

DISCUSSION PAPER SERIES

IZA DP No. 15358

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# Heterogeneous Returns to Active Labour Market Programs for Indigenous Populations

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## ABSTRACT

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# Heterogeneous Returns to Active Labour Market Programs for Indigenous Populations\*

This paper studies the impact of active labour market programs for institutionally distinct Indigenous populations in Canada using administrative data on the universe of participants in the Aboriginal Skills and Employment Training Strategy (ASETS). Within Indigenous population groups, we compare labour market outcomes among individuals who participated in high- relative to low-intensity programs, where high-intensity programs were longer in duration. For Métis and non-Status First Nations groups, we find a large impact of high-intensity participation on earnings two years post-ASETS. The post-program earnings of Status First Nations individuals who participated in high-intensity programs were not statistically different from those in low-intensity programs. We argue that these differences are due to the unique institutional environments affecting different Indigenous populations.

**JEL Classification:** J15, I38, M53

**Keywords:** active labour market programs, Indigenous peoples, labour market institutions, on-reserve employment, program evaluation, administrative data

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Whether active labour market programs have their desired effect depends not only on the content of the program and the participants, but also on context (Card et al., 2018; Crépon and Van Den Berg, 2016). This paper quantifies the effect of an active labour market program, the Aboriginal Skills and Employment Strategy (ASETS), which operated in a unique institutional environment in Canada, wherein distinct Indigenous populations faced substantively different institutions and labour markets, yet were funded by the same source. Using a new administrative dataset that links the universe of ASETS participants to tax records, we compare labour market outcomes among individuals who participated in longer-duration interventions, which we call high intensity, to those who received job counselling or employment assistance services, which were shorter in duration, which we call low intensity. We show that the effect of high- relative to low-intensity participation on earnings varied substantially across Indigenous population groups, and some of those differences can be attributed to working in labour markets that fall under different legal jurisdictions.

In Canada, there are three constitutionally recognized Indigenous groups: First Nations, Métis, and Inuit.<sup>1</sup> First Nations people are further classified under Canadian law as “Status” or “non-Status”, with the federal government exercising legislative jurisdiction over Status First Nations.<sup>2</sup> Together, Indigenous people comprised nearly five percent of the Canadian population in 2016. They also experience substantially lower earnings and employment rates than the average Canadian (Statistics Canada, 2017b). Even within the Indigenous population there is notable variation in labour market outcomes. Average outcomes among Métis tend to be close to the Canadian average, and Status First Nations people experience greater economic marginalization (Lamb, 2013; Pendakur and Pendakur, 2011; Feir, 2013; Drost,

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<sup>1</sup>Canadian legislation, such as the Constitution, uses the words *Indian* and *Aboriginal* rather than Indigenous and First Nations. We use the term Indigenous as equivalent to Aboriginal and First Nations as equivalent to Indian.

<sup>2</sup>“Status”, while not equivalent, parallels citizenship with a Tribal Nation in the United States. Since 1985, “Status” is legally distinct from citizenship in a First Nation, but still determines federal eligibility for particular rights and programs and is highly correlated with First Nations citizenship (Furi and Wherrett, 2003).

1994; Kuhn and Sweetman, 2002; George and Kuhn, 1994). These differences in outcomes extend beyond income and employment to pre-market factors like test scores, literacy and numeracy rates, and technological skills (Hu et al., 2019; Jones and Barber, 2019).

In part, to address these systemic inequalities, as well as to extend existing labour market programming that was culturally appropriate, the federal government funded the Aboriginal Skills and Employment Training Strategy (ASETS) from 2010 to 2018. A demand-driven focus distinguished ASETS from its predecessor, in the sense that independent Indigenous service delivery organizations tailored individual programs to respond to local labour demand conditions (Wood, 2016).<sup>3</sup> In many respects, ASETS mirrors similar programs from the United States Department of Labor that fund tribal service delivery organizations to administer employment and job training programs under Public Law 102-477 (U.S. Department of Labor, 2020b,a) and those in Australia that leverage local Indigenous service providers (United Nations, 2009). There are over 370 million Indigenous people worldwide, many of whom face similar economic challenges despite living in separate countries with different institutional environments (United Nations, 2009). Understanding how institutional structures affect the operation of these sorts of programs is, therefore, of global importance.

We study the relative effectiveness of ASETS programming that tends to be longer in duration using an empirical approach similar to Andersson, Holzer, Lane, Rosenblum, and Smith (2016). We group ASETS participants into a high-intensity group—those receiving skills development, including apprenticeships, wage subsidies, job creation partnerships, or essential skills programs—and a low-intensity group—employment assistance services (EAS) or job counselling—and then compare participants’ average outcomes between the two groups. We estimate the effects of high- relative to low-intensity participation using a doubly-robust inverse propensity score weighting and regression adjustment estimator. This method will identify the “average treatment effect” if selection into high-intensity participation, within the group of ASETS participants, depends only on a set of observed

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<sup>3</sup>For examples of other federal employment programs delivered by independent service organizations see (Malo Á, 2018; Dockery and Stromback, 2001; Finn and Millar, 2009).

control variables. Like [Andersson et al. \(2016\)](#), since we compare differing intensities of participation, selection *into* ASETS is not a potential source of bias. Instead, selection into high-intensity interventions, conditional on ASETS participation, is the primary threat to identification. We provide evidence that the comparison groups are balanced in observable characteristics. We then show that the remaining identifying variation in high-intensity participation, after conditioning on our covariates, is in part driven by funding for local service delivery organizations, which was based on demographic data from 1996 ([Office of the Auditor General of Canada, 2018](#)). Holding contemporaneous demographic characteristics constant, this source of variation is plausibly exogenous.

