Closing the First Nations Education Gap in Canada:

Assessing Progress and Estimating the Economic Benefits — An Update

FINAL REPORT

Centre for the Study of Living Standards

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Abstract

This report estimates the economic benefits associated with the closure of key labour market gaps facing First Nations people in Canada relative to non-Indigenous Canadians. We are primarily interested in the educational attainment gap. However, we also estimate the benefits of closing gaps in average employment income and employment rates between the two populations, conditional on educational attainment. In doing so, we provide an update to earlier reports by the CSLS on the subject. By comparing labour market outcomes recorded in the 2016 Census to those observed in previous Censuses, this report gauges the progress made over the last decade or so in eliminating these gaps. It then offers updated estimates of the economic benefits which would result from closing these gaps in terms of gains in GDP, employment income, employment rates, and productivity. By mobilizing individual-level Census microdata, we are able to breakdown these gains across age group, sex, province, and educational attainment category. Ultimately, we estimate that the cumulative economic benefits associated with the closure of the education gap could be as large as $265 billion, and that the cumulative economic benefits associated with the closure of all three gaps of interest could be as large as $457 billion.

Table of Contents

Executive Summary

Introduction

By most social and economic metrics, First Nations people tend to experience poorer outcomes than their non-Indigenous counterparts. On average, First Nations people earn markedly lower market incomes than non-Indigenous Canadians. In 2016, for example, despite comprising 2.4% of the working-age population, First Nations people only accounted for 1.4% of Canada's total employment income. Moreover, while Canadians at large enjoyed an employment rate of 60.5%, the employment rate of First Nations people was significantly lower at only 46.8% in 2016 (Statistics Canada, 2017b): a figure that reflects both high rates of unemployment and low rates of labour-force participation within the First Nations population. These inequalities are widely recognized as the products of racist and colonial policy which has systematically disenfranchised Canada's Indigenous peoples (often deliberately so), with many of these institutions and their legacies enduring to this day.

This report represents the newest addition to a series of research reports published by the Centre for the Study of Living Standards (CSLS) on labour market disparities faced by the Indigenous Peoples of Canada compared to non-Indigenous Canadians. The 2007 report titled "The Potential Contribution of Aboriginal Canadians to Labour Force, Employment, Productivity and Output Growth in Canada, 2001-2017" observed these disparities in labour market outcomes and linked them to the large gap in educational attainment between the two populations. The report proceeded to project Indigenous income, output, and productivity in 2017 under various assumptions about how the educational attainment gap might change over that period, noting the significant economic gains associated with boosting Indigenous educational attainment. The 2009 report titled "The Effect of Increasing Aboriginal Educational Attainment on the Labour Force, Output and the Fiscal Balance" updated the projections, extending the framework to 2026 and analyzing these gains might manifest in a sounder fiscal balance by boosting tax revenues and reducing the need for spending on Indigenous social well-being.

Most recently, the 2015 report titled "Closing the Aboriginal Education Gap in Canada: Assessing Progress and Estimating the Economic Benefits" assessed progress made in eliminating these labour market gaps between 2001 and 2011 and updated projections to the year 2031. This report again utilized the projection methodology developed in the CSLS's original 2007 report on the matter, although some modifications were made to account for the distribution of the Indigenous population across age, sex, and geographic categories.

Following with these previous reports by the CSLS, this report identifies the "education gap" or the disparity we observe in educational attainment between First Nations people and non-Indigenous Canadians, as a primary contributor to the market and non-market outcome gaps noted above. Still, this report utilizes a narrower scope. Unlike our 2015 report, which produced projections for all Indigenous Peoples of Canada, including the First Nations population, this report focuses solely on First Nations people.

The objective of this report is three-fold; given the established relationship between education and labour market outcomes, we aim a) to describe the education gap and how it has evolved since our

analysis in the 2015 report, b) to produce updated estimates of the economic benefits, both to First Nations people and to Canada generally, of closing the education gap by 2041, and c) to provide a broader outlook on the projected economic performance of the First Nations population, particularly in the labour market context. The data used for the analysis in this report is provided by the 2016 edition of the national quinquennial census conducted by Statistics Canada; at the time of writing, this is the most up-to-date data for the First Nations population with respect to key variables of interest.

It is imperative to note that this report is divided into two parts, each utilizing a distinct methodology to estimate the economic benefits of closing the labour market gaps facing First Nations people. The approach we employ in Part I – what we call the 'overnight model' – is less detailed in some respects compared to the approach we use in Part II – what we call the 'longitudinal model'. Still, we contend that both of these approaches are valuable given their distinct time horizons.

In simulating gap closure in the present day, the overnight model offers a detailed account of the present state of the education gap; in fact, the economic gains reported in the overnight model might also be interpreted as the current costs of maintaining these gaps in the present day, or the economic benefits which Canadians are foregoing today by allowing them to continue. Conversely, the longitudinal approach offers a more realistic account of what the gap closure process might actually look like and the kind of economic benefits which might accrue to First Nations people and Canada as a whole along the way. Still, the exercises are fundamentally similar in that they both try to quantify the economic importance of closing the key labour market disparities facing First Nations people. As such, we hold that the remarkable consistency between the findings of the two approaches is a testament to the credibility of the estimates offered in this report.

This report is structured in the following manner. The first section provides a brief introduction to the background and context of the report. The next section outlines the methodology we employ for closing each of three primary gaps we explore. In this section, we also note the various assumptions and limitations of the overnight model before delineating the key differences between the overnight and longitudinal models. The following section has us present, discuss, and interpret the results from the overnight model. We then conclude Part I with a brief summary of our findings and their significance.

A brief description of objective and structure opens Part II. Next, we provide a methodological overview of the longitudinal method, describing each of the five gap closure scenarios we explore (Scenarios 1-5) as well as the baseline projection which we compare these scenarios to. The following section presents the results from the longitudinal model, first in aggregate terms and then broken down for each age group, sex, province/territory, and educational attainment category. We supplement this discussion with an additional section comparing the results of the overnight and longitudinal models and identifying possible sources of variation between the approaches. The final section concludes.

Understanding the Gaps

In virtually every dimension, First Nations people experience poorer labour market outcomes than non-Indigenous Canadians. Consider the following statistics documenting the gap in the labour market outcomes of the two populations, as observed in the 2016 Census and 2016 Labour Force Survey (Statistics Canada, 2017b; 2022).

- The average employment income for individuals of working age (15+) who reported a non-zero employment income was $33,079 for First Nations people and $46,449 for non-Indigenous Canadians.[1]
- The employment rate of working-age First Nations people was 46.8% compared to 60.5% for non-Indigenous Canadians.
- The unemployment rate was 15.2% for First Nations people compared to 6.9% for non-Indigenous Canadians.
- The labour market participation of the working-age First Nations population was 61.3% compared to 65.6% for the non-Indigenous population.

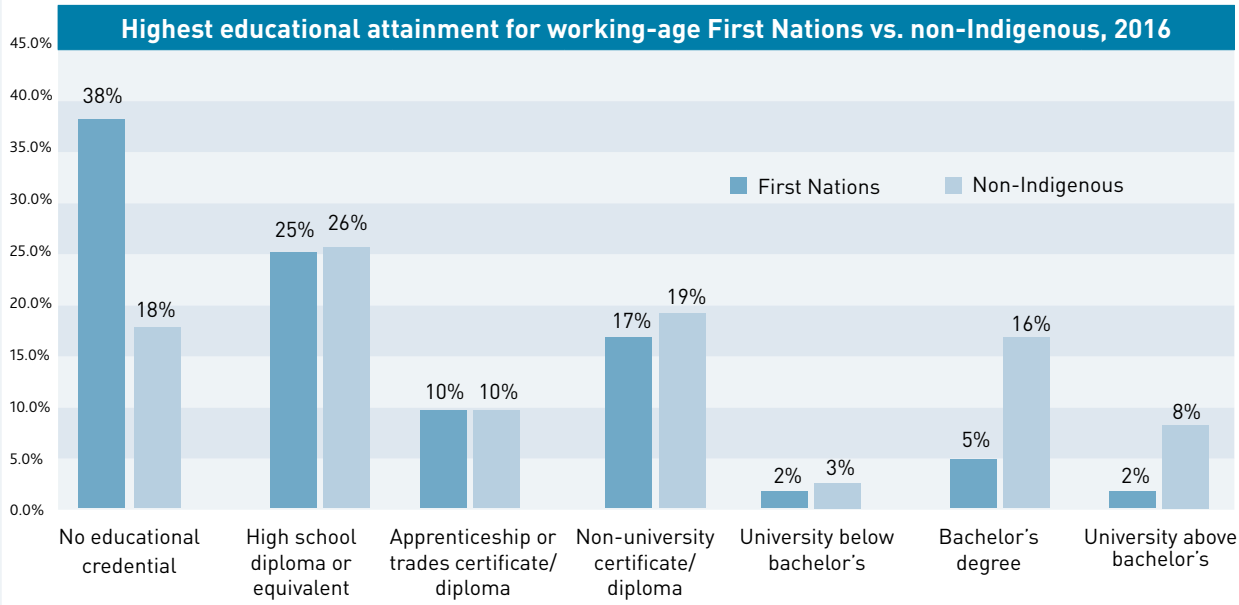
In the interest of understanding these labour market dynamics, this report investigates three separate gaps experienced by First Nations people compared to non-Indigenous Canadians: a) the educational attainment gap, b) the income gap conditional on educational attainment, and c) the employment rate gap conditional on educational attainment. While the aforementioned educational attainment gap is our primary concern, we contend that all three gaps are interrelated and relevant to the elimination of outcome gaps experienced by First Nations people.

The Education Gap

The educational attainment gap, or simply the "education gap", refers to the observation that First Nations individuals tend to occupy low levels of educational attainment in much greater proportions than non-Indigenous individuals, and conversely, that non-Indigenous individuals tend to occupy high levels of educational attainment in much greater proportions than First Nations individuals. We identify two approaches to measuring this gap.

[1] All dollar figures in this report are expressed in 2015 Canadian dollars unless stated otherwise.

The first method – what we call the distributional approach – involves comparing the proportion of either population which occupies a given level of educational attainment. The advantage of this approach is that it yields a series of category-specific gaps rather than one aggregate gap. This increased granularity allows us to see precisely which educational categories either population is concentrated in, and therein develop a better understanding of the nature of the gap.



Source: Statistics Canada, 2016 Census of Population, Statistics Canada Catalogue no. 98-400-X2016178.

As visualized in the chart above, the disparity in the overall educational attainment of the two populations is largely driven by gaps in three educational attainment categories. First Nations people are much likely to report no educational credentials (38% of the First Nations working-age population) than non-Indigenous Canadians (18% of the non-Indigenous working-age population). Conversely, First Nations people are significantly less likely to have a bachelor's degree or a degree above the bachelor level as their highest credential (5% and 2% of the working-age population, respectively) than non-Indigenous Canadians (16% and 8%, respectively).

The second method of measuring the education gap is what we call the average years approach. Each educational category is assigned a single value representing the expected number of years of schooling required to obtain that credential. The average years of education of a population is derived simply by taking the arithmetic mean of each individual's assigned years of education value. This allows us to describe the gap as the simple difference in the average years figure between the two populations. The advantage of this approach is that, unlike the distributional approach, it produces a single numerical measurement of the education gap that is easier to transform or compare over time relative to the distributional approach. The

table below presents the average years of education for both groups for both 2011 and 2016, with additional measures to quantify the gap and how it has changed between the 2011 National Household Survey and the 2016 Census.

Years of education for working-age (15+) First Nations vs. non-Indigenous, 2011 vs. 2016

	Avg Years of Education		Gap (absolute) (3)	FN as a proportion of non-Indigenous (4)	Gap(relative) (5) = 1.00 – (4)
	First Nations (1)	Non-Indigenous (2)			
2011	11.93	13.23	1.30	90.15%	9.85pp
2016	12.07	13.34	1.26	90.53%	9.47pp
Absolute change	0.15	0.11	-0.04	0.38pp	-0.38pp
Compound Annual Percentage Change	0.25%	0.16%	-0.63%	0.08%	-0.79%

Sources: Statistics Canada, 2011 National Household Survey, Statistics Canada Catalogue no. 99-011-X2011037; Statistics Canada, 2016 Census of Population, Statistics Canada Catalogue no. 98-400-X2016178.

In 2016, the average number of years of education for First Nations people was 12.1, corresponding to a high school level of education. Non-Indigenous individuals meanwhile had an average of 13.3 years of education, or over a full year more than Canada's First Nations population. The gap, which is derived by subtracting the average years of education for First Nations individuals from the same for non-Indigenous individuals, was about 1.26 years in 2016 compared to 1.30 years in 2011: a miniscule 3% reduction in the size of the gap over the 5-year interval between the censuses.

The bottom row of the table quantifies the change in terms of an annual percentage change, however, these estimates of the yearly change in the size of the gap are quite small. Still, it is worth noting that the rate of change in the average years of education is higher for the First Nations population than for the non-Indigenous population (0.25% per year vs. 0.16% per year). In other words, although both groups are becoming more educated over time, educational attainment is rising at a faster rate for First Nations people than for non-Indigenous people. As a result, the size of the education gap is, in fact, decreasing over time. Still, at the rates described in Table 2, we estimate it would take about 117 years for the gap to disappear completely. Overall, the years of education measure paints a picture of a significant education gap that is shrinking, albeit quite slowly.

The Conditional Income Gap

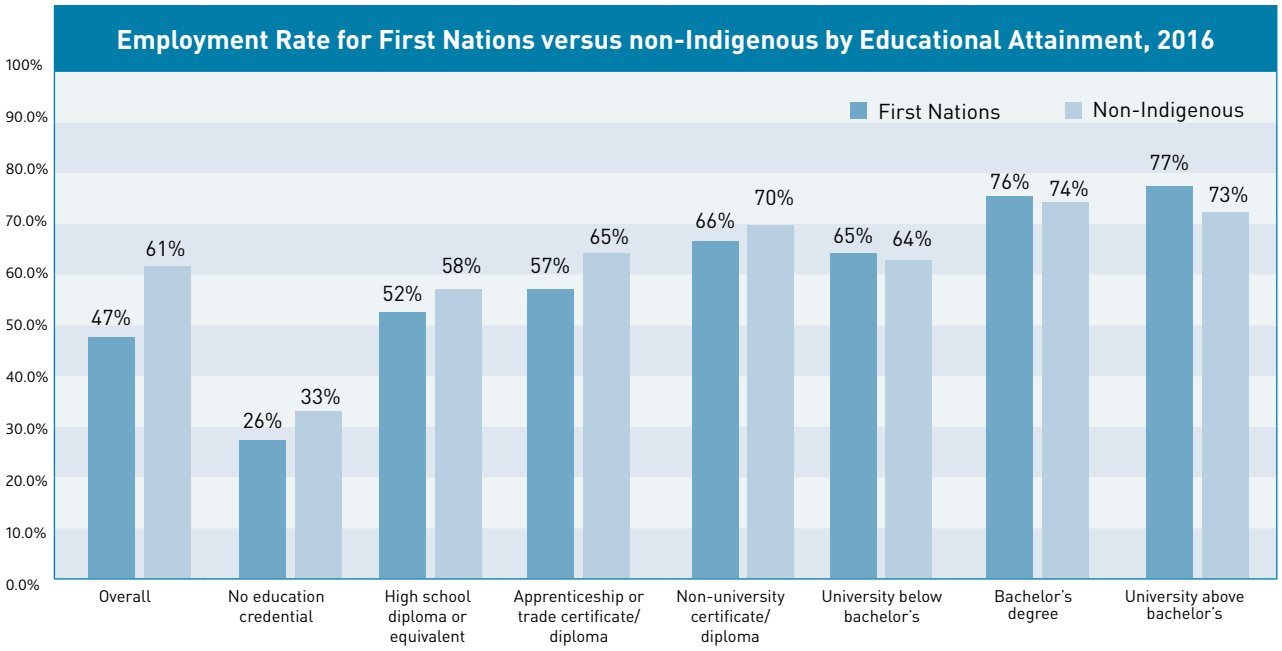
In addition to having a lower average level of educational attainment, First Nations also tend to earn significantly less from employment than non-Indigenous people, with First Nations people earning only about 71% of what non-Indigenous people earn, on average. The core variable which we are most interested in as we grapple with this gap in earnings is the level of educational attainment. As seen in the previous subsection, the distribution of educational attainment differs between First Nations people and non-Indigenous Canadians, and it is likely, given the positive relationship between education and earnings, that differing levels of education between the two groups is the primary driver of the income gap we observe. For this reason, we are not particularly interested in the aggregate income gap as we estimate the potential economic benefits of boosting the labour market performance of First Nations people. Rather, we are interested in the income gap conditional on, or controlling for, one's level of education.

Clearly, even when we compare within educational categories, the income gap persists, although admittedly no individual gap quite matches the $13,370 figure that we find when we do not control for educational attainment. This suggests that distributional differences in educational attainment between the two populations were indeed driving much of the overall disparity in earnings, although, as evidenced by the residual gaps, these differences do not explain the entire discrepancy. Still, when we control for educational attainment, about half of the aggregate income gap disappears, with the average First Nations employment income constituting between 83% and 88% of the non-Indigenous figure, compared to 71% when we do not control for education.

The dollar value of the gap rises in absolute terms as the level of educational attainment rises, with the largest gap of $10,630 occurring at the highest level of educational attainment ("above bachelor level"). However, average employment income rises for both groups alongside this gap—for this reason, we might be more interested in relative measures which take changes in income into account. One such measure, which expresses the average employment income of First Nations people as a proportion of non-Indigenous average employment income, finds that the relative size of the income gap falls slightly as educational attainment rises: a finding which reinforces the importance of higher educational attainment for First Nations people as a means of closing the income gap.

The Conditional Employment Rate Gap

Finally, First Nations people also tend to experience lower rates of employment than their non-Indigenous counterparts. As outlined in the previous section, at least some of this discrepancy is likely attributable to distributional differences in variables which are related to employability and labour market participation like age, province, gender, and education. Once again however, we can control for education by comparing within educational categories, as the chart below does.



Although gaps in employment rate persist once we control for education, none of the gaps within categories carry the same magnitude as the overall gap, with the size of the gap dropping from about 14 percentage points to about 6 to 7 percentage points on average. This again suggests that distributional differences in educational attainment between First Nations people and non-Indigenous Canadians are responsible for about half of the gap in employment rates that we observe. The largest employment rate gap within educational categories, in both absolute and relative terms, occurs in the "no certificate category". Here, the employment rate for First Nations people is exceedingly low at 25.6%, while the rate for non-Indigenous Canadians is significantly higher at 33.5%: a gap of about 8 percentage points. A similarly sized gap is also observed in the "apprenticeship or trades" category.

Interestingly, at the highest levels of educational attainment (specifically those involving a university certification of some kind), the direction of the gap becomes reversed; that is to say, within these categories, First Nations individuals actually enjoy a higher employment rate than non-Indigenous people. It is likely that this is purely the result of distributional differences between the groups which we have not controlled for, with differences in age being the most likely candidate. The First Nations population is younger on average than the non-Indigenous population, and this is especially true in the highest categories of

educational attainment. On average, highly educated non-Indigenous Canadians tend to be significantly older than highly educated First Nations individuals (Statistics Canada, 2019a). Moreover, older individuals tend to be less interested in working compared to younger individuals. Thus, when we do not control for differences in age between the two populations, the comparatively young First Nations population in these educational categories appears to enjoy higher rates of employment than their older non-Indigenous counterparts.

Methodology

A core objective of this report is to estimate the economic benefits that would accrue a) to First Nations people and b) to Canadians generally if these three gaps – the educational attainment gap, the conditional income gap, and the conditional employment gap – were to be closed. As part of this estimation process, we will assess the impact of closing each of the three gaps individually, as well as the cumulative impact of closing all three gaps simultaneously.

In Part I of this report, we envision these gaps closing instantaneously or "overnight". In order to estimate the benefits associated with closing a given gap, we develop hypothetical versions of the 2016 economy where that gap has closed. We define the closure of the education gap as a scenario where the proportion of the First Nations population in any given educational category is equal to the observed proportion of the non-Indigenous population in that category in 2016. We define the closure of the conditional income gap as the First Nations population having the same average employment income within educational categories as the non-Indigenous population. Similarly, we define the closure of the conditional employment rate gap as the First Nations population experiencing the same employment rate within educational categories as the non-Indigenous population.

To calculate the economic benefits associated with a given scenario, we simply replace the share/average employment income/employment rate of the First Nations population within each educational category with the relevant figure for the non-Indigenous population. We then proceed to calculate the total employment income and total employment for the First Nations population and the Canadian population, defining the estimated economic benefit for a given scenario as the difference in total employment income and employment between that scenario and the measures as observed in 2016.

In Part II of this report, we envision these gaps closing slowly over the course of 20 years, from 2021 to 2041 – what we call the longitudinal model of gap closure. We begin by producing a baseline scenario, projecting how Canadian GDP, total employment income, employment, and productivity will progress over this period based on economic projections produced by the CSLS and population projections published by Statistics Canada. We then consider 5 gap closure scenarios: (i) the education gap closing halfway, (ii) the education gap fully closing, (iii) the conditional income gap closing, (iv) the conditional employment rate gap closing, and (v) all three gaps closing fully. In a similar manner to Part I, we calculate the economic benefits associated with a given gap closure scenario by taking the difference of key economic measures like GDP and employment between the scenario of interest and the baseline scenario. However, unlike Part I, where gap closure was assumed to be instantaneous, we calculate these gains for each year in the 2021 to 2041 period, and therein we are able to quantify the cumulative economic benefits accumulated over the 20-year-period through the gradual closure of these gaps.

In the longitudinal model, we employ a number of additional measures in order to render a more robust and realistic picture of how the gap closure process might actually occur. By leveraging individual-level 2016 Census microdata, we are able to observe the employment rate and average employment income for each distinct combination of the following variables: age group, sex, educational attainment and province or territory of residence. This provides a more granular perspective on the labour market outcomes of First Nations and non-Indigenous individuals compared to the overnight model, where we simply utilize the average employment income and employment rate for each educational category.

In total, this framework gives us 1188 variable combinations or "bins" (11 province/territories x 6 age groups x 2 sexes x 9 educational attainment categories). Through the use of these bins, we are able to control for differences between the First Nations and the non-Indigenous populations in the distribution of individuals across these variables. This means that when we simulate each gap closure scenario, we are only comparing individuals of the same sex, age group, and province or territory of residence.

We construct the projected level of educational attainment for both populations in the following manner. First, we observe the within-bin distribution of individuals across educational attainment categories as reported in the 2016 Census. Next, we observe how the educational attainment for each population changed over the 2006-2016 period at the national level. We then apply this rate of change to the nation-wide educational attainment distributions of each population, extrapolating to the year 2041. In order to make our analysis more tractable and accommodate the small size of many of the bins, we make the simplifying assumption that, under the baseline scenario, the educational attainment distribution in each bin matches the projected nation-wide distribution for that population; that is, all First Nations bins have an identical educational attainment distribution which matches the projected national First Nations distribution, and all non-Indigenous bins have an identical educational attainment distribution which matches the projected national non-Indigenous distribution.

To simulate the closing of the educational attainment gap in this model, we simply apply the projected non-Indigenous educational attainment distribution to every First Nations bin, such that the educational attainment distribution is identical for all bins, regardless of whether that bin contains First Nations or non-Indigenous individuals. To simulate the closing of the conditional income gap, we replace the average employment income in each bin of First Nations people with the projected 2041 average employment income of non-Indigenous people in the bin with the same educational attainment and age-sex-province characteristics. Similarly, to simulate the closing of the conditional employment rate gap, we replace the employment rate in each bin of First Nations people with the projected 2041 employment rate (which we assume to be the same as the rate observed in 2016) of the matching non-Indigenous bin.

In controlling for these additional variables like age, sex, and geography, we are able to mobilize a more causal definition of these gaps. This is to say, compared to a situation where we do not control for these variables, the labour market disparities we observe and close here are more likely to reflect the true effect on employment rates and incomes of being First Nations as opposed to non-Indigenous. In other words, by only comparing labour market outcomes between bins with the same age, sex, and geographical characteristics, we are able to eliminate the elements of the aggregate labour market gaps which are due simply to differences in the demographics of the two populations (ex. the First Nations population being younger and younger individuals tending to earn lower wages on average).

Estimated Benefits

Using the overnight model articulated in Part I of this report, we estimate significant benefits associated with the closure of each gap. In particular, we estimate that:

- The instantaneous closure of the education gap is associated with about a $5.0 billion increase in First Nations total employment income, representing a 44.8% increase over observed First Nations total employment income in 2016. Moreover, we estimate that employment would grow by about 68,500 jobs, raising the share of Canadian employment made up by First Nations people (the First Nations "employment share") from 1.88% to 2.27%.

- The instantaneous closure of the conditional income gap is associated with a $2.0 billion increase in First Nations total employment income, representing a 18.2% increase over pre-closure levels. Given that the closure of this gap within our estimation strategy only sees us adjusting employment incomes and does not involve any manipulation of First Nations employment rates, there are no employment gains in this scenario.

- The instantaneous closure of the conditional employment rate gap is associated with a $1.1 billion increase in First Nations total employment income, representing a 10.0% increase in total employment income compared to pre-closure levels. The closure of the gap is also associated with an increase in First Nations employment of about 40,900 jobs, raising the First Nations employment share to 2.11%.

- The simultaneous closure of all three gaps is associated with about an $8.6 billion increase in First Nations total employment income, representing a massive 77.4% over pre-closure levels. This scenario is also associated with an increase in First Nations employment of about 94,800 jobs, raising the First Nations employment share to 2.42%

We posit that the results from the overnight model of gap closure provide strong evidence in support of policy measures to close labour market disparities facing the First Nation population, with particular emphasis placed on the educational attainment gap as the most economically impactful of the three gaps. These estimated economic benefits might also be interpreted as estimates of the opportunity costs incurred in 2016 by allowing these gaps to persist. Hence, our results across all four scenarios are unequivocal in portraying these gaps, and particularly the education gap, as tremendous constraints on the economic performance of Canada's First Nations population: constraints which impede the growth and flourishing of not only First Nations communities but the Canadian economy writ large.

Using the longitudinal model articulated in Part II of this report, we find results which are remarkably consistent with those reported above. These results are collected in the tables below.

Main Results, Projections for First Nations in 2041 by Scenario						
Scenario		**1**	**2**	**3**	**4**	**5**
GDP Gains						
Total FN Contribution to GDP (billions)	68.35	98.57	83.46	79.49	77.02	116.79
% change over baseline	-	44.2%	22.1%	16.3%	12.7%	70.9%
Total Canadian Contribution to GDP (billions)	3,081.35	3,111.57	3,096.46	3,092.50	3,090.02	3,129.79
% change over baseline	-	1.0%	0.5%	0.4%	0.3%	1.6%
Employment Income Gains						
Total FN Employment Income (billions)	34.17	49.28	41.73	39.75	38.51	58.39
% change over baseline	-	44.2%	22.1%	16.3%	12.7%	70.9%
Total Canadian Employment Income (billions)	1,540.67	1,555.79	1,548.23	1,546.25	1,545.01	1,564.90
% change over baseline	-	1.0%	0.5%	0.4%	0.3%	1.6%
Employment Gains (thousands)						
Total FN Employment	674.82	779.43	727.13	814.27	674.82	862.59
% change over baseline	-	15.5%	7.8%	20.7%	0.0%	27.8%
Total Canadian Employment	23,284	23,388	23,336	23,423	23,284	23,471
% change over baseline	-	0.4%	0.2%	0.6%	0.0%	0.8%
Labour Productivity Gains						
FN Labour Productivity	101,280	126,463	114,777	97,626	114,127	135,393
% change over baseline	-	24.9%	13.3%	-3.6%	12.7%	33.7%
Aggregate Canadian Labour Productivity	132,340	133,040	132,691	132,028	132,712	133,345
% change over baseline	-	0.5%	0.3%	-0.2%	0.3%	0.8%

Notably, we project that:

- The closure of the education gap is associated with an increase in GDP of about $30 billion in 2041 compared to the baseline scenario and about 105,000 additional jobs. Furthermore, over the 2021-2041 period, the gradual closure of the education gap is associated with a cumulative $285 billion in additional GDP and a gain of about 1.03 million job-years (additional yearly employment incomes for First Nations people) compared to the baseline scenario. These gains manifest in a 0.05 percentage point boost to the annual GDP growth rate over the period, raising the figure from 1.71% to 1.76% per year. Similarly, the annual growth rate of Canadian employment is augmented from 0.95% per year to 0.97% per year, and the annual growth rate of labour productivity from 0.75% per year to 0.78% per year.

