THE *MARSHALL* DECISIONS AND ECONOMIC WELL-BEING INDICATORS IN ATLANTIC CANADIAN COMMUNITIES

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Abstract

This article estimates the economic impact of the *Marshall* decisions on First Nations communities with higher-than-average proportions of their labour force engaged in trapping and fishing. Using the 1996 and 2016 waves of the Canadian census, we construct four commonly used indicators of economic well-being (education, income, unemployment, housing); impacts are examined using a difference-in-differences method that controls for heterogeneous effects. Results are mixed. Although the evidence does not necessarily support an unquestionable conclusion of direct economic improvement, our reduced-form results characterize a series of trends in these communities, emphasizing the importance of multidimensional measures of economic well-being.

Résumé

Cet article estime l'impact économique des décisions *Marshall* sur les communautés des Premières Nations dont la proportion de la main-d'œuvre travaillant dans le domaine du piégeage et de la pêche est supérieure à la moyenne. À l'aide des recensements canadiens de 1996 et de 2016, nous construisons quatre indicateurs de bien-être économique couramment utilisés (éducation, revenu, chômage, logement) et les impacts sont examinés à l'aide d'une méthode de différence dans les différences qui contrôle les effets hétérogènes. Les résultats sont mitigés, et bien que les preuves ne soutiennent pas nécessairement une conclusion incontestable d'amélioration économique directe, nos résultats de forme réduite caractérisent une série de tendances dans ces communautés, soulignant l'importance des mesures multidimensionnelles du bien-être économique.

Introduction

In 1999, the *Marshall* decisions reached by the Supreme Court of Canada affirmed that some Indigenous Peoples have the right to fish, hunt, and gather in pursuit of a "moderate livelihood." The right to fish from the *Marshall* decisions exceeds the food, social, and ceremonial rights established for Indigenous Peoples across Canada following *R v Sparrow*:

> The right to fish for food, social and ceremonial (FSC) purposes is protected under section 35 of the Constitution. It is a collective right, not an individual one. Designated Indigenous harvesters can catch what is needed for themselves and/or their community for FSC purposes.[2]

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[2] Government of Canada, Fisheries and Oceans Canada, *Food, Social and Ceremonial Fisheries,* 2022, https://www.dfo-mpo.gc.ca/fisheries-peches/aboriginal-autochtones/fsc-asr-eng.html.

The right to fish, hunt, and gather in pursuit of a moderate livelihood is not general to all Indigenous Peoples in Canada. It arises from the combined effect of the *Mi'kmaq Treaties of 1760–61* and s. 35(1) of the Constitution which states that "existing aboriginal and treaty right of the aboriginal peoples of Canada are hereby recognized and affirmed." The treaty right does not provide for unconstrained access to resources that can be fished, hunted, or gathered since "s.35 aboriginal and treaty rights are subject to regulation, provided such regulation is shown by the Crown to be justified on conservation or other grounds of public importance."[3] Referring to the precedent set in *R v Badger*, the *Marshall* decisions affirm a "treaty right to continue to obtain necessaries through hunting and fishing by trading the products of those traditional activities subject to restrictions that can be justified under the *Badger* test."[4]

By including a right to trade, the *Marshall* decisions go beyond the gathering of natural resources for food, social, and ceremonial purposes, and thus the rights affirmed by the decisions could have greater economic consequences. FSC rights from *R v Sparrow* are collective. *Marshall* rights are for individuals who are members of Peoples determined to be signatories to the 1760–61 Treaties. Harvesting rights are based on membership in a group with a common cultural heritage and shared genetic lineage. But the affirmation of the right to fish, hunt, and gather in pursuit of a moderate livelihood does not change the property rights for any other inputs involved in economic activity related to fishing, hunting, or gathering. For example, boats used for fishing continue to be subject to the same private property rights as before the Supreme Court decision, and the individual nature of property rights for ownership of claims on capital inputs needed for processing the results of fishing, hunting, and gathering are similarly unaffected.

Considering the sequence of economic activity from harvesting to consumption, if harvesting activity is economically relatively more important, the *Marshall* decisions might have a significantly positive impact, given this avenue was most affected by the decisions. If harvesting is less economically important than processing and marketing, the *Marshall* decisions would have a more modest impact on the economic conditions of the First Nations communities to which they apply. Consequently, this paper asks: to what extent did the *Marshall* decisions impact the economic well-being of those First Nations communities likely to be most affected by this ruling (i.e., First Nations communities in Atlantic Canada, and, in particular, those communities with well above average involvement in trapping and fishing)?

Using a community-level well-being index that is specifically constructed for the census subdivisions in New Brunswick, Kayahan et al. (2021), find that indicators of well-being for non-First Nations communities in New Brunswick remain stable between 2001 and 2016. However, similar studies that demonstrate changes, or lack thereof, to community-level well-being within First Nations' communities have yet to be conducted. Our paper addresses this gap in the literature by using a similar set of economic well-being indicators to examine how First Nations communities, particularly those most involved in trapping and fishing, changed from the Census of 1996 to the Census of 2016. The *Marshall* decisions were issued in 1999, between these two time points, so these years provide the basis for exploring the impacts of the rulings on community-level economic well-being.

[3] *R v Marshall* [1999] 3 SCR 456 at 539.

[4] *Ibid.,* 459.

Literature Review

The Mi'kmaq people have traditionally practised *Netukulimk*, a way of life that provides a livelihood from natural resources but does so in a way that does not jeopardize the sustainability of the environment. This practice contends that humans are viewed as part of nature; they do not own it.[5] For many Indigenous Peoples in what is referred to by settlers as Atlantic Canada, fishing is an essential activity, with the catch historically being divided among the community for nourishment, ceremonial, and commercial purposes.[6] Wiber and Milley suggest that historically, about 80 per cent of the protein in the Mi'kmaq diet consisted of fish.[7] Notably, this way of life did not establish property rights. Instead, decisions were typically communal, especially concerning harvesting practices.[8]

However, the eighteenth century marked a time when both the Mi'kmaq and Maliseet Peoples of Atlantic Canada were largely displaced from their traditional lands by colonialists. Treaties were signed during this period, most of which were under a "peace and friendship" agreement, whereby the British made promises to support Indigenous harvesting activities.[9] However, as Coates argues, the British did little to support these harvesting activities and continued to settle the unceded territories.[10] Likewise, a series of restrictions occurred throughout the 1960s and 1970s that serve to exclude or limit many Indigenous Peoples' participation in commercial fishing.[11] These restrictions have lasting implications on First Nations communities. For instance, Denny and Fanning report that Indigenous fishers were

[5] See Suzanne Berneshawi, "Resource Management and the Mi'kmaq Nation," *Canadian Journal of Native Studies* 17, no. 1 (1997): 115–48; Robert C.G. Capistrano and Anthony T. Charles, "Indigenous Rights and Coastal Fisheries: A Framework of Livelihoods, Rights and Equity," *Ocean & Coastal Management* 69 (2012): 200–09, DOI: 10.1016/j.ocecoaman.2012.08.011; Shelley Denny and Lucia M. Fanning, "A Mi'kmaw Perspective on Advancing Salmon Governance in Nova Scotia, Canada: Setting the Stage for Collaborative Co-Existence," *The International Indigenous Policy Journal* 7, no. 3 (2016): 1–25. DOI: 10.18584/iipj.2016.7.3.4; Patricia Doyle-Bedwell and Faye G. Cohen, "Aboriginal Peoples in Canada: Their Role in Shaping Environmental Trends in the Twenty-First Century," in *Governing the Environment: Persistent Challenges, Uncertain Innovation,* ed. Edward A. Parson (Toronto: University of Toronto Press, 2001), 169–206; and, Melanie Wiber and Chris Milley, "After *Marshall*: Implementation of Aboriginal Fishing Rights in Atlantic Canada," *The Journal of Legal Pluralism and Unofficial Law* 39, no. 55 (2007), 163–86.

[6] Martha Stiegman, "Fisheries Privatization Versus Community-Based Management in Nova Scotia: Emerging Alliances Between First Nations and Non-Native Fishers," in *Environmental Conflict and Democracy in Canada,* ed. Laurie E. Adkin (Vancouver: UBC Press, 2009), 69–83.

[7] Wiber and Milley, "After Marshall".

[8] Chris Milley and Anthony Charles, "Mi'kmaq Fisheries in Atlantic Canada: Traditions, Legal Decisions, and Community Management," Paper presented at the 2001 People and the Sea: Maritime Research in the Social Sciences: An Agenda for the 21st Century conference, Amsterdam, Netherlands, August 30.

[9] By definition, treaties arose "from the many formal agreements between European colonial powers or Canada and Aboriginal peoples." See Douglas Harris and Peter Millerd, "Food Fish, Commercial Fish, and Fish to Support a Moderate Livelihood: Characterizing Aboriginal and Treaty Rights to Canadian Fisheries," *Arctic Review on Law and Politics* 1, no. 1 (2010): 85.

[10] Ken Coates, "Breathing New Life into Treaties: History, Politics, the Law, and Aboriginal Grievances in Canada's Maritime Provinces," *Agricultural History* 77, no. 2 (2003): 333–54; Wiber and Milley, "After Marshall"; note that during this time, the Mi'kmaq people did not sign any treaties surrendering rights to the land. However, it was not until after the *Simon* decision that the Canadian government recognized this fact. See Tom Isaac, *Aboriginal Law: Cases, Materials and Commentaries* (Saskatoon: Purich Publishing, 1999).

[11] Joseph Gough, *Managing Canada's Fisheries: from Early Days to the Year 2000* (Ottawa: Les éditions du Septentrion in co-operation with Fisheries and Oceans Canada, and Public Works and Government Services, 2007).

pushed out of the salmon industry as a result of harvesting bans and a quota system.[12] With limited land, restricted access to fish, and a dearth of resources, Indigenous economic well-being declined severely.[13]

The Canadian Constitution Act of 1982 includes section 35, which briefly discusses Indigenous rights. In particular, it states: "Existing Aboriginal and treaty rights of the Aboriginal peoples of Canada are hereby recognized and affirmed."[14] Although no explicit definitions of rights or lists of relevant treaties is provided, s. 35 provides the basis for Indigenous Peoples to seek recourse within the Canadian court system. One such example in Atlantic Canada was the *Sparrow* decision of 1992, which upheld the treaty for Indigenous Peoples to hunt and fish for ceremonial purposes.[15] However, this decision did not include a right to engage in commercial fishing, which many Indigenous Peoples argue existed during colonial times.[16]

The ability to seek recourse within the Canadian court system lays the foundation for the first *Marshall* decision. In August 1993, Donald Marshall Jr. sold 210 kilograms of eels for $787.10 and was subsequently arrested for fishing out of season, with illegal nets, and without a licence. Mr. Marshall appealed his case on grounds that, as a Mi'kmaq, he was pursing his right to fish under the 1760 and 1761 Peace and Friendship Treaties.[17] After losing his case twice in Nova Scotia provincial courts, this case subsequently made its way to the Supreme Court of Canada and led to what is known as the *Marshall* decision. This decision refers to the September 1999 Supreme Court of Canada ruling that "Mi'kmaq and Maliseet peoples had the right to hunt, fish, and gather, and to sell their products to make a 'moderate livelihood.'"[18] Coates notes that among the Indigenous Peoples of Canada, there was optimism that this decision would oblige different levels of government across Canada to recognize the rights of First Nations communities to share natural resources for economic purposes. There was hope of a shift of power to First Nations communities from the Minister of Indian Affairs (now called Indigenous and Northern Affairs Canada) and thus a greater movement toward self-government.[19]

While there was a sense of optimism among Indigenous Peoples, the initial *Marshall* decision was not well received by many non-Indigenous fishers in the region. The Department of Fisheries and Oceans (DFO) also expressed concern with the implications of the *Marshall* decisions on conservation. This led to what is known as "*Marshall 2*," wherein the Supreme Court of Canada clarified that

[12] Denny and Fanning, "A Mi'kmaw Perspective."