In the second year after entering ASETS, average annual earnings among high-intensity participants was just over \$1000 higher than among similar low-intensity participants, which is a 9% increase relative to low-intensity pre-participation earnings. This overall effect for all participants masks considerable heterogeneity across population groups. Since nearly all Inuit in our sample are high-intensity participants, we focus on differences between Status First Nations, non-Status First Nations, and Métis groups.

In the second year after entering ASETS, the impact of high-intensity participation on annual earnings was large for both Métis and non-Status men and women. In the Métis and non-Status groups, the effect sizes were similar in levels for men and women, but, as a percentage of pre-participation low-intensity earnings, the relative effect of high-intensity participation was more than 17% for men and more than 27% for women. The estimated effects on any employment in a year were small, suggesting that the earnings effects were either due to higher wages or more hours of work, neither of which are observed in our data. In contrast, for Status First Nations men and women, the estimated difference in average annual earnings between high- and low-intensity participants was small (less than \$200) and statistically insignificant.

To understand the reasons for the heterogeneity in the earnings differences, we start by showing that Métis people who participated in high-intensity programming typically had

interventions that were substantially longer in duration, and this is particularly true for skills development interventions, which previous research suggests deliver the largest earnings returns (Card et al., 2010, 2018). We discuss potential reasons for these longer durations related to the scale of Métis service delivery organizations, as well as how differences in the level of government with jurisdiction over services for separate Indigenous groups affects the mix of programs that are alternatives to, or may be taken in combination with, ASETS.

We then show that, within the Status First Nations group, the relative effect of high-intensity participation depended on whether participants were employed on a reserve in the year prior to their first ASETS intervention. Reserves are lands retained by specific First Nations for their “beneficial use” and are held in trust by the federal government and are institutionally distinct places in Canada governed by a unique set of laws.<sup>4</sup> For Status First Nations men and women who worked off reserve prior to their ASETS participation, the returns to high- relative to low-intensity programs were 7% and 5% of pre-program earnings, respectively, in the second year following participation. Among those who had pre-program on-reserve employment, average earnings in the high-intensity group was consistently similar or lower than in the low-intensity group, even when those participants lived in urban non-remote areas. We further decompose the effects to show that Status First Nations participants who transitioned from on- to off-reserve employment in the post-period experienced a relatively large (approximately \$1,500) return to high-intensity participation, but because this group was a small fraction overall, and the likelihood of making that transition was the same in both intensity groups, the aggregate effect is dominated by the lack of an earnings difference for those who remained employed on reserves.

For historic, legislative, and jurisdictional reasons, the institutions that govern labour markets on- and off-reserve are vastly different. Reserves traditionally face significant barriers to investment and economic activity (Tulo, 2014). We draw on existing research and discussions about on-reserve labour market demand, (Jafri and Alasia, 2019; Feir and Scoones,

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<sup>4</sup>Reserves are analogous to reservations in the United States.

2022; Canadian Council for Aboriginal Business, 2016; Richard et al., 2008; DeWeaver, 2010; Redbird, 2021), to argue that the unique economic environments on reserves that limit opportunities for wage growth and occupational progression may restrict the capacity of active labour market programs to improve participants' earnings.

These potential restrictions are critical to interpreting our results, and apply more generally to evaluations from similar contexts; when broader reforms are required to address institutional barriers, it might be inappropriate to interpret the lack of an earnings return as evidence that a program is ineffective. This is particularly important if the program is generating meaningful benefits that are unobserved. The set of barriers where this issue is relevant extends beyond labour market institutions to factors such as racism and discrimination.

Our results contribute new evidence to the wider literature on active labor market programs.<sup>5</sup> Previous research has demonstrated that programs tend to be more effective during temporary periods of high unemployment (Card et al., 2010) and that training programs can have positive impacts on average but little effect for the most disadvantaged participants (Crépon and Van Den Berg, 2016; Bitler et al., 2006). We can extend these results because of the unique way that different levels of government exercise jurisdiction over distinct Indigenous populations in Canada. We observe similar people participating in the same broad set of programs, in the same geographic regions, but who work in economies governed by very different regulations and institutions. The result that the effectiveness of active labour market programming differs across these jurisdictions, points toward an important role for labour market institutions in a way that has not been possible in previous research.