- The closure of all three gaps simultaneously is associated with an increase in GDP of about $48.4 billion in 2041 compared to the baseline scenario and about 188,000 additional jobs. The gradual closure of the three gaps, meanwhile, is associated with a cumulative $457 billion in GDP gains and an increase of 1.86 million job-years compared to the baseline scenario. Altogether, the closure of the three gaps raises the annual growth rate of GDP for the 2021-2041 from 1.71% per year to 1.79% per year: a 0.08 percentage point increase. Moreover, the annual growth rate of Canadian employment rises from 0.95% per year to 0.99% per year, and the annual growth rate of labour productivity from 0.75% per year to 0.79% per year.

Cumulative Economic Benefits of the Full Closure of the Education Gap (Scenario 1), Estimates for 2021-2041

	Total GDP (billions)	Total Employment (Job-Years)	Annual GDP Growth Rate	Annual Employment Growth Rate	Annual Productivity Growth Rate
	(1)	(2)	(3)	(4)	(5)
Baseline	54,904.8	445,572,763	1.71%	0.95%	0.75%
Scenario 1	55,190.3	446,607,635	1.76%	0.97%	0.78%
absolute change	285.5	1,034,872	0.05pp	0.02pp	0.03pp
percentage change over baseline	0.5%	0.2%	2.9%	2.4%	3.53%

Source: Authors' calculations based on 2016 Census data and CSLS economic projections.

Cumulative Economic Benefits of the Closure of All Three Gaps (Scenario 5), Estimates for 2021-2041					
	Total GDP (billions)	Total Employment (Job-Years)	Annual GDP Growth Rate	Annual Employment Growth Rate	Annual Productivity Growth Rate
	(1)	(2)	(3)	(4)	(5)
Baseline	54,904.8	445,572,763	1.71%	0.95%	0.75%
Scenario 5	55,362.1	447,429,345	1.79%	0.99%	0.79%
absolute change	457.3	1,856,582	0.08pp	0.04pp	0.04pp
percentage change over baseline	0.8%	0.4%	4.6%	4.3%	5.06%

Source: Authors' calculations based on 2016 Census data and CSLS economic projections.

Conclusion

We present these gains as evidence of the great economic benefits which would accrue both to First Nations people and Canadians generally, should policymakers and community leaders pursue the elimination of the labour market disparities facing First Nations people vis-à-vis non-Indigenous people. We hold that economic benefits of this size are remarkable, no matter the context. Still, we posit that our findings become even more salient when situated in the context of present-day concerns about economic stagnation and Canada's slow growth trajectory. At a time when economists and business leaders speculate that the Canadian labour market is all "tapped out", the First Nations population remains a chronically overlooked and underinvested-in resource for the Canadian economy. Put simply, the economic costs of maintaining these gaps – to say nothing of the humanitarian costs – are enormous and they have scarcely been as relevant as they are today.

Part I: Overnight Model

Closing the First Nations Education Gap in Canada: Assessing Progress and Estimating the Economic Benefits — An Update, Part I [2]

By most social and economic metrics, First Nations people tend to experience poorer outcomes than their non-Indigenous counterparts. They are, on average, much more likely than non-Indigenous Canadians to develop severe health conditions like diabetes and substance dependencies, and they are significantly more likely to become homeless or incarcerated (Kim 2019; Government of Canada 2020; Belanger et al. 2013). They are also at a disadvantage in terms of labour market outcomes. On average, they earn markedly lower market incomes than non-Indigenous Canadians. In 2016, for example, despite comprising 2.4% of the working-age population, First Nations people only accounted for 1.4% of Canada's total employment income. Moreover, while Canadians at large enjoyed an employment rate of 60.5%, the employment rate of First Nations people was significantly lower at only 46.8% in 2016 (Statistics Canada, 2017b): a figure that reflects both high rates of unemployment and low rates of labour-force participation within the First Nations population. These inequalities are widely recognized as the products of racist and colonial policy which has systematically disenfranchised Canada's Indigenous peoples (often deliberately so), with many of these institutions and their legacies enduring to this day.

In its discussion of the widespread outcome gaps between First Nations people and non-Indigenous Canadians, this report will update the CSLS's 2015 report "Closing the Aboriginal Education Gap in Canada: Assessing Progress and Estimating the Economic Benefits" [3] in focusing on the "education gap", or the disparity we observe in educational attainment between First Nations people and non-Indigenous Canadians (Calver, 2015). We posit that this phenomenon—wherein Indigenous Peoples of Canada, including First Nations people, possess a much lower average level of educational attainment than non-Indigenous Canadians—is a primary contributor to both the market and non-market outcome gaps identified above. As outlined in detail in our 2015 report, there are significant, well-evidenced linkages between educational attainment and earnings, employment, health, and crime, wherein higher levels of education produce better market and non-market outcomes across the board. As such, this report will aim to assess the potential economic benefits and impacts of reducing or fully closing this education gap.

Whereas our 2015 report focused on Canada's entire Indigenous population, this report will utilize a narrower scope, focusing solely on First Nations people. The objective of this report is three-fold; given the established relationship between education and labour market outcomes, we aim a) to describe the education gap and how it has evolved since our analysis in the 2015 report, b) to produce updated estimates of the economic benefits, both to First Nations people and to Canada generally, of closing the [4]

[2] This report was written by Chris Haun under the supervision of Andrew Sharpe. They wish to thank Don Drummond, Bert Waslander, Matt Calver, and the participants of the June 14th seminar at the Assembly of First Nations office for their thoughtful comments and feedback on this report.

[3] As well as the CSLS's 2007 report "The Potential Contribution of Aboriginal Canadians to Labour Force, Employment, Productivity and Output Growth in Canada, 2001-2017" and the 2009 follow-up report "The Effect of Increasing Aboriginal Educational Attainment on the Labour Force, Output and the Fiscal Balance"

[4] This report uses the term "education gap" as shorthand for the "educational attainment gapbetween First Nations and Non-Indigenous Canadians" for the sake of brevity.

[5] Although the 2015 report was broader in scope, it broke down key projections by Indigenous heritage group, including by First Nations identity. In this way, this report is very much an update to the 2015 report. As such, this report compares key results for First Nations with the previous report where appropriate.

education gap by 2041, and c) to provide a broader outlook on the projected economic performance of the First Nations population, particularly in the labour market context. The data used for the analysis in this report is provided by the 2016 edition of the national quinquennial census conducted by Statistics Canada; at the time of writing, this is the most up-to-date data for the First Nations population with respect to key variables of interest.[6]

This report has been prepared at the request of the Assembly of First Nations (AFN). It is imperative to note that this report is divided into two parts, each utilizing a distinct methodology to estimate the economic benefits of closing the labour market gaps facing First Nations people. The approach we employ in Part I – what we call the 'overnight model' – is less detailed in some respects compared to the approach we use in Part II – what we call the 'longitudinal model'. Still, we contend that both of these approaches are valuable given their distinct time horizons. In simulating gap closure in the present day, the overnight model offers a detailed account of the present state of the education gap; in fact, the economic gains reported in the overnight model might also be interpreted as the current costs of maintaining these gaps in the present day, or the economic benefits which Canadians are foregoing today by allowing them to continue. Conversely, the longitudinal approach offers a more realistic account of what the gap closure process might actually look like and the kind of economic benefits which might accrue to First Nations people and Canada as a whole along the way. Still, the exercises are fundamentally similar in that they both try to quantify the economic importance of closing the key labour market disparities facing First Nations people. As such, we hold that the remarkable consistency between the findings of the two approaches is a testament to the credibility of the estimates offered in this report.

This report now moves to describe in detail the three labour market gaps between First Nations and non-Indigenous people which we address in our models. The next section outlines the methodology we employ for closing each of these gaps, as well as for an additional scenario where we close all three gaps simultaneously. In this section, we also note the various assumptions and limitations of the overnight model before delineating the key differences between the overnight and longitudinal models. The following section has us present, discuss, and interpret the results from the overnight model. We then conclude Part I with a brief summary of our findings and their significance.

A brief description of objective and structure opens Part II. In the following section, we then move to provide a methodological overview of the longitudinal method, describing each of the five gap closure scenarios we explore (Scenarios 1-5) as well as the baseline projection which we compare these scenarios to. The next section presents the results from the longitudinal model, first in aggregate terms and then broken down for each age group, sex, province/territory, and educational attainment category. We supplement this discussion with an additional section comparing the results of the overnight and longitudinal models and identifying possible sources of variation between the approaches. The final section concludes.

[6] Data from the 2021 Census on the topic of First Nations people will not be available until September 2022. Data pertaining to education will not be available until November 2022. For these reasons, the analyses in this report will focus primarily on data from the 2016 Census, however the report can be updated once the relevant data from the 2021 Census is released.

Understanding the Gaps

Following our 2015 report on the subject, we will investigate three separate gaps experienced by First Nations people compared to non-Indigenous Canadians: a) the education gap, b) the income gap conditional on education, and c) the employment rate gap conditional on education.[7] While the aforementioned education gap is our primary concern, we contend that all three gaps are interrelated and relevant to the elimination of outcome gaps experienced by First Nations people. This report will now move to detail each of these gaps in turn.

The Education Gap: Distributional Approach

The education gap is the simplest as well as the most important of the three gaps in our view. It refers to the observation that, on average, First Nations individuals have lower levels of educational attainment than non-Indigenous Canadians. One approach to measuring educational attainment entails recording the highest educational credential or degree that an individual has earned. Box 1 describes one way of quantifying the gap in educational

As Chart 1 shows, the distribution of educational attainment levels for the First Nations population is very different than that for non-Indigenous Canadians. First Nations people disproportionately occupy the lowest categories of this variable—what we call 'bins'—with about 38% of First Nations people reporting no educational credentials at all. Conversely, less than 8% of First Nations people have a bachelor's degree or a more advanced credential. The distribution of non-Indigenous individuals across these bins, however, is spread out much more evenly. Only about 18% of non-Indigenous individuals report having no educational credentials, and about 24% of non-Indigenous Canadians have a bachelor's degree or higher. While there is great variation in educational attainment within both the First Nations and non-Indigenous populations, comparing the two distributions shows a clear distinction: First Nations individuals tend to occupy low levels of educational attainment in much greater proportions than non-Indigenous individuals, and non-Indigenous individuals tend to occupy high levels of educational attainment in much greater proportions than First Nations individuals. Box 1 describes in detail this manner of quantifying the educational attainment gap between First Nations and non-Indigenous individuals.

[6] For the sake of brevity, the income gap conditional on education is sometimes referred to as the "conditional income gap". Similarly, the employment rate gap conditional on education is sometimes referred to as the "conditional employment rate gap". In both cases, unless explicitly stated otherwise, these gaps are conditional on levels of educational attainment. Words like overall or aggregate are sometimes used to refer to the unconditional gaps.

Box 1: Measuring the Education Gap — The Distributional Approach

We call this the **distributional approach** to measuring the education gap. In observing the distribution of educational attainment—the highest educational degree or certification one has achieved—within the two populations, we see the share of each population which falls into any given bin. We can then identify individual bins where the difference between the shares in the two populations is significant. The advantage of this approach is that it yields a series of category-specific gaps rather than one aggregate gap. This increased granularity allows us to see precisely which educational categories either population is concentrated in, and therein develop a better understanding of the nature of the gap. The trade-off to this precision comes in the form of tractability though; comparing these gaps over time is cumbersome and the results of this approach are more difficult to grasp and visualize than an approach which produces a single gap.

Table 1: Educational attainment for working-age (15+) First Nations vs. non-Indigenous, 2016

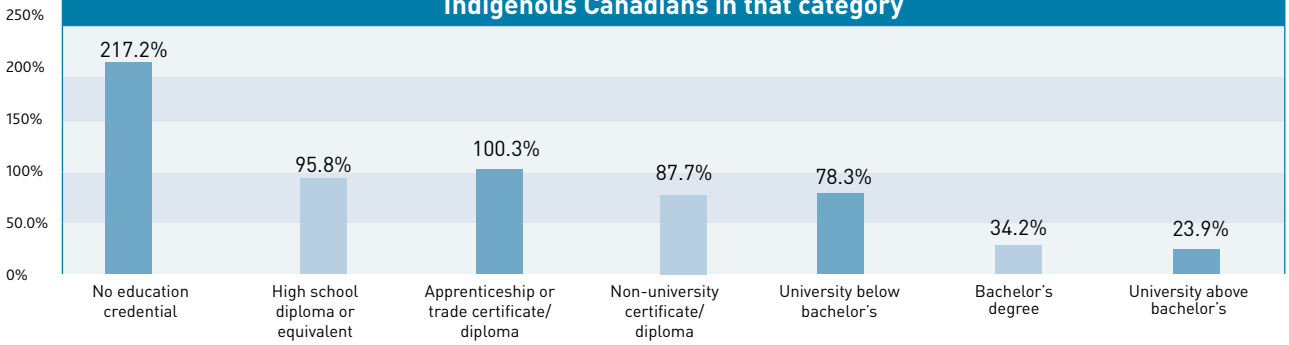
	Total	No certificate, diploma or degree	Secondary (high) school diploma or equivalency certificate	Apprentice-ship or trades certificate or diploma	College, CEGEP or other non-univer-sity certificate or diploma	University certificate or diploma below bachelor level	Bachelor's degree	University certificate, diploma or degree above bach-elor level
First Nations								
# of individuals	691,405	264,425	175,315	67,480	117,785	15,520	37,670	13,210
proportion of individuals	100%	38.2%	25.4%	9.8%	17.0%	2.2%	5.4%	1.9%
Non-Indigenous								
# of individuals	27,418,100	4,827,400	7,253,640	2,669,080	5,327,705	786,105	4,365,815	2,188,355
Absolute GAP (non-Indigenous less First Nations)		-20.6pp	1.1pp	<-0.1pp	2.4pp	0.6pp	10.5pp	6.1pp
First Nations as a proportion of non-Indigenous		217.2%	95.8%	100.3%	87.7%	78.3%	34.2%	23.9%
Relative GAP (100% - First Nations as Proportion of non-Indigenous)		-117.2pp	4.2pp	-0.3pp	12.3pp	21.7pp	65.8pp	76.1pp

Note: *pp = percentage points, negative numbers represent categories which First Nations people are more likely to occupy than non-Indigenous people

Source: Statistics Canada, 2016 Census of Population, Statistics Canada Catalogue no. 98-400-X2016178.

Table 1 records the gap for each educational category. Here we define the gap as the difference in the proportion of the two populations that falls into a given bin. The largest gap, in both absolute and relative terms, is the "no certificate" category which First Nations people are about 20 percentage points more likely to occupy compared to non-Indigenous people. The next largest gap, in relative terms, is the "above bachelor level" category where the disparity runs in the opposite direction; First Nations people are about 6 percentage points less likely to inhabit this bin than non-Indigenous people. This discrepancy may not seem particularly large, but only because the absolute proportion of non-Indigenous people with this qualification is already a small number. Expressed in relative terms, the likelihood that a First Nations individual occupies this category is less than a quarter of the likelihood that a non-Indigenous person does the same: the largest relative gap of any educational attainment category. This is followed by the "bachelor's degree" category which First Nations people are about 10 percentage points less likely to occupy than non-Indigenous people. Expressed in relative terms, the proportion of First Nations people in the category makes up barely a third of the proportion of non-Indigenous people.

Chart 2: Share of First Nations in an educational category as a proportion of the share of non-Indigenous Canadians in that category



Source: Statistics Canada, 2016 Census of Population, Statistics Canada Catalogue no. 98-400-X2016178.

Chart 2 expresses the share of the First Nations population in a category as a proportion of the share of non-Indigenous Canadians in that same category. A value of 100% signifies that the share of the two populations occupying a category is identical; in other words, there is no gap. A value exceeding 100% meanwhile indicates that the share of First Nations people in a category is greater than the share of non-Indigenous people, while a value below 100% indicates that the share of First Nations people is less than that of non-Indigenous people. As the chart shows, First Nations are greatly overrepresented in the "no certificate" category but are underrepresented to varying degrees in virtually every other educational category. Moreover, as the level of educational attainment rises, the likelihood of First Nations individuals occupying a bin falls steadily in comparison to their non-Indigenous counterparts.

The Education Gap: Average Years Approach

Another way of quantifying the education gap involves measuring the average number of years of education in a given population; Box 2 provides a detailed description of the advantages and limitations of this approach This method confirms the existence of a significant gap between the educational attainment levels of First Nations and non-Indigenous Canadians. The advantage of this approach is that it allows us to distill the distribution of educational attainment levels into a single figure that is much easier to track over time and compare between periods. Table 2 presents the average years of education for both groups for both 2011 and 2016, with additional measures to quantify the gap and how it has changed between the 2011 National Household Survey and the 2016 Census.

Box 2: Measuring the Education Gap — The Average Years Approach

We call this the average years approach to measuring the education gap. Each educational category is assigned a single value representing the expected number of years of schooling required to obtain that credential. The average years of education of a population is derived simply by taking the arithmetic mean of each individual's assigned years of education value. This allows us to describe the gap as the simple difference in the average years figure between the two populations. The coding scheme of the average years variable is described below:

Educational Attainment Category	Assigned Value
No certificate, diploma or degree	10 years
Secondary (high) school diploma or equivalency certificate	12 years
Apprenticeship or trades certificate or diploma	13 years
College, CEGEP or other non-university certificate or diploma	14 years
University certificate or diploma below bachelor level	15 years
Bachelor's degree	16 years
University certificate, diploma or degree above bachelor level	18 years

The advantage of this approach is that, unlike the distributional approach, it produces a single numerical measurement of the education gap that is simple to transform or compare over time. This usability comes at the price of precision, however. As the mean is a very narrow representation of its underlying distribution, the measure produced by this approach tells us little about the shape of the education gap. Indeed, it is conceivable that two very distinct distributions of educational attainment might produce the same average years of education value, indicating no education gap at all, even when the distributional approach suggests significant category-specific gaps. Knowing that the average years of education in a population is 14, for example, does not tell us anything about the spread of individuals across categories. The distribution could be polar, with individuals either occupying the very low or the very high categories but largely avoiding the middle categories. Alternatively, the distribution could be tightly clustered around the middle categories, with very few individuals inhabiting either end of the range. Fundamentally, the mean does not provide us with enough information to distinguish between these two distributions.

In 2016, the average number of years of education for First Nations people was 12.1, corresponding to a high school level of education. Non-Indigenous individuals meanwhile had an average of 13.3 years of education, or over a full year more than Canada's First Nations population.[8] The gap, which is derived by subtracting the average years of education for First Nations individuals from the same for non-Indigenous individuals, was about 1.26 years in 2016 compared to 1.30 years in 2011: a miniscule 3% reduction in the size of the gap over the 5-year interval

Table 2: Years of education for working-age (15+) First Nations vs. non-Indigenous, 2011 vs. 2016

	Avg Years of Education		Gap (absolute) (3)	FN as a proportion of non-Indigenous (4)	Gap(relative) (5) = 1.00 – (4)
	First Nations (1)	Non-Indigenous (2)			
2011	11.93	13.23	1.30	90.15%	9.85pp
2016	12.07	13.34	1.26	90.53%	9.47pp
Absolute change	0.15	0.11	-0.04	0.38pp	-0.38pp
Compound Annual Percentage Change	0.25%	0.16%	-0.63%	0.08%	-0.79%

Note: *pp = percentage points

Sources: Statistics Canada, 2011 National Household Survey, Statistics Canada Catalogue no. 99-011-X2011037; Statistics Canada, 2016 Census of Population, Statistics Canada Catalogue no. 98-400-X2016178.

between the censuses. The bottom row of the table quantifies the change in terms of an annual percentage change, however, these estimates of the yearly change in the size of the gap are quite small. Still, it is worth noting that the rate of change in the average years of education is higher for the First Nations population than for the non-Indigenous population (0.25% per year vs. 0.16% per year). In other words, although both groups are becoming more educated over time, educational attainment is rising at a faster rate for First Nations people than for non-Indigenous people.

[8] The coding strategy employed to produce the average years of education variable does not make allowances for differences that may exist between First Nations people and non-Indigenous Canadians in the time required to achieve a given level of educational attainment. We suspect that this is particularly problematic for the "no certificate, diploma or degree," given that, on average, First Nations individuals are more likely than non-Indigenous individuals to have not completed primary or middle school (Statistics Canada, 2009). In this category, a more accurate representation of the 'expected' years of education for First Nations people might be 8 years. In this way, our coding strategy likely underestimates the true gap in years of education between the two populations. It is also suspected that First Nations individuals may take longer than non-Indigenous individuals to attain certain educational credentials. However, we believe this difference is less problematic. Ultimately, the years of education measure is only a proxy for an individual or population's 'educatedness'. An individual taking longer than expected to complete a given credential likely does not represent any meaningful difference in one's level of education, and as such, we are less concerned about these manners of deviation from our coding strategy.

As a result, the education gap is, in fact, decreasing over time. Still, at the rates described in Table 2, we estimate it would take about 117 years for the gap to disappear completely.[9] Overall, the years of education measure paints a picture of a significant education gap that is shrinking, albeit quite slowly.

It is important to note that both approaches to measuring educational attainment (the distributional approach and the average years approach) fail to incorporate the quality of education which individuals are receiving. Instead, they assume that a single year of education or a given credential are equally valuable for all people in all regions at all institutions. This is a troublesome assumption given that instructional quality and standards of achievement vary widely across the country and between institutions, with the quality of on-reserve education for First Nations people often being particularly poor (Dart, n.d.). For this reason, the effective gap in educational attainment between the First Nations and non-Indigenous populations is likely larger than either of these approaches would suggest.

The Income Gap Conditional on Education

In addition to having a lower average level of educational attainment, First Nations individuals earn lower incomes on average than non-Indigenous individuals. In 2015, for example, the mean employment income[10] for First Nations people was $33,079 compared to $46,449 for the non-Indigenous population—an absolute gap of $13,370, with First Nations people earning only about 71% of what non-Indigenous people earn on average.[11]

[9] We calculate the time it would take for the education gap to disappear using three different methods. The first method entails calculating the compound annual growth rate of average years of education for both the First Nations and non-Indigenous populations and evaluating the number of years it would take for these figures to converge. The second method entails calculating the compound annual growth rate for the average First Nations years of education as a proportion of the non-Indigenous figure and evaluating the number of years it would take for the ratio to equal one. The third method entails calculating the compound annual growth rate for the non-Indigenous years of education as a proportion of the First Nations figure and evaluating the number of years it would take for the ratio to equal one. These three methods all yield the same estimate of about 117 years. It is worth noting that all three of these methods assume a constant rate of change for the education gap and the average years of education of both populations. This assumption is not particularly realistic, given that our measure of educational attainment has a ceiling. Furthermore, institutions of higher education, like universities, tend to be less accessible (less widespread, more exclusive, more expensive) than lower-level educational institutions like high schools. Consequently, population-level gains in educational attainment are relatively easier to realize at lower average levels of education than at higher average levels of education. Thus, as levels of educational attainment reach higher levels in a population, the growth in the average years of education is likely to slow down. An additional, fourth method approximates this dynamic by envisioning the average years of education for non-Indigenous people as constant at 2016 levels. This yields a much smaller estimate of about 40 years for the average years of education for the two populations to converge.

[10] The primary measure of income we use in this report is employment income. For the sake of brevity, we will sometimes use the words "income"; unless stated otherwise, we are referring to employment income. Mean employment income in particular is calculated using all working-age individuals (15 years of age or older) who reported a non-zero sum for employment income in the 2016 Census. However, given that the Census asks respondents to report earnings for the previous year, these income figures actually represent incomes earned in 2015.

[11] It's crucial to note though that this full gap certainly does not represent pure wage discrimination against First Nations people. Rather, much of the gap is produced by differences in key variables between the two groups. For example, the First Nations population is, on average, significantly younger than the non-Indigenous population; younger individuals generally lack the same kind of work experience and skills as older individuals, and as such they are likely to earn lower wages. For this reason, if we do not control for age (i.e. comparing only people who are the same age to eliminate differences in age as a possible explanation for differences in income), the average earnings of the First Nations population will be lower than those of non-Indigenous population, even if there is no direct wage discrimination occurring. This is only a demonstrative example however, as the differences driving this gap in earnings extend far beyond age, likely including location (particularly urban vs. rural), labour force status (part-time vs. full-time vs. seasonal), and a number of other variables. Moreover, there may be some degree of direct wage discrimination that we would observe should we control for all of these other differences.

The core variable which we are most interested in as we grapple with this gap in earnings is the level of educational attainment. As seen in the previous subsection, the distribution of educational attainment differs between First Nations people and non-Indigenous Canadians, and it is likely, given the positive relationship between education and earnings, that differing levels of education between the two groups is the primary driver of the income gap we observe. For this reason, we are not particularly interested in the aggregate income gap as we estimate the potential economic benefits of boosting the labour market performance of First Nations people. Rather, we are interested in the income gap *conditional* on, or *controlling for*, one's level of education. Put simply, we are asking: what is the difference between the earnings of First Nations individuals and non-Indigenous individuals when we only compare individuals with the same level of educational attainment? Table 3 shows the results of this approach.

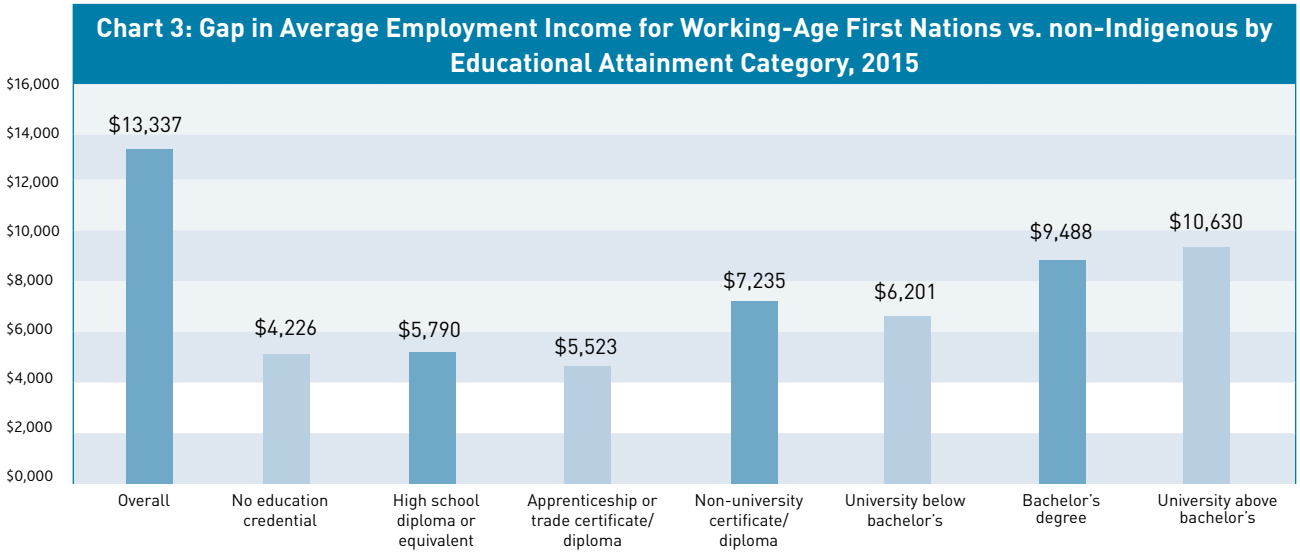
Clearly, even when we compare within educational categories, the income gap persists, although admittedly no individual gap quite matches the $13,370 figure that we find when we do not control for educational attainment. This suggests that distributional differences in educational attainment between the two populations were indeed driving much of the overall disparity in earnings, although, as evidenced by the residual gaps presented in Table 3, these differences do not explain the entire discrepancy. Still, when we control for educational attainment, about half of the aggregate income gap disappears, with the average First Nations employment income constituting between 83% and 88% of the non-Indigenous figure, compared to 71% when we do not control for education.