[13] Anthony Davis and Svein Jentoft, "The Challenge and the Promise of Indigenous Peoples' Fishing Rights —from Dependency to Agency," *Marine Policy* 25, no. 3 (2001): 223–37, DOI: 10.1016/S0308-597X(01)00014-8.

[14] *Constitution Act, 1982,* Part 2—Rights of the Aboriginal Peoples of Canada, https://laws-lois.justice.gc.ca/eng/const/page-13.html#h-53.

[15] *R v Sparrow* [1990] 1 SCR 1075.

[16] Capistrano and Charles, "Indigenous Rights and Coastal Fisheries."

[17] The treaty did not explicitly give the Mi'kmaq the right to fish; instead, it stipulated that they may only trade at British trading posts. However, the Mi'kmaq commonly traded fish at these locations for what were deemed "necessaries"; hence the modern interpretation of the right to fish for a "moderate livelihood."

[18] David Bedford, "Emancipation as Oppression: The *Marshall* Decision and Self-Government," *Journal of Canadian Studies* 44, no. 1 (2010), 206.

[19] Ken Coates, *The Marshall Decision and Native Rights* (Montreal: McGill-Queen's University Press, 2000). Bedford notes this transfer of power exists largely between the Minister of Indigenous and Northern Affairs Canada and the First Nations community chief (and council), the latter governing entity being established by the *Indian Act*. Passed in 1876 at the founding of what is now called Canada, this act largely governs how the minister of this department governs the Indigenous Peoples of Canada. See Bedford, "Emancipation as Oppression."

government could restrict the rights identified in the *Marshall* decision in the name of conservation (or if economic fairness among non-Indigenous fishers was being compromised). Further, governments were empowered to restrict rights if they felt that economic fairness was compromised among non-Indigenous fishers.[20] As Davis and Jentoft note, this "embodies the Canadian state's apparent inability to approach and negotiate with the Mi'kmaq as partners, rather than as clients."[21]

Bedford notes that, among fishers, much of the resentment was targeted at Burnt Church (Esgenoôpetijk*)*. Unlike other reserves in the region, Esgenoôpetijk did not sign further agreements with the government to limit their catch in return for fishing licences and capital (vessels, fishing supplies, and training).[22] Around the time of the *Marshall* decisions, lobster was among the most valuable catches, and many Indigenous fishers pursued this prosperous industry.[23] However, the DFO argued that conservation took priority over a "moderate livelihood," halting much of this increased activity. Barsh contends that the department's claims were highly exaggerated, given that the Indigenous portion of the catch was less than two per cent of the total in the years immediately following the decisions.[24]

For the communities that entered into further licensing agreements, the DFO protected the commercial industry by only issuing licences that had either been retired or bought out by the government.[25] This process is not unlike many that have unfolded before—that is, in exchange for money, communities gave up certain rights, which led to continued convergence to non-Indigenous economic and political structures. Within these structures, Cairns (2000) uses the term "citizen plus" to characterize modern Indigenous Peoples of Canada as equal citizens with some degree of compensation for historic injustices.[26] However, this compensation does not provide the freedom to engage in their traditional economic and political practices. It also represents a distinct shift from the Indigenous ways of treating resources as common goods (where hunting/fishing by one individual was shared with the group) to the modern economy that is largely defined by property rights resulting from concerns over a "tragedy of the commons" scenario.[27, 28]

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[20] *R v Marshall* (#2), [1999] 3 SCR 533.

[21] Davis and Jentoft, "The Challenge and the Promise," 232.

[22] Bedford, "Emancipation as Oppression." Such resentment took the form of acts of vandalism and violence toward Indigenous fishers in the community. Davis and Jentoft note that the DFO spent about $150 million in the process of signing these short-run agreements. See Davis and Jentoft, "The Challenge and the Promise." Harris and Millerd further argue that "between 2000 and 2007, Fisheries Canada spent almost $600 million to provide eligible First Nations with communal commercial licenses, vessels (acquired from commercial fishers under a voluntary retirement program), fishing vessels, and training." See Harris and Millerd, "Food Fish," 91.

[23] Coates, "Breathing New Life into Treaties."

[24] Russel Lawrence Barsh, "Netukulimk Past and Present: Mikmaw Ethics and the Atlantic Fishery," *Journal of Canadian Studies* 37, no. 1 (2002): 15–42.

[25] Bedford, "Emancipation as Oppression."

[26] Alan Cairns, *Citizens Plus: Aboriginal Peoples and the Canadian State* (Vancouver: UBC Press, 2000).

[27] Leacock comments on how early European settlers were bewildered by the lack of Indigenous authority. Instead, governance was maintained by a chief who acted in a manner chosen by the community; "strong leadership" was punishable by death. See Eleanor Burke Leacock, "The Montagnais 'Hunting Territory' and the Fur Trade," *American Anthropological Association Memoirs* 56, no. 5 (1954, Memoir No. 78).

[28] In his 1968 essay, Hardin argues that without property rights, the pursuit of individual self-interest, in a shared-resource system, will eventually lead to depletion of resource stocks, causing the industry to collapse. Although this topic pre-dates Hardin, his phrase "tragedy of the commons" has been used in many disciplines, including those that examine fishing. See Garrett Hardin, "The Tragedy of the Commons," *Science* 162, no. 3859 (1968): 1243–48.

This new way of issuing licences led to increased inequities within First Nations communities, and Bedford notes that it has not had the intended impact of moving communities toward self-governance.[29] Instead, they transferred power to a small number of people, typically chiefs and band councils, re-enforcing the individualistic norms within modern capitalist economic structures to the detriment of traditional Indigenous practices of sharing. Consequently, an individualistic attitude toward conservation has been pressed upon First Nations communities that have historically approached this matter in communal ways.[30] Hence, this practice of establishing property rights is at odds with the epistemology (e.g., traditional conservation practices, including the Mi'kmaq perspective of *Netukulimk* that honours sustainability and the prosperity of future generations) commonly held by the Indigenous Peoples of Canada.[31]

Issuing retired licences to First Nations communities was met with objections from both Indigenous and non-Indigenous fishers. A series of articles in the Halifax-based newspaper, the *Chronicle Herald*, criticized the DFO for their purchases of licences at inflated prices as it distorted the market and led to higher licence prices, which negatively impacted the ability of non-Indigenous fishers to enter the commercial fishing market. On the other hand, Wiber and Milley contend that at a time when fishers were concerned about the scale of their operations and the scarcity of resources, they economically benefitted from the sale of older vessels and supplies to the government for more than they would have received otherwise.[32] Furthermore, fishers who occupied less abundant fishing areas were encouraged to sell their quota and were able to benefit from inflated prices—a result also due to the government's lack of scale and need for the provision of such resources, given the dearth of resources in First Nations communities.[33] Consequently, one could argue that Indigenous fishers entered the commercial fishery in a precarious (and inequitable) manner.

Another concern with the *Marshall* decisions was the lack of clarity as to what constitutes a "moderate livelihood." Other than it was to exclude the "accumulation of wealth," this vagueness added to much of the resentment from local non-Indigenous fishers and to the worries about conservation from the DFO.[34] Nonetheless, the *Marshall* decisions imply that Indigenous Peoples are now part of the commercial fishing industry. However, during the decades leading up to the *Marshall* decisions, resource-based economies had been in decline, and this did not preclude the fisheries. Dwindling stocks have given rise to increasing levels of regulation, and international competition further hurt the local industry.[35] Thus, although the *Marshall* decisions affirmed the right for Mi'kmaq participation in the commercial fishery, the decisions occurred at a time when the economic prospects for increased levels of prosperity through increased levels of fishing were less likely.

[29] Bedford, "Emancipation as Oppression."

[30] Elinor Ostrom, *Governing the Commons: The Evolution of Institutions for Collective Action* (Cambridge: Cambridge University Press, 1990).

[31] Amber Giles, Lucia Fanning, Shelley Denny, and Tyson Paul, "Improving the American Eel Fishery through the Incorporation of Indigenous Knowledge into Policy Level Decision Making in Canada," *Human Ecology* 44, no. 2 (2016): 167–83.

[32] Wiber and Milley, "After *Marshall*."

[33] Davis and Jentoft, "The Challenge and the Promise."

[34] Davis and Jentoft, "The Challenge and the Promise."

[35] Harris and Millerd, "Food Fish."

Data and Methods

The primary objective of this paper is to explore what changes occurred to the economic well-being of First Nations communities in the period following the Supreme Court of Canada's reversal of the convictions of Donald Marshall Jr. in 1999. From the 1996 and 2016 waves of the census public use microdata files (PUMFs), we calculate indicators for four key measures of community-level economic well-being: education, income, unemployment, and housing. For this study, community is defined in terms of census subdivisions. These indicators are standard measures from the census, and they have been used in past analyses of regional economic well-being.[36] They also form the underlying basis for the Community Well-Being Index, originally developed to examine economic well-being among Indigenous Peoples of Canada.[37] More specifically, the following census variables are included in our study:

- **Population:** Total number of people in a community (all ages).
- **Share of occupied private dwellings that need major repairs (%):** Proportion of occupied private dwellings that require major repairs in a community.
- **Share of population with no secondary school certificate, diploma, or degree (%):** For the population aged 15 years and over, proportion of private households with no certificate, secondary school diploma or degree as their highest educational attainment.
- **Labour force participation rate (%):** The ratio of the labour force to the total population, aged 15 years and over, in a community.
- **Unemployment rate (%):** For the population aged 15 years and over, the ratio of the number of unemployed individuals to the labour force in a community.
- **Median household income ($):** Median total income of households in a community.
- **Share of households with income less than $10,000 (%):** For the population aged 15 years and over, proportion of private households that earn less than $10,000 in a community.
- **Share of households with income less than $20,000 (%):** For the population aged 15 years and over, proportion of private households that earn less than $20,000 in a community.

[36] For example, see Angela Daley et al., "How Well Is Maine Doing? Comparing Well-Being across Maine Counties," *Maine Policy Review* 27, no. 2 (2018): 30–7; and Burç Kayahan et al., "Relative Rankings of Communities in New Brunswick Using Community Well-Being Indicators from the Census," *Atlantic Canada Economics Review/Revue d'Économie du Canada Atlantique* 2, no. 1 (2021): 1–19.