## 2 Background on ASETS

In general, the federal and provincial governments in Canada share jurisdiction over the provision of active labour market programs. However, under Canadian law, the *Constitution*

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<sup>5</sup>See LaLonde (1995), Greenberg et al. (2003), Card et al. (2010), and Card et al. (2018) for meta-analyses.



*Act, 1867* confers on the federal government the authority to govern laws, programs and policies in relation to “Indians and Lands Reserved for Indians” through section 91(24).<sup>6</sup> This has implications for the way that Indigenous people access labour market programming in Canada.<sup>7</sup>

Since 1996 under part II of the *Employment Insurance (EI) Act*, Employment Benefits and Support Measures (EBSM), the provinces have administered active labour market programming for EI participants through Labour Market Development Agreements (LMDAs) with the federal government. The provinces have also administered active labour market programs for those ineligible for EI, like new or precariously employed workers, that are funded through six-year bilateral Labour Market Agreements (LMAs) with the federal government (Barnetson, 2018). While Indigenous people are not excluded from the general programming available through LMDAs or LMAs, unique programs to meet their needs fall under the jurisdiction of the federal government. Thus, the federal government has authority to provide an independent set of active labour market programs for Indigenous people.

The first program explicitly designed to deliver active labour market programming similar to those under the EBSM, but independently from EI and through local Indigenous organizations was the Aboriginal Human Resources Development Strategy (AHRDS), which began in 1999 (Office of the Auditor General of Canada, 2018; Human Resources and Skills Development Canada, 2009). Programs under AHRDS included skills development, targeted wage subsidies, self-employment support, participation in job creation partnerships, and employment assistance services and were operated through agreement holders, who delivered the services through sub-agreement holders or sub-project holders.<sup>8</sup> The department

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<sup>6</sup>Other Indigenous groups are recognized as “Indian” for purposes of Federal constitutional responsibilities (Daniels v. Canada, 2016 SCC 12, [2016] 1 S.C.R. 99; Reference Re Eskimos, [1939] SCR 104), although these groups are still legally distinct in other ways.

<sup>7</sup>This federal level of jurisdiction is not unique and is shared with other former British colonies such as the United States.

<sup>8</sup>AHRDS also included explicit funding to advance the availability of child care through the First Nations and Inuit Child Care Initiative which supported the creation of 6,000 child care spaces in First Nations and Inuit Communities from the late 1990s through 2010 (Human Resources and Skills Development Canada, 2012).

responsible for delivering AHRDS assessed it in 2009 using a matching procedure and found that it had a positive impact on the income and employment of participants ([Human Resources and Skills Development Canada, 2009](#)). The evaluation did not distinguish between Indigenous populations, rather it focused on the types of labour force interventions that had the largest marginal impacts. That program ended in 2009 and was replaced by the Aboriginal Skills and Employment Training Strategy (ASETS), which is the focus of our analysis. Both AHRDS and ASETS programs were delivered through Indigenous organizations to ensure that they were more locally and culturally responsive to the needs of the people they served ([Wood, 2016](#)).

The ASETS program started in 2010, was initially funded until 2015, and was then extended to the end of the fiscal year of 2018. As of March 2018, there were 86 active agreement holders under ASETS with five-year agreements and 347 active sub-agreement or sub-project holders ([Office of the Auditor General of Canada, 2018](#)).<sup>9</sup> The program had over 600 service delivery sites across Canada ([Employment and Social Development Canada, 2019](#)). Between the fiscal years 2010-2011 and 2017-2018 the estimated total program funding for ASETS was \$2.4 billion ([Office of the Auditor General of Canada, 2018](#)).

ASETS agreement holders, sub-agreement holders and sub-project holders varied substantially in their levels of funding, the clients they served, and the exact ways in which they delivered programming. As of 2015, the largest agreement was funded at nearly \$25 million and the smallest roughly \$500,000. About two-thirds of the funding was directed to First Nations agreement holders, 18 percent to organizations that serve Métis people, 11 percent to urban agreement holders, and 5 percent to Inuit organizations ([Employment and Social Development Canada, 2020](#); [Wood, 2016](#)).

ASETS differentiated itself from AHRDS through its emphasis on “demand-driven skills development, partnerships with the private sector and other governments, and accountability” ([Human Resources and Skills Development Canada, 2009](#), p 20). Largely, the focuses

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<sup>9</sup>As of 2015, 57 of the agreement holders were First Nations, 13 served urban populations, irrespective of their Indigenous group, 8 served Inuit people, and 7 served Métis people ([Wood, 2016](#)).

of ASETS were operationalized through different reporting practices, and required strategic planning processes on the part of the agreement holders. Despite the original intention of the local, Indigenous-operated service delivery system of ASETS, there has been a concern about the administrative burden faced by agreement holders and their autonomy over the use of their funding (Wood, 2016).