Table 1: Educational attainment for working-age (15+) First Nations vs. non-Indigenous, 2016

	Total	No certificate, diploma or degree	Secondary (high) school diploma or equivalency certificate	Apprentice-ship or trades certificate or diploma	College, CEGEP or other non-univer-sity certificate or diploma	University certificate or diploma below bachelor level	Bachelor's degree	University certificate, diploma or degree above bach-elor level
First Nations	$33,079	$21,260	$28,170	$39,549	$38,570	$41,509	$52,997	$68,480
Non-Indigenous identity	$46,449	$25,526	$33,960	$45,072	$45,805	$47,710	$62,485	$79,110
Absolute GAP (non-Indigenous less First Nations)	$13,370	$4,266	$5,790	$5,523	$7,235	$6,201	$9,488	$10,630
First Nations as a proportion of non-Indigenous	71.2%	83.32%	83.0%	87.7%	84.2%	87.0%	84.8%	86.6%
Relative GAP (100% - First Nations as Proportion of non-Indigenous)	28.8pp	16.7pp	17.1pp	12.3pp	15.8pp	13.0pp	15.2pp	13.4pp

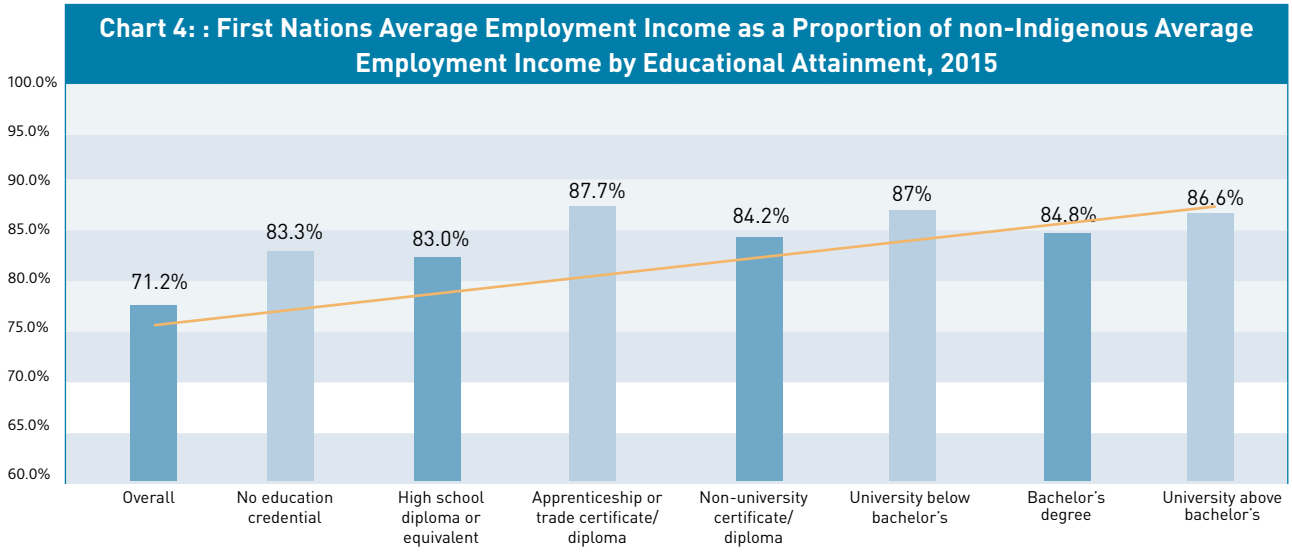
*pp = percentage point, average employment income figures are calculated only for those individuals who reported non-zero sums for employment income in the 2016 Census.

Source: Statistics Canada, 2016 Census of Population, Statistics Canada Catalogue no. 98-400-X2016268.



Source: Statistics Canada, 2016 Census of Population, Statistics Canada Catalogue no. 98-400-X2016268.

As Chart 3 show, the dollar value of the gap rises in absolute terms as the level of educational attainment rises, with the largest gap of $10,630 occurring at the highest level of educational attainment ("above bachelor level"). However, as the table shows, average employment income rises for both groups alongside this gap—for this reason, we might be more interested in relative measures which take changes in income into account. One such measure, which expresses the average employment income of First Nations people as a proportion of non-Indigenous average employment income, finds that the relative size of the income gap falls slightly as educational attainment rises. Chart 4 shows this pattern. At the lowest educational categories, First Nations earnings hover around 83% of non-Indigenous earnings, but this number converges towards around 86% at the highest educational categories: a finding which reinforces the importance of higher educational attainment for First Nations people as a means of closing the income gap.



Source: Statistics Canada, 2016 Census of Population, Statistics Canada Catalogue no. 98-400-X2016268.

Interestingly though, the smallest relative gaps do not occur at the highest levels of educational attainment. Rather, the relative income gap is at its smallest in the "apprenticeship or trades" category, where First Nations people earn about 88% of the non-Indigenous figure, followed closely by the "university below bachelor level", where that figure drops slightly to 87%. The most significant income gaps, meanwhile, occur in the "high school diploma or equivalency certificate" and "no educational credentials" category, where First Nations people earn about 83% of the average non-Indigenous employment income.

The Employment Rate Gap Conditional on Education

Finally, First Nations people also tend to experience lower rates of employment than their non-Indigenous counterparts. The employment rate of a given population can be expressed as *E/WA,* where *E* represents the number of employed persons within the population and *WA* represents the number of working-age individuals within the population. It expresses the population that is presently employed as a proportion of the broader population that *could* be employed. As such, it is sometimes interpreted as a sort of composite measure, capturing both the rate of unemployment and the rate of labour force participation within a given population.[12] Both factors are expressed through E, the numerator of the equation. Holding the size of the population constant, as unemployment rises, logically, the number of employed persons should fall, and the employment

[12] The employment rate of a population can be decomposed as follows:

$$e = E/WA = (L-U)/WA = (P*WA-U)/WA = ((E+U)-U)/WA$$

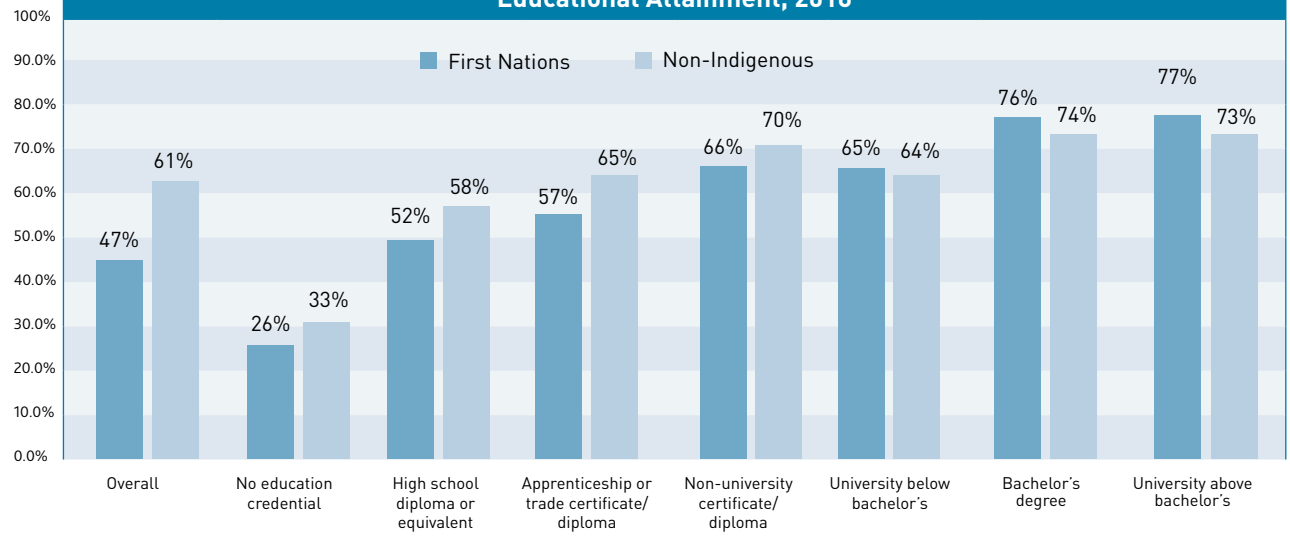
where e is the employment rate, E is the number of employed persons in the population, WA is the working age population (the number of individuals above 15 years old in this context), L is the labour force or the number of people who are either working or actively looking for work, U is the number of unemployed persons in the population, and P is the labour force participation rate of the population or the proportion of the working age population that is in the labour force. Alternatively, the employment rate of a population can be expressed as:

$$e = E/WA = (1-u)P$$

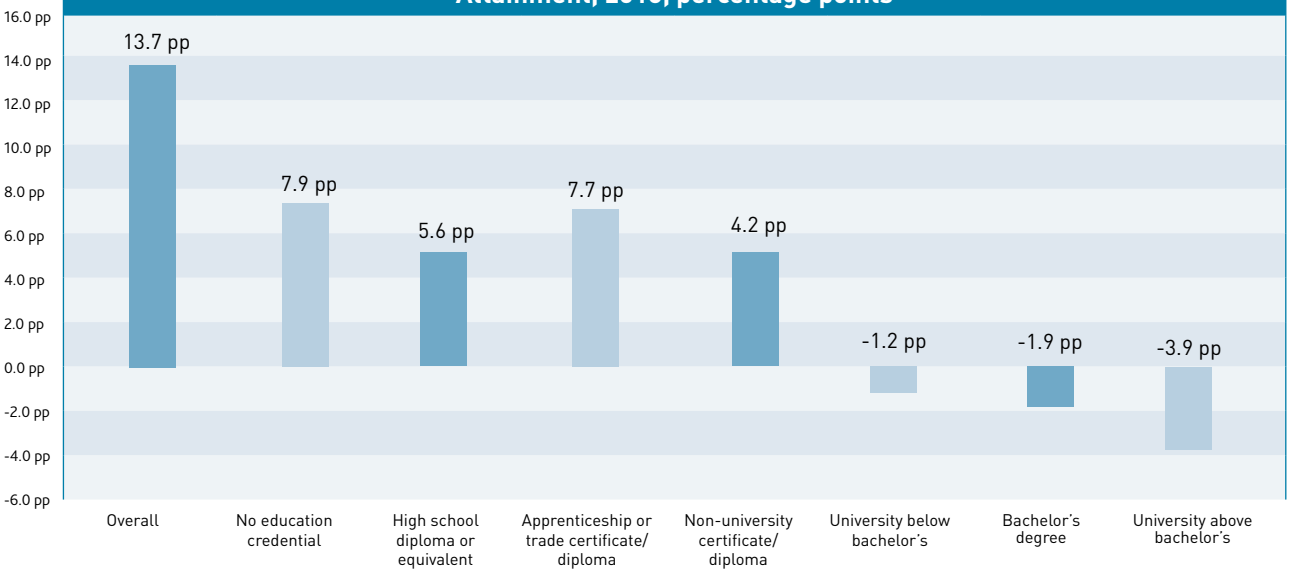
where u is the unemployment rate and e, E, WA, and P represent the concepts described above.

rate therein. Similarly, as the proportion of the population who are working or looking for work (i.e. the 'labour force') rises, the number of employed persons is also likely to rise, with the employment rate to follow. To the extent that the employment rate captures these two dimensions, it can be a useful tool for measuring the labour market performance of a population in broad terms. Table 4 and Chart 5 present the employment rate for First Nations people and non-Indigenous Canadians both generally and by education level.

Chart 5: Employment Rate Gap Between First Nations people and non-Indigenous Canadians by Educational Attainment, 2016



Panel B: Employment Rate Gap for First Nations Compared to non-Indigenous by Educational Attainment, 2016, percentage points



Source: Statistics Canada, 2016 Census of Population, Statistics Canada Catalogue no. 98-400-X2016267.
Note: pp - percentage points, negative numbers indicate that the employment rate for First Nations people is higher than the employment rate for non-Indigenous Canadians

Table 4: Employment rate for working-age (15+) First Nations vs. non-Indigenous, 2016

	Total	No certificate, diploma or degree	Secondary (high) school diploma or equivalency certificate	Apprentice-ship or trades certificate or diploma	College, CEGEP or other non-univer-sity certificate or diploma	University certificate or diploma below bachelor level	Bachelor's degree	University certificate, diploma or degree above bach-elor level
First Nations								
# of employed individuals	323,685	67,635	91,115	38,715	77,340	10,070	28,645	10,160
working age population	691,405	264,425	175,315	67,480	117,785	15,520	37,670	13,210
employment rate	46.8%	25.6%	52.00%	57.4%	65.7%	64.9%	76.0%	76.9%
Non-Indigenous								
# of employed individuals	16,592,130	1,617,050	4,178,585	1,736,750	3,722,625	500,535	3,238,840	1,597,750
working age population	27,418,100	4,827,400	7,253,640	2,669,080	5,327,705	786,105	4,365,815	2,188,355
employment rate	60.5%	33.5%	57.6%	65.1%	69.9%	63.7%	74.2%	73.0%
Absolute Gap (non-Indigenous less First Nations)	13.7pp	7.9pp	5.6pp	7.7pp	4.2pp	-1.2pp	-1.9pp	-3.9pp
FN employment rate as a proportion of non-Indigenous	77.4%	76.4%	90.2%	88.2%	94.0%	101.9%	102.5%	105.3%
Relative Gap (1 - First Nations as Proportion of non-Indigenous)	22.6pp	23.6pp	9.8pp	11.8pp	6.0pp	-1.9pp	-2.5pp	-5.3pp

Note: *pp = percentage points, employment numbers and rates are calculated using all individuals who reported working during the census week (May 1 to May 7, 2016 for most households)

Source: Statistics Canada, 2016 Census of Population, Statistics Canada Catalogue no. 98-400-X2016267.

The overall employment rate[13] for non-Indigenous Canadians is 60.5% in 2016 compared to 46.8% for First Nations people: an absolute gap of 13.7 percentage points, with the First Nations rate making up just 77% of the non-Indigenous rate. Again, this is reflective of relatively high rates of unemployment and relatively low

rates of labour force participation in the First Nations population. Per the Labour Force Survey, the unemployment rate for the First Nations population in 2016 is 15.2% for the First Nations population, compared to 6.9% for the non-Indigenous population (Statistics Canada, 2022). Similarly, the labour force participation rate is 61.3% for the First Nations population in 2016, compared to 65.6% for the non-Indigenous population (Statistics Canada, 2022).

As outlined in the previous section, at least some of this discrepancy is likely attributable to distributional differences in variables which are related to employability and labour market participation like age, province, gender, and education. Once again however, we can control for education by comparing within educational categories, as Table 4 does. Although gaps in employment rate persist once we control for education, none of the gaps within categories carry the same magnitude as the overall gap, with the size of the gap dropping from about 14 percentage points to about 6 to 7 percentage points on average. This again suggests that distributional differences in educational attainment between First Nations people and non-Indigenous Canadians are responsible for about half of the gap in employment rates that we observe. The largest employment rate gap within educational categories, in both absolute and relative terms, occurs in the "no certificate category". Here, the employment rate for First Nations people is exceedingly low at 25.6%, while the rate for non-Indigenous Canadians is significantly higher at 33.5%: a gap of about 8 percentage points. A similarly sized gap is also observed in the "apprenticeship or trades" category.

Interestingly, at the highest levels of educational attainment (specifically those involving a university certification of some kind), the direction of the gap becomes reversed; that is to say, within these categories, First Nations individuals actually enjoy a higher employment rate than non-Indigenous people. This phenomenon is most pronounced at the highest level of educational attainment, "above bachelor level", where the employment rate is nearly 4% higher for First Nations people than for non-Indigenous people.

It is likely that this is purely the result of distributional differences between the groups which we have not controlled for, with differences in age being the most likely candidate. The First Nations population is younger on average than the non-Indigenous population, and this is especially true in the highest categories of educational attainment. On average, highly educated non-Indigenous Canadians tend to be significantly older than highly educated First Nations individuals (Statistics Canada, 2019a). Moreover, older individuals tend to be less interested in working compared to younger individuals. Thus, when we do not control for differences in age between the two populations, the comparatively young First Nations population in these educational categories appears to enjoy higher rates of employment than their older non-Indigenous counterparts.

[13] There are two primary ways of measuring employment using the data provided by the 2016 Census. Most obviously, we can use the number of employed people. This number is based on a Census question which asks respondents if they worked during the week that the Census was conducted (May 1st to May 7th for most households in 2016). This approach may thus exclude seasonal workers or people who, for whatever reason, did not work during the reference week, but were working at other points in the year. This method yields an employment rate of 60.2% for Canadians generally. The other, broader approach classifies any person who reports a non-zero sum for their employment income as employed. This method yields an employment rate of 71.3% for Canadians. While the first approach may suffer from being too limited, this approach risks being overly inclusive. Individuals who worked even a single hour within a year will be classified as employed, occupying the same category as individuals who work 40 hours a week year-round. For this report, we have chosen to use the first approach, referring to the employment rates and numbers provided by Statistics Canada. This approach is certainly not without its flaws, however we feel it is a better approximation of long-term employment, which is the form of employment we are most interested in.

Methodology

A core objective of this report is to estimate the economic benefits that would accrue a) to First Nations people and b) to Canadians generally if these three gaps – the educational attainment gap, the conditional income gap, and the conditional employment gap -- were to be closed. As part of this estimation process, we will assess the impact of closing each of the three gaps individually, as well as the cumulative impact of closing all three gaps simultaneously. The primary metric which we use to estimate these benefits is the total employment income generated by the closure of a gap. Total employment income is simply the sum of the earnings from employment of all individuals in a population, usually a national economy; it has a close relationship with output, with the growth rates of the two measures being inextricably linked. Moreover, total employment income comprises about half of GDP. Our methodology for these estimates is fairly simple, and this section will now move to outline the specific procedure we perform to simulate the closing of each gap as well as for all three gaps simultaneously. We then conclude the section with a brief discussion of the limitations of this methodology, and a sketching of the methodology we employ in Part II of this report.

Closing the Education Gap

Our definition of closing the education gap entails adjusting the share of the First Nations population in any given educational attainment category such that it exactly matches the share of the non-Indigenous population in that category. This thus results in the average years of education becoming identical across both populations. To simulate the closure of the education gap, we simply replace the proportion of First Nations people in any given educational attainment category with the proportion of non-Indigenous people in that category. To produce an estimate of the economic benefits of that change, we compare the total employment income of a) First Nations people and b) Canadians before and after the closure of the gap. Total employment income can be calculated by summing up the employment income of every individual in the relevant population. Unfortunately, we lack information on the precise employment incomes of each individual in the First Nations population, let alone the entire Canadian population. We do however have the average employment income for each group (and even each educational attainment category): figures which we can multiply by the number of employed individuals in each category to produce an estimate of the total employment income.

We first estimate the total employment income of First Nations individuals before the closure of the gap by multiplying the number of employed First Nations individuals in each educational category by the average employment income in that category.[14] This is somewhat more difficult to do for the post-closure total employment income however, given that we do not have the number of employed persons in each

[14] This process of calculating this pre-closure total employment income figure is the same for all four scenarios. For this reason, its calculation is omitted from our description of the procedures used to close the other gaps.

educational category under this hypothetical scenario. We can estimate these employment numbers however.[15] First, we multiply the total First Nations working-age population by the proportion of the working-age non-Indigenous population in each educational category; this provides us an estimate of how many working-age First Nations people would occupy each category after the closing of the gap.[16] We then multiply the number of working-age First Nations people in each educational category by the employment rate in that category (see Table 4) to produce an estimate of the number of employed First Nations people in each category. Finally, to produce an estimate of the post-closure total employment income for the First Nations population, we multiply the number of employed First Nations in each category by the average employment income for First Nations people in that category (see Table 3) and add up all of these figures. By subtracting the post-closure total employment income from the pre-closure figure, we can quantify the economic benefit of closing the gap. We can also add the change in total employment income for First Nations people to the pre-closure total employment income for Canadians[17] generally to find the new total employment income for the country post-closure.

Another way of estimating the economic benefits of closing the gap is quantifying the number of jobs created by the movement of First Nations individuals into higher categories of educational attainment. Employment rates tend to be higher in these categories compared to lower categories. As such, when we close the education gap—an adjustment which moves many First Nations people to higher educational categories—many First Nations individuals begin to enjoy higher rates of employment. In aggregate, this change in the effective employment rate means a greater number of employed First Nations people.[18]

[15] This estimation process involves the use of both the employment rate in a given educational attainment category and the mean employment income in a given educational attainment category. It should be noted that these two metrics are not directly comparable; the employment rate is calculated by including only those individuals who reported working during the Census week, while the mean employment income is calculated for all individuals who reported a non-zero sum of employment income. In other words, they are calculated using different definitions of employment (see Footnote 14 for more details on the distinction). The mean employment income for the group counted as employed by the 2016 Census (and therein represented in the employment rate) is likely higher than the mean employment income used in our estimation. Indeed, the 2016 Census Public Use Microdata File (PUMF) confirms that the mean employment income for those counted as employed in the 2016 Census week was about $7,000 higher than the mean employment income for those who reported a non-zero sum for their employment income that same year (Statistics Canada, 2017). As a result, our estimates of total employment income produced using this framework are likely underestimates.

[16] Here we assume that the total First Nations population remains the same before and after the closure: an assumption that we will revisit at the end of this section.

[17] The calculation of pre-closure total employment income for all Canadians follows a very similar procedure to the calculation of pre-closure total employment income for the First Nations population. The number of employed individuals in each educational category is multiplied by the average employment income in that category.

[18] Both of these approaches of quantifying the benefits of closing the education gap assume that the movement of First Nations individuals between educational categories does not affect the labour market conditions in those categories. Namely, we assume that the average employment income and the employment rate remain constant at pre-closure levels. While this is not an entirely reasonable assumption, we posit that the real effects on these parameters would be insignificant given the small size of these movements relative to the size of the Canadian population in any given category..

Closing the Income Gap Conditional on Education

The closure of the income gap conditional on education entails a similar albeit much simpler process. To produce an estimate of the total employment income[19] for the First Nations population post-closure, we simply multiply the pre-closure number of employed First Nations people in each educational attainment category by the average employment income for non-Indigenous individuals in that category. Finally, as in the previous section, we can subtract the pre-closure total employment income from the post-closure figure to produce an estimate of the change in total employment income resulting from the income gap closure.

It is important to note that the closure of the income gap within educational categories does not constitute a closing of the aggregate income gap; that is to say, even after closing the income gap conditional on education, First Nations people will still earn less on average than non-Indigenous people. This is a consequence of differences in the distribution of educational attainment levels between the First Nations and non-Indigenous populations. The aggregate average employment income figure can be thought of as a weighted average of the individual average employment income figures for each educational category. This function can be expressed in the following form:

$$\bar{Y}^e = \sum_{c=1}^{n} (a_c \bar{Y}^e{}_c),$$

where $\bar{Y}^e$ is the aggregate average employment income of a population, $\bar{Y}^e{}_c$ is the average employment income of educational attainment category c, a_c is a weight representing the proportion of the population which occupies category c, and n is the number of educational attainment categories. When we close the income gap conditional on education, we are replacing the average employment income of First Nations people in a given category with the same figure for non-Indigenous people; essentially, we are equalizing $\bar{Y}^e{}_c$ i across the two populations. This is not sufficient to eliminate the aggregate income gap however, as the distribution of individuals across educational categories will still vary between First Nations and non-Indigenous people. Thus, the values of a_c will still vary between the populations and disparity will remain between the aggregate average employment incomes $(\bar{Y}^e)$ of First Nations people and non-Indigenous Canadians. In order for the aggregate income gap to fully close, both the income gap conditional on education and the education gap would need to close.[20] Under these circumstances, both a_c and $\bar{Y}^e{}_c$ would be equalized across the two populations, leading to a convergence of $\bar{Y}^e$ for First Nations and non-Indigenous people, and a full closure of the aggregate income gap.

[19] It should also be noted that the jobs approach to quantifying economic benefits is not applicable to the closure of the income gap. First Nations individuals are not moving between categories nor is the employment rate gap being closed, and as such, the First Nations population does not enjoy a higher effective employment rate (neither in the aggregate nor in specific categories). The only economic benefits accruing as a result of closing the conditional income gap are the gains in income which all employed First Nations people experience; there are no gains in employment.

[20] We will perform this operation in our fourth and final scenario where all three gaps are closed simultaneously.

Closing the Employment Rate Gap Conditional on Education

The closure of the employment rate gap conditional on education also follows a fairly simple process. The working-age population of First Nations people in each educational category is multiplied by the non-Indigenous employment rate in that category. This produces the number of employed First Nations people in each educational category, which is then multiplied by the average employment income for First Nations people in that category. Once again, this provides us an estimate of the total employment income post-closure for First Nations people, which can then be compared to the pre-closure figure to produce the estimated change in total employment income as a result of the gap closure.[21] We can also estimate the number of jobs generated by the closure of the conditional employment rate gap as an additional way of quantifying the economic benefits. To do so, we compare the pre- and post- closure number of employed First Nations people in each category and sum the differences.

As with the closure of the conditional income gap, the closure of the conditional employment rate gap is not sufficient to eliminate the aggregate employment rate gap. The aggregate employment rate for a given population can be expressed as:

$$\bar{Y}^e = \sum_{c=1}^{n} (a_c \bar{Y}^e{}_c),$$

where E is the aggregate employment rate for a population, E_c is the employment rate within a given educational attainment category c, a_c is a weight representing the proportion of the population which occupies category c, and n is the number of educational attainment categories. Closing the employment rate gap within educational categories equalizes E_c across the First Nations and non-Indigenous populations, however the values of a_c remain distinct for the two groups. In order for the aggregate employment rate gap to close fully, both the conditional employment rate gap and the education gap need to close.[22]

Closing All Three Gaps Simultaneously

The procedure for estimating the benefits of closing all three gaps simultaneously is very similar to the process for estimating the benefits of closing the education gap. The distinction is that at every step we now use the parameters of the non-Indigenous population rather than the First Nations population: an adjustment that allows us to produce a portrait of the Canadian economy if First Nations people were to enjoy the same level of educational attainment, the same income conditional on education, and the same employment rate conditional on education as non-Indigenous Canadians.

[21] As described in the "Understanding the Gaps" section, there are several educational categories in which First Nations people actually enjoy a higher employment rate than non-Indigenous individuals. In these categories, we will not close the disparity in employment rate between the two groups, given that replacing the First Nations employment rate with the non-Indigenous rate would actually be economically harmful. Alternatively, we could replace the non-Indigenous employment rate with the higher Indigenous employment rate, therein boosting the economic performance of non-Indigenous individuals, however we feel this is not germane to the goal of this report. We have instead chosen to leave the First Nations employment rate as is in these categories.

[22] Again, we will perform this exercise in the final scenario as described in the following subsection.

We begin by closing the education gap. We do so by multiplying the total working age population of First Nations people by the proportion of the non-Indigenous working age population in each educational category. This yields the number of working-age First Nations people in each category if the distribution of educational attainment for First Nations people was identical to the distribution for non-Indigenous Canadians. We then close the conditional employment rate gap by multiplying the number of working-age First Nations people in each category by the non-Indigenous employment rate in that category, yielding the number of employed First Nations people in each category. Finally, we close the conditional income gap. By multiplying the number of employed First Nations people in each category by the average employment income of non-Indigenous Canadians in that category and summing these figures, we produce the total employment income for the First Nations population post-closure. Again, one way we can quantify the economic benefits of closing all three gaps is by subtracting the pre-closure total employment income of First Nations people from the post-closure figure.

Alternatively, we can calculate the number of new jobs produced by subtracting the pre-closure number of employed First Nations people in each category from the post-closure number. The factors driving this job creation process are a) the greater employment rate which many First Nations people now enjoy simply by virtue of having a higher level of educational attainment and b) the greater employment rate which most First Nations people enjoy now that employment rates in every category have converged to the rates enjoyed by non-Indigenous Canadians.

Assumptions & Limitations

All four of these scenarios follow what we call the overnight model of gap closure. That is, they envision the three major gaps between First Nations people and non-Indigenous Canadians closing instantaneously or 'overnight'. This is obviously not a reasonable assumption; the closing of these gaps will take years, if not decades, and will likely require substantial policy interventions. Moreover, this is hardly an innocuous assumption given that the absolute and relative sizes of both populations, as well other key parameters like real wage rates and employment rates, are expected to change significantly over this time period. As such, the findings of this model should not be regarded as an exact simulation of the economic outcomes that will arise should these gaps truly be closed. Rather, they should be viewed as initial estimations of the magnitude of benefits which might accrue to First Nations people and Canadians generally, should policymakers pursue such goals.

Part II of this report sees us quantify the economic benefits of closing the three primary gaps using a more detailed and more realistic model. We call this model the longitudinal model. Rather than disappearing instantaneously, this model envisions the gaps closing slowly over the course of years. It also makes use of economic projections developed by the Centre for the Study of Living Standards to incorporate changes over time in the key population parameters that we have outlined above, namely real wages, employment rates, and the size of the populations. Moreover, this model takes a slightly broader scope, assessing economic benefits in terms of GDP, employment, employment income, and productivity gains. Finally, whereas the 'overnight' model primarily mobilizes aggregate-level data for its estimations, this 'longitudinal' model leverages 2016 Census individual-level microdata provided by Statistics Canada in order to control for differences in age, sex, and geography between the two populations.

