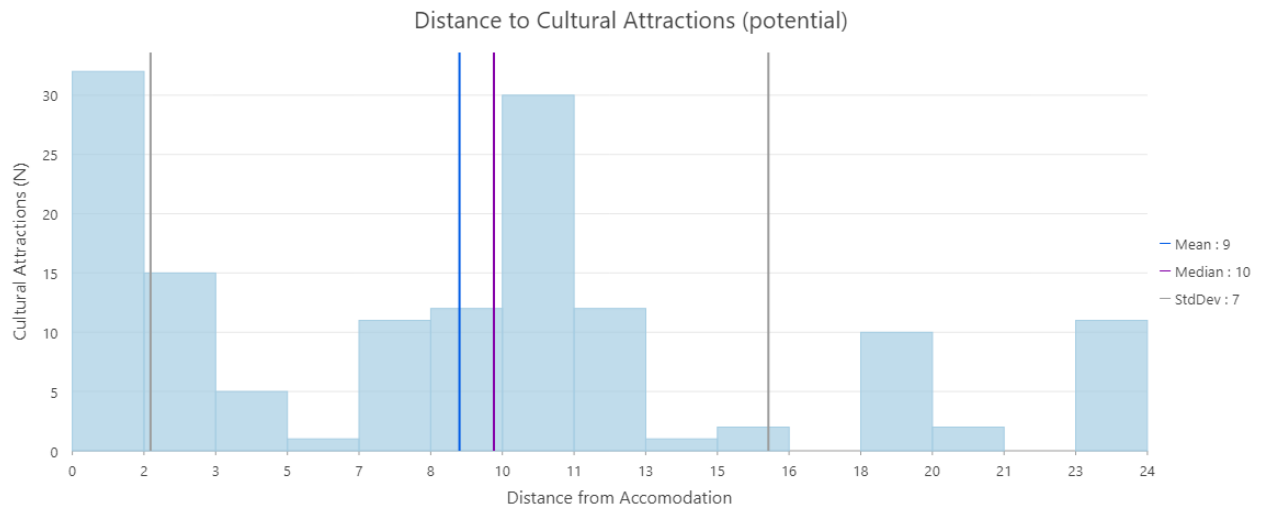


Figure B4. Summary of path length for the potential network of cultural attractions. This graph includes all offers, both current and potential. A tall bar close to the left of the graph indicates a high number of short paths between accommodations and cultural attractions (e.g., less than 2 km in length) while a tall bar close to the right indicates a high number of long paths (close to the 25 km limit). The graph also reports mean, median and standard deviation relative to path length.



Figure B5. Summary of path length for the current network of restauration services. A tall bar close to the left of the graph indicates a high number of short paths between accommodations and restauration services (e.g., less than 2 km in length). while a tall bar close to the right indicates a high number of long paths (close to the 25 km limit). The graph also reports mean, median and standard deviation relative to path length.

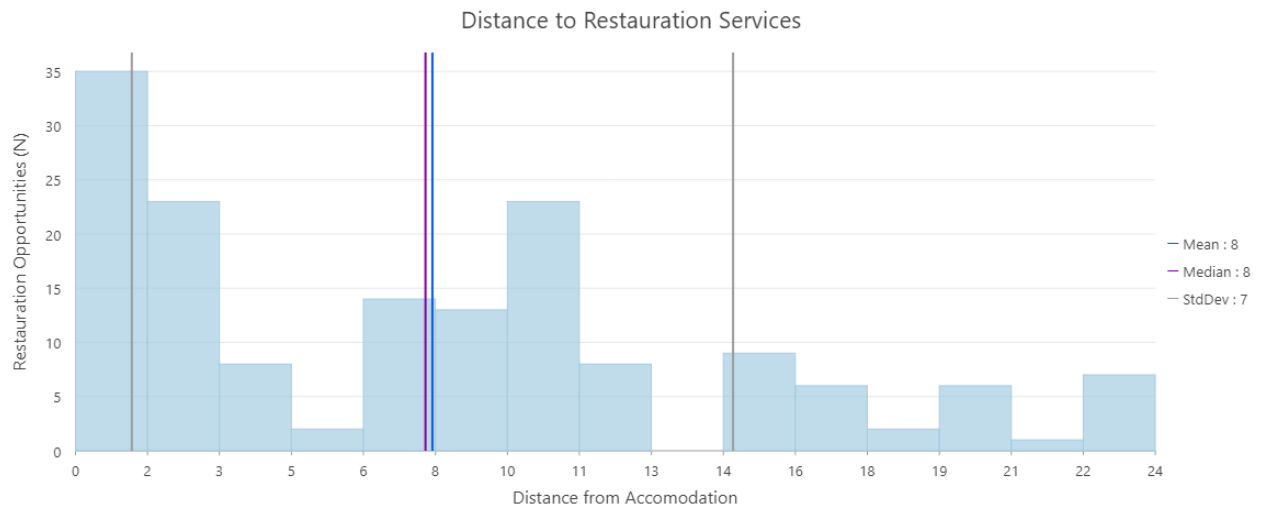


Figure B6. Summary of path length for the potential network of restauration services. This graph includes all offers, both current and potential. A tall bar close to the left of the graph indicates a high number of short paths between accommodations and restauration services (e.g., less than 2 km in length) while a tall bar close to the right indicates a high number of long paths (close to the 25 km limit). The graph also reports mean, median and standard deviation relative to path length.