Compared to other labour market programs, there is limited quantitative research examining which aspects of ASETS were successful or the impact of active labour market programming for Indigenous populations, more generally. In light of this, the National Indigenous Economic Development Board (NIEDB) and the Office of the Auditor General of Canada have both expressed the need for more program evaluation and data analysis (NIEDB, 2019).<sup>10</sup> Since then, Employment and Skills Development Canada (ESDC) has produced an evaluation of the program, in which it was determined that skills development was the most effective intervention for increasing employment among participants (Employment and Social Development Canada, 2020). Our analysis contributes to this overall effort in evaluating ASETS by quantifying the effects of varying intensities of ASETS participation in different population groups.

In 2019, ASETS was replaced by the Indigenous Skills and Employment Training (ISET) Program. The new program is largely a continuation of the main features of the ASETS program but offers more flexibility and takes “a distinctions based approach” to recognize the needs of First Nations, Métis, Inuit, and urban/non-affiliated Indigenous people (Employment and Social Development Canada, 2019). Therefore, understanding the ways in which population groups had different experiences with ASETS remains relevant to the successful future of ISET programming.

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<sup>10</sup>The NIEDB was established in 1990 as a national, non-partisan board mandated by the Government of Canada on Indigenous economic development issues and is comprised of First Nations, Métis, and Inuit leaders across the country.

### 3 Data and Sample Selection

Our primary data source is the Labour Market Program Data Platform (LMPDP). This data repository was created by Employment and Skills Development Canada (ESDC) and combines data from five administrative sources: Integrated Labour Market Program (ILMP) database, Employment Insurance Administrative Data, Records of Employment, T4 Supplementary Records, and T1 Tax Return Records. The ILMP brings together information about the type, duration, and timing of active labour market interventions from a variety of programs. The five administrative data sources are linked by a unique person identifier.

The LMPDP includes the universe of ASETS interventions that were recorded by Agreement Holders in the centralized reporting system. Many ASETS Agreement Holders offer a range of services that would not be recorded in the data we use. As such, it is worth emphasizing that we are comparing high- to low-intensity participation within ASETS, and are not evaluating the overall services that Agreement Holders may offer.

We restrict our analysis to ASETS participants who were ages 18 to 64, which leads to an overall sample of over 110,000 participants. This represents roughly ten percent of the total Indigenous population and is therefore unique in its representation of Indigenous peoples compared to other data sources commonly used in the literature.<sup>11</sup>

Our sample period includes interventions that start between 2010 and 2014. We begin in 2010 because that is the year when ASETS replaced AHRDS. Although the ASETS program continued through to March 2018, our sample ends in 2014 because the last year of available T4 data is 2016 and we examine outcomes two years after the program started.<sup>12</sup> The T1 files, Records of Employment and Employment Insurance data included in the LMPDP

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<sup>11</sup>This was calculated as taking the number of participants in the ASETS program in our sample (2010-2014) divided by the number of Indigenous people over the age of 24 and under the age of 65 ([Statistics Canada, 2017a](#)).

<sup>12</sup>For example, if a person enters an ASETS program in 2011, the first post-program year is 2012, and the second is 2013. We define our post-program period based on the program start because the amount of time spent in the program, or the likelihood of completing the program, can be thought of as an outcome of program participation.

begin in 1990, and the T4 files begin in 1999, so we are able to construct pre-ASETS labour market and program participation histories.

The ILMP database contains a separate record for each time an individual participates in an intervention, and each record contains information about the type of intervention, as well as the start and end date. For most individuals there are multiple intervention records, including records of the same intervention type or of differing types. In practice, these interventions might be linked as a part of an “Action Plan”; however, we cannot observe any such links in the data. Instead, we link together interventions that occur without a 90 day break separating them. Specifically, we identify the first occurrence of participation in an ASETS intervention. Then, we link to that spell each concurrent and subsequent intervention, as long as the intervention starts within 90 days of the preceding intervention.<sup>13</sup>

Following an approach taken by [Andersson et al. \(2016\)](#), we separate the sample into two groups based on whether the collection of interventions in which an individual participated are classified as “high” or “low” intensity. In our case, participation in only an employment assistance service (EAS) or a job counselling program is classified as low intensity. The high-intensity group includes individuals who participated in skills development, including apprenticeships, wage subsidies, job creation partnerships, or essential skills programs. We exclude participants in school-work-experience and self-employment programs because we expect that these interventions have different intended outcomes.<sup>14</sup> In the language of the program-evaluation literature, the high-intensity group would be considered the “treatment” group, while the low-intensity group is the “control” group.

Individuals in the high-intensity group may have participated in these programs in com-

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<sup>13</sup>In the ESDC evaluations of LMDA ([Employment and Social Development Canada, 2017](#)) and ASETS ([Employment and Social Development Canada, 2020](#)) programs, interventions that occur within the same six month period are bundled into an “Action Plan Equivalent”. We depart from this approach because we want the program start date to coincide with the first occurrence of ASETS participation.