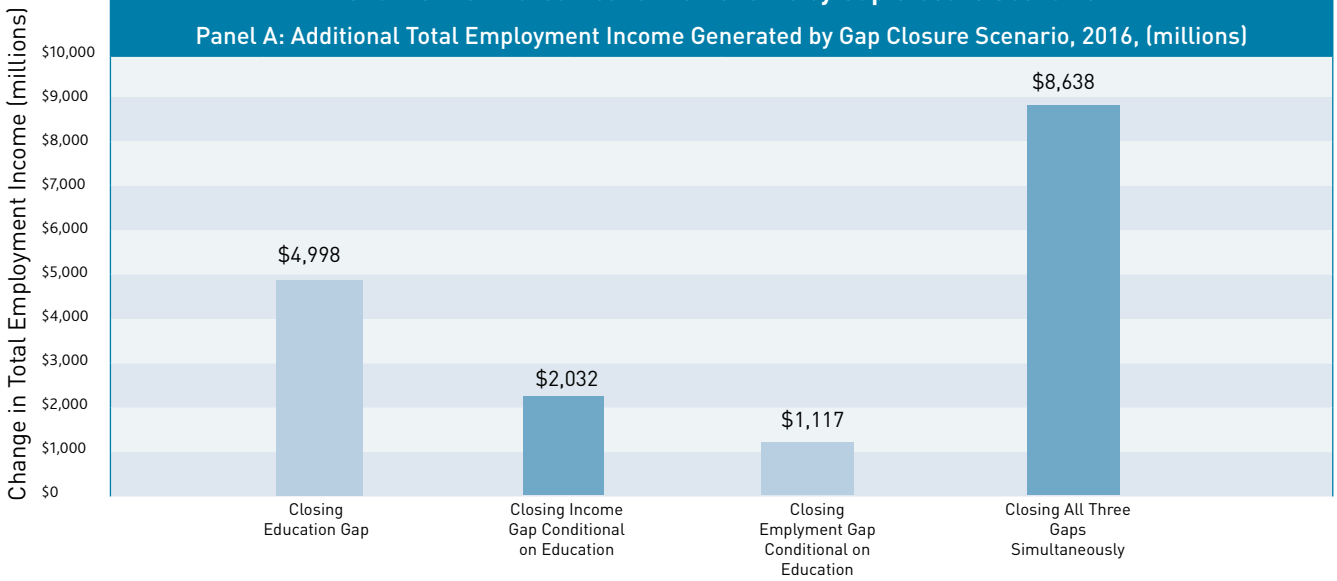
Results

Chart 6 and Table 5 collect our main results across the four scenarios we explore. Panel A of Chart 6 presents the employment income effects of closing the education gap, while Panel B shows the employment effects. Tables 6 to 9, meanwhile, present the results for each gap closure scenario. Our discussion of the results is structured in the following manner: we begin with the closure of the education gap before moving to discuss the closure of the conditional education gap, the closure of the conditional employment rate gap, and ultimately the simultaneous closure of all three gaps.

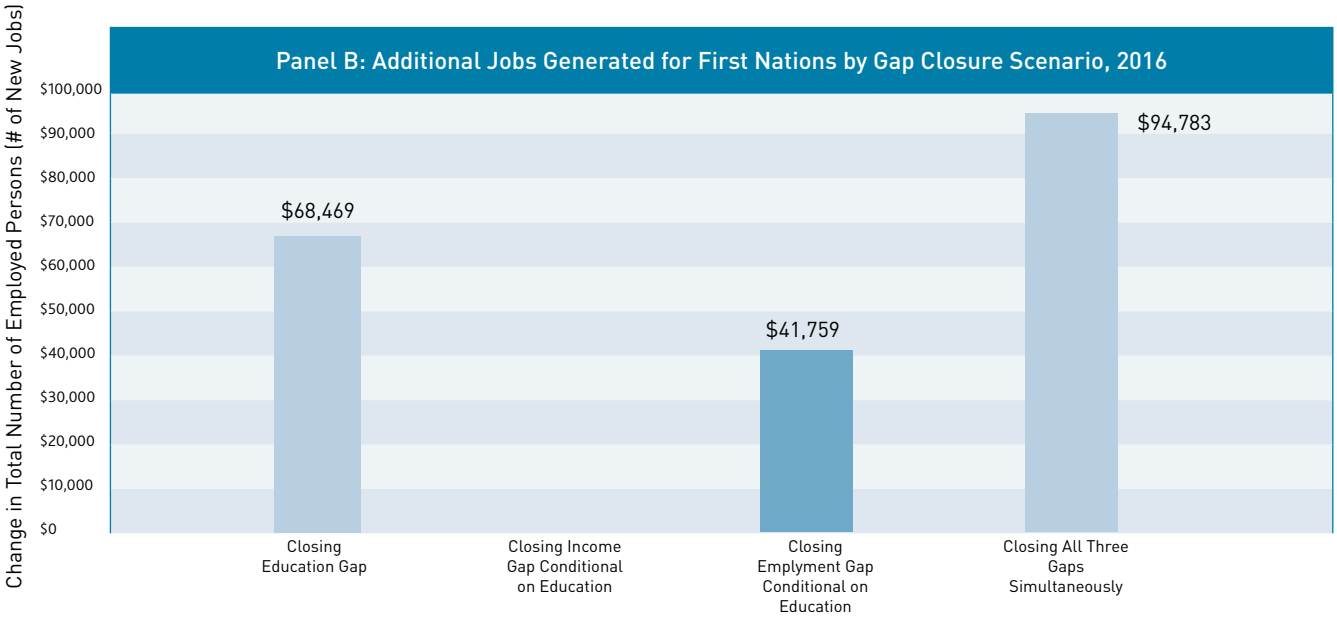
These benefits should be interpreted as how measures of the Canadian economy in 2016 might change if key labour market gaps between First Nations people and non-Indigenous Canadians were to close. Essentially, we are developing hypothetical versions of the 2016 economy where these gaps have closed and calculating the economic benefits for a given gap closure scenario as the difference in any given measure between that hypothetical scenario and the real, observed 2016 economy.[23] As such, the benefits expressed here are one-time benefits which would accrue if the aforementioned labour market gaps were to close instantaneously or "overnight". Alternatively, these benefits may be conceptualized as the opportunity cost of allowing these gaps to persist. For example, the gains in total employment income associated with the closure of the educational attainment gap can be interpreted as the amount of total employment income which Canadians are 'leaving on the table', so to speak, by not addressing this gap; in other words, we estimate that Canadian total employment income in 2016 would have been that much larger if the educational attainment gap was closed. In the longitudinal model offered in Part II of this report, we also offer time-series estimates of the yearly benefits which would be accrued if these gaps were to close realistically over time.

Chart 6: Estimated Economic Benefits by Gap Closure Scenario

Panel A: Additional Total Employment Income Generated by Gap Closure Scenario, 2016, (millions)



[23] Hence, all dollar estimates of benefits are expressed in 2015 Canadian dollars.



Sources: Statistics Canada, 2016 Census of Population, Statistics Canada Catalogue no. 98-400-X2016178. Statistics Canada, 2016 Census of Population, Statistics Canada Catalogue no. 98-400-X2016268. Statistics Canada, 2016 Census of Population, Statistics Canada Catalogue no. 98-400-X2016267.

Table 5: Estimated Economic Benefits of Gap Closures

Gap Closure Scenario	New Employ-ment (# of jobs) from gap closure	Employ-ment Share before gap closure	Employ-ment share after gap closure	Total Canadian Employment Income pre- gap closure (millions)	Total Canadian Employment Income post- gap closure (millions)	Change in Total Employment Income (absolute) (millions)	Change in FN Total Employ-ment Income (percent change)	Change in Canadian Total Employment Income (percent change)
Closing Education Gap	68,469	**1.88%**	**2.27%**	$793,564	$798,562	$4,998	**44.82%**	**0.63%**
Closing Income Gap Conditional on Education		**1.88%**	**1.88%**	$793,564	$795,596	$2,032	**18.22%**	**0.26%**
Closing Employment Gap Conditional on Education	40,851	**1.88%**	**2.11%**	$793,564	$794,681	$1,117	**10.02%**	**0.14%**
Closing All Three Gaps Simultane-ously	94,783	**1.88%**	**2.42%**	$793,564	$802,202	$8,638	**77.47%**	**1.09%**

Sources: Statistics Canada, 2016 Census of Population, Statistics Canada Catalogue no. 98-400-X2016178. Statistics Canada, 2016 Census of Population, Statistics Canada Catalogue no. 98-400-X2016268. Statistics Canada, 2016 Census of Population, Statistics Canada Catalogue no. 98-400-X2016267.

Closing the Education Gap

Table 6 presents our estimates for the economic benefits associated with closing the education gap under the overnight model outlined in the previous section. In total, we estimate that the closure of the gap would generate nearly $5 billion dollars in additional employment income for the Canadian economy, constituting a 0.63% increase in total Canadian employment income. As a proportion of national earnings these gains may seem small, but this is simply a consequence of the small proportion of the Canadian population which First Nations people comprise; in 2016, First Nations people accounted for only 2.1% of the Canadian working-age population. As a proportion of First Nations total employment income, that $5 billion dollars in additional income represents a nearly 45% increase from pre-closure income levels. Moreover, we estimate that the closure of the gap would generate an additional 68,469 jobs for First Nations people as a result of the higher employment rates that higher levels of educational attainment are associated with. Overall, this would boost the employment rate for First Nations people from 46.8% to 56.7%: an increase of about 10 percentage points. Furthermore, it would raise the proportion of total Canadian employment made up by First Nations–what we call the employment share for the First Nations population or the First Nations employment share–from 1.88% to 2.27%.

Table 6: Economic Benefits of Closing Education Gap

	Total	No certificate, diploma or degree	Secondary (high) school diploma or equivalency certificate	Apprentice-ship or trades certificate or diploma	College, CEGEP or other non-university certificate or diploma	University certificate or diploma below bachelor level	Bachelor's degree	University certificate, diploma or degree above bachelor level
New Employment (# of jobs) from gap closure	68,469	-36,471	4,001	-81	10,927	2,795	55,026	32,276
Total FN Employment Income pre- gap closure (millions)	$11,151	$1,438	$2,567	$1,531	$2,983	$418	$1,518	$696
Total FN Employment Income post- gap closure (millions)	$16,149	$663	$2,679	$1,528	$3,404	$534	$4,434	$2,906
Change in FN Total Employment Income (absolute) (millions)	$4,998	-$775	$113	-$3	$421	$116	$2,916	$2,210
Change in FN Total Employment Income (percent change)	44.82%	-53.92%	4.39%	-0.21%	14.13%	27.76%	192.10%	317.68%

Sources: Statistics Canada, 2016 Census of Population, Statistics Canada Catalogue no. 98-400-X2016178. Statistics Canada, 2016 Census of Population, Statistics Canada Catalogue no. 98-400-X2016268. Statistics Canada, 2016 Census of Population, Statistics Canada Catalogue no. 98-400-X2016267.

As shown in Table 6, the largest of the gains in income occur in the "bachelor's degree" and "above bachelor level" categories where the increases in employment income total to $2.9 billion and $2.2 billion respectively; this tracks with our analysis of the gaps presented in Table 1 where we noted that these two educational categories had the largest gaps in educational attainment between the two groups. Logically, closing these two widest gaps should produce the largest gains and that is exactly what we observe: a phenomenon which is bolstered by the fact that these two categories boast the highest average incomes of the attainment categories by a large margin. The other major area of disparity between the two populations is in the "no certificate" category, which First Nations people were twice as likely to occupy compared to non-Indigenous Canadians. As shown in Table 6, the closure of the education gap is actually expected to produce a negative change in the total employment income of First Nations people in this category. It is critical to note that this negative figure is purely a function of First Nations people leaving the category as they achieve higher levels of education. First Nations people

are not earning less; in fact, they are expected to earn significantly more in the higher educational categories that they now inhabit. Rather, First Nations individuals are simply being redistributed into high educational categories, leaving this category (as well as the "apprenticeship or trades" category) with a smaller population, and therein, a smaller total employment income. These small losses are greatly overshadowed by the significant gains in other, higher educational categories however.

The employment figures in Table 6 tell a similar story. A fairly large number of jobs–about 36,000–are 'lost' in the" no certificate" category, but once again, this only represents First Nations individuals moving into higher educational categories and likely into higher paying jobs. It is important to note though, that the changes in employment numbers within educational categories do not necessarily represent movement between jobs. For example, a First Nations individual who has not graduated high school and is working in manual labour would be counted as one job within the "no certificate" category. If that First Nations individual were to achieve a high school equivalency certificate as part of the closure of the education gap, their job would no longer be counted in the "no certificate" category and would now be counted in the "high school diploma or equivalent" category. This would happen regardless of if that individual stayed in their current job or if they leveraged their newly acquired credentials to find a different job. With that said, given that greater economic opportunity and greater earning potential are some of the primary reasons why individuals pursue higher levels of education, it seems likely that most individuals who reach a higher level of educational attainment will see their new credentials reflected in their income. These gains in income may arise from moving between jobs, but they can also arise from wage increases, or in the case of the self-employed, increased self-employment income.

Closing the Income Gap Conditional on Education

Table 5 and 7 present our estimates for the economic benefits associated with closing the income gap conditional on education under the overnight model. We estimate that the closure of the gap would generate about $2 billion dollars in additional employment income: a 0.26% increase in total Canadian employment income or about an 18% increase in the total employment income of the First Nations population. The largest source of these gains is the "college or non-university certificate" category where the closure of the

gap results in about $560 million in additional employment income, comprising over 25% of the aggregate gains across all categories. This is followed closely by the "high school diploma or equivalent" category where closure of the gap yields $528 million in additional employment income.

Interestingly, unlike the closure of the education gap, the greatest source of gains here does not stem from the educational categories with the largest income gaps. As shown previously in Chart 3, the two categories with the largest gaps in average employment income between the two populations are the "bachelor's degree" category and the "above bachelor level" category, or the two highest levels of educational attainment. Here however, the closure of the income gap in these two categories only yields $272 million and $108 million respectively. These are still large gains to be sure, but perhaps not as large as we might expect given the significant absolute gaps in the earnings of First Nations people compared to non-Indigenous Canadians in these categories. The reason for this is that the size of economic gains from closing the income gap in any given category is not solely a function of the size of the gap. Rather, the size of economic gains is a product of both a) the size of the gap and b) the proportion of the population in that gap. As Table 1 shows, the proportion of First Nations people in these top two categories only totals to 7.4% of the population, compared to the 42.4% of the population occupying the "high school" and "college" categories. This dynamic not only explains the distribution of economic gains across the educational categories, it also illustrates why the gains from the closure of the conditional income gap do not quite rival the gains from the closure of the education gap.

Table 7: Economic Benefits of Closing Income Gap Conditional on Education								
	Total	No certificate, diploma or degree	Secondary (high) school diploma or equivalency certificate	Apprenticeship or trades certificate or diploma	College, CEGEP or other non-university certificate or diploma	University certificate or diploma below bachelor level	Bachelor's degree	University certificate, diploma or degree above bachelor level
New Employment (# of jobs) from gap closure								
Total FN Employment Income pre- gap closure (millions)	$11,151	$1,438	$2,567	$1,531	$2,983	$418	$1,518	$696
Total FN Employment Income post- gap closure (millions)	$13,182	$1,726	$3,094	$1,745	$3,543	$480	$1,790	$804
Change in FN Total Employment Income (absolute) (millions)	$2,032	$289	$528	$214	$560	$62	$272	$108
Change in FN Total Employment Income (percent change)	18.22%	20.07%	20.55%	13.96%	18.76%	14.94%	17.90%	15.52%

Sources: Statistics Canada, 2016 Census of Population, Statistics Canada Catalogue no. 98-400-X2016178. Statistics Canada, 2016 Census of Population, Statistics Canada Catalogue no. 98-400-X2016268. Statistics Canada, 2016 Census of Population, Statistics Canada Catalogue no. 98-400-X2016267.

Whereas the closure of the education gap yields about $5 billion in additional total employment income, the closure of the income gap conditional on education yields approximately 40% of that -- about $2 billion. Moreover, while the closure of the education gap generates 68,469 new jobs for First Nations people, the closure of the income gap conditional on education, by definition, generates no additional employment opportunities. Part of this disparity is explained by the analysis above; the closure of the income gap does

not redistribute First Nations people across educational categories like the closure of the education gap, and as such, closing even seemingly enormous gaps like the income gap at the "above bachelor level" does not generate enormous economic benefits given that very few First Nations people occupy this category. Moreover, the potential income gains from moving individuals up the educational distribution are significantly greater than the potential income gains from closing any of the within-category income gaps. In other words, the gap in earnings between less educated and highly educated First Nations people is much more substantial than the income gap between First Nations people and non-Indigenous Canadians within any given educational category. For example, moving a First Nations individual from the "high school" category to the "bachelor's degree" category is associated, on average, with a nearly $25,000 increase in income: a figure which dwarfs the largest within-category income gap at $10,630, and even the aggregate income gap at $13,370. For these reasons, although the closure of the income gap conditional on education is substantial and important, the economic importance of closing the education gap is significantly greater.

Closing the Employment Rate Gap Conditional on Education

Table 5 and 8 present our estimates for the economic benefits associated with the closure of the employment rate gap between First Nations people and non-Indigenous Canadians within educational categories. Overall, the closure of the employment rate gap under the 'overnight model' is projected to generate about $1.1 billion in additional total employment income, representing a 0.14% increase in Canadian total employment income and about a 10% increase in the total employment income of First Nations people.[24] Moreover, we estimate that the closure of the gap would generate 40,851 new jobs as a result of the higher employment rates which most First Nations people would now enjoy. Consequently, the employment share for the First Nations population–the proportion of total Canadian employment accounted for by the employment of First Nations people–would rise from 1.88% to 2.11% (see Table 5). The most significant source of these gains, by far, is the "no certificate" category, which would yield an estimated $444 million in additional employment income, should the employment rate gap be closed: a 31% increase from the pre-closure total employment income of First Nations people in this category. This is not particularly surprising, given that, as shown in Table 1, the gap in employment rates in this category was the largest of any educational category at about 8 percentage points.

[24] As mentioned in Footnote 22, this model does not apply any adjustments to education categories where the employment rate is higher for First Nations than for non-Indigenous Canadians. The figure provided in the "total" column of Table 8 is a sum of the economic benefits of the closing the employment rate for the categories where we have made adjustments, and as such, this figure does not include any losses associated with closing the employment rate gap in the "below bachelor level", "bachelor's degree", or "above bachelor level" categories.

Table 8: Economic Benefits of Closing Employment Rate Gap Conditional on Education

	Total (1)	No certificate, diploma or degree (2)	Secondary (high) school diploma or equivalency certificate (3)	Apprenticeship or trades certificate or diploma (4)	College, CEGEP or other non-university certificate or diploma (5)	University certificate or diploma below bachelor level (6)	Bachelor's degree (7)	University certificate, diploma or degree above bachelor level (8)
New Employment (# of jobs) from gap closure (A)	40,851	20,890	9,818	5,196	4,947	**-186**	**-678**	**-515**
Total FN Employment Income pre- gap closure (millions) (B)	$11,151	$1,438	$2,567	$1,531	$2,983	$418	$1,518	$696
Total FN Employment Income post- gap closure (millions) (C)	$12,268	$1,882	$2,843	$1,737	$3,174	$410	$1,482	$660
Change in FN Total Employment Income (absolute) (millions) (D)	$1,117	$444	$277	$205	$191	**-$8**	**-$36**	**-$35**
Change in FN Total Employment Income (percent change) (E)	10.02%	30.89%	10.77%	13.42%	6.40%	**-1.85%**	**-2.37%**	**-5.07%**

Sources: Statistics Canada, 2016 Census of Population, Statistics Canada Catalogue no. 98-400-X2016178. Statistics Canada, 2016 Census of Population, Statistics Canada Catalogue no. 98-400-X2016268. Statistics Canada, 2016 Census of Population, Statistics Canada Catalogue no. 98-400-X2016267.

Note: Column 1 is the sum of Columns 2, 3, 4, 5, 6, 7, 8 except in Rows A, D, and E where Columns 6, 7, 8 (the shaded boxes) are omitted from the calculation of the total.

The second most substantial source of gains is the "high school" category which is projected to experience a $277 million increase in total employment income resulting from the closure of the gap. Interestingly, the "apprenticeship or trades" category, which experienced the second highest employment rate gap at 7.7% -- less than half a percentage point smaller than the gap in the "no certificate" category -- is projected to

yield only $205 million in additional total employment income from the closure. Again, this is by no means an insignificant amount, but it is less than half of the gains projected for the "no certificate category" despite experiencing an employment rate gap of comparable size. We posit that this is, again, a consequence of the relatively small proportion of the population which inhabits this category; while the "no certificate" category accounts for about 38% of the First Nations population, the "apprenticeship or trades" category accounts for only about 10%.

Once again, the total gains from the closure of the employment rate gap conditional on education pale in comparison somewhat to the projected gains from the closure of the education gap, and to some extent, even the income gap. While all three do generate significant economic benefit, the projected gains from closing the employment rate gap are about 20% of the gains from closing the education gap, and about 55% of the gains from closing the income gap; the smallest of the three by a significant margin. One possible explanation for this is that the bulk of the aggregate employment rate gap, both in absolute and relative terms, is contributed by the lowest educational categories where individuals earn, on average, the lowest incomes. As such, although the closure of the employment rate gap generates an additional 40,851 jobs, and therein an additional 40,851 incomes, the majority of these incomes are relatively low. This is exacerbated by the fact that First Nations people in the highest educational categories--who enjoy the highest average employment incomes-- already enjoy a higher employment rate than non-Indigenous individuals. As such, no benefits from closing the employment rate gap accrue from these categories. Again, while the employment rate gap is certainly significant, its economic importance does not match that of the education gap.

Closing All Three Gaps Simultaneously

Tables 5 and 9 present our estimates for the economic benefits associated with the simultaneous closure of all three gaps--the education gap, the income gap conditional on education, and the employment rate gap conditional on education--according to our overnight model. We project that the closure of the three gaps simultaneously would generate an additional $8.6 billion in total employment income, representing a 1.09% increase in Canada's total employment income and about a 77% increase in the total employment income of First Nations people. Moreover, we estimate that the closure of the three gaps would yield a total of 94,783 additional jobs. Consequently, the employment share for the First Nations population would rise from 1.88% to 2.42%. The source of these gains is threefold. Firstly, many First Nations people would occupy higher educational attainment categories as a result of the closing of the education gap. These individuals would thus enjoy both higher employment rates and higher incomes by virtue of attaining higher levels of education. Secondly, all First Nations people would enjoy higher incomes resulting from the closure of the income gap conditional on education. Finally, First Nations people would enjoy higher employment rates within most educational categories as a result of the closure of the employment rate gap. As one would expect, these gains are by far the largest of any of the four scenarios, with the change in total employment income being about 72% larger than the same figure in the "closing the education gap" scenario, and the number of jobs generated being about 38% larger.

Table 9: Economic Benefits of Closing All Three Gaps At Once								
	Total	No certificate, diploma or degree	Secondary (high) school diploma or equivalency certificate	Apprenticeship or trades certificate or diploma	College, CEGEP or other non-university certificate or diploma	University certificate or diploma below bachelor level	Bachelor's degree	University certificate, diploma or degree above bachelor level
New Employment (# of jobs) from gap closure	94,783	-26,854	14,244	5,102	16,570	2,557	53,044	30,124
Total FN Employment Income pre- gap closure (millions)	$11,151	$1,438	$2,567	$1,531	$2,983	$418	$1,518	$696
Total FN Employment Income post- gap closure (millions)	$19,789	$1,041	$3,578	$1,975	$4,302	$602	$5,104	$3,187
Change in FN Total Employment Income (absolute) (millions)	$8,638	-$397	$1,011	$444	$1,319	$184	$3,586	$2,491
Change in FN Total Employment Income (percent change)	77.47%	-27.61%	39.40%	28.98%	44.20%	44.13%	236.23%	358.05%

Sources: Statistics Canada, 2016 Census of Population, Statistics Canada Catalogue no. 98-400-X2016178. Statistics Canada, 2016 Census of Population, Statistics Canada Catalogue no. 98-400-X2016268. Statistics Canada, 2016 Census of Population, Statistics Canada Catalogue no. 98-400-X2016267.

The distribution of gains across the educational categories very much resembles the distribution seen under the "closing the education gap" scenario. The sources of the largest gains in both total employment income and jobs are the "bachelor's degree" category, which generates about $3.6 billion in additional employment income and 53,044 jobs, followed by the "above bachelor level" category, which generates about $2.5 billion in additional employment income and 30,124 jobs. This again tracks with what we would expect based on our findings in Tables 1, 3, and 4: these categories are not only the sources of the largest gaps in educational attainment (as per the distributional approach), but they also boast the highest average incomes and high rates of employment. As such, closing the education gap generates massive economic benefits to the extent that it redistributes First Nations people individuals en masse into these categories. This is of course encouraged by the closure of the income gap, which further increases the average incomes associated with these two categories.[25]

[25] The closure of the employment rate gap has no effect here however because the employment rate of First Nations was already higher than the employment rate of non-Indigenous Canadians pre-closure.

Once again, as with the closure of the education gap, the closure of the three gaps simultaneously is associated with losses in the income and number of jobs associated with the "no certificate category". Specifically, it leads to a fall in total employment income equal to about $397 million, and the 'loss' of 26,854 jobs. However, as discussed in "closing the education gap" scenario which opened this section, these figures do not, in any way, represent negative economic outcomes accruing to First Nations people. Rather these numbers are simply a consequence of the migration of First Nations individuals to categories with significantly higher average earnings and rates of employment. Interestingly, the "apprenticeship or trades" category, which was a minute loss of jobs and employment income in the "closing the education gap" scenario, is now associated with positive contributions to total employment income and the number of jobs: a development which is assumedly a consequence of closing the income and employment rate gaps.

It is worth noting that the gains in key metrics of economic benefit – namely in total employment income, number of jobs, and First Nations employment share – are not additive. That is to say, the sum of the gains from the three prior scenarios does not equal the gains from this final scenario. The change in total employment income from this final scenario, for example, is actually larger in absolute terms than the sum of the three prior scenarios – an estimated $8.6 billion compared to a sum of $8.1 billion. This is also true in relative terms; this final scenario represents a 1.09% increase in Canadian total employment income and a 77.47% increase in First Nations total employment income compared to totals of 1.03% and 73.06% respectively in the prior three scenarios. The opposite is true for new employment generated by the closure of the gaps. The projected number of jobs generated by the simultaneous closure of the three gaps is overshadowed by the sum of new jobs from the previous three scenarios at 94,783 and 110,228 respectively: a difference of over 15,000 jobs. Similarly, the change in First Nations employment share is smaller in this scenario than the sum of the employment share gains in the three prior scenarios. The simultaneous closure of the three gaps yields a 0.54% increase in employment share compared to a total increase of 0.63%, summing together the impacts of the three individual gap closure scenarios.

We interpret this as a natural consequence of the way we model the simultaneous closing of the three gaps. We choose to close the education gap first in our calculations, redistributing First Nations individuals across educational attainment categories. Because the closure of the conditional employment and income gaps occur after this redistribution process, the impacts of closing theses gaps vary from the impacts we observe in the individual gap closure scenarios. Many First Nations people now occupy different educational categories than they did before the closure of the education gap, and as such, the gains they reap from the closure of these two gaps may be larger or smaller than the total gains they would reap from summing together the impacts of the individual gap closure scenarios.

[26] Here the term "otherwise" refers to the sum of the three individual gap closure scenarios wherein the gaps are closed separately.

Given that the closure of the education gap moves First Nations individuals to higher categories of educational attainment, and that the absolute size of the within-category income gap is larger for higher education categories than for lower ones, the gains generated from the closure of the conditional income gap grow here compared to the individual gap scenario. Put simply, the closure of the education gap moves First Nations people into categories where they gain more from the closure of the conditional income gap than they would have otherwise.[26] This is reflected in the change in total employment income, which is larger than the sum of the gains in income from the three prior scenarios. Similarly, given that both the absolute and relative size of the within-category employment rate gap tends to fall as the level of educational attainment increases, even reversing direction in the highest educational categories, the gains generated from the closure of the conditional employment rate gap shrink here compared to the individual gap scenario.[27] The closure of the education gap, in this case, moves First Nations people into categories where they gain less from the closure of the conditional employment rate gap than they would have otherwise. This is reflected in the number of new jobs as well as the First Nations employment share, both of which are smaller here than the sum of their equivalents in the individual gap closure scenarios. We also would expect this to be reflected in the change in total employment income – fewer new jobs means less additional income, after all. However, it seems that these relatively smaller gains (compared to the prior three scenarios) are eclipsed by the relatively larger gains associated with closing the income gap in this final simultaneous scenario (again, compared to the individual gap closure scenarios). This phenomenon tracks with our previous observation that the economic benefits of closing the conditional income gap are significantly larger than the economic benefits of closing the conditional employment gap. Ultimately, this produces a change in total employment income which is larger than in the previous three scenarios.