[37] See Robin P. Armstrong, *The Geographical Patterns of Socio-Economic Well-Being of First Nations Communities in Canada*, Working Paper No. 46, Agriculture and Rural Working Paper Series (Agriculture Division, Statistics Canada, 2001); Mindy McHardy and Erin O'Sullivan, *First Nations Community Well-Being in Canada: The Community Well-Being Index (CWB), 2001* (Strategic Research and Analysis Directorate, Indian and Northern Affairs Canada, 2004); Erin O'Sullivan and Mindy McHardy, "The Community Well-Being Index (CWB): Well-Being in First Nations Communities, Present, Past, and Future." In Aboriginal Policy Research Consortium International, *Aboriginal Well-Being: Canada's Continuing Challenge,* 2008: Chapter 6, 111–48; Erin O'Sullivan, *The Community Well-Being Index (CWB): Measuring Well-Being in First Nations and Non-Aboriginal Communities, 1981–2006* (Ottawa: Strategic Research Directorate, Aboriginal Affairs and Northern Development Canada, 2011); Government of Canada, Indigenous Services Canada, *National Overview of the Community Well-Being Index, 1981 to 2016*, (Ottawa, 2019a); Government of Canada, Indigenous Services Canada, *Report on Trends in First Nations Communities, 1981 to 2016* (Ottawa, 2019b).

We have focused our study on these two time periods to evaluate the impacts of the *Marshall* decisions over a twenty-year span. While the decision was reached in 1999, the 1996 data allow for a pre-policy set of observations. Additionally, we chose to compare 1996 and 2016, given similarities in the business cycle. Both were expansionary years, also characterized by growing levels of inequality. Using the most recent census (2020/2021) could confound our findings, given COVID-19 caused major disruptions to economic well-being.

Fisheries and Oceans Canada identifies the Peskotomuhkati Nation at Skutik, and thirty-four Mi'kmaq and Maliseet First Nations as being implicated by the *Marshall* decisions, which effectively includes all the First Nations communities in New Brunswick, Prince Edward Island, Nova Scotia, and the Gaspé region of Quebec. Thus, our study includes all subdivisions that reported to the census in New Brunswick, Prince Edward Island, Nova Scotia, Newfoundland and Labrador, and the Gaspé region of Quebec in 1996 and 2016. To characterize the total number of First Nations and non-First Nations communities within this region of Canada, Table 1 shows the breakdown by province, with information directly collected from the 1996 and 2016 Censuses. The list of First Nations communities included in our study is presented in Appendix E.

Table 1. Counts of Communities by Province in 1996 and 2016.

	1996			2016		
Province	**FN**	**Non-FN**	**Total**	**FN**	**Non-FN**	**Total**
Newfoundland and Labrador	1	364	365	3	360	363
Prince Edward Island	1	109	110	4	108	112
Nova Scotia	15	85	100	22	70	92
New Brunswick	13	262	275	18	255	273
Gaspé Region, Quebec	2	61	63	2	46	48
Total	32	881	913	49	839	888

Notes: FN = First Nations, Non-FN = Non-First Nations. Source: 1996 and 2016 Canadian Censuses.

We cannot directly observe whether a First Nations community was impacted by the *Marshall* decisions; hence, we consider two different scenarios. In Scenario 1, all First Nations communities are assumed to have been affected by the *Marshall* decisions, which is represented in Equation 1. In Scenario 2, we examine a subset of the First Nations communities that demonstrate an above-average engagement in the trapping and fishing industries. We hypothesize that these communities would have been more likely to be affected by the *Marshall* decisions. This hypothesis is motivated by the notion that First Nations communities with a relatively higher share of labour force allocated in the trapping and fishing industries may be better positioned to generate economic impacts in the aftermath of the *Marshall* decisions. Scenario 2 is represented in Equation 2.

Using ordinary least squares (OLS) regression methods, we estimate the expected changes in these variables for First Nations and non-First Nations communities between 1996 and 2016. Moreover, we characterize the extent to which the changes in these variables differ between groups of communities. However, it should be noted that these specifications are reduced-form equations since they do not directly capture only the impact of the *Marshall* decisions in a causal sense. This is further discussed in Section 5.

As mentioned above, we use two specifications (one for each scenario) to decompose the changes in averages of the outcome variables and estimate the differences in these changes for sub-categories of communities. Equation 1, which corresponds to Scenario 1, estimates the difference-in-differences model for each variable using the First Nations and non-First Nations communities in 1996 and 2016.

$$\textbf{Equation 1}: Y_{it} = \beta_0 + \beta_1 FN_{it} + \beta_2 Y2016_t + \beta_3 FN_{it} \times Y2016_t + \epsilon_{it}$$

In the above equation, FN equals unity if census subdivision i in period t is a First Nations community, 0 otherwise; $Y2016$ equals unity if the observation occurs in 2016, 0 otherwise. The third term captures the interaction of these two variables; thus β_3, the difference-in-differences estimator, is the parameter estimate of primary interest as it captures the change in economic well-being for First Nations communities relative to their non-First Nations counterparts. Lastly, ϵ denotes the error term, which is assumed to be idiosyncratic.

As an extension of Equation 1, we also run the same analysis while excluding communities with a population exceeding 1,500.[38] We adopt this exclusion strategy because First Nations communities tend to have relatively small populations, which will impact their comparability with non-First Nations communities. In 1996, the First Nations communities had an average population of 483 with standard deviation of 519.[39] By comparison, the average non-First Nations community had a population of 2,750 with a standard deviation of 8,416.

Equation 2, while also excluding those communities with a population of 1,500 or more, extends the difference-in-differences model to consider Scenario 2 where we consider a subset of the First Nations communities based on their existing labour force share employed in trapping and fishing. In the 1996 Census, the average share of labour force employed in trapping and fishing in the First Nations communities is 6.2 per cent. Hence, we created the indicator variable $Marshall_{it}$, which equals unity if the share of the labour force employed in trapping and fishing exceeds 6.2 per cent in 1996, 0 otherwise.

$$\begin{aligned}\textbf{Equation 2}: Y_{it} = {} & \beta_0 + \beta_1 FN_{it} + \beta_2 FN_{it} \times Marshall_{it} + \beta_3 NonFN_{it} \times Marshall_{it} \\ & + \beta_4 Y2016_{it} + \beta_5 FN_{it} \times Y2016_{it} + \beta_6 FN_{it} \times Marshall_{it} \times Y2016_{it} \\ & + \beta_7 NonFN_{it} \times Marshall_{it} \times Y2016_{it} + \epsilon_{it}\end{aligned}$$

where $NonFN$ equals unity if a census subdivision is a non-First Nations community; 0 otherwise.

[38] Additionally, First Nations communities with populations that exceed twice the standard deviation of the mean are also excluded as they are outliers.

[39] The magnitude of the standard deviation for the population variable is larger than the mean due to substantial skewness in the population variable for both sub-groups. For the First Nations communities, the minimum value for 1996 is 40 and the maximum value is 2504, creating a large spread. For the non-First Nations communities, the minimum value is 51 and the maximum value is 114,733. Tables 2A and 2B, which report the summary statistics for the key community-level indicators of economic well-being for the 1996 and 2016 Censuses respectively, also demonstrate this result. The large standard errors reported for the population variable result from the wide range in population values in the combined sample for the First Nations and non-First Nations communities (i.e., the minimum value from the smallest First Nation community in the sample and the maximum value from the Halifax Regional Municipality).

Equation 2 (colloquially known as a triple-differences model) provides estimates for four subgroups:

1. First Nations communities with above-average share of labour force in trapping and fishing in 1996.
2. First Nations communities with below average share of labour force in trapping and fishing in 1996.
3. Non-First Nations communities with labour engagement in trapping and fishing akin to subgroup 1.
4. Non-First Nations communities with labour engagement in trapping and fishing unlike subgroup 1 (base group).

Using this classification based on industry concentration, eleven First Nations communities are assumed to be impacted by the *Marshall* decisions—i.e., subgroup 1—which is roughly one-third of the First Nations communities included in the analysis.[40] This group of communities is referred to as "TF High" for the remainder of the paper and highlighted in bold font in Appendix E. Due to the difference-in-differences framework, not only can we estimate the expected changes in the impacted communities for the variables included in our study, but also we can compare these trends to those experienced by the First Nations communities that are considered to be unimpacted by the *Marshall* decisions, i.e. subgroup 2, under Scenario 2.

Moreover, using the industry concentration classification, we identify a subset of 232 non-First Nations communities with the share of the labour force employed in trapping and fishing exceeds the 6.2 per cent threshold in 1996. The expected changes in this subset of non-First Nations communities, i.e., subgroup 3, may serve as an alternative comparator since labour engagement in trapping and fishing industry exhibited in these communities is akin to those exhibited in the impacted First Nations communities under Scenario 2.

Results

Tables 2A and Table 2B present the summary statistics for the key community-level indicators of economic well-being for the 1996 and 2016 Censuses, respectively. Results show that average values of population and median household income increased between 1996 and 2016, whereas the averages for share of dwellings that need major repairs, share of population with no high school certificate or diploma, participation rate, unemployment rate, and share of population that earn less than $10,000 and $20,000 decreased during this period.[41]

[40] Until 1996, the census provided a more detailed reporting of the breakdown of labour force across different industries. However, after 1996, some categories are aggregated (i.e., agriculture, forestry, fishing, and hunting are grouped under a single category). For the scope of this paper, it is essential to focus on the fishing, hunting, and trapping industries to associate potential changes with the *Marshall* decisions. Hence, under this measure, the determination of whether a community is impacted by the *Marshall* decisions or not is made using the share of labour force population employed in the trapping and fishing industries in 1996, which also necessitates a balanced panel approach (i.e., communities are included in the analysis only if they are observed in both 1996 and 2016 Censuses). Hunting data is not included given that it was not collected in either census, nor is this data (to our knowledge) publicly available elsewhere.

[41] Section 35 of the Constitution protects the rights of FN communities to fish, hunt, and gather for their own use so the *Marshall* decisions did not extend the possibilities to substitute own production for income. To the extent that harvesting for FN communities following the *Marshall* decisions might have generated a few additional barter opportunities with non-FN communities which were not reflected in nominal income measured by the census, our results may slightly understate the real income shifts of those FN communities with significant proportion of the labour force engaged in harvesting.

Table 2A. 1996 Summary Statistics (all communities).

Variable	Obs.	Mean	Std. Dev.	Min.	Max.
Population (people)	913	2,671	8,279	40.0	114,733
Dwellings that need major repairs (%)	910	19.0	13.3	0.0	100.0
Less than HS (%)	913	50.4	13.3	0.0	100.0
Participation rate (%)	913	56.5	11.1	20.0	90.9
Unemployment rate (%)	913	26.8	15.9	0.0	100.0
Median household income ($)	913	28,417	12,829	0.0	72,263
Household income < $10K (%)	810	8.7	6.5	0.0	48.0
Household income < $20K (%)	810	30.0	11.0	0.0	68.8

Table 2B. 2016 Summary Statistics (all communities).