<sup>14</sup>Specifically, the benefits from school-work-experience programs may take much longer to accrue and our measure of employment earnings does not fully capture the returns to self-employment.

combination with EAS or job counselling, or interventions from other programs.<sup>15</sup> These comparison groups help us learn generally about whether high-intensity participation improves outcomes within the subgroup of ASETS participants. Some programs might be more effective than others, and by grouping the interventions together, we estimate a weighted average of the effects across the different types and combinations of high-intensity interventions relative to EAS or job counselling. We include details about the distribution of intervention types in Appendix A.2 in Figures A.1 through A.5.<sup>16</sup>

In Table 1, we summarize the percentage of high-intensity participation in the full sample, and in the three population groups for which we separately estimate the relative effect of high-intensity programs. We do not estimate the effects separately for Inuit participants or those whose population group was not identified, although these participants are included in the full sample. For Inuit, the fraction in the high-intensity group is too large for our methodology; however, we provide detailed descriptive outcomes for Inuit in Appendix E. We don't include separate analyses for the group with an unidentified population group because those results mirror the estimates for the full sample. In the full sample, 64% percent of individuals are high-intensity participants. The high-intensity share is similar for Status First Nations men and women and Métis men. The high-intensity share among Métis women is roughly 5 percentage points higher than the full sample, and more than 10 percentage points lower in the non-Status First Nations group.

One important difference between the high- and low-intensity groups is the average duration of interventions, as evidenced in Table 1. Overall, the median durations in the low-intensity groups are much shorter than in the high-intensity groups. For the full sample,

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<sup>15</sup>Previous evaluations of both AHRDS and ASETS have done bivariate comparisons between a single form of intervention (wage subsidies or skills development, for example) to non-participants (Human Resources and Skills Development Canada, 2009; Employment and Social Development Canada, 2020); however, when there are multiple unordered alternatives, evaluating the effectiveness of a specific intervention relative to another—for example, essential skills development compared to wage subsidies—requires either very restrictive assumptions on selection into different interventions or information on individuals' rankings of the various interventions (Kirkeboen et al., 2016). Our approach rests on less stringent assumptions about the selection process and this motivates how we define the comparison groups.

<sup>16</sup>The online appendix for this paper can be found at <https://bit.ly/3mvIPY0>.

the high-intensity group median is 82 days, which is 75 days longer than the low-intensity group median. In each population group, there is a meaningful difference in the median duration between the two participation groups. The median durations also vary substantially across population groups. We return to this issue later when we discuss possible reasons for heterogeneous returns to high-intensity participation.

We evaluate the impact of high-intensity participation on a wide range of labour market outcomes in the first and second years after first participating in ASETS. Specifically, we examine earnings, which are computed by aggregating the earnings reported on all T4 entries observed for a given individual in a given year. We include regular earnings and earnings that are tax exempt under the *Indian Act*. We also consider an indicator for whether the individual is employed based on whether they have a T4 in a given year.<sup>17</sup> We evaluate the impact of high-intensity participation on both the number of weeks of regular EI receipt as well as the incidence of regular EI receipt. More detailed information on the construction of each of these outcomes can be found in Appendix A.1.

We construct a number of additional variables to include as controls using [Lechner and Wunsch \(2013\)](#) as a starting point for our choice of covariates. These include standard demographic characteristics, like age, number of children, disability status, Indigenous identity group, marital status, program-entry year, and employment information for the pre-intervention period, such as indicators for whether individuals were previously employed, if they have ever received a T4, and their previous earnings history. Finally, to approximate local labour market characteristics, we also use the complete count of all clients in the data to construct aggregate variables at the Forward Sortation Area (FSA)-year level for employment, unemployment, and earnings.<sup>18</sup> More details on variable creation and definitions are

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<sup>17</sup>Since we do not observe the reported number of hours worked unless a person has an EI claim, we cannot examine the intensive margin of labour supply.

<sup>18</sup>FSA's are geographic units based on the first three characters in a postal code. The first character in the postal code refers to the province, the second differentiates urban from rural areas, and the third is interpreted in combination with the first two characters to refer to either a specific rural region, a medium sized city, or a section of a metropolitan area. We determine FSA's from the postal codes in the T1 files, which means we only observe FSA's for tax filers. If we do not observe someone in the T1 files in the year

provided in Appendix A.1. All dollar values are Canadian dollars that have been converted to real 2010 dollars using the Consumer Price Index.

For a selection of control variables, we show in Table 2 sample means and standard deviations in the high- and low-intensity groups for the full sample.<sup>19</sup> These tables also report difference-in-means tests, and normalized differences. We focus on the means and standard deviations here and return to the normalized differences in Section 4.3. In both groups, there are slightly more men than women. Status First Nations are the largest Indigenous group in our data set, comprising approximately 70% of individuals in both high- and low-intensity groups. The average age in both groups is in the early 30s, likely a reflection of the fact that labour market programs can include formal schooling or skill building. A large portion—70% in both groups—are employed in the year prior to program entry, and only 4% of either group had never recorded a T4 prior to program entry. This is further evidence that the ASETS program differed from many other labour market programs intended to assist with re-entry into the labour market.<sup>20</sup>

## 4 Empirical Methodology

This section describes the identification assumptions underlying our methodological framework and provides an overview of our estimation strategies. We then provide an evaluation of whether our identifying assumptions are plausible.