Conclusion

We posit that our analysis of the potential gains from closing the key labour market gaps facing First Nations individuals in comparison to their non-Indigenous counterparts provide strong evidence in support of policy measures to close such gaps. Under the overnight model, we estimate that the simultaneous closure of the three key gaps—the education gap, the income gap conditional on education, and the employment rate gap conditional on education—would generate an additional $8.63 billion in total employment income: a 1.09% increase in Canada's total employment income and a staggering 77.5% increase in the total employment income of First Nations people. We also find that it would provide an additional 94,783 new jobs to First Nations people. We specifically recognize the gap in educational attainment between the two populations as the most economically significant of these gaps, with the closure of the education gap alone contributing about $5 billion in additional total employment income and boosting the total employment income of First Nations people by 44.8%. The closure of the income and employment rate gaps conditional on educational attainment, meanwhile, are associated with economic benefits that are somewhat smaller in scale, albeit still substantial; the summed total employment income generated from the individual closure of these two gaps makes up about 63% of the gains in total employment income associated with the closure of the education gap.

[27] This effect is especially pronounced given that the closure of the education gap moves many First Nations into categories where the First Nations employment rate is higher than the non-Indigenous employment rate. Many of these individuals are moved from categories where the First Nations employment rate is lower than the non-Indigenous rate, and as such, they go from reaping some amount of gains from the closure of the conditional employment rate gap to reaping no gains at all.

The model which we employ in this report—what we call the overnight model of gap closure—envisions these gaps closing instantaneously: a simplifying assumption which has allowed us to produce the initial estimates we have offered in this report. Part II of this report utilizes what we call the longitudinal model of gap closure, envisioning the closure of the gaps as a gradual, decades-long process. This approach mobilizes the 2016 Census Public Use Microdata File offered by Statistics Canada alongside economic projections developed by the Centre for the Study of Livings Standards in order to control for demographic differences between the populations. Specifically, we control for age, sex and province/territory of residence alongside educational attainment in order to produce a more causal understanding of the relationships between First Nations identity, educational attainment, and key labour market outcomes. This method offers a broader approach to estimating the economic benefits of gap closures, assessing the impacts on not only employment income but GDP and labour productivity, among other metrics.

Still, even without the additional depth offered by the longitudinal approach, we are confident in asserting the economic importance of closing the education gap as well as the associated income and employment rate gaps within educational categories. Our results across all four scenarios are unequivocal in portraying these gaps, and particularly the education gap, as tremendous constraints on the economic performance of Canada's First Nations population: constraints which impede the growth and flourishing of not only First Nations communities but the Canadian economy writ large. Further to our previous reports regarding the economic performance of Canada's Indigenous peoples, including Canada's First Nations people, we submit this report as evidence of the need for concerted policy efforts to reduce and ultimately eliminate the labour market disparities we have outlined here. There have long been potent humanitarian arguments for addressing these gaps and we position this report as part of a growing body of literature recognizing the additional economic salience of such efforts.

Part II: Longitudinal Model

Closing the First Nations Education Gap in Canada: Assessing Progress and Estimating the Economic Benefits — An Update, Part II

Part II of this report focuses on the "longitudinal" method of estimating the economic benefits of closing the various labour market gaps experienced by First Nations people compared to non-Indigenous people. Whereas the "overnight" model of gap closure presented in Part I of this report envisions these labour market gaps closing instantaneously, the longitudinal approach imagines the gaps closing gradually over the course of a 20-year period (2021 to 2041). In doing so, it leverages population projections produced by Statistics Canada and economic projections produced by the CSLS to develop estimates of key economic indicators for the First Nations population over this period (Statistics Canada, 2021; Arif, 2022). Moreover, through the use of individual-level Census microdata, we are able to control for the demographic characteristics of individuals and project their future economic performance in terms of wages, output, labour productivity, and employment.[28] Compared to the overnight model, which uses aggregate level data, this approach allows us to produce more accurate and more detailed estimations of the impacts of these labour market gaps on the First Nations population and the Canadian economy.

Part II of this report is structured in the following manner. The first section provides a methodological overview of the longitudinal model and the different scenarios of gap closure that we explore. In the second section, we present the results of the model, first at the aggregate-level for each scenario, and then disaggregated across the four major variables we consider: province/territory, sex, age, and educational attainment.[29] The third section discusses these results in comparison to the results from Part I, outlining possible sources of divergence between the findings of the overnight model and the longitudinal model. The fourth and final section concludes.

Methodological Overview

Within this model, we consider six different scenarios – one baseline scenario and five gap closure scenarios (Scenario 1 to Scenario 5) – each with their own set of assumptions about how the labour market gaps experienced by the First Nations population might change and develop by the year 2041. Table 1 presents a summary of how we define each of these scenarios. For each scenario, we produce estimates of key economic indicators, namely, employment, employment income, contribution to GDP, and labour productivity.[30] By comparing these estimates between scenarios, we are able to develop an understanding of the gains which may accrue to First Nations people and Canadians generally if these disparities are partially or completely eliminated.

[28] We tend to measure these four variables in dollars. Unless it is explicitly stated otherwise, these variables are expressed in 2015 Canadian dollars.

[29] Our model includes Canada's three territories as a single category ("territories") alongside all ten provinces. When referring to these 11 categories in this report we try to use province/territory wherever it is possible and does not impair readability. However, there are some instances, particularly as we describe and compare results between the provinces, where it is difficult to include this terminology without undermining the clarity of our writing. It should thus be noted that any use of the word province in this paper includes the amalgamated "territories" category unless the context explicitly distinguishes between the two.

[30] This report uses the "productivity" interchangeably with "labour productivity", as this is the only form of productivity we discuss. We calculate labour productivity as total output divided by total employment; as such, the concept is always expressed in 2015 Canadian dollars per employed person.

Table 1: Scenario Definitions

Scenario	Description	Assumptions		
		First Nations Educational Attainment in 2041	First Nations Employment Rates in 2041	First Nations Wages in 2041
Baseline		Projected based on 2006-2016 rates of improvement for First Nations; "business as usual"	Equal to First Nations employment rates in 2016	Equal to First Nations employment incomes in 2016, assuming annual growth of 1%
1	Full Closure of the Education Gap	Same as projected educational attainment of non-Indigenous population in 2041; no educational attainment gap in 2041	Equal to First Nations employment rates in 2016	Equal to First Nations employment incomes in 2016, assuming annual growth of 1%
2	Half Closure of the Education Gap	Equal to the average of the baseline projections for First Nations and non-Indigenous populations; half of gap in baseline is eliminated	Equal to First Nations employment rates in 2016	Equal to First Nations employment incomes in 2016, assuming annual growth of 1%
3	Closure of the Employment Rate Gap	Projected based on 2006-2016 rates of improvement for First Nations; "business as usual"	Equal to non-Indigenous employment rates in 2016; gap closed	Equal to First Nations employment incomes in 2016, assuming annual growth of 1%
4	Closure of the Income Gap	Projected based on 2006-2016 rates of improvement for First Nations; "business as usual"	Equal to First Nations employment rates in 2016	Equal to non-Indigenous employment incomes in 2016, assuming annual growth of 1%; gap closed
5	Closure of All Three Gaps (Educational Attainment, Employment Rate, Income)	Same as projected educational attainment of non-Indigenous population in 2041; no educational attainment gap in 2041	Equal to non-Indigenous employment rates in 2016; gap closed	Equal to non-Indigenous employment incomes in 2016, assuming annual growth of 1%; gap closed

The baseline scenario, which we use as a benchmark when analyzing the other five scenarios, assumes that the level of educational attainment among First Nations will continue to change at the same rate as it did between the 2006 and 2016 censuses.[31] In most (but not all) educational categories, the disparity in attainment between the First Nations population and the non-Indigenous population closes somewhat during this period. This baseline scenario is produced by simply extrapolating the rate of change observed in each educational category between 2006 and

[31] Specifically, we calculate the compound annual growth rate required to achieve the change between 2006 and 2016 in the proportion of the First Nations population which occupies any of the nine educational attainment categories. For example, if the proportion of First Nations people with a bachelor's degree as their highest certification was 10% in 2006 and 20% 2016, we would calculate that as a 200% change over the 2006-2016 period. The corresponding compound annual growth rate would then be about 7.17%. Given that the proportion occupying some educational attainment categories falls over this period, these rates can be greater than or less than one.

2016 over the 2016-2041 period. The rate of change for each of these categories is presented in Table 2, alongside historical and projected levels of educational attainment. Ultimately, this approach sees the education gap between the population widen in some categories compared in 2016. Undoubtedly, both groups become more educated, however, for the First Nations population, these gains mainly occur as individuals move out of the "no certificate" category, and into the "high school", and non-university post-secondary categories (college, CEGEP). There are also significant gains in the "bachelor" and "university above bachelor" categories. However, in both absolute and relative terms, the gains experienced in these categories are greater for the non-Indigenous population than for the Indigenous population, and as such the gap in these categories actually grow under this baseline scenario.[32]

Table 2: Proportion of Working Age Population (15+) in Educational Attainment Categories by Year and Scenario[33]

	First Nations						
	2006	2011	2016	Compound Annual Growth Rate (2006-2016)	Projected 2041 at Current Rates (baseline)	Education Gap Half Closes by 2041	Education Gap Closes Fully by 2041
No certificate	48.3%	43.9%	39.0%	-2.1%	17.1%	12.4%	7.8%
High School	19.6%	23.1%	26.6%	3.1%	42.6%	33.6%	24.7%
Other Trades Certificate	10.4%	10.5%	8.8%	-1.6%	4.4%	5.3%	6.1%
College, CEGEP (3 months to 1 year)	2.5%	2.7%	4.2%	5.3%	11.3%	8.5%	5.6%
College, CEGEP (1 year to 2 years)	7.1%	7.1%	8.3%	1.5%	8.9%	9.3%	9.8%
College, CEGEP (2 years+)	3.9%	4.2%	4.1%	0.3%	3.3%	5.0%	6.8%
University below Bachelor	2.9%	2.3%	1.9%	-4.2%	0.5%	0.6%	0.7%
Bachelor	4.0%	4.6%	5.7%	3.6%	10.2%	19.5%	28.7%
University above Bachelor	1.3%	1.7%	1.5%	1.9%	1.8%	5.8%	9.8%
Total	100.0%	100.0%	100.0%	-	100.0%	100.0%	100.0%
Average Years of Education	**11.75**	**11.87**	**12.01**	**-**	**12.62**	**13.37**	**14.12**

[32] It should be noted that the methodology used for these projections involves a standardization process which affects the results in considerable ways. After applying the historical rates of growth to each educational attainment proportion to estimate the future proportion of individuals in that category, these proportions no longer sum to 100%. As such, a normalization process must be applied to both the non-Indigenous educational distribution as well as the First Nations educational distribution in order to return the sum of the proportions back to 100%. Given that the unnormalized total differs between the two populations as a result of the different levels of growth in educational attainment which each population experiences, the educational attainment distributions are scaled down by distinct factors, with the factors representing the average level of growth across all the education categories. Consequently, any individual proportion does not solely represent the level of growth projected for that category, but also the average level of growth expected for each educational category in the population. This generates some unintuitive results in some cases; for example, the size of the relative gap between the proportion of First Nations in the "above bachelor" category and the same proportion in the non-Indigenous population actually grows in our projection, even though the First Nations proportion is projected to grow faster than the non-Indigenous proportion. For these reasons, caution should be exercised in interpreting these projected proportions, especially when comparing the proportions across the two populations. Still, they represent broad-level movements in educational attainment, and for the purposes of estimating key economic indicators like employment incomes, contributions to GDP, and levels of employment, we hold that these projections are meaningful.

Table 2: Proportion of Working Age Population (15+) in Educational Attainment Categories by Year and Scenario[33]

	Non-Indigenous						
	2006	2011	2016	Compound Annual Growth Rate (2006-2016)	Projected 2041 at Current Rates (baseline)	Education Gap Half Closes by 2041	Education Gap Closes Fully by 2041
No certificate	23.1%	18.8%	17.8%	-2.6%	7.8%	-	-
High School	25.8%	25.4%	26.7%	0.4%	24.7%	-	-
Other Trades Certificate	10.9%	10.6%	9.7%	-1.2%	6.1%	-	-
College, CEGEP (3 months to 1 year)	2.3%	2.3%	3.1%	3.1%	5.6%	-	-
College, CEGEP (1 year to 2 years)	8.3%	8.7%	9.2%	1.0%	9.8%	-	-
College, CEGEP (2 years+)	6.9%	7.5%	7.2%	0.5%	6.8%	-	-
University below Bachelor	4.5%	4.6%	2.8%	-4.7%	0.7%	-	-
Bachelor	11.9%	14.2%	16.1%	3.0%	28.7%	-	-
University above Bachelor	6.5%	8.0%	7.6%	1.7%	9.8%	-	-
Total	100.0%	100.0%	100.0%	-	100.0%	-	-
Average Years of Education	**13.04**	**13.34**	**13.36**	**-**	**14.12**	**-**	**-**

Sources: Statistics Canada (2010) "2006 Census Public Use Microdata File (PUMF). Individuals File,"

Dataset, Abacus Data Network.; Statistics Canada (2014) "2011 National Household Survey Public Use Microdata File (PUMF): Individuals File," Dataset, Abacus Data Network.; Statistics Canada. (2019a). "2016 Census Public Use Microdata File (PUMF). Individuals File," Dataset, Abacus Data Network.

Scenario 1 sees the educational attainment gap between First Nations people and non-Indigenous people close completely. Under this scenario, the First Nations population is assumed to have the same educational attainment distribution as the non-Indigenous population in 2041.[34] For example, if 20% of the non-Indigenous population in 2041 is projected to occupy the "bachelor's degree" category, this scenario assumes that the same proportion of the First Nation population will occupy the "bachelor's degree" category in 2041. This assumption is made for each of the nine educational categories which we investigate. It is essential to note that the gap which is being closed is the gap between the projected 2041 First Nations population and the projected 2041 non-Indigenous population, not the gap between the two populations in the present day.

Scenario 2, meanwhile, envisions the educational attainment gap closing only "half-way". Functionally, this

[33] This table, like the rest of this report, can be updated in early 2023 upon the full release of the relevant 2021 Census data.

[34] Non-Indigenous levels of educational attainment in 2041 are projected using the same methodology described in the baseline scenario for the First Nations population (see Table 2).

means that, rather than assuming the educational attainment of First Nations people in 2041 will be equal[35] to that of non-Indigenous people in 2041, we assume that the First Nations educational attainment distribution will be the average of the projected 2041 distributions for First Nations people and non-Indigenous people. For each educational category (ex. "high school"), we estimate the proportion of the First Nations population in that category by taking the arithmetic mean of a) the projected proportion of First Nations in that category in 2041 in the baseline scenario, and b) the projected proportion of non-Indigenous people in that category in 2041, given current trends. In other words, half of the gap in the baseline scenario is eliminated under Scenario 2. In this way, this scenario represents a sort of middle-ground between Scenario 1, where First Nations educational attainment in 2041 is made equal to non-Indigenous levels of educational attainment, and the baseline scenario. Although smaller in scale and effect than Scenario 1, this "half-way" scenario likely represents a more realistic, albeit still optimistic, assumption about the progression of First Nations educational attainment vis-à-vis non-Indigenous educational attainment. In 2041, many individuals who have completed their education and are in the workforce today will still be in the workforce. As such, the full closure of the educational attainment gap would require that today's young First Nations people attain extremely high levels of education in order to 'balance out' the presence of older First Nations people who are, on average, less educated than non-Indigenous individuals of the same age. The half-closed scenario, meanwhile, more or less represents a future in which today's young First Nations people attain the same levels of education as today's young non-Indigenous people: a proposition which, though a lofty goal in itself, is much more achievable.

For Scenario 3, we turn our attention to another labour market gap experienced by First Nations people in comparison to non-Indigenous people: the conditional employment rate gap. This is the observation that, even when matched up based on demographic and educational characteristics, First Nations people tend to experience lower rates of employment than non-Indigenous people. In Part I of this report, we were interested in the employment rate gap conditional on educational attainment – that is, the disparity in employment rates between First Nations people and Indigenous people of the same level of educational attainment. However, with the use of individual-level Census microdata, we are now able to control for differences in sex, province/territory of residence, and age, in addition to educational attainment. For the sake of brevity, we will refer to this gap as simply the conditional employment rate gap. We describe each combination of these four variables as a "bin" containing the number of First Nations individuals that matches that combination of characteristics. For example, one bin, which might be called "Quebec females 35-44 years old with a high school education", contains all female First Nations in Quebec between the ages of 35 and 44 who have a high school diploma or an equivalent as their highest educational certification. Given that economic indicators like rates of employment and average incomes vary greatly across these four variables, and we are primarily interested in labour market disparities which occur solely because of one's status as a First Nations person or a non-Indigenous person, we feel it is best to observe the gaps within bins, rather than across whole populations. Under this scenario, we assume that the educational attainment of the First Nations population is the same as in the baseline scenario, however in calculating levels of employment, income, and output, we utilize the non-Indigenous employment rate for each bin (each age-sex-province-educational attainment combination). In this way, we envision the employment rate gap between the First Nations and non-Indigenous populations fully closing.

[35] We define equality in educational attainment as the two populations occupying each educational attainment category in identical proportions. For example, if 25% of the non-Indigenous population has a bachelor's degree as their highest certification, equality in educational attainment would mean that 25% of the First Nations population also has a bachelor's degree as their highest certification. This is only an example of one category though; for the educational attainments of the two populations to be equal, this would need to be true for all nine educational categories. We base this definition on what we defined as the "distributional approach" to measuring educational attainment in Part I of this report.

Scenario 4 envisions the conditional income gap closing by 2041. Like the conditional employment rate gap, the conditional income gap refers to the observation that, even for individuals of the same sex, province/territory of residence, age group, and educational attainment level, First Nations individuals tend to earn less on average in employment income than non-Indigenous individuals. To simulate the closing of this gap, we follow a similar procedure to the previous scenario. We assume that the First Nations population in 2041 has "baseline" levels of educational attainment, however, when we calculate employment, income, and output, we utilize the non-Indigenous average employment income for each bin (each age-sex-province-educational attainment combination). By doing so, we are able to produce estimates of key economic indicators under the assumption that the conditional income gap has closed fully.

Finally, for Scenario 5, we essentially combine Scenarios 1, 3, and 4 in order to simulate the closure of all three major labour market gaps simultaneously. We assume that First Nations people in 2041 have the same level of educational attainment as non-Indigenous people are projected to have, and furthermore, when calculating, employment, income, and output, we use the non-Indigenous employment rate and average employment income for each bin (each age-sex-province-educational attainment combination). In doing so, we simulate a future in which all three gaps have been fully closed; one in which First Nations individuals experience largely the same labour market outcomes as non-Indigenous Canadians.

Results

In our model, we are primarily interested in four sources of economic benefit associated with the closure of labour market gaps: gains in employment, gains in output or contribution to GDP, gains in income (specifically employment income), and gains in productivity, which is calculated as output per employed person. This section will now proceed to present how each of these economic indicators vary between the scenarios outlined previously. The gains for each scenario will be assessed by comparing the employment, output, employment income, and productivity of a given scenario to the same measures in the baseline scenario. Given that the baseline scenario reflects a "business-as-usual" assumption, wherein labour market disparities experienced by First Nations people continue to evolve as they have for the past decade or so, gains over the baseline scenario might be interpreted as the economic benefits of taking greater action to eliminate these gaps.

Results are organized in the following manner: Tables 3 to 5 collect our main results, presenting our estimates for the key economic benefits associated with each gap closure scenario, first for 2041 and then cumulatively for the period 2021-2041. Tables 4 – 16 present these results at the national level for each scenario, again focusing first on the results for 2041 and then on the cumulative results for 2021-2041. Finally, Tables 16 – 19 break down the main results by each of the key variables used to define the bins[36]: that is, by province/territory, age group, sex, and educational attainment. Our analysis begins by reporting the aggregate results associated with each gap closure scenario, before launching into a more detailed

discussion of results for each of the four major variables included in the longitudinal model.

[36] There are a total of 1188 bins (11 province/territories x 6 age groups x 2 sexes x 9 educational attainment categories). The contribution of each of these bins to employment, total employment income, and total GDP can be provided upon request.

Table 3: Main Results, Projections for First Nations in 2041 by Scenario						
Scenario		**1**	**2**	**3**	**4**	**5**
GDP Gains						
Total FN Contribution to GDP (billions)	68.35	98.57	83.46	79.49	77.02	116.79
% change over baseline	-	44.2%	22.1%	16.3%	12.7%	70.9%
Total Canadian Contribution to GDP (billions)	3,081.35	3,111.57	3,096.46	3,092.50	3,090.02	3,129.79
% change over baseline	-	1.0%	0.5%	0.4%	0.3%	1.6%
Employment Income Gains						
Total FN Employment Income (billions)	34.17	49.28	41.73	39.75	38.51	58.39
% change over baseline	-	44.2%	22.1%	16.3%	12.7%	70.9%
Total Canadian Employment Income (billions)	1,540.67	1,555.79	1,548.23	1,546.25	1,545.01	1,564.90
% change over baseline	-	1.0%	0.5%	0.4%	0.3%	1.6%
Employment Gains (thousands)						
Total FN Employment	674.82	779.43	727.13	814.27	674.82	862.59
% change over baseline	-	15.5%	7.8%	20.7%	0.0%	27.8%
Total Canadian Employment	23,284	23,388	23,336	23,423	23,284	23,471
% change over baseline	-	0.4%	0.2%	0.6%	0.0%	0.8%
Labour Productivity Gains						
FN Labour Productivity	101,280	126,463	114,777	97,626	114,127	135,393
% change over baseline	-	24.9%	13.3%	-3.6%	12.7%	33.7%
Aggregate Canadian Labour Productivity	132,340	133,040	132,691	132,028	132,712	133,345
% change over baseline	-	0.5%	0.3%	-0.2%	0.3%	0.8%

Source: Authors' calculations based on 2016 Census data and CSLS economic projections.

Table 4: Main Results, Projected Change in GDP Over Baseline Scenario (billions), 2021-2041

Scenario	Baseline (total level)	Education Gap Closes 1	Education Gap Half Closes 2	Employment Rate Gap Closes 3	Income Gap Closes 4	All Three Gaps Close 5
2021	2,195.17	0.00	0.00	0.00	0.00	0.00
2022	2,232.71	1.09	0.55	0.40	0.31	1.74
2023	2,270.88	2.22	1.11	0.82	0.64	3.55
2024	2,309.72	3.38	1.70	1.25	0.97	5.41
2025	2,349.21	4.59	2.30	1.70	1.32	7.34
2026	2,389.38	5.84	2.92	2.16	1.68	9.34
2027	2,430.24	7.13	3.57	2.63	2.05	11.40
2028	2,471.80	8.46	4.24	3.13	2.43	13.53
2029	2,514.07	9.83	4.92	3.63	2.83	15.74
2030	2,557.06	11.26	5.64	4.16	3.23	18.01
2031	2,600.78	12.72	6.37	4.70	3.66	20.36
2032	2,645.26	14.24	7.13	5.26	4.09	22.79
2033	2,690.49	15.80	7.91	5.84	4.54	25.30
2034	2,736.50	17.42	8.72	6.43	5.00	27.89
2035	2,783.29	19.08	9.55	7.04	5.48	30.56
2036	2,830.89	20.80	10.41	7.68	5.97	33.31
2037	2,879.30	22.57	11.29	8.33	6.48	36.16
2038	2,928.53	24.40	12.20	9.00	7.00	39.09
2039	2,978.61	26.28	13.14	9.70	7.54	42.11
2040	3,029.54	28.22	14.11	10.41	8.10	45.23
2041	3,081.35	30.22	15.11	11.15	8.67	48.44
Total	52,709.61	285.55	142.88	105.42	82.00	457.30
GDP Annual Growth Rate	1.71%	1.76%	1.73%	1.73%	1.72%	1.79%

Source: Authors' calculations based on 2016 Census data and CSLS economic projections.

Table 5: Main Results, Projected Change in Employment Over Baseline Scenario (job-years), 2021-2041

Scenario	Baseline (total level)	Education Gap Closes 1	Education Gap Half Closes 2	Employment Rate Gap Closes 3	Income Gap Closes 4	All Three Gaps Close 5
2021	19,271,900	-	-	-	-	-
2022	19,454,983	4,361	2,183	5,809	-	7,815
2023	19,639,805	8,806	4,407	11,731	-	15,781
2024	19,826,384	13,336	6,674	17,766	-	23,901
2025	20,014,734	17,952	8,984	23,916	-	32,177
2026	20,204,874	22,655	11,337	30,184	-	40,612
2027	20,396,820	27,448	13,735	36,570	-	49,207
2028	20,590,590	32,330	16,177	43,077	-	57,965
2029	20,786,201	37,304	18,665	49,705	-	66,889
2030	20,983,670	42,370	21,198	56,458	-	75,980
2031	21,183,015	47,531	23,779	63,337	-	85,242
2032	21,384,253	52,786	26,407	70,343	-	94,676
2033	21,587,404	58,139	29,082	77,478	-	104,285
2034	21,792,484	63,589	31,807	84,745	-	114,071
2035	21,999,513	69,139	34,581	92,144	-	124,038
2036	22,208,508	74,790	74,790	99,679	-	134,187
2037	22,419,489	80,542	40,280	107,350	-	144,522
2038	22,632,474	86,399	43,207	115,160	-	155,045
2039	22,847,482	92,361	46,186	123,111	-	165,758
2040	23,064,534	98,429	49,217	131,205	-	176,664
2041	23,283,647	104,606	52,303	139,443	-	187,767
Total	426,300,863	1,034,872	554,998	1,379,212	-	1,856,582
GDP Annual Growth Rate	0.95%	0.97%	0.96%	0.98%	0.95%	0.99%

Source: Authors' calculations based on 2016 Census data and CSLS economic projections.

Aggregate Results

The Full Closure of the Education Gap

As Table 3 illustrates, the full closure of the education gap by 2041 is associated with substantial economic benefits. Under the baseline scenario, we estimate the First Nations contribution to GDP and employment at $68.3 billion and about 674,000 jobs respectively. When the education gap is eliminated, First Nations GDP rises by about $30 billion, and First Nations employment is boosted by over 100,000 additional jobs: a 44.2% increase in total First Nations output and a 15.5% increase in total First Nations employment. In the context of the Canadian economy, these gains represent a 1% increase in GDP and a 0.4% increase in employment. Moreover, they constitute substantial improvements in the share of total output and employment contributed by the First Nations population, with the First Nations share of GDP rising about 43% and the First Nations share of employment rising 15%.[37] As we discussed in Part 1 of this report, the benefits of closing the labour market gaps experienced by First Nations can seem small when compared against the Canadian economy as whole, but it is crucial to recognize that this is simply a consequence of the First Nations population comprising a relatively small proportion of the Canadian population. With this context in mind, these gains are far from insignificant, especially at a time when concerns abound that the Canadian economy is stagnating and that the Canadian labour supply is "tapped out".

Table 6: Economic Benefits of the Full Closure of the Education Gap (Scenario 1), Estimates for 2041

Panel A: Employment Income Effects			
	FN Total Employment Income (billions)	FN Employment Income per Employed Person	Total Canadian Employment Income (billions)
	(1)	(2)	(3)
Baseline	34.2	50,640	1,540.7
Scenario 1	49.3	63,231	1,555.8
absolute change	15.1	12,591	15.1
percentage change over baseline	44.2%	24.9%	1.0%

[37] We define the employment share of the First Nations population as the share of Canadian employment which is made up of employed First Nations people. Similarly, we define the GDP share of the First Nations population as the share of Canadian output which is attributable to the contributions of First Nations people.