Variable	Obs.	Mean	Std. Dev.	Min.	Max.
Population (people)	888	2,729	15,145	5.0	403,131
Dwellings that need major repairs (%)	863	10.4	7.6	0.0	58.7
Less than HS (%)	863	29.6	12.0	0.0	76.5
Participation rate (%)	863	55.9	10.4	15.4	85.7
Unemployment rate (%)	863	19.8	12.3	0.0	100.0
Median household income ($)	864	57,860	14,563	23,317	161,152
Household income < $10K (%)	715	2.8	3.2	0.0	29.2
Household income < $20K (%)	715	11.4	6.0	0.0	46.2

Notes: The number of observations reported for each variable is determined by the number of census subdivisions with non-missing values in a given census year. Census PUMFs supress some variables to protect the confidentiality of individual respondents. Consequently, the number of observations changes across variables, depending on the degree of suppression.

Ordinary least squares (OLS) regression results from the estimation of Equation 1 for each variable are presented in Appendix A, Tables A.1–A.8.[42] Estimates show that, on average, First Nations communities tended to have much smaller populations, and a smaller proportion of population without a high school certificate or diploma relative to non-First Nations communities in 1996. First Nations communities were also more likely to experience higher levels of unemployment along with drastically lower levels of income. The latter result is based on differences in median household income, and shares of households that earn less than $10,000 and/or $20,000. Economic differences are also apparent concerning the considerably larger share of private dwellings in need of major repairs that were reported among the First Nations communities.

[42] Given the importance of this topic, and its multidisciplinary impacts, our intention is to provide the results in a way that reaches the largest audience possible. And, since this is not a quantitative-focused journal, we have chosen to provide a clear and concise presentation of our findings, that minimizes distraction to the average reader. Full regression results can be found in an appendix, thus allowing readers with a quantitative background to more closely inspect our findings.

The difference-in-differences estimators in these tables also suggest that, from 1996 to 2016, the gap between First Nations and non-First Nations communities widened in some cases (the share of population with no high school certificate or diploma) and remained statistically unchanged in others (population, labour force participation, unemployment, median household income, share of households that earn less than $10,000 or $20,000). However, it did narrow in the case of the share of private dwellings in need of major repairs. Consequently, given this mixed set of results, Equation 1 estimates do not provide sufficient evidence to conclude that the *Marshall* decisions had an unquestionably positive economic impact on First Nations communities in the Maritimes provinces and the Gaspé region of Quebec.

Appendix B presents Equation 1 regression results for communities with populations below 1,500 people. By excluding large communities, difference-in-differences estimators only pertain to communities of similar size—i.e., changes in outcome variables between 1996 and 2016 are only with respect to comparably sized First Nations and non-First Nations census subdivisions. Although the regression results presented in Appendix B are similar to those in Appendix A, there are a few exceptions. Namely, mean differences between First Nations and non-First Nations communities regarding the unemployment rate, median household income, and shares of the population that earn less than $10,000 and/or $20,000 are smaller when large communities are excluded. Thus, some of the disparities between First Nations and non-First Nations communities are due to the size of the community.

Appendix C presents the regression results, estimated by OLS, for the triple-differences-model (Equation 2) regarding communities with populations less than 1,500 people, where the subset of First Nations communities for which we are estimating the potential differential impact of the *Marshall* decisions are identified based on the extent to which the labour force was employed in trapping and fishing.

The average values of each variable of interest for First Nations and non-First Nations communities in 1996 and 2016, calculated using parameter estimates from Equation 2, are presented in panel A for each table below (i.e., Table 3A to Table 10A). As previously mentioned, communities are categorized into two groups based on their share of the labour force employed in trapping and fishing. "**TF High**" refers to the group of communities with at least 6.2 per cent of the labour force employed in trapping and fishing, and "**TF Low**" refers to the remaining group—i.e., those with less than 6.2 per cent of the labour force employed in this industry. The predicted change in the average value of each variable during the 1996–2016 period for each category, and relative difference in the predicted changes compared to the base group (non-First Nations communities with low intensity of trapping and fishing), are presented in panel B for each table below (Table 3B to Table 10B).[43]

[43] For example, in Table 3B, the average community-level population for non-First Nations communities with low involvement decreased by 14.1 per cent from 1996 to 2016 (from 671 to 576 people). The reduction in the average community-level population for the non-First Nations communities with high involvement was 22.9 per cent. Comparing the changes between these groups, we can ascertain that the decline in the average community-level population was 8.8 percentage points larger for the non-First Nations communities with high involvement relative to the non-First Nations communities with low involvement (which is reported in the bottom section of Table 3B).

Given Tables 3A and 3B, the average population of First Nations communities grew in contrast to the Non-First Nations communities, whose average population decreased over the twenty-year period.[44] Moreover, population growth for those communities in the high TF subset tend to be larger than the First Nations communities in the low TF subset.

Table 3A: Average community-level population.

Year: 1996	**TF High**	**TF Low**
First Nations	354 people	402 people
Non-First Nations	573 people	671 people
Year: 2016	**TF High**	**TF Low**
First Nations	471 people	519 people
Non-First Nations	441 people	576 people

Table 3B: Change in community-level population.

Change from 1996–2016	**TF High**	**TF Low**
First Nations	33.0%	29.1%
Non-First Nations	-22.9%	-14.1%
Change relative to the base	**TF High**	**TF Low**
First Nations	+47.1%	+43.3%
Non-First Nations	-8.8%	Base

Although Tables 4A and 4B suggest that the share of occupied private dwellings in need of major repairs declined for all categories, we see that the First Nations communities with high TF experienced the largest decline during the 1996–2016 period, although this group still has, in absolute terms, the highest share of dwellings that require major repairs.

Table 4A: Average share of private dwellings in a community that need major repairs.

Year: 1996	**TF High**	**TF Low**
First Nations	58.1%	42.7%
Non-First Nations	15.8%	18.6%
Year: 2016	**TF High**	**TF Low**
First Nations	30.6%	22.8%
Non-First Nations	9.0%	10.4%

[44] A population increase may be an indicator of economic development, even if major changes in employment and income are not apparent. Long-term trends of population decline in many of these communities has been, at least in part, due to reduced economic opportunity. To the extent that the *Marshall* decisions offered new opportunities, one may posit that population growth may transpire without negatively impacting the going wage rates (i.e., a rising labour supply may not necessarily put downward pressure on equilibrium wages). Consequently, the current remuneration in these communities can support a relatively larger labour supply than before.

Table 4B: Change in per cent of dwellings in a community that need major repairs.

Change from 1996–2016	**TF High**	**TF Low**
First Nations	-27.5%	-19.9%
Non-First Nations	-6.8%	-8.2%
Change relative to the base	**TF High**	**TF Low**
First Nations	-19.3	-11.7%
Non-First Nations	+1.4%	Base

From Tables 5A and 5B, we see that non-First Nations communities experienced a much larger decline in the share of population without a high school certificate or diploma. The gaps between the categories of communities are mostly eliminated by 2016.[45]

Table 5A: Average share of a community without a high school certificate or diploma.

Year: 1996	**TF High**	**TF Low**
First Nations	41.0%	40.1%
Non-First Nations	59.3%	50.3%
Year: 2016	**TF High**	**TF Low**
First Nations	31.9%	30.3%
Non-First Nations	35.4%	29.2%

Table 5B: Change in share of a community without a high school certificate or diploma.

Change from 1996–2016	**TF High**	**TF Low**
First Nations	-9.1%	-9.8%
Non-First Nations	-23.9%	-21.1%
Change relative to the base	**TF High**	**TF Low**
First Nations	+12.0%	+11.3%
Non-First Nations	-2.8%	Base

Concerning Tables 6A and 6B, regression results do not suggest any statistically (or economically) significant changes in labour force participation rates among communities over this period.

[45] It is plausible that, given labour mobility, particularly among those who are educated, skilled, and/or young, a change in educational outcomes may not occur, as those seeking higher returns continue to be incentivized to work in more economically prosperous communities. However, the *Marshall* decisions may have increased job opportunities among the non-working, which is supported by modest increases in employment and a reduction in low-income households. This result would echo the finding of Austin, Glaeser, and Summers (2018), who conclude that improved job opportunities tend to have a relatively greater impact on reducing the number of non-working adults in an economically depressed community. See Benjamin Austin, Edward Glaeser, and Lawrence Summers, "Saving the Heartland: Place-Based Policies in 21st Century America," *Brookings Papers on Economic Activity*, Spring, (2018): 151–255.

Table 6A: Average labour force participation rate in a community.

Year: 1996	**TF High**	**TF Low**
First Nations	65.7%	58.6%
Non-First Nations	54.3%	55.1%
Year: 2016	**TF High**	**TF Low**
First Nations	63.6%	52.3%
Non-First Nations	54.6%	54.6%

Table 6B: Change in the labour force participation rate in a community.

Change from 1996–2016	**TF High**	**TF Low**
First Nations	-2.1%	-6.3%
Non-First Nations	0.3%	-0.5%
Change relative to the base	**TF High**	**TF Low**
First Nations	-1.6%	-5.8%
Non-First Nations	+0.8%	Base

Although Tables 7A and 7B suggest that all groups experienced a reduction in unemployment rates during the 1996–2016 period, First Nations communities tend to exhibit higher rates of unemployment than the non-First Nations communities in 2016. However, the First Nations communities with high TF are expected to have experienced the largest unemployment rate decline among all groups.

Table 7A: Average unemployment rate in a community.

Year: 1996	**TF High**	**TF Low**
First Nations	42.1%	27.4%
Non-First Nations	32.0%	28.3%
Year: 2016	**TF High**	**TF Low**
First Nations	32.5%	21.3%
Non-First Nations	25.7%	19.8%

Table 7B: Change in the unemployment rate in a community.

Change from 1996–2016	**TF High**	**TF Low**
First Nations	-9.6%	-6.1%
Non-First Nations	-6.3%	-8.6%
Change relative to the base	**TF High**	**TF Low**
First Nations	-1.1%	+2.5%
Non-First Nations	+2.3%	Base

Tables 8A and 8B illustrate that the relative change from 1996 to 2016 in median household income of First Nations communities is expected to be larger, which is primarily because First Nations communities tended to have lower values in 1996. Further, when considering absolute levels, the income

gap between the First Nations and non-First Nations communities widened mostly because the increase in median household incomes of non-First Nations communities outpaced the increase among First Nations communities.

Table 8A: Average community-level median household income.

Year: 1996	**TF High**	**TF Low**
First Nations	$15,677	$10,319
Non-First Nations	$24,809	$26,765
Year: 2016	**TF High**	**TF Low**
First Nations	$39,362	$34,708
Non-First Nations	$57,495	$58,070

Table 8B: Change in average community-level median household income.

Change from 1996–2016	**TF High**	**TF Low**
First Nations	151.1%	236.3%
Non-First Nations	131.8%	117.0%
Change relative to the base	**TF High**	**TF Low**
First Nations	+34.1%	+119.4%
Non-First Nations	+14.8%	Base

Tables 9A and 9B show that all groups experienced a similar level of reduction in the share of households that earn less than $10,000. However, First Nations communities still exhibit a larger proportion of low-income earners in 2016.

Table 9A: Average share of households in a community earning less than $10,000.

Year: 1996	**TF High**	**TF Low**
First Nations	18.9%	20.9%
Non-First Nations	7.7%	9.0%
Year: 2016	**TF High**	**TF Low**
First Nations	12.2%	16.0%
Non-First Nations	2.0%	2.4%

Table 9B: Change in households in a community earning less than $10,000.