### 4.1 Identification

We use the potential outcomes framework as a conceptual basis for our estimation choices. In this framework,  $Y_i^1$  is the outcome, for example earnings, that person  $i$  would experience had

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of participation, we check for a record in one of the previous three years and use that record to impute the FSA.

<sup>19</sup>Means for the full set of control variables in the full sample, as well as, for the Status First Nation, non-Status First Nation, and Métis samples are reported in Appendix A.3

<sup>20</sup>Unfortunately, our data do not contain information on educational attainment, so we do not know whether the high- and low-intensity groups were drawn from different parts of the distribution of educational attainment.



they been a high-intensity participant. Analogously,  $Y_i^0$  is the outcome in the counterfactual where person  $i$  is a low-intensity participant. In the data, only one of the potential outcomes is ever observed. We use  $D_i = 1$  to indicate high-intensity participation, and  $D_i = 0$  for low-intensity participation. With that in mind, the observed outcome can be written as:

$$Y_i(D_i) = Y_i^1 D_i + Y_i^0 (1 - D_i) \quad (1)$$

Each individual is associated with a vector of covariates  $X_i$ , which are unaffected by participation. If assignment to the high-intensity group is not random, as is the case with ASETS, further restrictions are needed to identify the effect of high-intensity participation. The following assumptions, known collectively as *strong ignorability*, must be met in order to estimate average effects by adjusting for differences in covariates across high- and low-intensity participants:

$$(Y_i^0, Y_i^1) \perp D_i | X_i \quad (\text{unconfoundedness}) \quad (2)$$

$$0 \leq p(x) < 1 \quad (\text{overlapping support}), \quad (3)$$

where,  $p(x) = \mathbb{E}[D_i | X_i = x] = Pr(D_i = 1 | X_i = x)$  is the propensity score.

Given unconfoundedness and a common support, we can then identify the “average treatment effect” (ATE) and the “treatment effect on the treated” (ATT) as:

$$\alpha_{ATE} = \mathbb{E}[Y_i^1 - Y_i^0] \quad (4)$$

$$\alpha_{ATT} = \mathbb{E}[Y_i^1 - Y_i^0 | D_i = 1] \quad (5)$$

It is important to keep in mind, that we do not estimate an average treatment effect for the population. Instead, we condition on participation in ASETS, and as such, the average treatment effect we estimate is actually a conditional average. The ATE and ATT will differ to the extent that high-intensity participants in the sample benefited differently from the

population of ASETS participants.<sup>21</sup>

There are several practical ways to estimate  $\alpha_{ATE}$  and  $\alpha_{ATT}$ . The next section discusses our preferred estimation strategy, which is followed by an analysis of the plausibility of each underlying assumption.

## 4.2 Estimation

Our primary estimation strategy is a doubly robust procedure that combines inverse propensity weighting and a regression based adjustment (henceforth, doubly robust IPW-RA).<sup>22</sup> This strategy requires an estimate for the propensity score, or the probability of being in the high-intensity group,  $\hat{p}(X_i)$ . The regression adjustment piece is a regression of the outcome  $Y_i$  on a set of covariates separately for the high- and low-intensity groups generating fitted values  $\hat{\mu}_1(X_i)$  and  $\hat{\mu}_0(X_i)$ , respectively. These pieces are combined in the following way for the ATE:

$$\hat{\alpha}_{ATE} = \frac{1}{N} \sum_{i=1}^N \left( \frac{D_i(Y_i - \hat{\mu}_1(X_i))}{\hat{p}(X_i)} + \hat{\mu}_1(X_i) \right) - \frac{1}{N} \sum_{i=1}^N \left( \frac{(1 - D_i)(Y_i - \hat{\mu}_0(X_i))}{1 - \hat{p}(X_i)} + \hat{\mu}_0(X_i) \right) \quad (6)$$

The benefit of this procedure is that only one of the two models—either the propensity score or the regression adjustment—need to be correctly specified to obtain unbiased parameter estimates (Bang and Robins, 2005).<sup>23</sup>

We estimate all the parts of (6) simultaneously using a Generalized Method of Moments estimator. In the regression adjustment models, we control for factors that directly affect labour market outcomes, including sex, Indigenous population group, previous earnings and employment, age and age-squared, marital status, disability status, an indicator for children,

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<sup>21</sup>In Feir et al. (2021), we estimate and discuss the distributional effect of ASETS for men and women, and we also show those distributional effects for each population group in Appendix C.4.

<sup>22</sup>Specifically, we use the Stata `teffects ipwra` routine.

<sup>23</sup>Intuitively, equation (6) can be rearranged and expressed as an estimator for the mean response if everyone had been treated/untreated plus an augmentation comprised of the product of two bias terms. One bias term is derived from the propensity score model and the other from the outcome regression model. Since the augmentation is the product of two bias terms, only one bias term needs to be 0 in order for the estimate of the ATE to provide an unbiased estimate of the population ATE (Funk et al., 2011).

and the year of program entry.