Panel B: GDP Effects			
	FN Contribution to GDP (billions)	FN Contribution to GDP as Share of Total GDP	Total Canadian GDP (billions)
	(4) = (1) x 2	(5)	(6) = (3) x 2
Baseline	68.3	2.22%	3,081.3
Scenario 1	98.6	3.17%	3,111.6
absolute change	30.2	0.95pp	30.2
percentage change over baseline	44.2%	42.8%	1.0%

Panel C: Employment Effects			
	FN Employment (# of jobs)	FN Employment Share	Total Canadian Employment (# of jobs)
	(7)	(8)	(9)
Baseline	674,824	2.90%	23,283,647
Scenario 1	779,430	3.33%	23,388,252
absolute change	104,606	0.43pp	104,606
percentage change over baseline	15.5%	15.0%	0.4%

Panel D: Productivity Effects			
	FN Productivity (output per person employed)	FN Productivity Share (FN productivity as proportion of Canadian productivity)	Aggregate Canadian Productivity (output per person employed)
	(10) = (2) x 2	(11)	(12)
Baseline	101,280	76.5%	132,340
Scenario 1	126,463	95.1%	133,040
absolute change	25,182	18.5pp	700
percentage change over baseline	24.9%	24.2%	0.5%

Source: Authors' calculations based on 2016 Census data and CSLS economic projections.

Average employment income and productivity for the First Nations population, meanwhile, increase by 24.9%; that's about a $25,000 increase in First Nations productivity and about a $12,000 increase in First Nations average employment income. Both of these measures essentially represent the ratio of gains to income or output to gains in employment.[38] If employment rose commensurately to output in this scenario, we would expect to see no change in productivity and average employment income. Thus, the fact that both productivity and average employment income rise substantially compared to the baseline under this

[38] Employment income and output are closely linked concepts. Historically, the labour share of income (that is the proportion of output which accrues to labour in the form of employment income) has been about 0.5 in Canada. As such, in our analysis we estimate output (GDP) as two times employment income. Because of this assumed linear relationship between the two concepts, labour productivity, which is calculated as total output over total employment, and average employment income, which is calculated as total employment income over total employment, have a similar interpretation.

scenario indicates that gains in income and output are relatively greater than gains in employment. In fact, these productivity gains are so large that First Nations productivity, which under the baseline scenario was only about 76.5% of total Canadian productivity, soars to nearly 95% of the Canadian figure when the education gap closes. Although we lack the data to estimate non-Indigenous productivity in the two scenarios, we assume that total Canadian productivity is a close approximation, given the relatively small proportion of the Canadian population which the Indigenous population represents. We highlight this result as hugely significant; it signifies that differences in educational attainment between the First Nations and non-Indigenous populations account for almost 80% of the productivity gap between the two populations, and hence, that the elimination of the educational attainment gap would also significantly reduce the productivity gap.

Table 7: Cumulative Economic Benefits of the Full Closure of the Education Gap (Scenario 1), Estimates for 2021-2041

	Total GDP (billions)	Total Employment (Job-Years)	Annual GDP Growth Rate	Annual Employment Growth Rate	Annual Productivity Growth Rate
	(1)	(2)	(3)	(4)	(5)
Baseline	54,904.8	445,572,763	1.71%	0.95%	0.75%
Scenario 1	55,190.3	446,607,635	1.76%	0.97%	0.78%
absolute change	285.5	1,034,872	0.05pp	0.02pp	0.03pp
percentage change over baseline	0.5%	0.2%	2.9%	2.4%	3.53%

Source: Authors' calculations based on 2016 Census data and CSLS economic projections.

Unlike the overnight model we presented in Part I of this report, the longitudinal model imagines the labour market gaps experienced by First Nations closing gradually over 20 years. As such, economic gains are accrued not only in 2041 upon the full closing of the gap, but also throughout the 2021-2041 period as the gap begins to close and Scenario 1 begins to diverge from the baseline scenario. Table 7 presents the cumulative results for the 2021-2041 period under Scenario 1, estimating benefits accrued throughout the entire gap closure process.

We estimate that over the 2021-2041 period, the full closure of the education gap is associated with about $286 billion in increased output. The gap closure process also produces an additional 1.03 million "job-years" throughout the period. A job-year represents exactly what the name suggests: a job in a single year. A job that is created in 2037 and continues to exist through to the end of 2041, for example, would constitute five job-years in our analysis. While this measure may be unconventional, it has a meaningful economic interpretation: each job-year represents an additional yearly income accruing to the First Nations population.

We also estimate how annual rates of real GDP, employment, and productivity growth would be affected by the additional output and employment generated by the closure of the full education gap. The CSLS economic projections, which we use as a basis for the projections presented in this report, estimate an annual real GDP growth rate of 1.71% for the 2019-2038 period. Factoring in the economic benefits generated through the closure of the education gap, we estimate that the real GDP growth rate for the 2021-2041 period would rise to 1.76% under Scenario 1: an increase of 0.05 percentage points. Similarly, we estimate that the annual growth rate of Canadian employment, which we project to be 0.95% for the 2021-

2041 period under the baseline scenario, would rise to 0.97% if the education gap were to close completely. Finally, we estimate that annual labour productivity growth would rise from 0.75% in the baseline scenario to 0.78% if the education gap were to close by 2041. Again, these numbers may appear small, but the effects they represent are far from it. These rates measure the growth of the entire Canadian economy *per year,* and as evidenced by the cumulative gains to GDP and employment presented in Table 7, even small improvements in these rates quickly compound into massive economic gains. Moreover, given contemporary concerns about Canada's economic stagnation, we highlight these gains and the potential augmentations they represent for Canada's economic growth trajectory as more salient than ever.

The Half Closure of the Education Gap

Table 8 presents the economic benefits associated with closing the educational attainment gap halfway. As one would expect, the economic benefits associated with this gap closure scenario are similar to the benefits found in Scenario 1, albeit much attenuated. Half-closing the education gap is associated with increases in output and income of $15.1 billion and $7.6 billion respectively. In relative terms, those gains represent an improvement in First Nations contribution to GDP and employment income of about 22%. The half-closing of the gap is also associated with an increase in First Nations employment of about 8%, or 52,000 jobs. Together, these gains represent an 0.5% increase in Canadian GDP in 2041 and a 0.2% increase in Canadian employment in 2041. Again, the economic gains in this scenario are, logically, about half of the economic gains associated with the full closure of the educational attainment gap in Scenario 1.

In terms of productivity, we estimate about a $13,500, or a 13.3%, increase in First Nations output per employed person over the baseline when the education gap is half-closed; given our assumption that about half of the value of output accrues to labour in the form of employment income, that also represents an increase in the average annual employment income of First Nations of nearly $7,000. This boost raises First Nations productivity from 76.5% of Canadian productivity to 86.5%: a 10-percentage point increase, eliminating about 42% of the baseline productivity gap. It also represents a 0.3% increase in aggregate Canadian productivity.

Table 8: Economic Benefits of the Half Closure of the Education Gap (Scenario 2), Estimates for 2041

Panel A: Employment Income Effects			
	FN Total Employment Income (billions)	FN Employment Income per Employed Person	Total Canadian Employment Income (billions)
	(1)	(2)	(3)
Baseline	34.2	50,640	1,540.7
Scenario 2	41.7	57,388	1,548.2
absolute change	7.6	6,748	7.6
percentage change over baseline	22.1%	13.3%	0.5%

Panel B: GDP Effects			
	FN Contribution to GDP (billions)	FN Contribution to GDP as Share of Total GDP	Total Canadian GDP (billions)
	(4) = (1) x 2	(5)	(6) = (3) x 2
Baseline	68.3	2.22%	3,081.3
Scenario 1	98.6	3.17%	3,111.6
absolute change	30.2	0.95pp	30.2
percentage change over baseline	44.2%	42.8%	1.0%

Panel C: Employment Effects			
	FN Employment (# of jobs)	FN Employment Share	Total Canadian Employment (# of jobs)
	(7)	(8)	(9)
Baseline	674,824	2.90%	23,283,647
Scenario 2	727,127	3.12%	23,335,949
absolute change	52,303	0.22pp	52,303
percentage change over baseline	7.8%	7.5%	0.2%

Panel D: Productivity Effects			
	FN Productivity (output per person employed)	FN Productivity Share (FN productivity as proportion of Canadian productivity)	Aggregate Canadian Productivity (output per person employed)
	(10) = (2) x 2	(11)	(12)
Baseline	101,280	76.5%	132,340
Scenario 1	114,777	86.5%	132,691
absolute change	13,497	10.0pp	351
percentage change over baseline	13.3%	13.0%	0.3%

Source: Authors' calculations based on 2016 Census data and CSLS economic projections.

Table 9: Cumulative Economic Benefits of the Half Closure of the Education Gap (Scenario 2), Estimates for 2021-2041

	Total GDP (billions)	Total Employment (Job-Years)	Annual GDP Growth Rate	Annual Employment Growth Rate	Annual Productivity Growth Rate
	(1)	(2)	(3)	(4)	(5)
Baseline	54,904.8	445,572,763	1.71%	0.95%	0.75%
Scenario 2	55,047.7	446,090,376	1.73%	0.96%	0.77%
absolute change	142.9	517,613	0.02pp	0.01pp	0.01pp
percentage change over baseline	0.3%	0.1%	1.5%	1.2%	1.8%

Source: Authors' calculations based on 2016 Census data and CSLS economic projections.

Table 9 presents the cumulative economic benefits of half-closing the education gap. Over the 2021-2041 period, the half closure of the education gap is associated with about an additional $143 billion in output compared to the baseline scenario and an additional 517,000 job-years accruing to the First Nations community. These gains manifest as a 0.02 percentage point increase in GDP, bringing Canada's annual GDP growth rate from 1.71% in the baseline scenario per year to 1.73% in Scenario 2. Similarly, the half-closure of the education gap causes the annual growth rate of employment to rise to 0.96% per year and the annual growth rate of productivity to rise to 0.77% per year; improvements of about 0.01 percentage point compared to the baseline.

The Closure of the Conditional Employment Rate Gap

Table 10 presents the estimated economic benefits associated with the closure of the conditional employment rate gap: that is, the employment rate disparity between First Nations and non-Indigenous people of the same sex, province/territory of residence, age group, and level of educational attainment. In 2041, when we assume the gap fully closes under Scenario 3, we estimate an additional $11.1 billion in First Nations contribution to GDP, and an additional $5.6 billion in First Nations employment income: a relative increase in both measures of 16.3%. Compared to the income and output gains associated with the closure of the education gap, these gains are more modest, albeit still significant. However, as one would expect given the focus of this scenario, the gains to employment are more substantial. The closure of the employment rate gap is associated with nearly 140,000 additional jobs for First Nations people; about a 21% increase in total First Nations employment. The First Nations employment share, which is projected to be 2.9% in the baseline scenario, rises to 3.48% as a result. These gains in employment exceed those seen in Scenarios 1 and 2 by a significant margin: a testament to the economic costs of the disparity in the employment rates enjoyed by First Nations people compared to non-Indigenous Canadians.

Table 10: Economic Benefits of the Closure of the Employment Rate Gap (Scenario 3), Estimates for 2041

Panel A: Employment Income Effects			
	FN Total Employment Income (billions)	FN Employment Income per Employed Person	Total Canadian Employment Income (billions)
	(1)	(2)	(3)
Baseline	34.2	50,640	1,540.7
Scenario 3	39.7	48,813	1,546.2
absolute change	5.6	-1,827	5.6
percentage change over baseline	16.3%	-3.6%	0.4%

Panel B: GDP Effects			
	FN Contribution to GDP (billions)	FN Contribution to GDP as Share of Total GDP	Total Canadian GDP (billions)
	(4) = (1) x 2	(5)	(6) = (3) x 2
Baseline	68.3	2.22%	3,081.3
Scenario 3	79.5	2.57%	3,092.5
absolute change	11.1	0.35pp	11.1
percentage change over baseline	16.3%	15.9%	0.4%

Panel C: Employment Effects			
	FN Employment (# of jobs)	FN Employment Share	Total Canadian Employment (# of jobs)
	674,824	2.90%	23,283,647
Baseline	814,268	3.48%	23,423,090
Scenario 3	139,443	0.58pp	139,443
absolute change	20.7%	19.9%	0.6%
percentage change over baseline	7.8%	7.5%	0.2%

Panel D: Productivity Effects			
	FN Productivity (output per person employed)	FN Productivity Share (FN productivity as proportion of Canadian productivity)	Aggregate Canadian Productivity (output per person employed)
	(10) = (2) x 2	(11)	(12)
Baseline	101,280	76.5%	132,340

Panel D: Productivity Effects			
Scenario 3	97,626	73.9%	132,028
absolute change	(3,654)	-2.6pp	(312)
percentage change over baseline	-3.6%	-3.4%	-0.2%

Source: Authors' calculations based on 2016 Census data and CSLS economic projections.

Source: Authors' calculations based on 2016 Census data and CSLS economic projections.

The natural consequence of this imbalance in output gains compared to employment gains is seen in the change in productivity and average employment income compared to the baseline scenario. As the employment rate gap closes, employment rises rather massively while output struggles to keep pace. As a result, the income which accrues to each employed person and the quantity of output attributed to each worker falls. This dynamic can be observed plainly in our results; when the employment rate gap is closed, we estimate that First Nations productivity and average employment income fall by 3.6%, reducing First Nations productivity from 76.5% of the Canadian average to 73.9%. Similarly, average employment income falls by just under $2,000.

Table 11: Cumulative Economic Benefits of the Closure of the Employment Rate Gap (Scenario 3), Estimates for 2021-2041

	Total GDP (billions)	Total Employment (Job-Years)	Annual GDP Growth Rate	Annual Employment Growth Rate	Annual Productivity Growth Rate
	(1)	(2)	(3)	(4)	(5)
Baseline	54,904.8	445,572,763	1.71%	0.95%	0.75%
Scenario 3	55,010.2	446,951,975	1.73%	0.98%	0.74%
absolute change	105.4	1,379,212	0.02pp	0.03pp	-0.01pp
percentage change over baseline	0.2%	0.3%	1.1%	3.2%	-1.6%

Source: Authors' calculations based on 2016 Census data and CSLS economic projections.

Table 11 presents the cumulative economic gains associated with the closing of the employment rate gap. Over the period 2021-2041, we estimate an additional $105.4 billion in output as a result of the gap closure: a 0.2% increase over the cumulative GDP for the period in the baseline scenario. We also project about 1.4 million additional job-years compared to the baseline scenario. Once again, though the income gains are notably smaller than in Scenarios 1 and 2, the gains in terms of employment are much larger. The impact of the closure of the employment rate gap on the annual growth rates of GDP and employment follow a similar pattern. Under Scenario 3, Canada's annual GDP growth rate rises 0.02 percentage points, or about 1.1% compared to the baseline scenario. The annual growth rate of employment, meanwhile, rises 0.03

percentage points to 0.98% per year: an improvement over the baseline of about 3.2%. Finally, reflecting the ratio of output gains to employment gains, the closure of the employment rate gap is actually associated with a deterioration in the annual rate of productivity growth. The productivity growth rate falls 0.1 percentage point, representing a decrease of 1.6% compared to the baseline scenario.

The Closure of the Conditional Income Gap

Table 12 presents the economic benefits associated with the closure of the conditional income gap for 2041. We estimate that this scenario is associated with an $8.7 billion increase in GDP, representing a 12.7% increase over First Nations contribution to GDP in the baseline, and a 0.3% increase in total Canadian GDP. This also manifests as a $4.3 billion increase in total First Nations employment income. These gains in output and income are certainly significant, however they are the smallest of all five scenarios which we explore.

Notably, unlike the previous scenarios, there are no employment gains associated with the closure of the conditional income gap. With the closure of the education gap, many First Nations people move to higher educational attainment categories, which on average, experience higher rates of employment than lower educational attainment categories. As such, many First Nations people who are unemployed in the baseline scenario become employed when the education gap closes, boosting total employment within the First Nations population and the Canadian economy. Similarly, when the conditional employment rate gap is closed, First Nations come to experience non-Indigenous employment rates, which are higher on average than First Nations employment rates. Hence, like Scenario 1 and 2, there are significant employment gains.

Table 12: Economic Benefits of the Closure of the Income Gap (Scenario 4), Estimates for 2041

Panel A: Employment Income Effects			
	FN Total Employment Income (billions)	FN Employment Income per Employed Person	Total Canadian Employment Income (billions)
	(1)	(2)	(3)
Baseline	34.2	50,640	1,540.7
Scenario 4	39.7	48,813	1,546.2
absolute change	5.6	-1,827	5.6
percentage change over baseline	16.3%	-3.6%	0.4%

Panel B: GDP Effects			
	FN Contribution to GDP (billions)	FN Contribution to GDP as Share of Total GDP	Total Canadian GDP (billions)
	(4) = (1) x 2	(5)	(6) = (3) x 2
Baseline	68.3	2.22%	3,081.3
Scenario 4	77.0	2.49%	3,090.0
absolute change	8.7	0.27pp	8.7
percentage change over baseline	12.7%	12.4%	0.3%

Panel C: Employment Effects			
	FN Employment (# of jobs)	FN Employment Share	Total Canadian Employment (# of jobs)
	(7)	(8)	(9)
Baseline	674,824	2.90%	23,283,647
Scenario 4	674,824	2.90%	23,283,647
absolute change	0	0.00pp	0
percentage change over baseline	0.0%	0.0%	0.0%

Panel D: Productivity Effects			
	FN Productivity (output per person employed)	FN Productivity Share (FN productivity as proportion of Canadian productivity)	Aggregate Canadian Productivity (output per person employed)
	(10) = (2) x 2	(11)	(12)
Baseline	101,280	76.5%	132,340
Scenario 3	114,127	86.0%	132,712
absolute change	12,847	9.5pp	372
percentage change over baseline	12.7%	12.4%	0.3%

Source: Authors' calculations based on 2016 Census data and CSLS economic projections.

With the closure of the conditional income gap however, there is no change in the employment rates experienced by the First Nations population. The only adjustment made compared to the baseline scenario is that First Nations within each age-sex-province-educational attainment category now earn the average wage of non-Indigenous people with the same characteristics. As such, there is no change in the number of people employed in this scenario compared to the baseline – only changes in what the already-employed earn.

Like Scenario 3, the disparity in income and employment gains here has a significant impact on productivity.

However, unlike Scenario 3, where the gains in employment overshadow the gains in income, resulting in less output per employed person, the effect runs in the opposite direction here; the moderate income gains eclipse the non-existent gains in employment. The result of this is that output and income per employed person rises considerably. Productivity and average employment income both rise by 12.7%, with productivity increasing by about $13,000 and average employment income jumping by over $6,000. Altogether, the gains bring First Nations productivity from 76.5% of the Canadian average to 86%, eliminating about 40% of the productivity gap.

Table 13: Cumulative Economic Benefits of the Closure of the Income Gap (Scenario 4), Estimates for 2021-2041

	Total GDP (billions)	Total Employment (Job-Years)	Annual GDP Growth Rate	Annual Employment Growth Rate	Annual Productivity Growth Rate
	(1)	(2)	(3)	(4)	(5)
Baseline	54,904.8	445,572,763	1.71%	0.95%	0.75%
Scenario 4	54,986.8	445,572,763	1.72%	0.95%	0.77%
absolute change	82.0	0	0.01pp	0.00pp	0.01pp
percentage change over baseline	0.1%	0.0%	0.8%	0.0%	1.9%

Source: Authors' calculations based on 2016 Census data and CSLS economic projections.

Table 13 presents our cumulative estimates of economic benefit for Scenario 4. In line with our point estimates for 2041, the cumulative gains associated with the closing of the income gap over the 2021-2041 period are the smallest of all five scenarios that we explore. In total, we estimate a cumulative $82 billion in additional output compared to the baseline scenario, and once again, no gains in employment. This represents a 0.01 percentage point increase in the annual growth rate of Canadian GDP, bringing the figure from 1.71% to 1.72%. We also estimate a 0.01 percentage point increase in the annual growth rate of productivity: about a 1.9% increase over the baseline scenario. The size of these productivity gains is about on par with those seen in Scenario 2 when we simulate the half-closing of the education gap.

The Closure of All Three Gaps

Table 14 presents the economic benefits in 2041 for Scenario 5, the final scenario which we explore. Under this scenario, all three gaps of interest – the education gap, the conditional employment rate gap, and the conditional income gap – close gradually over the 2021-2041 period. As one might expect, our estimates place this scenario as the most economically impactful of all the scenarios discussed. We estimate that the full closing of all three gaps is associated with a massive 70.9% increase in First Nations output over the baseline scenario; First Nations contribution to GDP rises by about $48 billion compared to the baseline scenario while total First Nations employment income grows by about $24 billion. The share of Canadian GDP accounted for by First Nations output grows by about 68% compared to the baseline scenario, jumping from 2.22% of Canadian GDP to 3.73%. As a result of these gains, our estimate of Canadian GDP in this

scenario is 1.6% larger than in the baseline scenario.

The scenario is also associated with great gains in employment. In 2041, the closure of the three gaps is associated with about an additional 188,000 jobs for First Nations. Total First Nations employment in this scenario is about 28% larger than the same figure in the baseline scenario, and total Canadian employment about 0.8% higher. The share of Canadian employment which is held by First Nations people is substantially higher here than in the baseline as a result – 3.68% as opposed to 2.90% in the baseline.

Table 14: Economic Benefits of the Closure of All Three Gaps (Scenario 5), Estimates for 2041

Panel A: Employment Income Effects			
	FN Total Employment Income (billions)	FN Employment Income per Employed Person	Total Canadian Employment Income (billions)
	(1)	(2)	(3)
Baseline	34.2	50,640	1,540.7
Scenario 5	58.4	67,697	1,564.9
absolute change	24.2	17,057	24.2
percentage change over baseline	70.9%	33.7%	1.6%

Panel B: GDP Effects			
	FN Contribution to GDP (billions)	FN Contribution to GDP as Share of Total GDP	Total Canadian GDP (billions)
	(4) = (1) x 2	(5)	(6) = (3) x 2
Baseline	68.3	2.22%	3,081.3
Scenario 5	116.8	3.73%	3,129.8
absolute change	48.4	1.51pp	48.4
percentage change over baseline	70.9%	68.2%	1.6%

Panel C: Employment Effects			
	FN Employment (# of jobs)	FN Employment Share	Total Canadian Employment (# of jobs)
	(7)	(8)	(9)
Baseline	674,824	2.90%	23,283,647
Scenario 5	862,591	3.68%	23,471,413
absolute change	187,767	0.78pp	187,767
percentage change over baseline	27.8%	26.8%	0.8%

Panel D: Productivity Effects			
	FN Productivity (output per person employed)	FN Productivity Share (FN productivity as proportion of Canadian productivity)	Aggregate Canadian Productivity (output per person employed)
	(10) = (2) x 2	(11)	(12)
Baseline	101,280	76.5%	132,340
Scenario 5	135,393	101.5%	133,345
absolute change	34,113	25.0pp	1,005
percentage change over baseline	33.7%	32.7%	0.8%

Source: Authors' calculations based on 2016 Census data and CSLS economic projections.

The closure of the three gaps is also associated with incredible gains in productivity and average employment income: an indication that gains in output are large relative to gains in employment (though it should be emphasized that both measures of economic benefit are very substantial under this scenario). Productivity and average employment income are about 33% higher under this scenario compared to the baseline: a level of benefit, which again, exceeds all four other scenarios. In fact, the gains in productivity are so significant that, under this scenario, First Nations productivity comes to exceed the Canadian average, rising from 76.5 percent of Canadian productivity in the baseline to a whopping 101.5% of the Canadian figure. Given that this scenario equalizes educational attainment, average employment incomes, and employment rates for similar First Nations and non-Indigenous people, this finding seems to suggest that First Nations people are distributed across age, sex, and provincial categories in a manner which is more productive than the non-Indigenous population. Although our methodology matches the distribution of First Nations individuals across educational attainment categories to the distribution of non-Indigenous individuals across the same categories – what we define as the closing of the education gap – it does not match the two populations on demographic characteristics like age, sex, and province/territory of residence. As such, when we close all three labour market gaps in this scenario, these demographic disparities remain as the sole source of variation between the two populations, economically speaking. Thus, the fact that measures of productivity are not equal for the two populations even after closing the three gaps – and that First Nations productivity actually comes to exceed non-Indigenous productivity, no less – would suggest that these demographic differences are driving the residual differences in productivity.

Table 15: Cumulative Economic Benefits of the Closure of All Three Gaps (Scenario 5), Estimates for 2021-2041

	Total GDP (billions)	Total Employment (Job-Years)	Annual GDP Growth Rate	Annual Employment Growth Rate	Annual Productivity Growth Rate
	(1)	(2)	(3)	(4)	(5)
Baseline	54,904.8	445,572,763	1.71%	0.95%	0.75%
Scenario 5	55,362.1	447,429,345	1.79%	0.99%	0.79%
absolute change	457.3	1,856,582	0.08pp	0.04pp	0.04pp
percentage change over baseline	0.8%	0.4%	4.6%	4.3%	5.06%

Source: Authors' calculations based on 2016 Census data and CSLS economic projections.

Table 15 presents the cumulative economic benefits associated with the closure of all three gaps over the course of the 2021-2041 period. We estimate that cumulative GDP for the period is $457.3 billion, or 0.8%, larger for this scenario compared to the baseline scenario. In terms of employment gains, we estimate that the closure of all three gaps is associated with nearly 1.9 million additional job-years for First Nations: a 0.4% increase compared to the baseline scenario. These immense gains are also evident in the annual growth rates of GDP, employment, and productivity, which are significant larger here compared to the baseline scenario. All three measures grow about 4-5% over the baseline, with Canada's annual GDP growth rate rising 0.08 percentage points, from 1.71% per year to 1.79%. Both the annual growth rate of Canadian employment and the annual growth rate of Canadian productivity rise 0.04 percentage points, going from 0.95% per year to 0.99% and from 0.75% to 0.79%, respectively. Again, the cumulative economic impacts for this gap closure scenario are substantially larger than the impacts estimated for any of the other scenarios.

Discussion & Variable Breakdown

In this section, we supplement the scenario-specific analysis provided in the previous section with a breakdown of our results across the four major variables considered in our model. We begin with a brief discussion of the aggregate-level results, comparing gains across the five gap closure scenarios. We then disaggregate our results along lines of province/territory, age group, sex, and educational attainment, discussing each variable in turn.

Tables 16 and 17 collect the GDP effects of each gap closure scenario in 2041, broken down across the four variable we use to define our bins: province, age, sex, and educational attainment. Table 16 presents the absolute change in GDP over the baseline scenario while Table 17 presents these changes in percentage form. Table 17 also presents the working age population of First Nations of each subgroup for ease of reference. Tables 18 and 19 present the same measures but for the employment effects of each gap closure scenario. Appendix Tables 1-3 provide similar breakdowns for productivity and income effects. Our discussion here will focus primarily on GDP and employment gains, however.

Comparing the results of each gap closure scenario at the aggregate level (i.e., without disaggregating into any of the subcategories presented), some patterns emerge. Scenario 5 exhibits the largest gains by quite a large margin, followed by Scenario 1, Scenario 2, Scenario 3, and ultimately Scenario 4. Of the three individual gaps, the education gap is the most consequential from an output perspective, with the associated gains being significantly larger than the gains from closing the income and employment rate gaps combined. From an employment perspective however, the employment rate gap produces the most significant gains. Interestingly, Scenario 5, which sees all three gaps close simultaneously, is associated with gains that are slightly smaller than the sum of the gains from Scenarios 1, 2, and 3. This mirrors our findings from the overnight model, and we believe the same intuition holds true here. The closing of the education gap moves individuals into higher educational attainment categories than they would have occupied otherwise, and on average, gaps in employment rates and employment incomes tend to be smaller (in relative terms at least, if not in absolute terms as well) in these higher education categories. As such, the closing of the education gap actually tends to eliminate some of the income and employment rate gaps. The gains from closing these residual gaps are thus smaller than when these gaps are eliminated individually (as in Scenarios 3 and 4), making Scenario 5 slightly less than the sum of its parts in terms of both employment and GDP gains.