Change from 1996–2016	**TF High**	**TF Low**
First Nations	-6.7%	-4.9%
Non-First Nations	-5.7%	-6.6%
Change relative to the base	**TF High**	**TF Low**
First Nations	+0.1%	+1.7%
Non-First Nations	+0.8%	Base

Results from Tables 10A and 10B are like those in Table 9 in that all groups experienced a similar level of reduction in the share of households earning less than $20,000 over the 1996–2016 period. However, First Nations communities still exhibit a much larger share of low-income households. The notable difference is that the First Nations communities in the high TF subset, on average, the largest decline among all the groups.

Table 10A: Average share of households in a community earning less than $20,000.

Year: 1996	**TF High**	**TF Low**
First Nations	47.6%	50.4%
Non-First Nations	30.2%	30.4%
Year: 2016	**TF High**	**TF Low**
First Nations	23.0%	33.2%
Non-First Nations	10.8%	10.5%

Table 10B: Change in households in a community earning less than $20,000.

Change from 1996–2016	**TF High**	**TF Low**
First Nations	-24.6%	-17.2%
Non-First Nations	-19.4%	-19.9%
Change relative to the base	**TF High**	**TF Low**
First Nations	-4.7%	+2.7%
Non-First Nations	+0.5%	Base

Given the research question of this study, our primary focus is on the sub-group of First Nations communities with higher-than-average labour force participation in trapping and fishing. Hence, we are interested in testing whether the average change in each dependent variable for this sub-group during the sample period is significantly different from that of other sub-groups. We present statistical tests of these differences in Appendix D.

In summary, Equation 2 results suggest that First Nations communities, with above-average share of labour force in trapping and fishing, experienced the largest declines in unemployment rates, share of private dwellings in need of major repairs, and share of households that earn less than $20,000, among all the sub-groups considered. Collectively, these results indicate that the *Marshall* decisions may have had a small but positive impact on the socioeconomic status of the affected First Nations communities.

Discussion and Conclusions

This study explores the impact of the *Marshall* decisions on First Nations communities during the 1996–2016 period. We carefully consider two scenarios: Scenario 1, where all First Nations communities are potentially affected by the *Marshall* decisions, and Scenario 2, where First Nations communities with an above-average engagement in trapping and fishing are potentially affected by the *Marshall* decisions. Results suggest that, relative to other First Nations communities and non-First Nations communities of comparable size, these selected communities tended to have similar changes in education and a slightly smaller increase in income. On average, they also experienced a larger decline

in the unemployment rate, a larger decline in the proportion of dwellings in need of major repairs, and a larger decline in the proportion of low-income households. However, except for the changes in housing quality and educational attainment, difference-in-differences estimation would suggest that none of these estimates are statistically significant.

The available dataset is not sufficiently comprehensive to carry out a counterfactual analysis required to ascertain causal relationships. That is, we cannot decompose the changes we observe into those caused by the *Marshall* decisions and those caused by other factors or forces over this time period. Events, decisions, and policy changes, which might have immediately or eventually impacted relative economic indicators for First Nations communities in Atlantic Canada include decisions of the Supreme Court of Canada such as in the cases of *Simon* (1985), *Sparrow* (1990), *Delgamuukw* (1997), *Marshall* (1999), *Sappier and Pochies and Gray* (2006); recommendations such as those from the *Royal Commission on Aboriginal Peoples* (1996); and negotiations and agreements between the federal and provincial governments and First Nations Assemblies regarding development rights. We provide a list of candidate events in Table F of the Appendix. Consequently, we can draw no firm conclusions about causality.

Nonetheless, there have been studies on the effectiveness or the impact of some of the above changes on the economic conditions in First Nations communities. Of these, most follow our approach of choosing one or more census years as points of evaluation. For example, Drost and Richards use the 1996 Census to examine inequalities in on-reserve and off-reserve income distributions.[46] Feir uses 1996 and 2006 Census data to find an increase in the earnings gap between those living on-reserve and those living off-reserve.[47] In contrast, Orr and Weir provide some case studies regarding the social impacts of economic development in select Atlantic First Nations communities.[48] Further, there are reports that describe best practices for development.[49] There is also a series of studies reporting on measured economic indicators at the national and regional level.[50] For this latter series of studies, economic indicators are combined into a Community Well-Being Index (CWBI). These studies present overall trends like those discussed in this paper, but without decomposing the changes into sub-groupings that might reflect changed conditions due to the events with the impacts we seek to evaluate.[51]

Coates cites CWBI values for communities in Atlantic Canada over the period 1981–2016. From those values, we can calculate that the CWBI for First Nations communities grew over the seventeen years from 1999 to 2016 by 12.28 per cent, with the growth in the CWBI for the eighteen years before 1999 being 18.75 per cent. This implies that the growth rate of the index did not increase after the

[46] Helmar Drost and John Richards, *Income On- and Off-Reserve: How Aboriginals Are Faring* (Toronto: C.D. Howe Institute, 2003), 27 pp.

[47] Donna Feir, "Size, Structure, and Change: Exploring the Sources of Aboriginal Earnings Gaps in 1995 and 2005," *Canadian Public Policy* 39, no. 2 (2013): 309–34.

[48] Jeff Orr and Warren Weir, *Aboriginal Measures for Economic Development* (Halifax: Fernwood Publishing, 2013).

[49] Fred Wien, "The Royal Commission Report: Nine Steps to Rebuild Aboriginal Economies," *Journal of Aboriginal Economic Development* 1, no. 1 (1999): 102–19; Government of Canada, Indian and Northern Affairs Canada (INAC), Office of the Federal Interlocutor for Métis and Non-Status Indians, *Aboriginal Economic Development in Canada*, 2009; Janice Tulk, *Guiding Principles for Aboriginal Economic Development* (Cape Breton University, 2013), 20 pp.

[50] Armstrong, *The Geographical Patterns;* McHardy and O'Sullivan, *First Nations Community Well-Being in Canada*; O'Sullivan and McHardy, *The Community Well-being Index*; O'Sullivan, *The Community Well-Being Index (CWB): Measuring Well-Being;* Government of Canada, Indigenous Services Canada, 2019a, 2019b.

[51] See Kayahan et al., "Relative Rankings" for a discussion of the stability of community rankings using this index for non-First Nations communities in New Brunswick.

Marshall decisions. Part of the explanation for the apparent disjuncture may stem from the difference between revenues and net economic benefit. Coates indicates that on-reserve revenues from First Nations fishing activity rose from $3 million in 1999 to $152 million in 2016, but also notes that, for the initial years in this period, economic benefits from the fishery rose from $4.4 million in 1999 to $35 million in 2009. Finally, Coates notes that the total number of jobs in the fishery by 2018 amounts to 4.1 per cent of the 41,000 on-reserve and off-reserve Indigenous Peoples in the Maritimes.[52] However, even with a focus on those communities with greater engagement in trapping and fishing, we find that the extent of the growth in fishing revenues has not been mirrored by the growth in the well-being indicators presented in this paper.

Still, we argue that the Coates results corroborate our findings. Specifically, First Nations communities that were relatively more involved in trapping and fishing experienced the following improvements over the study period: 27.5 percentage point reduction in share of homes in need of major repairs, 9.1 percentage point decrease in the share of households in a community having not completed high school, 9.6 percentage point reduction in the community-level unemployment rate, and a 34 percentage point increase in community-level median income, along with a 25 percentage point reduction in the share of households earning less than $20,000 per year. In comparison, Coates notes a significant rise in the standard of living and increases in community-level employment among First Nations communities in Atlantic Canada from 1999–2016. The difference between our set of findings and those discussed in Coates concerns the comparison group. That is, while we also find within-community development in First Nations communities, when compared against non-First Nations communities, the changes are less apparent.

Our study presents measures of the overall shift in a select group of socioeconomic indicators over the period 1996–2016. Given that our quantitative model is a reduced-form examination of this research question, we cannot say the *Marshall* decisions caused "this." But we can say, with some certainty, what the decisions did not cause. For instance, we can conclude that although the median income did rise in First Nations communities that had relatively more involvement in trapping and fishing, this general trend was not statistically different than non-First Nations Communities in the aftermath of the *Marshall* decisions. Consequently, we conclude that the *Marshall* decisions did not cause an immediate and dramatic increase, or decrease, in income for the communities it might be expected to have affected. As such, given the language of the decisions—"a modest livelihood"—one would anticipate that the *Marshall* decisions would have only a modest impact. In keeping with this expectation, we observe that most of the changes in the variables were indeed modest from 1996 to 2016.

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[52] Ken Coates, *The Marshall Decision at 20: Two Decades of Commercial Re-Empowerment of the Mi'kmaq and Maliseet.* MacDonald Laurier Institute, 2019. 52 pp.

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Bibliography

Armstrong, Robin P. *The Geographical Patterns of Socio-Economic Well-Being of First Nations Communities in Canada*. Working Paper No. 46, Agriculture and Rural Working Paper Series, Agriculture Division, Statistics Canada. Ottawa, 2001.

Austin, Benjamin, Edward Glaeser, and Lawrence Summers. "Saving the Heartland: Place-Based Policies in 21st Century America." *Brookings Papers on Economic Activity*, Spring, (2018): 151–255.

Barsh, Russell Lawrence. "Netukulimk Past and Present: Mikmaw Ethics and the Atlantic Fishery." *Journal of Canadian Studies* 37, no. 1 (2002): 15–42.

Bedford, David. "Emancipation as Oppression: The *Marshall* Decision and Self-Government." *Journal of Canadian Studies* 44, no. 1 (2010): 206–20.

Berneshawi, Suzanne. "Resource Management and the Mi'kmaq Nation." *Canadian Journal of Native Studies* 17, no. 1 (1997): 115–48.

Cairns, Alan. *Citizens Plus: Aboriginal Peoples and the Canadian State*. Vancouver: UBC Press, 2000.

Capistrano, Robert C.G., and Anthony T. Charles. "Indigenous Rights and Coastal Fisheries: A Framework of Livelihoods, Rights and Equity." *Ocean & Coastal Management* 69 (2012): 200–09. DOI: 10.1016/j.ocecoaman.2012.08.011.

Coates, Ken. "Breathing New Life into Treaties: History, Politics, the Law, and Aboriginal Grievances in Canada's Maritime Provinces." *Agricultural History* 77, no. 2 (2003): 333–54.

---. *The Marshall Decision and Native Rights*. Montreal: McGill-Queen's University Press, 2000.

---. *The Marshall Decision at 20: Two Decades of Commercial Re-Empowerment of the Mi'kmaq and Maliseet*, MacDonald Laurier Institute, 2019. 52 pp.

Constitution Act, 1982, Part 2—Rights of the Aboriginal Peoples of Canada. https://laws-lois.justice.gc.ca/eng/const/page-13.html#h-53.

Daley, Angela, Andrew Crawley, Muntasir Rahman, Jake Demosthenes, and Erin Lyons. "How Well Is Maine Doing? Comparing Well-Being Across Maine Counties." *Maine Policy Review* 27, no. 2 (2018): 30–7.