In addition to the doubly robust procedure, we verify that our results hold using a number of other estimation strategies. These include inverse propensity score weighting, propensity score matching, nearest neighbour matching with bias correction, doubly robust IPW-RA on differenced outcomes, and regression adjustment.<sup>24</sup> Since none of the alternative estimation strategies produce qualitatively different results, we use the doubly robust IPW-RA throughout our empirical section. In Appendix C.2, we provide more detail on our alternative estimation strategies and show that our main results are robust to the use of these different methods.

### 4.3 Evaluation of Underlying Assumptions

#### 4.3.1 Overlapping Support

To evaluate the evidence of overlapping support, we return to the normalized differences in Table 2. Normalized differences are differences in the mean value of covariates, normalized by a measure of the standard deviation of those covariates.<sup>25</sup> The benefit of using normalized differences as opposed to  $t$ -statistics is that the normalized differences present a scale and sample size free way of assessing balance and overlap between the high and low-intensity groups (Imbens, 2015).

Among the differences reported in Table 2, and the tables in Appendix A.3, there are statistically significant differences in the covariate means in high- and low-intensity groups even when those differences are small because we have very large samples; however, most of the normalized differences in Table 2 and Appendix Table A.1 are small and none are above the 0.25 threshold discussed in Imbens and Rubin (2015). Indeed, almost all are

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<sup>24</sup>In results not reported, we also run a doubly robust procedure where we use a LASSO to select control variables. These results, which are very similar to the main estimates, are available upon request.

<sup>25</sup>Formally, the normalized difference for covariate  $X_{i,k}$  is defined as:  $\Delta_{X,k} = \frac{\bar{X}_{t,k} - \bar{X}_{c,k}}{\sqrt{(S_{X,t,k}^2 + S_{X,c,k}^2)/2}}$ , where  $\bar{X}_{t,k}$  and  $\bar{X}_{c,t}$  are the means of  $X_{i,k}$  for the high- and low-intensity groups, respectively, and  $S_{X,t,k}^2$  and  $S_{X,c,k}^2$  are the standard deviations for the high- and low-intensity groups, respectively.

under 0.13, a value [Imbens and Rubin \(2015\)](#) suggest is a degree of balance comparable to random assignment. Although the normalized differences do not provide information on unobservable characteristics that differ between the high- and low-intensity groups, they do provide evidence that even in the raw data before we have re-weighted the data, the high- and low-intensity groups are reasonably balanced.<sup>26</sup> In addition to the normalized differences, we present histograms of the propensity scores in [Appendix B.1](#) to further demonstrate the overlapping support.

#### 4.3.2 Unconfoundedness

Following [Imbens \(2015\)](#), we assess unconfoundedness through a falsification exercise in which our dependent variable is the outcome one period before the program start year,  $Y_i^{1,t-1}$ ,  $Y_i^{0,t-1}$ , conditional on lags from prior periods 2-5, and the cumulative of lags 5-10.<sup>27</sup> Since the outcomes in period  $t - 1$  precede participation in ASETS, and therefore should not be affected by high-intensity participation, the pre-program effects should all be zero. [Figures 2 and 3](#) present these falsification exercises for our main outcomes, earnings and employment, for the full sample and each Indigenous group separately. The estimates are computed using inverse propensity score weighting. In both figures, subgroups are displayed along the horizontal axis and the vertical axis displays the pre-participation effects in \$1,000s.

For earnings ([Figure 2](#)), five of the seven pre-participation estimates are statistically indistinguishable from 0. The other two, those for the full sample and the male non-Status First Nations sample, are statistically significant, but economically small in magnitude. For instance, the largest pre-participation effect is found among Métis men and represents an increase in earnings of \$632. Similarly, the pre-participation effects on the probability of being employed ([Figure 3](#)) are statistically significant for the full sample and the non-Status

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<sup>26</sup>Each of the Indigenous populations groups are also well-balanced across high- and low-intensity groups, as shown in the descriptive tables in [Appendix A.3](#).

<sup>27</sup>We use a smaller set of controls than in the main estimation due to the fact that our controls must be time invariant from the  $t - 2$  perspective.

First Nations samples, but are relatively small in magnitude. Together with the distributions of propensity scores, this provides evidence in favour of unconfoundedness and the common support assumptions holding for the samples and outcomes we examine.

The pre-participation experiments test whether there are statistically significant differences in high- and low-intensity outcomes in the year prior to ASETS participation. A stronger yet similar test of unconfoundedness is to check for parallel trends in outcomes between high- and low-intensity groups in several years before participation. Plotting the trends in outcomes between the high- and low-intensity groups over time can provide visual evidence in support of or against the unconfoundedness assumption. Figure 4 shows this for the full sample for earnings and employment, and the analogous figures for each Indigenous population group are reported in Appendix B.3.