Table 16: Projected Absolute Change in First Nations Contribution to GDP over Baseline Scenario (millions), 2041

	Baseline (total level)	Education Gap Closes	Education Gap Half Closes	Employment Rate Gap Closes	Income Gap Closes	All Three Gaps Close
Scenario	**Total**	(1)	(2)	(3)	(4)	(5)
Province/Territory						
Newfoundland and Labrador	2,119	1,366	683	-198	-204	689
Prince Edward Island	92	69	34	37	25	124
Nova Scotia	1,813	648	324	53	43	805
New Brunswick	712	167	83	234	127	916
Quebec	6,617	2,067	1,033	347	-361	2,305
Ontario	16,488	7,015	3,507	2,059	2,096	11,249
Manitoba	7,611	5,775	2,888	1,805	1,333	6,866
Saskatchewan	6,061	3,509	1,754	3,136	1,378	8,193
Alberta	14,054	5,498	2,749	2,150	1,977	9,240
British Columbia	10,966	3,416	1,708	1,184	2,199	7,010
Territories	1,813	693	346	341	58	1,044
Total	68,346	30,222	15,111	11,148	8,670	48,443

Table 16: Projected Absolute Change in First Nations Contribution to GDP over Baseline Scenario (millions), 2041						
Age Group						
15 to 24 years	5,219	3,826	1,913	1,117	-400	2,510
25 to 34 years	12,685	5,911	2,955	3,218	2,647	10,946
35 to 44 years	18,127	7,664	3,832	3,902	1,718	12,498
45 to 54 years	18,131	6,548	3,274	3,289	3,268	14,878
55 to 64 years	8,610	2,649	1,325	1,758	2,152	8,648
65 years and over	5,573	3,624	1,812	-2,136	-717	-1,036
Total	68,346	30,222	15,111	11,148	8,670	48,443
Sex						
Male	41,390	14,989	7,495	8,012	7,700	32,599
Female	26,956	15,233	7,617	3,136	969	15,844
Total	68,346	30,222	15,111	11,148	8,670	48,443
Educational Attainment						
No certificate	4,378	-2,380	-1,190	2,645	983	-326
High School	24,412	-10,243	-5,122	5,587	3,568	-3,944
Other Trades Certificate	2,967	1,085	542	714	611	3,311
College, CEGEP (3 months to 1 year)	7,812	-3,908	-1,954	1,453	1,167	-2,140
College, CEGEP (1 year to 2 years)	7,682	800	400	1,026	947	3,430
College, CEGEP (2 years+)	2,977	3,217	1,609	516	506	5,604
University below Bachelor	456	229	115	45	12	348
Bachelor	13,968	25,344	12,672	-747	1,416	28,408
University above Bachelor	3,694	16,078	8,039	-92	-540	13,753
Total	68,346	30,222	15,111	11,148	8,670	48,443
TOTAL	**68,346**	**30,222**	**15,111**	**11,148**	**8,670**	**48,443**

Source: Authors' calculations based on 2016 Census data and CSLS economic projections.

Table 17: Projected Percent Change in First Nations Contribution to GDP over Baseline Scenario, 2041

	FN Working Age Population	Education Gap Closes	Education Gap Half Closes	Employment Rate Gap Closes	Income Gap Closes	All Three Gaps Close
Scenario	**Total**	(1)	(2)	(3)	(4)	(5)
Province/Territory						
Newfoundland and Labrador	37,000	64.48	32.24	-9.34	-9.63	32.52
Prince Edward Island	3,000	74.25	37.12	40.33	26.68	134.47
Nova Scotia	35,000	35.71	17.86	2.92	2.37	44.39
New Brunswick	23,000	23.46	11.73	32.85	17.82	128.71
Quebec	126,000	31.24	15.62	5.24	-5.46	34.84
Ontario	328,000	42.55	21.27	12.49	12.71	68.23
Manitoba	168,000	75.88	37.94	23.72	17.52	90.21
Saskatchewan	142,000	57.89	28.94	51.73	22.73	135.17
Alberta	204,000	39.12	19.56	15.30	14.07	65.75
British Columbia	228,000	31.15	15.58	10.80	20.05	63.92
Territories	19,000	38.21	19.10	18.83	3.17	57.59
Total	1,313,000	44.22	22.11	16.31	12.68	70.88
Age Group						
15 to 24 years	249,613	46.59	23.30	25.37	20.87	86.29
25 to 34 years	228,457	42.28	21.14	21.53	9.48	68.95
35 to 44 years	214,558	36.11	18.06	18.14	18.03	82.06
45 to 54 years	158,279	30.77	15.39	20.42	25.00	100.44
55 to 64 years	246,212	65.03	32.52	-38.33	-12.86	-18.59
65 years and over	1,313,000	44.22	22.11	16.31	12.68	70.88
Total	68,346	30,222	15,111	11,148	8,670	48,443
Sex						
Male	645,416	36.21	18.11	19.36	18.60	78.76
Female	667,584	56.51	28.26	11.63	3.60	58.78
Total	1,313,000	44.22	22.11	16.31	12.68	70.88
Educational Attainment						

Table 17: Projected Percent Change in First Nations Contribution to GDP over Baseline Scenario, 2041						
No certificate	102,235	-54.35	-27.18	60.41	22.46	-7.44
High School	324,323	-41.96	-20.98	22.89	14.62	-16.16
Other Trades Certificate	79,686	36.56	18.28	24.08	20.58	111.59
College, CEGEP (3 months to 1 year)	74,114	-50.02	-25.01	18.60	14.93	-27.39
College, CEGEP (1 year to 2 years)	128,758	10.42	5.21	13.36	12.32	44.65
College, CEGEP (2 years+)	89,166	108.07	54.04	17.34	16.99	188.22
University below Bachelor	9,277	50.29	25.14	9.84	2.64	76.34
Bachelor	377,009	181.45	90.73	-5.34	10.14	203.38
University above Bachelor	128,433	435.18	217.59	-2.50	-14.61	372.25
Total	1,313,000	44.22	22.11	16.31	12.68	70.88
TOTAL	**1,313,000**	**44.22**	**22.11**	**16.31**	**12.68**	**70.88**

Source: Authors' calculations based on 2016 Census data and CSLS economic projections.

Table 18: Projected Absolute Change in First Nations Employment over Baseline Scenario (# of jobs), 2041						
	FN Working Age Population	Education Gap Closes	Education Gap Half Closes	Employment Rate Gap Closes	Income Gap Closes	All Three Gaps Close
Scenario	**Total**	(1)	(2)	(3)	(4)	(5)
Province/Territory						
Newfoundland and Labrador	16,566	4,247	2,124	435	-	2,767
Prince Edward Island	1,271	538	269	718	-	869
Nova Scotia	19,601	1,936	968	523	-	2,280
New Brunswick	10,148	1,089	544	2,787	-	4,077
Quebec	66,063	6,176	3,088	6,339	-	11,440
Ontario	172,399	22,566	11,283	20,170	-	34,412
Manitoba	84,096	20,118	10,059	28,503	-	33,763

Table 18: Projected Absolute Change in First Nations Employment over Baseline Scenario (# of jobs), 2041						
Saskatchewan	58,227	12,345	6,172	39,913	-	44,088
Alberta	110,365	17,298	8,649	22,627	-	29,062
British Columbia	125,083	16,464	8,232	13,782	-	20,962
Territories	11,005	1,829	915	3,647	-	4,047
Total	674,824	104,606	52,303	139,443	-	187,767
Age Group						
15 to 24 years	102,856	17,200	8,600	30,774	-	40,748
25 to 34 years	143,345	27,014	13,507	44,645	-	55,720
35 to 44 years	143,698	19,230	9,615	37,356	-	46,064
45 to 54 years	137,692	18,780	9,390	32,243	-	40,327
55 to 64 years	77,894	8,289	4,144	19,370	-	23,932
65 years and over	69,339	14,093	7,046	-24,945	-	-19,025
Total	674,824	104,606	52,303	139,443	-	187,767
Sex						
Male	353,112	47,224	23,612	81,607	-	100,849
Female	321,712	57,382	28,691	57,836	-	86,918
Total	674,824	104,606	52,303	139,443	-	187,767
Educational Attainment						
No certificate	64,479	-35,046	-17,523	38,615	-	-17,419
High School	281,210	-117,996	-58,998	64,199	-	-80,735
Other Trades Certificate	29,524	10,794	5,397	9,302	-	23,496
College, CEGEP (3 months to 1 year)	83,248	-41,644	-20,822	17,711	-	-32,793
College, CEGEP (1 year to 2 years)	72,242	7,525	3,762	9,339	-	17,837
College, CEGEP (2 years+)	25,715	27,791	13,895	4,115	-	36,352
University below Bachelor	3,614	1,817	909	564	-	2,664
Bachelor	97,818	177,493	88,747	-4,160	-	165,785

Table 18: Projected Absolute Change in First Nations Employment over Baseline Scenario (# of jobs), 2041						
University above Bachelor	16,975	73,872	36,936	-242	-	72,579
Total	674,824	104,606	52,303	139,443	-	187,767
TOTAL	**674,824**	**104,606**	**52,303**	**139,443**	**-**	**187,767**

Source: Authors' calculations based on 2016 Census data and CSLS economic projections.

Table 19: Projected Percent Change in First Nations Employment over Baseline Scenario, 2041						
	FN Working Age Population	Education Gap Closes	Education Gap Half Closes	Employment Rate Gap Closes	Income Gap Closes	All Three Gaps Close
Scenario	**Total**	(1)	(2)	(3)	(4)	(5)
Province/Territory						
Newfoundland and Labrador	37,000	25.64	12.82	2.63	-	16.70
Prince Edward Island	3,000	42.33	21.16	56.49	-	68.34
Nova Scotia	35,000	9.88	4.94	2.67	-	11.63
New Brunswick	23,000	10.73	5.36	27.46	-	40.18
Quebec	126,000	9.35	4.67	9.59	-	17.32
Ontario	328,000	13.09	6.54	11.70	-	19.96
Manitoba	168,000	23.92	11.96	33.89	-	40.15
Saskatchewan	142,000	21.20	10.60	68.55	-	75.72
Alberta	204,000	15.67	7.84	20.50	-	26.33
British Columbia	228,000	13.16	6.58	11.02	-	16.76
Territories	19,000	16.62	8.31	33.14	-	36.77
Total	1,313,000	15.50	7.75	20.66	-	27.82
Age Group						
15 to 24 years	215,881	16.72	8.36	29.92	-	39.62
25 to 34 years	249,613	18.85	9.42	31.14	-	38.87
35 to 44 years	228,457	13.38	6.69	26.00	-	32.06
45 to 54 years	214,558	13.64	6.82	23.42	-	29.29
55 to 64 years	158,279	10.64	5.32	24.87	-	30.72
65 years and over	246,212	20.32	10.16	-35.97	-	-27.44

Table 19: Projected Percent Change in First Nations Employment over Baseline Scenario, 2041						
Total	1,313,000	15.50	7.75	20.66	-	27.82
Sex						
Male	645,416	13.37	6.69	23.11	-	28.56
Female	667,584	17.84	8.92	17.98	-	27.02
Total	1,313,000	15.50	7.75	20.66	-	27.82
Educational Attainment						
No certificate	102,235	-54.35	-27.18	59.89	-	-27.02
High School	324,323	-41.96	-20.98	22.83	-	-28.71
Other Trades Certificate	79,686	36.56	18.28	31.51	-	79.58
College, CEGEP (3 months to 1 year)	74,114	-50.02	-25.01	21.28	-	-39.39
College, CEGEP (1 year to 2 years)	128,758	10.42	5.21	12.93	-	24.69
College, CEGEP (2 years+)	89,166	108.07	54.04	16.00	-	141.36
University below Bachelor	9,277	50.29	25.14	15.59	-	73.72
Bachelor	377,009	181.45	90.73	-4.25	-	169.48
University above Bachelor	128,433	435.18	217.59	-1.42	-	427.56
Total	1,313,000	15.50	7.75	20.66	-	27.82
TOTAL	**1,313,000**	**15.50**	**7.75**	**20.66**	**-**	**27.82**

Source: Authors' calculations based on 2016 Census data and CSLS economic projections.

Province/Territory

Breaking down gains by province/territory reveals several relationships of interest. Overall, the absolute size of gains tends to follow the working age population of First Nations in each province fairly closely. That is to say, provinces with larger working age populations of First Nations tend to exhibit higher gains across all scenarios. Ontario, Manitoba, and Alberta are the three provinces estimated to experience the largest gains across most of the five scenarios, with two key exceptions: British Columbia exhibits the largest GDP gains of all provinces when the income gap closes and Saskatchewan benefits the most, in both GDP and employment, when the employment rate gap closes and when all gaps close simultaneously.

When viewed in relative terms, these relationships shift significantly however. Across all gaps, Prince Edward Island consistently exhibits some of the largest percentage increases over the baseline scenario; the closure of the education gap, for example, is associated with an increase in First Nations GDP of about 74% and the closure of all three gaps is associated with a massive 134% increase in First Nations GDP. Employment in these scenarios also rises 42% and 68% respectively. To an extent, this seems intuitive given P.E.I's exceedingly small population of working-age First Nations. Still, the massive relative gains that P.E.I experiences from gap closure seems to indicate that gains from gap closure do not scale perfectly with working-age population (otherwise we would see absolute gains in proportion to the very small population).

New Brunswick and Saskatchewan are also estimated to benefit from enormous gains in output in Scenario 5, with relative increases in First Nations GDP of well over 100%. Small working-age population might also be an explanation for New Brunswick's gains, but this is somewhat discredited by the comparatively small gains the province experiences in other scenarios. This discrepancy between Scenario 5's gains and gains from the other scenarios suggests that there is a sort of interaction effect at play, where the gains from closing the three gaps simultaneously are much larger than the sum of the gains from closing the gaps individually. It is possible that the gap in employment rates and average employment incomes are actually larger in higher educational attainment categories in New Brunswick, and that the movement of First Nations people up the educational attainment distribution actually produces larger income and employment rate gaps, hence the larger gains in Scenario 5. Saskatchewan's output gains, meanwhile, seem to be derived primarily from the closure of the employment rate gap, which itself is associated with an additional $3 billion in First Nations GDP contribution (a 51% increase over baseline) and a massive 40,000 additional jobs for First Nations (a 69% increase). Interestingly, although it enjoys significant gains in GDP and employment in Scenario 5, these gains are markedly smaller than the sum of its gains in individual gap closure scenarios: a finding which suggests that Saskatchewan's employment rate gap and income gap become meaningfully attenuated by the closure of the education gap.

The size of GDP gains for each province/territory in each scenario tends to follow the same pattern as is observed at the national level; Scenario 5 tends to be associated with the largest gains, followed by Scenarios 1, 2, 3, and 4. There are some exceptions to this trend, however. In British Columbia and Ontario, for example, the closure of the income gap (Scenario 4) is associated with greater GDP gains than the closure of employment rate gap. For British Columbia, where the output gains from closing the income gap exceed the gains from half closing the education gap, this seems to be indicative of an income gap which is larger than the Canadian average, hence the larger gains. Comparing Ontario's gains by scenario to the national-level gains, however, suggests that the gains from closing the employment rate gap (Scenario 3) are less significant than average, likely indicating an employment rate gap which is smaller than in other provinces. Saskatchewan, as mentioned previously, is another example; the GDP gains from the closure of the employment rate gap are nearly equal to the gains from closing the education gap and are much larger than the gains from Scenarios 2 and 4. This too suggests an employment rate gap which is larger than other provinces.

In terms of employment, this pattern in the size of gains across scenarios is much less consistent though. In Newfoundland and Labrador, Nova Scotia, Ontario, and British Columbia, the closure of the education gap is associated with greater gains than the closure of the employment rate gap. These provinces are very much

the exception though, and even some of these provinces benefit more from Scenario 3, the closure of the employment rate gap, than from Scenario 2: a departure from what we observed when breaking results down by GDP gains. Most of the provinces – namely P.E.I, New Brunswick, Quebec, Manitoba, Saskatchewan, Alberta – as well as the territories experience employment gains from the employment rate gap which exceed the gains associated with the closure of the education gap, often by a significant margin. Manitoba, for example, sees close to 29,000 additional jobs over the baseline scenario when the employment rate gap is closed, compared to a reduced 20,000 additional jobs when the education gap closes. This result is fairly intuitive. Whereas the closure of the education gap generates increased employment via a decidedly indirect mechanism – moving First Nations into higher education categories where they tend to experience greater rates of employment – the closure of the employment rate gap boosts employment directly by matching First Nations employment rates with non-Indigenous employment rates. This is unlike the dynamic observed with respect to GDP gains. There, the closure of the education gap tends to produce greater income and output gains than the closure of the employment rate gap because the former works through two mechanisms – raising incomes directly and creating additional incomes through additional employment – whereas the latter only affects output by creating additional employment.

Although all gap closure scenarios have a positive effect on employment, some provinces experience negative GDP gains in some gap closure scenarios. Quebec, for example, is estimated to experience a reduction in First Nations GDP of about 5% relative to baseline when the income gap closes. We interpret this result as indicating that First Nations people enjoy a higher average employment income than non-Indigenous people with the same age-sex-province-educational attainment characteristics. Notably, Newfoundland and Labrador is estimated to experience reductions in First Nations GDP of about 9-10% with the closure of either the income gap or the employment rate gap. These results would suggest that First Nations in Newfoundland and Labrador enjoy an employment rate and average employment income that are higher than those of non-Indigenous people with similar characteristics. Because of these dynamics, Newfoundland and Labrador is unique in being the only province for which the gains from closing all three gaps are actually smaller than the gains from simply closing the education gap.

Age Group

Breaking gains down by age group too yields some interesting insights. In absolute terms, the 45-54, 35-44, and 25-34 cohorts tend to experience the greatest GDP gains across all scenarios. This makes sense given a) that these groups represent individuals in their prime (when they're most likely to be working) and at the peak of their earning potential, and b) that higher levels of employment and income are associated with greater absolute GDP gains. These same groups also tend to benefit from the greatest absolute gains in employment across scenarios. The 25-34 cohort, specifically, is associated with absolute employment gains that are substantially larger than other age groups. For example, when the education gap closes, an additional 27,000 jobs are generated for First Nations in the 25-34 group: 7,000 more than is estimated for the next largest group, the 35-44 cohort. In relative terms though, the groups that benefit the most vary depending on the scenario.

For Scenarios 1 and 2, where the education gap closes fully or partially, the 15-24 and 65+ cohorts

experience the greatest gains in First Nations contribution to GDP by quite a decent margin, with increases of 73% and 65% respectively. In each scenario, we assume that all age-province-sex bins possess an identical educational attainment distribution: due to this simplifying assumption, it is not possible for different age groups to experience smaller or larger education gaps than one another. As such, variations between cohorts in the estimated gains they experience from the closure of the education gap are only due to differing relationships between educational attainment and employment rates or wages. If an age group experiences an above-average level of benefit from the closure of the educational attainment, this should be interpreted as a product of the greater returns to education in that group, not as a product of a larger education gap. Such is the case for the 15-24 and 65+ age groups. This makes some intuitive sense. 15–24-year-olds are likely to lack significant work experience compared to other groups, and as such, the kind of opportunities and labour market outcomes they can attain is likely to be more heavily influenced by their educational qualification than other, older groups. Seniors, meanwhile, are expected to face reduced employability in positions involving manual labour: the kind of positions which are most common for low levels of education. As such, both groups benefit an extraordinary amount from additional levels of educational attainment. Furthermore, both groups face below-average levels of employment and income and have relatively small contributions to GDP. As such, absolute gains need not be particularly large for the relative, percentage gains over baseline to be substantial.

In terms of employment gains, it is the 65+ and 25-34 cohorts which experience the greatest relative gains. Broadly, we believe a similar interpretation applies here: these age ranges, more so than other ranges, face great returns to additional education. Still, we posit that the lower relative gains associated with the 15-24 cohort here compared to the GDP perspective reflect the different mechanisms at play for the production of GDP and employment gains. GDP gains come from gains in income and gains in employment rates whereas employment gains are derived solely from improvements in employment rates. As evidenced by the disparities in relative GDP gains and relative employment gains, increased educational attainment has greater implications for income than employment rates in the 15-24 age range.

Moving to Scenario 3, the closure of the employment rate gap, the 25-34, 35-44, and 15-24 cohorts exhibit the largest relative gains here: an indication that the disparity in employment rates between First Nations people and non-Indigenous people is likely larger in these categories compared to others. Interestingly however, when the employment rate gap closes, the 65+ age group experiences a massive reduction in First Nations employment and GDP contribution; with both measures falling 35-39% compared to the baseline scenario. A similar occurrence is observed in Scenario 4, when the income gap closes, and Scenario 5, when all three gaps close. We posit that these negative effects might reflect a fundamental difference in the labour market activity of First Nations and non-Indigenous people: First Nations people may tend to retire later than non-Indigenous people. Hence, replacing the employment rate for First Nations in each bin with the employment rate for non-Indigenous people in the same bin results in a much lower level of employment and income. The fall in GDP contribution that occurs in the 65+ cohort when the income gap closes is not fully explained by this dynamic, however, as we only measure average employment income for individuals who report a positive sum for employment income in the 2016 census (a measure which does not include pension earnings). Hence, retired individuals should not contribute to the income calculation. We offer two possible explanations for this result. Perhaps a meaningful proportion of retired people continue to report a small but non-zero sum for their employment income, causing the disparity in retirement age

between the two populations to manifest as an income disparity wherein First Nations people out-earn non-Indigenous people. Or, alternatively, employed First Nations people in this age category simply do earn more than similar non-Indigenous people, hence the negative GDP effect associated with the closure of the income gap.

In Scenario 4, the 55-64 cohort experiences the greatest relative gains in GDP, which would seem to suggest that the relative income gap between the First Nations population and the non-Indigenous population is larger here than in other categories. Scenario 5, from a GDP perspective, sees the 24-34, 55-64 and 45-54 cohorts gaining the most in relative terms, with gains of 100%, 86%, and 82% over baseline, respectively. The 55-64 group is particularly interesting, given that the gains here are about 25 percentage points higher than the sum of the gains from Scenarios 1, 3, and 4. This would suggest that, for 55 to 64-year-old individuals, higher educational attainment categories are associated with income gaps of greater magnitude. This group's employment gains in Scenario 5 are less than the sum of the relevant individual scenarios however, indicating that the employment rate gap actually decreases at higher educational categories for 55 to 64-year-olds. This "less-than-the-sum-of-its-parts" observation holds true for every age group in Scenario 5, including the 15-24 and 25-34 cohorts, who experience the highest relative employment gains of all age groups.

Sex

GDP and employment gains differ considerably between males and females. In both absolute and relative terms, we estimate that the closure of the education gap is associated with greater gains for women than men. In total, we estimate that the GDP contribution of both groups would rise by about $15 billion. However, this represents a much larger increase over baseline for women (about 57%) than for men (about 36%). With respect to employment however, gains for females eclipse gains for males in both absolute and relative terms. Again, since we have assumed that educational attainment for both groups is equal to the national average for First Nations, this disparity in gains is not indicative of education gaps of different magnitudes; rather, it reflects the fact that women experience greater returns to education than men.

This dynamic reverses for Scenarios 3, 4, and 5 however. Males experience greater gains, in relative and absolute terms and in both GDP and employment when the employment rate gap or income gap close. This is assumedly a result of another, intersecting labour market disparity wherein women tend to experience markedly lower rates of employment and average incomes than men. This downward pressure on female wages and employment seems to overshadow the gaps between First Nations people and non-Indigenous people; even non-Indigenous females face significantly suppressed wages and rates of employment simply by virtue of being a female, leading to relatively small gaps. As such, the gains from eliminating the disparity in wages and employment rates between First Nations people and non-Indigenous people has a much greater effect for men, who don't face this some downward pressure. As a natural consequence of this dynamic, men also experience much greater gains than women in Scenario 5. Of note is the fact that, while men enjoy GDP gains in Scenario 5 which are slightly larger than the sum of gains from Scenarios 1, 3, and 4, women enjoy GDP gains which are substantially less than the sum of gains from the other scenarios. This tracks with our interpretation of the results from Scenario 1: women gain significant returns

from education, in part because gaps in income between First Nations people and non-Indigenous people are reduced at these higher levels of educational attainment. This also manifests in the gains for Scenario 5 because the closure of the education gap increases the educational attainment of First Nations women above what it would have been in Scenarios 3 and 4. In terms of employment however, the results in Scenario 5 are fairly similar between males and females, with the relative gains for males hovering just slightly above the relative gains for females. Both groups experience gains which are less than the sum of the gains from Scenarios 1 and 3: a reflection of the fact that the employment rate gaps for both groups tend to shrink at higher levels of educational attainment.

Educational Attainment

Given that we are directly adjusting peoples' levels of educational attainment in Scenarios 1, 2, and 5, the results by educational attainment take on a slightly different shape compared to our breakdowns by variable. When the education gap is closed, partially or fully (Scenarios 1, 2, and 5), the greatest gains accrue to the "University above Bachelor" category accrue to the "University above bachelor", "Bachelor", and "College, CEGEP (2 years+)" categories. In fact, the GDP gains just in the top two educational categories account for 137% of the total GDP gains across all categories and 127% of total employment gains across categories.[39] This makes sense, as these are the categories which non-Indigenous people tend to occupy in much greater proportion than non-Indigenous people. Hence, these are the categories that the First Nations population is moving to as the education gap closes. Conversely, the "No certificate", "High School" and "Other Trades Certificate" categories experience significant reductions in First Nations GDP contribution simply because these are the categories which First Nations occupy in greater proportions than non-Indigenous people. The GDP contribution in these categories decreases not because First Nations in these categories are earning less after the closure of the education gap, but simply because there are fewer First Nations occupying these categories.

Given that Scenarios 3 and 4 do not entail the closure of the education gap, gains are distributed differently under these scenarios. When the employment rate gap closes, the greatest relative gains accrue to the four lowest categories of educational attainment, with the "no certificate" category in particular experiencing a very substantial 60% increase in First Nations GDP contribution and employment compared to the baseline: a figure which dwarfs the relative gains in other categories. This would suggest that the employment rate gap is particularly large in these lowest educational attainment categories. Moreover, as we observed in the overnight model, the highest educational attainment categories experience negative GDP and employment effects from the closure of the employment rate gap due to the fact that First Nations people in these categories actually enjoy higher rates of employment than similar non-Indigenous people. A similar phenomenon is observed when the income gap closes. The "university above bachelor" category experiences a $540 million or 14.61% decline in First Nations GDP contribution compared to baseline, indicating that First Nations people in this category actually tend to earn more than similar non-Indigenous people. The greatest relative gains in Scenario 4, meanwhile, accrue to the "no certificate", "other trades certificate" and "college, CEGEP (2 years+)" categories, where the gap in earnings between First Nations and similar non-Indigenous people seems to be particularly large.

[39] This figure is over 100% because of the negative GDP effects experienced in other educational attainment categories. In other words, the sum of the effects in all educational attainment categories is less than the sum of the effects in the top two categories ("Bachelor" and "University above Bachelor").

Comparing The Models

This section begins by summarizing and comparing the results of the overnight and longitudinal models. We identify what we see as the two key sources of deviation in the methodologies of the two models: differences in the assumptions we make about First Nations population between models and differences in the control variables which we include. We proceed to explore each of these concepts in turn.

Table 20 collects key results from the overnight and longitudinal models. Given that the two models estimate economic gains at different points in time for populations of different sizes, we mainly compare relative, rather than absolute, measures of gain. For the overnight model, the baseline for these relative measures of gain is the 2016 Canadian economy as captured by the 2016 Census.[40] The baseline for the longitudinal model, meanwhile, is a projection for the 2041 Canadian economy under the assumption that existing labour market gaps between First Nations and non-Indigenous people continue to evolve as they did between the 2006 and 2016 Censuses.

Panel A presents the relative gain in First Nations employment and employment income compared to the respective counterfactual or baseline scenario of each model, expressed as the percentage gain over that baseline scenario. Panel B presents these same measures at the national level, expressing the percentage change in total Canadian employment income and employment compared to the baseline. Employment income is the only measure of income or output that we present in these comparisons given that the overnight model only produces estimates of employment income and not GDP. Still, given our assumption that there is a linear relationship between the two concepts – specifically, that half the value of all output accrues to labour in the form of employment income – these percentage gains in employment income also represent percentage gains in GDP.

Table 20: Main Results by Model Used

Panel A: FN Employment Income and Employment Effects, Percentage Change over Baseline

	Scenario 1 (Full Education Gap Closes)	Scenario 2 (Half Education Gap Closes)	Scenario 3 (Employment Rate Gap Closes)	Scenario 4 (Income Gap Closes)	Scenario 5 (All Gaps Close)
FN Total Employment Income					
Overnight	44.82%	-	10.02%	18.22%	77.47%
Longitudinal	44.22%	22.11%	16.31%	12.68%	70.88%
FN Employment					
Overnight	21.15%	-	12.90%	-	29.28%
Longitudinal	15.50%	7.75%	20.66%	-	27.82%

[40] It should be noted however that employment incomes reported in the 2016 Census represent earnings for 2015.