Davis, Anthony, and Svein Jentoft. "The Challenge and the Promise of Indigenous Peoples' Fishing Rights—from Dependency to Agency." *Marine Policy* 25, no. 3 (2001): 223–237. DOI: 10.1016/S0308-597X(01)00014-8.

Delgamuukw v British Columbia [1997] 3 SCR 1010.

Denny, Shelley, and Lucia M. Fanning. "A Mi'kmaw Perspective on Advancing Salmon Governance in Nova Scotia, Canada: Setting the Stage for Collaborative Co-Existence." *The International Indigenous Policy Journal* 7, no. 3 (2016): 1–25. DOI: 10.18584/iipj.2016.7.3.4.

Doyle-Bedwell, Patricia, and Faye G. Cohen. "Aboriginal Peoples in Canada: Their Role in Shaping Environmental Trends in the Twenty-First Century." In *Governing the Environment: Persistent Challenges, Uncertain Innovation*, edited by Edward A. Parson, 169–206. Toronto: University of Toronto Press, 2001.

Drost, Helmar, and John Richards. *Income On- and Off-Reserve: How Aboriginals Are Faring*. Toronto: C.D. Howe Institute, 2003. 27 pp.

Feir, Donna. "Size, Structure, and Change: Exploring the Sources of Aboriginal Earnings Gaps in 1995 and 2005." *Canadian Public Policy* 39, no. 2 (2013): 309–34.

Giles, Amber, Lucia Fanning, Shelley Denny, and Tyson Paul. "Improving the American Eel Fishery through the Incorporation of Indigenous Knowledge into Policy Level Decision Making in Canada." *Human Ecology* 44, no. 2 (2016): 167–83.

Gough, Joseph. *Managing Canada's Fisheries: from Early Days to the Year 2000*. Ottawa: Les éditions du Septentrion in co-operation with Fisheries and Oceans Canada, and Public Works and Government Services Canada, 2007.

Government of Canada. *Census Subdivision 2016*. 2018. https://open.canada.ca/data/en/dataset/90db78e2-eda2-4b2c-ae2e-a474187f2bf8.

---. Aboriginal Affairs and Northern Development. *Evaluation of Aboriginal Economic Development and Strategic Partnerships Initiative*. 2014. https://www.rcaanc-cirnac.gc.ca/eng/1442416988942/1537963511938.

---. Crown-Indigenous Relations and Northern Affairs Canada. *Negotiations in Atlantic Canada*. 2019. https://www.rcaanc-cirnac.gc.ca/eng/1100100028583/1529409875394.

---. Fisheries and Oceans Canada. *Food, Social and Ceremonial Fisheries*. 2022. https://www.dfo-mpo.gc.ca/fisheries-peches/aboriginal-autochtones/fsc-asr-eng.html.

---. Indian and Northern Affairs Canada (INAC). Office of the Federal Interlocutor for Métis and Non-Status Indians. *Aboriginal Economic Development in Canada*. 2009. http://www.firstpeoplesgroup.com/mnsiurban/PDF/economic_development/Aboriginal_Economic_Development_In_Canada.pdf.

---. Indigenous Services Canada. *National Overview of the Community Well-Being Index, 1981 to 2016*. Ottawa, 2019a. https://www.sac-isc.gc.ca/eng/1419864229405/1557324163264.

---. Indigenous Services Canada. *Report on Trends in First Nations Communities, 1981 to 2016*. Ottawa, 2019b. https://www.sac-isc.gc.ca/eng/1345816651029/1557323327644.

---. Royal Commission on Aboriginal Peoples Report of the Royal Commission on Aboriginal Peoples. 1996.

Hardin, Garrett. "The Tragedy of the Commons." *Science* 162, no. 3859: 1243–48.

Harris, Douglas, and Peter Millerd. "Food Fish, Commercial Fish, and Fish to Support a Moderate Livelihood: Characterizing Aboriginal and Treaty Rights to Canadian Fisheries." *Arctic Review on Law and Politics* 1, no. 1 (2010): 82–107.

Isaac, Tom. *Aboriginal Law: Cases, Materials and Commentaries*. Saskatoon: Purich Publishing, 1999.

Kayahan, Burç, Stephen Law, Isaiah Bishop, and Barry Watson. "Relative Rankings of Communities in New Brunswick Using Community Well-Being Indicators from the Census." *Atlantic Canada Economics Review/Revue d'Économie du Canada Atlantique* 2, no. 1: 1–19. https://ojs.acadiau.ca/index.php/ACER-RECA/article/view/4256.

Leacock, Eleanor Burke. "The Montagnais 'Hunting Territory' and the Fur Trade." *American Anthropological Association Memoirs* 56, no. 5 (1954, Memoir No. 78).

McHardy, Mindy, and Erin O'Sullivan. *First Nations Community Well-Being in Canada: The Community Well-Being Index (CWB), 2001*. Strategic Research and Analysis Directorate, Indian and Northern Affairs Canada, 2004. http://publications.gc.ca/collections/Collection/R2-344-2001E.pdf.

Milley, Chris, and Anthony Charles. "Mi'kmaq Fisheries in Atlantic Canada: Traditions, Legal Decisions, and Community Management." Paper presented at the 2001 People and the Sea: Maritime Research in the Social Sciences: An Agenda for the 21st Century Conference, Amsterdam, Netherlands. August 30.

O'Sullivan, Erin. *The Community Well-Being Index (CWB): Measuring Well-Being in First Nations and Non-Aboriginal Communities, 1981–2006*. Ottawa: Strategic Research Directorate, Aboriginal Affairs and Northern Development Canada, 2011.

O'Sullivan, Erin and Mindy McHardy. "The Community Well-Being Index (CWB): Well-Being in First Nations Communities, Present, Past, and Future." In Aboriginal Policy Research Consortium International, *Aboriginal Well-Being: Canada's Continuing Challenge,* 2008: Chapter 6, 111–48. https://ir.lib.uwo.ca/aprci/5.

Orr, Jeff, and Warren Weir. *Aboriginal Measures for Economic Development*. Halifax: Fernwood Publishing, 2013.

Ostrom, Elinor. *Governing the Commons: The Evolution of Institutions for Collective Action*. Cambridge: Cambridge University Press, 1990.

R v Badger [1996] 1 SCR 771.

R v Marshall (#1) [1999] 3 SCR 456.

R v Marshall (#2) [1999] 3 SCR 533.

R v Sappier; *R v Gray* [2006] 2 SCR 686.

R v Sparrow [1990] 1 SCR 1075.

Simon v The Queen [1985] 2 SCR 387.

Stiegman, Martha. "Fisheries Privatization versus Community-Based Management in Nova Scotia: Emerging Alliances Between First Nations and Non-Native Fishers." *Environmental Conflict and Democracy in Canada*, edited by Laurie E. Adkin, 69–83. Vancouver: UBC Press, 2009.

Tulk, Janice. *Guiding Principles for Aboriginal Economic Development*. Cape Breton University, 2013. 20 pp. https://www.cbu.ca/wp-content/uploads/2019/08/Guiding_Principles_for_Aboriginal_Economic_Development_sm.pdf.

Wiber, Melanie, and Chris Milley. "After *Marshall*: Implementation of Aboriginal Fishing Rights in Atlantic Canada." *The Journal of Legal Pluralism and Unofficial Law* 39, no. 55 (2007): 163–186.

Wien, Fred. "The Royal Commission Report: Nine Steps to Rebuild Aboriginal Economies." *Journal of Aboriginal Economic Development* 1, no. 1 (1999): 102–119.

Appendix A — Pooled Regression Results: Equation 1 - All Communities

Table A.1: Population.

	Coefficient	Robust Std. Err.	t-stat.	P-value	95% Conf.	Interval
First Nations	-2,268	298	-7.62	0.0%	-2,852	-1,684
Year: 2016	110	608	0.18	85.6%	-1,083	1,303
First Nations × 2016	-111	621	-0.18	85.9%	-1,328	1,107
Constant	2,751	284	9.69	0.0%	2,194	3,307
Observations	1,801					
R-squared	0.002					

Table A.2: Share of private dwellings that need major repairs.

	Coefficient	Robust Std. Err.	t-stat.	P-value	95% Conf.	Interval
First Nations	30.30	3.73	8.11	0.0%	22.98	37.62
Year: 2016	-8.33	0.45	-18.58	0.0%	-9.21	-7.45
First Nations × 2016	-13.90	4.48	-3.11	0.0%	-22.69	-5.12
Constant	17.92	0.40	45.24	0.0%	17.15	18.70
Observations	1,773					
R-squared	0.288					

Table A.3: Share of population with no high school certificate or diploma.

	Coefficient	Robust Std. Err.	t-stat.	P-value	95% Conf.	Interval
First Nations	-9.95	2.39	-4.2	0.0%	-14.65	-5.26
Year: 2016	-21.25	0.61	-35.0	0.0%	-22.44	-20.06
First Nations × 2016	12.44	3.19	3.9	0.0%	6.18	18.71
Constant	50.75	0.44	114.6	0.0%	49.88	51.62
Observations	1,776					
R-squared	0.410					

Table A.4: Labour force participation rate.

	Coefficient	Robust Std. Err.	t-stat.	P-value	95% Conf.	Interval
First Nations	4.15	2.21	1.9	6.0%	-0.18	8.47
Year: 2016	-0.48	0.52	-0.9	36%	-1.49	0.54
First Nations × 2016	-3.31	2.97	-1.1	27%	-9.13	2.52
Constant	56.31	0.37	151.7	0.0%	55.58	57.04
Observations	1,776					
R-squared	0.003					

Table A.5: Unemployment rate.

	Coefficient	Robust Std. Err.	t-stat.	P-value	95% Conf.	Interval
First Nations	6.69	3.13	2.1	3.3%	0.55	12.83
Year: 2016	-6.96	0.68	-10.2	0.0%	-8.30	-5.62
First Nations × 2016	-1.91	3.80	-0.5	61.6%	-9.36	5.54
Constant	26.53	0.53	49.7	0.0%	25.49	27.58
Observations	1,776					
R-squared	0.062					

Table A.6: Median household income.

	Coefficient	Robust Std. Err.	t-stat.	P-value	95% Conf.	Interval
First Nations	- 16,364	2,027	-8.1	0.0%	-20,338	-12,389
Year: 2016	29,753	644	46.2	0.0%	28,489	31,017
First Nations × 2016	-3,198	3,054	-1.1	30%	-9,188	2,792
Constant	28,990	422	68.7	0.0%	28,163	29,818
Observations	1,777					
R-squared	0.567					

Table A.7: Share of households earning less than $10,000.

	Coefficient	Robust Std. Err.	t-stat.	P-value	95% Conf.	Interval
First Nations	12.17	2.57	4.7	0.0%	7.14	17.21
Year: 2016	-5.98	0.23	-26.4	0.0%	-6.42	-5.54
First Nations × 2016	-0.15	3.00	-0.1	96%	-6.03	5.73
Constant	8.40	0.22	38.9	0.0%	7.98	8.82
Observations	1,525					
R-squared	0.355					

Table A.8: Share of households earning less than $20,000.