Panel A: National Employment Income and Employment Effects, Percentage Change over Baseline					
	Scenario 1 (Full Education Gap Closes)	Scenario 2 (Half Education Gap Closes)	Scenario 3 (Employment Rate Gap Closes)	Scenario 4 (Income Gap Closes)	Scenario 5 (All Gaps Close)
Total Employment Income					
Overnight	0.63%	-	0.14%	0.26%	1.09%
Longitudinal	0.98%	0.49%	0.36%	0.28%	1.57%
Employment					
Overnight	0.40%	-	0.24%	-	0.55%
Longitudinal	0.45%	0.22%	0.60%	-	0.81%

Panel C: First Nations Employment Income and Employment Share, Absolute Levels						
	Baseline	Scenario 1 (Full Education Gap Closes)	Scenario 2 (Half Education Gap Closes)	Scenario 3 (Employment Rate Gap Closes)	Scenario 4 (Income Gap Closes)	Scenario 5 (All Gaps Close)
FN Employment Income Share						
Overnight	1.41%	2.02%	-	1.54%	1.66%	2.47%
Longitudinal	2.22%	3.17%	2.70%	2.57%	2.49%	3.73%
FN Employment Share						
Overnight	1.88%	2.27%	-	2.12%	1.88%	2.42%
Longitudinal	2.90%	3.33%	3.12%	3.48%	2.90%	3.68%

Panel D: First Nations Employment Income and Employment Share, Percentage Change Over Baseline					
	Scenario 1 (Full Education Gap Closes)	Scenario 2 (Half Education Gap Closes)	Scenario 3 (Employment Rate Gap Closes)	Scenario 4 (Income Gap Closes)	Scenario 5 (All Gaps Close)
FN Employment Income Share					
Overnight	43.42%	-	9.48%	17.51%	74.95%
Longitudinal	42.82%	21.51%	15.89%	12.37%	68.23%
FN Employment Share					
Overnight	20.58%	-	12.54%	-	28.48%
Longitudinal	14.98%	7.51%	19.95%	-	26.80%

Source: Authors' calculations based on 2016 Census data and CSLS economic projections.

Note: All estimates presented for the longitudinal model are for the year 2041. Estimates for the overnight model are for the year 2016.

Panel C expresses the economic gains associated with each scenario in a different way, recording the proportion of Canadian employment (employment share) and employment income (employment income share) accounted for by First Nations people under each model and scenario. Given that the different scenarios utilize a different baseline with different employment and income shares to start, the effect of gap closure is more difficult to parse here. Still, the data in Panel C offers a useful snapshot of how the First Nations population changes relative to the Canadian population across the two models and the individual scenarios they explore. Panel D expresses the percentage change in these shares over baseline for each scenario. In doing so, it provides a more tractable way of comparing changes in employment and income shares across the two scenarios. Across all panels, Scenario 2 is left blank for the overnight model given that this scenario – the half closure of the education gap – is not explored under the overnight model. Similarly, employment gains in Scenario 4 are left blank for both models given that the closure of the income gap is not associated with any gains in employment.

The results in Panel A are broadly similar across the two models; there are minor discrepancies between the estimates of the two models. However, the effect sizes of the gains from each scenario are quite similar. Across the four scenarios for which we have results for both models, the results from the longitudinal method tend to be slightly attenuated compared to the results from the overnight model. A similar result is also observed in Panel D: each gap closure scenario is associated with gains of similar size to Panel A, and once again, the results of the longitudinal model tend to be slightly reduced compared to the overnight model.

Scenarios 3 and 4 represent somewhat of an exception to this trend. The gains from Scenario 3 are actually found to be larger in the longitudinal model than the overnight model; the estimated employment income gains, in particular, are about 63% larger in the longitudinal model than the overnight model. In fact, in the longitudinal model, the income gains from Scenario 3 are found to be larger than Scenario 4, while the opposite is true in the overnight model. Scenario 4, meanwhile, has the longitudinal results as, again, slightly reduced compared to overnight results. Still, the Scenario is noteworthy given the significant discrepancy between the results of the overnight model and the longitudinal model; the gains for the longitudinal model are about 44% smaller than the gains for the overnight model.

In contrast to Panels A and D which provided fairly similar estimates of economic gain for each of the models, Panel B on the effects for Canada offers results which differ significantly between the models. Here, the estimated gains in Canadian income and employment are consistently found to be larger in the longitudinal model than the overnight model. The full closure of the education gap is associated with income gains that are estimated to be 55% higher in the longitudinal model than the overnight model. Similarly, the closure of all three major gaps is associated with employment gains that are estimated to be 47% higher in the longitudinal model than the overnight model.

We believe that these differences across models in the estimated economic gains associated with each gap closure scenario are mainly a product of two factors: differences in the assumptions we make about the First Nations population across the two methodologies used, and the use of additional control variables in the longitudinal model. We now move to discuss each of these factors individually.

Population Differences

The overnight model and the longitudinal model simulate gap closure using different versions of the First Nations population. The overnight model, which envisions the labour market gaps experienced by First Nations disappearing instantaneously, uses the First Nations population in 2016 as characterized by the 2016 Census. The longitudinal model meanwhile projects the future economic performance of First Nations for the 2021-2041 period using projections produced by Statistics Canada. For the longitudinal model, the results presented in Table 21 reflect the economic gains from closing each of the relevant gaps in the year 2041. As such, the First Nations population looks significantly different with respect to a) the size of the First Nations population relative to the Canadian population, and b) the demographic groups that comprise the First Nations population and proportion of the total First Nations population they represent.

As one of the fastest growing populations in Canada, First Nations come to occupy a greater and greater proportion of the Canadian population over the course of the 2021-2041 period. In 2016, the First Nations population represented 3.04% of the Canadian population and 2.78% of the Canadian working age population (Statistics Canada, 2017a, 2017b). By 2041, Statistics Canada estimates that the First Nations population will represent 3.56% of the Canadian population and 3.37% of the Canadian working age population (Statistics Canada, 2019, 2021). These differences in the First Nations population across the two methodologies help to explain the significant difference in the employment and employment income shares of First Nations between the models (see Panel C). A First Nations population which represents a larger share of Canada means that, all else equal, the same percentage change in First Nations employment and income will represent a larger increase in aggregate Canadian income and employment. We present this dynamic as a possible explanation for the fairly substantial differences in the results of the two models as presented in Panel B.

This effect might be further bolstered by changes in the demographics of the First Nations. As we've noted prior in this report, variables like age, sex, and province/territory of residence are major determinants of the labour market outcomes that individuals experience. The methodology we employ in the longitudinal method controls for these variables, only comparing wages and employment rates among individuals who share the same age group, sex, and province/territory of residence. However, there are assuredly other variables that we have not controlled for and that are determinants of labour market outcomes. Living on reserve, for example, tends to be associated with poorer labour market outcomes for First Nations. If the growth rate of First Nations people living on-reserve over the 2021-2041 period was meaningfully higher than the growth rate of First Nations people living off-reserve, the First Nations population in 2041 would be comprised of a greater proportion of on-reserve individuals than the First Nations population in 2016. This, in turn, might lead to lower average wages and rates of employment for the 2041 First Nations population compared to the 2016 population. The apparent wage gap between First Nations and non-Indigenous people in 2041, not controlling for on-reserve status, might seem larger in 2041 than 2016. The gains associated with closing that gap might then be estimated as larger in the longitudinal method compared to the overnight method, where the proportion of the First Nations population living on-reserve is lower. This is just one example of how differences in the growth rates of groups with unobserved characteristics can drive differences between the results of the two methods.[41]

[41] It should be noted that we do not directly project non-Indigenous population growth to 2041. We measure wages and employment rates in each of the 1188 age-sex-province-educational attainment bins for the 2016 non-Indigenous population and forecast these measures to 2041. However, we only compare the First Nations and non-Indigenous populations within bins, for individuals with the same age, sex, and province characteristics. We do not directly produce estimates for the non-Indigenous population. As such, changes in the demographic breakdown of the non-Indigenous population over the 2021-2041 period have no impact on our estimates of the economic gains associated with gap closure.

Another key difference between the two methodologies is the level of educational attainment assigned to the First Nations and non-Indigenous populations. In the overnight model, we simply observe the share of each population in each educational attainment category in the 2016 Census. The longitudinal model, however, requires us to project the future educational attainment of both populations in 2041. We do so using historical trends, extrapolating to 2041 the growth in each educational attainment category observed between the 2006 and 2016 Census. As shown in Table 2, this produces an education gap of a different size than the one observed in 2016: a gap which is, on average, larger than the one observed in 2016. Given that the gains from closing the education gap directly depend on the size of said gap, this difference between the educational attainment of the First Nations population and the non-Indigenous population in 2016 and 2041 is likely to produce deviations in the results of the two models.

Omitted Control Variables

The overnight model involved the comparison of First Nations and non-Indigenous people across different age, sex, and provincial categories. We defined the closure of the income gap, for example, as First Nations people earning the same average employment income as non-Indigenous people in the same educational category. In this way, we were, at times, "comparing apples to oranges." The disparity in earnings between a 19-year-old female First Nations person in the Northwest Territories and a 45-year-old male non-Indigenous person in Alberta is likely to be vast – and not entirely due to one's identity as a First Nations person or a non-Indigenous person. Differences in demographic characteristics, like one's province/territory of residence, age, or sex are also associated with different labour market outcomes. By only comparing individuals with the same level of educational attainment, we controlled for perhaps the most significant determinant of labour market performance. Still, the data we mobilized for the overnight model limited us from controlling for other key determinants of labour market performance, and as such, there was likely some level of bias to our measurement of the labour market gaps facing First Nations people and the gains associated with closing those gaps. Bias is ever present in economic analysis as all models make simplifications and data are rarely available on all relevant variables. Still, a more rigorous model is always desirable.

The longitudinal model hence sought to reduce bias present in our estimations by leveraging detailed, individual-level microdata from the 2016 Census. With this microdata, we were able to control for not only education, but also age, sex, and province/territory of residence. In this way, we were able to come much closer to the ideal of "comparing apples to apples"; that is, isolating the causal effect of First Nations identity on labour market outcomes by comparing only the labour market outcomes of First Nations and non-Indigenous people who are identical in all other relevant characteristics.

The fact that our estimates of economic gain are, on average, slightly smaller in the longitudinal method compared to the overnight method might suggest that there is a degree of bias in our estimates from the overnight method, and that this bias is predominantly upward. In other words, the overnight model may have produced slight overestimates of the size of the labour market disparities facing First Nations people. Imagine the distribution of First Nations people across age, sex, and province/territory categories in 2016 was associated with poorer labour market outcomes compared to the non-Indigenous population. This

would produce seemingly larger labour market gaps in the overnight model relative to the longitudinal model, since the overnight model does not control for these characteristics, whereas the longitudinal model does. Given this seemingly larger gap, the overnight model would produce larger estimates of the economic benefits associated with gap closure compared to the longitudinal model. This discrepancy in the results of the models would not be caused by any real difference in the labour market performance of the populations across models. Rather, it would simply be a consequence of attributing existing differences in First Nations and non-Indigenous labour market performance to different sources; in the overnight model, the gap in the performance of the populations would be completely attributed to the effect of being First Nations or non-Indigenous, whereas in the longitudinal model, some of the disparity would be attributed to differences in the composition and characteristics of the First Nations population.

One potential source of such bias is differences in age between the populations, as the First Nations population is, on average, younger than the non-Indigenous population. Younger individuals tend to earn lower wages than older individuals. By not controlling for age in the overnight model, we measured the effect of this difference as part of the effect on wages of being First Nations. In the longitudinal method, however, we controlled for these differences, only comparing First Nations and non-Indigenous people of similar age. Therein, we measured a smaller gap in wages between the populations compared to the overnight model. This is one potential explanation for the smaller gains we associate with the closure of the income gap in the longitudinal model compared to the overnight model (see Table 21). The relatively large gains we associate with the closure of the employment rate gap in the longitudinal model compared to the overnight model may too be a result of controlling for these demographic differences; in this case though, the direction of the discrepancy suggests downward bias in the overnight model estimates.

It is crucial to note that even with the added controls in the longitudinal model, there are certainly additional omitted variables which we have not included in either of our models. As mentioned in the prior section on the consequences of population differences, on-reserve status -- which we might operationalize as residence in urban versus rural areas given that very few non-Indigenous people live on-reserve -- is another variable which future research might try to control for. Living rurally or on-reserve is generally associated with fewer employment opportunities compared to living in more populated, less remote areas; in this way, this variable is likely to be a significant determinant of labour market outcomes. The fact that we have not controlled for it, then, is likely to be a source of bias in both the overnight and longitudinal models.

Conclusion

The findings of the longitudinal model of gap closure are broadly consistent with the findings from Part I of this report: the closure of the various labour market disparities facing First Nations is associated with significant gains in employment, output, income, and productivity for not only First Nations but Canadians broadly.

The educational attainment gap is particularly consequential in this regard; we estimate that its full closure is associated with an additional $30 billion in output in 2041 compared to the baseline scenario, and a cumulative $285 billion in additional output over the 2021-2041 period. Moreover, we estimate that the full closure of the gap would generate nearly 105,000 additional jobs for First Nations people in 2041, and 1.03 million additional job-years for the First Nations people compared to the baseline over the 2021-2041 period. Furthermore, we find that the average employment income of First Nations people in 2041 would rise nearly $13,000 compared to the baseline scenario, increasing from about $50,600 to about $63,200. These gains in employment and output manifest as a $25,000 increase over baseline in the productivity of the First Nations population in 2041, measured as output per employed person. This productivity boost would bring First Nations productivity from 76.5% of the Canadian average to 95.1%: a massive increase that nearly eliminates the productivity gap between the First Nations population and Canadians at large. As a result of these gains, the projected annual growth rate of Canadian GDP for the 2021-2041 period rises about 0.05 percentage points over baseline, from 1.71% per year to 1.76%. The annual growth rate of Canadian employment also rises about 0.02 percentage points, from 0.95% per year to 0.97%. The annual growth rate of Canadian labour productivity for the period improves meaningfully as well, from 0.75% per year to 0.78%: a change of about 0.03 percentage points.

Admittedly, fully closing the educational attainment gap between First Nations and non-Indigenous people by 2041 is an unrealistic prospect given that many individuals in the labour force today will still be in the labour force by 2041. Still, the gains from closing the educational attainment gap even halfway are considerable. We estimate that the half closure of the educational attainment gap is associated with an additional $15 billion in output in 2041: a 22% increase in First Nations output compared to the baseline scenario. This manifests as a cumulative $143 billion in additional output over the 2021-2041 period. The half closure of the educational attainment gap is also associated with an additional 52,000 jobs over baseline for First Nations in 2041, and an additional 518,000 job-years for First Nations people over the 2021-2041 period. Average annual First Nations employment income would also rise by nearly $7,000 under this scenario, while labour productivity would increase by over $13,000. As a proportion of Canadian labour productivity, First Nations labour productivity rises from 76.5% to about 86.5%: an increase of 10 percentage points. In total, these gains result in a 0.02 percentage point increase in the annual growth rate of Canadian GDP, a 0.01 percentage point increase in the annual growth rate of Canadian employment, and a 0.01 percentage point increase in the annual growth rate of Canadian labour productivity.

As one might expect though, the most substantial gains are associated with the simultaneous closure of the educational attainment gap, the conditional employment rate gap, and the conditional employment income gap. Under this scenario, we estimate that total First Nations output in 2041 would increase by about $48 billion over the baseline scenario. Over the entire 2021-2041 period however, we estimate that the gradual

closure of the three gaps is associated with a cumulative $457 billion in additional output. First Nations employment in 2041 is also projected to rise by nearly 188,000 jobs above baseline under this scenario, with cumulative gains of just under 1.9 million additional job-years accruing to First Nations over the 2021-2041 period. Average First Nations employment income, meanwhile, is projected to rise by $17,000 in 2041, upon the full closure of the three gaps. We also estimate that First Nations labour productivity would rise by $34,000 under this scenario, from about $101,000 per employed person to over $135,000. This productivity gain pushes First Nations productivity beyond the Canadian average, from 76.5% of Canadian labour productivity to 101.5%. These gains represent a 0.08 percentage point improvement in the annual growth rate of Canadian GDP for the 2021-2041 period, bringing the figure to 1.79% per year. Moreover, the annual growth rates of Canadian employment and labour productivity both rise 0.04 percentage points, to 0.99% and 0.79% respectively.

We present these gains as evidence of the great economic benefits which would accrue both to First Nations people and Canadians generally, should policymakers and community leaders pursue the elimination of the labour market disparities facing First Nations people vis-à-vis non-Indigenous people. We hold that economic benefits of this size are remarkable, no matter the context. Still, we posit that our findings become even more salient when situated in the context of present-day concerns about economic stagnation and Canada's slow growth trajectory. At a time when economists and business leaders speculate that the Canadian labour market is all "tapped out", the First Nations population remains a chronically overlooked and underinvested-in resource for the Canadian economy. Put simply, the economic costs of maintaining these gaps – to say nothing of the humanitarian costs – are enormous and they have scarcely been as relevant as they are today.

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Statistics Canada (2019b). Table 17-10-0057-01. Projected population, by projection scenario, age and sex, as of July 1 (x 1,000).

Statistics Canada (2021). Table 17-10-0144-01. Projected population by Indigenous identity, age group, sex, area of residence, provinces and territories, and projection scenario, Canada (x 1,000).

Statistics Canada (2022). Table 14-10-0365-01. Labour force characteristics by region and detailed Indigenous group.

Appendix Table 1: Projected Change in First Nations Average Employment Income over Baseline Scenario, 2041

Appendix Table 1: Projected Change in First Nations Average Employment Income over Baseline Scenario, 2041						
	Baseline (total level)	Education Gap Closes	Education Gap Half Closes	Employment Rate Gap Closes	Income Gap Closes	All Three Gaps Close
Scenario	**Total**	(1)	(2)	(3)	(4)	(5)
Province/Territory						
Newfoundland and Labrador	63,951	19,769	11,008	-7,456	-6,155	8,670
Prince Edward Island	36,312	8,144	4,783	-3,751	9,690	14,265
Nova Scotia	46,254	10,876	5,694	111	1,094	13,573
New Brunswick	35,079	4,032	2,119	1,484	6,252	22,156
Quebec	50,079	10,025	5,236	-1,990	-2,733	7,481
Ontario	47,819	12,455	6,610	337	6,078	19,240
Manitoba	45,254	18,973	10,500	-3,439	7,927	16,165
Saskatchewan	52,050	15,756	8,633	-5,193	11,830	17,611
Alberta	63,670	12,907	6,923	-2,749	8,959	19,865
British Columbia	43,833	6,969	3,699	-87	8,789	17,707
Territories	82,377	15,246	8,208	-8,856	2,614	12,540
Total	50,640	12,591	6,748	-1,827	6,424	17,057
Age Group						
15 to 24 years	25,372	12,299	6,624	-1,664	-1,943	1,539
25 to 34 years	44,248	10,331	5,610	-1,948	9,235	15,107
35 to 44 years	63,073	16,075	8,542	-2,237	5,979	17,621
45 to 54 years	65,840	13,022	6,926	-2,816	11,868	26,872
55 to 64 years	55,267	10,056	5,282	-1,969	13,814	29,473
65 years and over	40,188	14,933	8,155	-1,480	-5,170	4,897
Total	50,640	12,591	6,748	-1,827	6,424	17,057
Sex						
Male	58,608	11,807	6,274	-1,787	10,904	22,885

Appendix Table 1: Projected Change in First Nations Average Employment Income over Baseline Scenario, 2041						
Female	41,894	13,750	7,438	-2,253	1,506	10,475
Total	50,640	12,591	6,748	-1,827	6,424	17,057
Educational Attainment						
No certificate	33,953	0	0	111	7,624	9,106
High School	43,405	0	0	21	6,344	7,642
Other Trades Certificate	50,252	0	0	-2,840	10,341	8,955
College, CEGEP (3 months to 1 year)	46,923	0	0	-1,037	7,007	9,295
College, CEGEP (1 year to 2 years)	53,167	0	0	202	6,552	8,511
College, CEGEP (2 years+)	57,887	0	0	666	9,833	11,237
University below Bachelor	63,039	0	0	-3,136	1,665	948
Bachelor	71,395	0	0	-814	7,240	8,982
University above Bachelor	108,820	0	0	-1,192	-15,899	-11,409
Total	50,640	12,591	6,748	-1,827	6,424	17,057
TOTAL	**50,640**	**12,591**	**6,748**	**-1,827**	**6,424**	**17,057**

Source: Authors' calculations based on 2016 Census data and CSLS economic projections.

Appendix Table 2: Projected Change in First Nations Average Employment Income over Baseline Scenario (per cent), 2041					
	Education Gap Closes	Education Gap Half Closes	Employment Rate Gap Closes	Income Gap Closes	All Three Gaps Close
Scenario	(1)	(2)	(3)	(4)	(5)
Province/Territory					
Newfoundland and Labrador	30.91	17.21	-11.66	-9.63	13.56
Prince Edward Island	22.43	13.17	-10.33	26.68	39.28
Nova Scotia	23.51	12.31	0.24	2.37	29.34
New Brunswick	11.49	6.04	4.23	17.82	63.16

Appendix Table 2: Projected Change in First Nations Average Employment Income over Baseline Scenario (per cent), 2041					
Quebec	20.02	10.46	-3.97	-5.46	14.94
Ontario	26.05	13.82	0.70	12.71	40.24
Manitoba	41.93	23.20	-7.60	17.52	35.72
Saskatchewan	30.27	16.59	-9.98	22.73	33.83
Alberta	20.27	10.87	-4.32	14.07	31.20
British Columbia	15.90	8.44	-0.20	20.05	40.40
Territories	18.51	9.96	-10.75	3.17	15.22
Total	24.86	13.33	-3.61	12.68	33.68
Age Group					
15 to 24 years	48.47	26.11	-6.56	-7.66	6.07
25 to 34 years	23.35	12.68	-4.40	20.87	34.14
35 to 44 years	25.49	13.54	-3.55	9.48	27.94
45 to 54 years	19.78	10.52	-4.28	18.03	40.81
55 to 64 years	18.19	9.56	-3.56	25.00	53.33
65 years and over	37.16	20.29	-3.68	-12.86	12.19
Total	24.86	13.33	-3.61	12.68	33.68
Sex					
Male	20.15	10.70	-3.05	18.60	39.05
Female	32.82	17.75	-5.38	3.60	25.00
Total	24.86	13.33	-3.61	12.68	33.68
Educational Attainment					
No certificate	0.00	0.00	0.33	22.46	26.82
High School	0.00	0.00	0.05	14.62	17.61
Other Trades Certificate	0.00	0.00	-5.65	20.58	17.82
College, CEGEP (3 months to 1 year)	0.00	0.00	-2.21	14.93	19.81
College, CEGEP (1 year to 2 years)	0.00	0.00	0.38	12.32	16.01
College, CEGEP (2 years+)	0.00	0.00	1.15	16.99	19.41

Appendix Table 2: Projected Change in First Nations Average Employment Income over Baseline Scenario (per cent), 2041					
University below Bachelor	0.00	0.00	-4.97	2.64	1.50
Bachelor	0.00	0.00	-1.14	10.14	12.58
University above Bachelor	0.00	0.00	-1.10	-14.61	-10.48
Total	24.86	13.33	-3.61	12.68	33.68
TOTAL	**24.86**	**13.33**	**-3.61**	**12.68**	**33.68**

Source: Authors' calculations based on 2016 Census data and CSLS economic projections.

Appendix Table 3: Projected Change in First Nations Productivity over Baseline Scenario, 2041						
	Baseline (total level)	Education Gap Closes	Education Gap Half Closes	Employment Rate Gap Closes	Income Gap Closes	All Three Gaps Close
Scenario	**Total**	(1)	(2)	(3)	(4)	(5)
Province/Territory						
Newfoundland and Labrador	127,901	39,539	22,016	-14,913	-12,311	17,340
Prince Edward Island	72,625	16,287	9,566	-7,502	19,379	28,530
Nova Scotia	92,507	21,752	11,388	222	2,188	27,146
New Brunswick	70,159	8,064	4,237	2,967	12,503	44,312
Quebec	100,157	20,049	10,472	-3,980	-5,466	14,962
Ontario	95,637	24,911	13,220	673	12,156	38,480
Manitoba	90,508	37,946	21,000	-6,878	15,853	32,329
Saskatchewan	104,100	31,512	17,266	-10,385	23,661	35,222
Alberta	127,340	25,814	13,845	-5,498	17,918	39,731
British Columbia	87,666	13,937	7,399	-174	17,577	35,414
Territories	164,754	30,491	16,416	-17,712	5,228	25,080
Total	101,280	25,182	13,497	-3,654	12,847	34,113
Age Group						
15 to 24 years	50,745	24,598	13,248	-3,329	-3,886	3,078
25 to 34 years	88,495	20,662	11,221	-3,896	18,469	30,214
35 to 44 years	126,146	32,150	17,083	-4,474	11,958	35,243
45 to 54 years	131,681	26,043	13,853	-5,632	23,737	53,744
55 to 64 years	110,535	20,112	10,564	-3,937	27,628	58,947

Appendix Table 3: Projected Change in First Nations Productivity over Baseline Scenario, 2041						
65 years and over	80,377	29,866	16,310	-2,961	-10,340	9,795
Total	101,280	25,182	13,497	-3,654	12,847	34,113
Sex						
Male	117,216	23,614	12,547	-3,575	21,807	45,771
Female	83,789	27,501	14,876	-4,505	3,012	20,951
Total	101,280	25,182	13,497	-3,654	12,847	34,113
Educational Attainment						
No certificate	67,906	0	0	222	15,248	18,213
High School	86,809	0	0	42	12,688	15,284
Other Trades Certificate	100,504	0	0	-5,680	20,681	17,909
College, CEGEP (3 months to 1 year)	93,845	0	0	-2,073	14,014	18,590
College, CEGEP (1 year to 2 years)	106,334	0	0	405	13,105	17,021
College, CEGEP (2 years+)	115,775	0	0	1,332	19,665	22,473
University below Bachelor	126,078	0	0	-6,272	3,329	1,896
Bachelor	142,791	0	0	-1,628	14,481	17,963
University above Bachelor	217,641	0	0	-2,383	-31,798	-22,818
Total	101,280	25,182	13,497	-3,654	12,847	34,113
TOTAL	**101,280**	**25,182**	**13,497**	**-3,654**	**12,847**	**34,113**

Source: Authors' calculations based on 2016 Census data and CSLS economic projections.

Table 23: Projected Change in First Nations Productivity over Baseline Scenario (per cent), 2041					
	Education Gap Closes	Education Gap Half Closes	Employment Rate Gap Closes	Income Gap Closes	All Three Gaps Close
Scenario	(1)	(2)	(3)	(4)	(5)
Province/Territory					
Newfoundland and Labrador	30.91	17.21	-11.66	-9.63	13.56
Prince Edward Island	22.43	13.17	-10.33	26.68	39.28
Nova Scotia	23.51	12.31	0.24	2.37	29.34
New Brunswick	11.49	6.04	4.23	17.82	63.16
Quebec	20.02	10.46	-3.97	-5.46	14.94
Ontario	26.05	13.82	0.70	12.71	40.24
Manitoba	41.93	23.20	-7.60	17.52	35.72
Saskatchewan	30.27	16.59	-9.98	22.73	33.83
Alberta	20.27	10.87	-4.32	14.07	31.20
British Columbia	15.90	8.44	-0.20	20.05	40.40
Territories	18.51	9.96	-10.75	3.17	15.22
Total	24.86	13.33	-3.61	12.68	33.68
Age Group					
15 to 24 years	48.47	26.11	-6.56	-7.66	6.07
25 to 34 years	23.35	12.68	-4.40	20.87	34.14
35 to 44 years	25.49	13.54	-3.55	9.48	27.94
45 to 54 years	19.78	10.52	-4.28	18.03	40.81
55 to 64 years	18.19	9.56	-3.56	25.00	53.33
65 years and over	37.16	20.29	-3.68	-12.86	12.19
Total	24.86	13.33	-3.61	12.68	33.68
Sex					
Male	20.15	10.70	-3.05	18.60	39.05
Female	32.82	17.75	-5.38	3.60	25.00
Total	24.86	13.33	-3.61	12.68	33.68
Educational Attainment					
No certificate	0.00	0.00	0.33	22.46	26.82
High School	0.00	0.00	0.05	14.62	17.61

Table 23: Projected Change in First Nations Productivity over Baseline Scenario (per cent), 2041					
Other Trades Certificate	0.00	0.00	-5.65	20.58	17.82
College, CEGEP (3 months to 1 year)	0.00	0.00	-2.21	14.93	19.81
College, CEGEP (1 year to 2 years)	0.00	0.00	0.38	12.32	16.01
College, CEGEP (2 years+)	0.00	0.00	1.15	16.99	19.41
University below Bachelor	0.00	0.00	-4.97	2.64	1.50
Bachelor	0.00	0.00	-1.14	10.14	12.58
University above Bachelor	0.00	0.00	-1.10	-14.61	-10.48
Total	24.86	13.33	-3.61	12.68	33.68
TOTAL	**24.86**	**13.33**	**-3.61**	**12.68**	**33.68**

Source: Authors' calculations based on 2016 Census data and CSLS economic projections.

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