	Coefficient	Robust Std. Err.	t-stat.	P-value	95% Conf.	Interval
First Nations	20.32	2.87	7.1	0.0%	14.70	25.94
Year: 2016	-18.67	0.41	-45.0	0.0%	-19.48	-17.86
First Nations × 2016	-2.74	3.66	-0.8	45%	-9.92	4.43
Constant	29.49	0.37	78.8	0.0%	28.75	30.22
Observations	1,525					
R-squared	0.573					

Appendix B — Pooled Regression Results: Equation 1 - Large Communities Excluded[53]

Table B.1: Population.

	Coefficient	Robust Std. Err.	t-stat.	P-value	95% Conf.	Interval
First Nations	-229.93	67.52	-3.4	0.0%	-362.38	-97.47
Year: 2016	-95.97	21.56	-4.5	0.0%	-138.28	-53.66
First Nations × 2016	67.05	89.15	0.8	45%	-107.85	241.95
Constant	647.44	15.25	42.5	0.0%	617.53	677.36
Observations	1,254					
R-squared	0.032					

Table B.2: Share of private dwellings that need major repairs.

	Coefficient	Robust Std. Err.	t-stat.	P-value	95% Conf.	Interval
First Nations	30.32	3.88	7.82	0.0%	22.72	37.93
Year: 2016	-7.90	0.62	-12.67	0.0%	-9.13	-6.68
First Nations × 2016	-14.64	4.67	-3.14	0.0%	-23.80	-5.48
Constant	17.97	0.55	32.47	0.0%	16.89	19.06
Observations	1,226					
R-squared	0.268					

Table B.3: Share of population with no high school certificate or diploma.

	Coefficient	Robust Std. Err.	t-stat.	P-value	95% Conf.	Interval
First Nations	-13.13	2.47	-5.3	0.0%	-17.97	-8.29
Year: 2016	-21.98	0.75	-29.2	0.0%	-23.46	-20.51
First Nations × 2016	13.27	3.33	4.0	0.0%	6.74	19.80
Constant	53.59	0.54	98.9	0.0%	52.53	54.66
Observations	1,229					
R-squared	0.417					

Table B.4: Labour force participation rate.

	Coefficient	Robust Std. Err.	t-stat.	P-value	95% Conf.	Interval
First Nations	6.08	2.25	2.7	1.0%	1.66	10.49
Year: 2016	-0.34	0.68	-0.5	62%	-1.68	1.00
First Nations × 2016	-3.26	3.04	-1.1	28%	-9.22	2.71
Constant	54.84	0.50	110.5	0.0%	53.87	55.82
Observations	1,229					
R-squared	0.009					

[53] Large communities are those with a population of at least 1,500 people.

Table B.5: Unemployment rate.

	Coefficient	Robust Std. Err.	t-stat.	P-value	95% Conf.	Interval
First Nations	3.72	3.26	1.1	25%	-2.68	10.13
Year: 2016	-7.61	0.90	-8.4	0.0%	-9.38	-5.84
First Nations × 2016	-1.67	3.97	-0.4	67%	-9.45	6.12
Constant	29.51	0.71	41.8	0.0%	28.12	30.89
Observations	1,229					
R-squared	0.06					

Table B.6: Median household income.

	Coefficient	Robust Std. Err.	t-stat.	P-value	95% Conf.	Interval
First Nations	-13,933	2,104	-6.62	0.0%	-18,060	-9,805
Year: 2016	31,319	776	40.39	0.0%	29,797	32,840
First Nations × 2016	-3,709	3,150	-1.18	24%	-9,889	2,471
Constant	26,318	544	48.36	0.0%	25,250	27,385
Observations	1,230					
R-squared	0.593					

Table B.7: Share of households with less than $10,000 income.

	Coefficient	Robust Std. Err.	t-stat.	P-value	95% Conf.	Interval
First Nations	11.97	2.71	4.4	0.0%	6.65	17.29
Year: 2016	-6.16	0.33	-18.9	0.0%	-6.79	-5.52
First Nations × 2016	-1.02	3.07	-0.3	74%	-7.04	5.00
Constant	8.48	0.31	27.2	0.0%	7.86	9.09
Observations	978					
R-squared	0.325					

Table B.8: Share of households with less than $20,000 income.

	Coefficient	Robust Std. Err.	t-stat.	P-value	95% Conf.	Interval
First Nations	19.62	3.04	6.5	0.0%	13.66	25.58
Year: 2016	-19.41	0.55	-35.4	0.0%	-20.49	-18.33
First Nations × 2016	-3.48	3.76	-0.9	36%	-10.85	3.90
Constant	30.18	0.50	60.4	0.0%	29.20	31.16
Observations	978					
R-squared	0.573					

Appendix C — Difference-in-Differences Estimation: Equation 2

Table C.1: Population.

	Coefficient	Robust Std. Err.	t-stat.	P-value	95% Conf.	Interval
First Nations (FN)	-268.70	88.16	-3.05	0.00	-441.67	-95.73
FN × Marshall Decision (MD)	-47.85	106.73	-0.45	0.65	-257.26	161.57
Non-FN × MD	-98.24	31.18	-3.15	0.00	-159.42	-37.06
Year: 2016	-94.90	27.53	-3.45	0.00	-148.92	-40.88
FN × 2016	212.11	130.72	1.62	0.11	-44.37	468.58
FN × MD × 2016	-0.39	169.09	0.00	1.00	-332.17	331.39
Non-FN × MD × 2016	-36.33	42.26	-0.86	0.39	-119.24	46.58
Constant	670.91	20.07	33.43	0.00	631.54	710.29
Observations	1,122					
R-squared	0.058					

Table C.2: Share of private dwellings that need major repairs.

	Coefficient	Robust Std. Err.	t-stat.	P-value	95% Conf.	Interval
First Nations (FN)	24.15	5.22	4.62	0.00	13.90	34.40
FN × Marshall Decision (MD)	15.40	7.15	2.15	0.03	1.37	29.44
Non-FN × MD	-2.77	1.14	-2.43	0.02	-5.00	-0.53
Year: 2016	-8.20	0.84	-9.76	0.00	-9.85	-6.55
FN × 2016	-11.74	6.79	-1.73	0.08	-25.06	1.59
FN × MD × 2016	-7.58	8.84	-0.86	0.39	-24.92	9.77
Non-FN × MD × 2016	1.38	1.28	1.07	0.28	-1.14	3.90
Constant	18.57	0.75	24.85	0.00	17.10	20.03
Observations	1,112					
R-squared	0.302					

Table C.3: Share of population with no high school certificate or diploma.

	Coefficient	Robust Std. Err.	t-stat.	P-value	95% Conf.	Interval
First Nations (FN)	-10.23	3.59	-2.85	0.00	-17.26	-3.19
FN × Marshall Decision (MD)	0.89	4.64	0.19	0.85	-8.22	9.99
Non-FN × MD	8.98	1.07	8.38	0.00	6.88	11.08
Year: 2016	-21.11	0.96	-21.88	0.00	-23.00	-19.22
FN × 2016	11.30	4.45	2.54	0.01	2.56	20.04
FN × MD × 2016	0.71	6.02	0.12	0.91	-11.11	12.52
Non-FN × MD × 2016	-2.79	1.55	-1.80	0.07	-5.82	0.25
Constant	50.31	0.69	72.73	0.00	48.95	51.67
Observations	1,115					
R-squared	0.474					

Table C.4: Labour force participation rate.

	Coefficient	Robust Std. Err.	t-stat.	P-value	95% Conf.	Interval
First Nations (FN)	3.57	2.58	1.38	0.17	-1.49	8.62
FN × Marshall Decision (MD)	7.04	4.73	1.49	0.14	-2.24	16.33
Non-FN × MD	-0.81	1.12	-0.72	0.47	-3.01	1.39
Year: 2016	-0.49	0.85	-0.57	0.57	-2.15	1.18
FN × 2016	-5.81	3.76	-1.54	0.12	-13.18	1.57
FN × MD × 2016	4.19	6.22	0.67	0.50	-8.00	16.39
Non-FN × MD × 2016	0.80	1.53	0.52	0.60	-2.19	3.79
Constant	55.07	0.59	93.79	0.00	53.92	56.22
Observations	1,115					
R-squared	0.017					

Table C.5: Unemployment rate.

	Coefficient	Robust Std. Err.	t-stat.	P-value	95% Conf.	Interval
First Nations (FN)	-0.91	4.45	-0.20	0.84	-9.64	7.82
FN × Marshall Decision (MD)	14.68	5.45	2.69	0.01	3.98	25.38
Non-FN × MD	3.64	1.51	2.41	0.02	0.67	6.61
Year: 2016	-8.57	1.18	-7.29	0.00	-10.87	-6.26
FN × 2016	2.46	5.18	0.48	0.64	-7.71	12.63
FN × MD × 2016	-3.54	7.13	-0.50	0.62	-17.53	10.45
Non-FN × MD × 2016	2.30	1.96	1.17	0.24	-1.55	6.14
Constant	28.34	0.96	29.42	0.00	26.45	30.23
Observations	1,115					
R-squared	0.089					

Table C.6: Median household income.

	Coefficient	Robust Std. Err.	t-stat.	P-value	95% Conf.	Interval
First Nations (FN)	-16,445	2,441	-6.7	0.0%	-21,236	-11,655
FN × Marshall Decision (MD)	5,358	4,507	1.2	23.5%	-3,486	14,201
Non-FN × MD	-1,956	1,187	-1.7	10.0%	-4,284	373
Year: 2016	31,306	1,029	30.4	0.0%	29,287	33,325
FN × 2016	-6,918	3,060	-2.3	2.4%	-12,921	-914
FN × MD × 2016	-703	5,669	-0.1	90.1%	-11,826	10,419
Non-FN × MD × 2016	1,380	1,678	0.8	41.1%	-1,911	4,672
Constant	26,765	691	38.7	0.0%	25,409	28,121
Observations	1,117					
R-squared	0.609					

Table C.7: Share of households earning less than $10,000.

	Coefficient	Robust Std. Err.	t-stat.	P-value	95% Conf. Interval	
First Nations (FN)	11.91	3.30	3.60	0.00	5.42	18.39
FN × Marshall Decision (MD)	-1.93	5.80	-0.33	0.74	-13.32	9.46
Non-FN × MD	-1.21	0.68	-1.77	0.08	-2.55	0.13
Year: 2016	-6.56	0.44	-14.94	0.00	-7.42	-5.69
FN × 2016	1.68	3.75	0.45	0.65	-5.68	9.03
FN × MD × 2016	-1.83	6.46	-0.28	0.78	-14.51	10.85
Non-FN × MD × 2016	0.84	0.71	1.17	0.24	-0.56	2.24
Constant	8.95	0.42	21.18	0.00	8.12	9.78
Observations	882					
R-squared	0.334					

Table C.8: Share of households earning less than $20,000.

	Coefficient	Robust Std. Err.	t-stat.	P-value	95% Conf. Interval	
First Nations (FN)	19.96	2.34	8.5	0%	15.37	24.55
FN × Marshall Decision (MD)	-2.75	6.72	-0.4	68%	-15.95	10.45
Non-FN × MD	-0.23	1.13	-0.2	84%	-2.45	1.99
Year: 2016	-19.90	0.70	-28.3	0%	-21.29	-18.52
FN × 2016	2.69	3.05	0.9	38%	-3.30	8.68
FN × MD × 2016	-7.43	7.58	-1.0	33%	-22.32	7.46
Non-FN × MD × 2016	0.48	1.24	0.4	70%	-1.96	2.92
Constant	30.41	0.65	47.0	0%	29.14	31.68
Observations	882					
R-squared	0.583					

Appendix D — Statistical Tests of Changes in the Dependent Variables

In this section, we present the results of statistical significance tests that compare the changes in each dependent variable during the 1996–2016 period among the sub-groups considered within Equation 2:

1. **First Nations: TF High** – First Nations communities with above-average average share of labour force in trapping and fishing in 1996.
2. **First Nations: TF Low** – First Nations communities with below-average average share of labour force in trapping and fishing in 1996.
3. **Non-First Nations: TF High** – Non-First Nations communities with labour engagement in trapping and fishing akin to subgroup 1.
4. **Non-First Nations: TF Low** – Non-First Nations communities with labour engagement in trapping and fishing unlike subgroup 1.

In particular, the change in the average values of a dependent variable during the 1996–2016 period for each sub-group can be expressed as a function of the regression coefficients reported in Equation 2, which are presented in Appendix C. For example, the change in the average population of First Nations: TF High sub-group [sub-group 1] during the 1996–2016 period is calculated by summing up the regression coefficients of Year: 2016, FN × 2016, and FN × MD × 2016 variables reported in Table C.1. Similarly, the change in the average population of First Nations: TF Low sub-group [sub-group 2] during the 1996–2016 period is calculated by summing up the regression coefficients of Year: 2016 and FN × 2016 variables reported in Table C.1.

The difference in the change of average population among these sub-groups during the 1996–2016 period would be estimated by the regression coefficient of the FN × 2016 variable. We can test whether there is a significant difference between the changes in the average population of these sub-groups in the sample period by conducting a statistical test of this coefficient, using an F-test.

Given the research question of this study, our primary focus is on the First Nations: TF High sub-group. Hence, we are interested in testing whether the average change in each dependent variable for the First Nations: TF High sub-group during the sample period is significantly different from that of other sub-groups.

In Table D.1 below, we present the value of the *F-statistic* and the corresponding *p-value* for the null hypothesis stating that, on average, there are no significant differences in the way that the dependent variable changed for the First Nations: TF High sub-group during the 1996 and 2016 period relative to the way that it changed for each of the other groups.

Table D.1: Results of the Statistical Significance Tests (Comparing Changes from 1996 to 2016).

Dependent Variable	Comparison	F-statistic	P-value		
Population	FN:TF High vs FN: TF Low	F (1,1114) = 0.00	Prob > F =	0.9981	
	FN:TF High vs Non-FN: TF High	F (1,1114) = 4.63	Prob > F =	0.0317	**
	FN:TF High vs Non-FN: TF Low	F (1,1114) = 3.44	Prob > F =	0.0638	*
Dwellings in need of major repair (%)	FN:TF High vs FN: TF Low	F (1,1104) = 0.73	Prob > F =	0.3915	
	FN:TF High vs Non-FN: TF High	F (1,1104) = 12.72	Prob > F =	0.0004	***
	FN:TF High vs Non-FN: TF Low	F (1,1104) = 11.16	Prob > F =	0.0009	***
Less than high school (%)	FN:TF High vs FN: TF Low	F (1,1107) = 0.01	Prob > F =	0.9062	
	FN:TF High vs Non-FN: TF High	F (1,1107) = 11.63	Prob > F =	0.0007	***
	FN:TF High vs Non-FN: TF Low	F (1,1107) = 7.88	Prob > F =	0.0051	***
Participation rate (%)	FN:TF High vs FN: TF Low	F (1,1107) = 0.45	Prob > F =	0.5002	
	FN:TF High vs Non-FN: TF High	F (1,1107) = 0.22	Prob > F =	0.6415	
	FN:TF High vs Non-FN: TF Low	F (1,1107) = 0.10	Prob > F =	0.7514	
Unemployment rate (%)	FN:TF High vs FN: TF Low	F (1,1107) = 0.25	Prob > F =	0.6195	
	FN:TF High vs Non-FN: TF High	F (1,1107) = 0.41	Prob > F =	0.5223	
	FN:TF High vs Non-FN: TF Low	F (1,1107) = 0.04	Prob > F =	0.8348	
Median household income ($)	FN:TF High vs FN: TF Low	F (1,1109) = 0.02	Prob > F =	0.9013	
	FN:TF High vs Non-FN: TF High	F (1,1109) = 3.17	Prob > F =	0.0754	*
	FN:TF High vs Non-FN: TF Low	F (1,1109) = 2.33	Prob > F =	0.1269	
Household income < $10K (%)	FN:TF High vs FN: TF Low	F (1, 874) = 0.08	Prob > F =	0.7772	
	FN:TF High vs Non-FN: TF High	F (1, 874) = 0.03	Prob > F =	0.8529	
	FN:TF High vs Non-FN: TF Low	F (1, 874) = 0.00	Prob > F =	0.9776	
Household income < $20K (%)	FN:TF High vs FN: TF Low	F (1, 874) = 0.96	Prob > F =	0.3277	
	FN:TF High vs Non-FN: TF High	F (1, 874) = 0.55	Prob > F =	0.4594	
	FN:TF High vs Non-FN: TF Low	F (1, 874) = 0.46	Prob > F =	0.4994	

Notes: FN = First Nations, Non-FN = Non-First Nations
TF High = above average labour force participation in trapping and fishing
TF Low = below average labour participation in trapping and fishing
*** significant at 1%, ** significant at 5%, and * significant at 10%

We can see from Table D.1 that the First Nation: TF High sub-group displayed a significantly different trend for population, share of dwellings that require major repairs, and share of population without a high-school certificate relative to either of the Non-First Nations groups. As also shown by predicted changes in Tables 3B, 4B and 5B, the First Nations – TF High sub-group exhibits:

- a positive change in population relative to the decline in population exhibited by either of the non-First Nations sub-group,
- a much larger decline in share of dwellings that require major repairs relative to either of the non-First Nations sub-group, and
- a smaller reduction in the share of population without a high-school certificate or diploma relative to either of the non-First Nations sub-group.

Appendix E — List of First Nations communities included in the analysis

First Nations Community	CSD Name (1996)	Population in 1996	% of Labour Force in TF (1996)	TF High
Lennox Island, PEI	**Lennox Island 1**	**222**	**20.0**	**1**
Eel Ground, NB	Big Hole Tract 8	40	0.0	0
Ugpi'Ganjig (Eel River Bar), NB	**Eel River 3**	**281**	**16.0**	**1**
Elsipogtog (Big Cove), NB	Richibucto 15	1403	4.3	0
Esgenoôpetitj (Burnt Church), NB	**Burnt Church 14**	**816**	**8.2**	**1**
Indian Island, NB	Indian Island 28	52	0.0	0
Kingsclear, NB	Kingsclear 6	421	0.0	0
Madawaska Maliseet, NB	St. Basile 10	105	0.0	0
Metepenagiag, NB	**Red Bank 4**	**268**	**11.1**	**1**
Oromocto, NB	**Oromocto 26**	**256**	**8.7**	**1**
Pabineau, NB	**Pabineau 11**	**134**	**28.6**	**1**
St. Mary's, NB	Devon 30	647	4.0	0
Tobique, NB	Tobique 20	910	2.2	0
Woodstock, NB	**Woodstock 23**	**222**	**8.3**	**1**
Acadia, NS	Yarmouth 33	73	0.0	0
Annapolis Valley, NS	Cambridge 32	80	0.0	0
Bear River, NS	Bear River (Part) 6	77	0.0	0
Eskasoni, NS	Eskasoni 3	2504	3.7	0
Glooscap, NS	Horton 35	48	0.0	0
Membertou, NS	Membertou 28B	612	4.3	0
Millbrook, NS	Millbrook 27	758	3.6	0
Paq'tnkek, NS	**Pomquet & Afton 23**	**283**	**20.0**	**1**
Pictou Landing, NS	**Fishers Grant 24**	**315**	**22.7**	**1**
Potlotek (Chapel Island), NS	**Chapel Island 5**	**350**	**7.7**	**1**
Sipekne'katik (Indian Brook), NS	Indian Brook 14	946	0.0	0
Wagmatcook, NS	Wagmatcook 1	448	0.0	0
We'koqma'q (Waycobah), NS	Whycocomagh 2	574	5.1	0
Gesgapegiag, QC	Gesgapegiag 2	442	0.0	0
Listuguj, QC	Listuguj	1296	2.2	0
Miawpukek First Nation, NL	**Samiajij Miawpukek**	**751**	**13.3**	**1**

Notes: CSD = Census Subdivision, TF = Trapping and Fishing

Appendix F

Table F: Selected events, decisions, and policy changes related to First Nations communities in Atlantic Canada, from 1982 to 2016

1982	*Constitution Act* amends Constitution to add section 35(1) "recognizing and affirming Aboriginal and treaty rights"
1985	*Simon* decision, Supreme Court affirms that the Treaty of 1752 is an existing treaty, which includes the right to hunt
1990	*Denny, Paul, and Syliboy* decision, Supreme Court affirms Aboriginal right to fish for food arising from section 35(1).
1990	*Sparrow* decision, Supreme Court interprets section 35(1) to create "Sparrow test" for limits on Aboriginal rights
1994	North America Free Trade Agreement (NAFTA)
1996	*Royal Commission on Aboriginal Peoples* (RCAP) report released.
1997	National Energy Review Board begins review process for Sable Island and Northeast Pipeline, Nova Scotia
1997	*Tripartite Memorandum of Understanding* signed between Nova Scotia Mi'kmaq Chiefs, and the Governments of Canada and Nova Scotia
1997	*Delgamuukw* decision, Supreme Court clarifies how rights to land would be determined
1999	*Marshall* decisions, Supreme Court affirms and limits the right to hunt, fish, and gather for a moderate livelihood for the Indigenous signatories to the Treaties of 1760 and 1761
2002	*Umbrella Agreement* signed by Nova Scotia Mi'kmaq Chiefs, and the Governments of Canada, and Nova Scotia
2006	Assembly of Nova Scotia Mi'kmaq Chiefs established
2006	*Sappier and Pochies and Gray* decisions, Supreme Court affirms Aboriginal right (Maliseet and Mi'kmaq, in New Brunswick and Nova Scotia) to harvest wood for the construction of a dwelling (personal use) but not for commercial purposes
2007	*Framework Agreement*, signed by Nova Scotia Mi'kmaq Chiefs, and the Governments of Canada, and Nova Scotia
2007	*Partnership Agreement*, signed by Prince Edward Island Mi'kmaq, and the Governments of Canada, and Prince Edward Island
2007	Formation of Atlantic Indigenous Economic Development Integrated Research Program (AIEDIRP)
2008	*Niganita'suatas'gl Ilsutagann Agreement* (NI), signed by Mi'gmaq of Quebec, and the governments of Canada and the province of Quebec
2015	*Truth and Reconciliation 94 Calls to Action Report* issued.
2016	Assembly of Nova Scotia Mi'kmaw Chiefs sign an *Impact Benefits Agreement* setting out a royalty regime for the Nova Scotia Mi'kmaq