The pre-trend figures suggest that there were no differential trends in outcomes between high- and low-intensity groups in any of the outcomes we examine. Furthermore, we do not see the presence of an ‘Ashenfelter’s Dip’, wherein those in training experience a decline in earnings prior to entering training (Ashenfelter, 1975, 1978). If we were to observe this pattern in the data, it would bring into question the exogeneity of high-intensity participation, suggesting instead that the high-intensity group is a selected sample of program participants. It is reassuring for our identification strategy that we do not see a similar pre-program dip in earnings (or employment) in either the high- or low-intensity groups.

## 5 What Determines High-Intensity Participation Conditional on Observed Characteristics?

Because our identification strategy relies on conditional independence, this section describes the variation in high-intensity participation that exists after conditioning on a rich set of characteristics. We argue that our identifying variation is related to an idiosyncratic feature of the ASETS funding formula wherein funding was allocated based on the provincial

demographic characteristics from 1996 rather than contemporaneous conditions.

We begin by regressing by OLS an indicator for high-intensity participation on all of our control variables except the rural indicator and the Forward Sortation Area (FSA)-level aggregated controls. We do this for the full sample. We then construct residuals from that regression, which represents the variation that identifies the relative effect of high-intensity participation. We call this the high-intensity participation residual.

The privacy and security regulations governing our data access do not permit us to merge external sources of data to the micro data; however, we are able to match aggregate data to other sources of aggregate data. For this reason, we calculate the average high-intensity participation residual in each FSA for Status First Nations, non-Status First Nations, and Métis men and women. The FSA in which an individual lives when starting their ASETS participation is the only level of geography smaller than the province that we observe.

Figure 1 displays the geographic distribution of the residual high-intensity participation, for each population group. We exclude population group-FSA cells with fewer than 5 participants. Because these are residuals, the overall sample mean is zero, and positive numbers on the map are interpreted as FSAs that have above average high-intensity participation (even after controlling for individual characteristics), and negative numbers are below average. There is considerable geographic variation in participation, and notably variation across provincial borders, holding latitude constant, where the local labour markets straddling the border would be similar.

There are two reasons to expect high-intensity participation to vary geographically. First, ASETS funding allocations varied across provinces and territories, and, second, the costs of delivering funding tend to increase with the remoteness of the community. The allocation of funding to each province and territory was determined by a mechanism called the National Aboriginal Resources Allocation Model (NARAM), which was first established for the Aboriginal Human Resources Development Strategy ([Office of the Auditor General of Canada, 2018](#)). The NARAM was intended to allocate funding to communities most in need of train-

ing and used an index of characteristics to determine need. That index varied by provinces and territories and included the size of the working age population, and the shares of the populations not in the labour force, unemployed, with less than high school, lone parent households, speaking an Indigenous language and living in either the ‘near’ or ‘far’ remote zones.<sup>28</sup> A key feature of the NARAM, which was applied to ASETS allocations, is that it was based on demographics from the 1996 Census, even though there had been considerable demographic change between 1996 and 2010. Indeed, the Auditor General, in its report on ASETS, specifically notes that funding was not allocated on the basis of current needs (Office of the Auditor General of Canada, 2018).

If we can sufficiently control for contemporaneous labour market conditions, and since funding was determined by past demographic characteristics, then the funding allocation is a source of variation in high-intensity participation that is plausibly independent of post-participation outcomes. To investigate whether funding is correlating with high-intensity participation, we calculated the total funding by province and territory from the contribution agreements that were established in 2010 and covered our sample period, 2010-2014.<sup>29</sup> Unfortunately, we cannot observe how funding was allocated within provinces and territories, so to take into account local variation in the costs of delivering high-intensity interventions, we interact funding with the distance from the center of the FSA to the nearest university.<sup>30</sup> This distance can be viewed as a proxy for remoteness because universities tend to be located in the urban south. While, generally, goods and services are more expensive in remote communities, delivering skills development, essential skills, or apprenticeship interventions would be particularly more expensive if instructional personnel have to be brought into communities, or if participants need to leave their communities and their transportation and housing costs need to be covered.

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<sup>28</sup>The exact formula used to compute the NARAM index was provided to us directly from ESDC.

<sup>29</sup>The funding levels were obtained from the Canada Open Government Portal: <https://search.open.canada.ca/en/gc/>.

<sup>30</sup>We calculate the geodetic distance between each of the two points. This is a form of “as-the-crow-flies” distance calculation that takes into account the curvature of the earth. We thank Marc Frenette for providing a list of university postal codes.

To test whether funding predicts the residual variation in high-intensity participation, we could estimate the following model:

$$\text{hip}_{ip} = \beta_0 + \beta_1 \ln(\text{fund})_p + \beta_2 \text{DistUni}_i + \beta_3 \ln(\text{fund})_p \times \text{DistUni}_i + x'_i \beta_x + \epsilon_i, \quad (7)$$

where  $\text{hip}_{ip}$  is the residualized share in FSA-population-sex group  $i$  who are high-intensity participants,  $\ln(\text{fund})_p$  is the natural log of funding in province or territory  $p$ ,  $\text{DistUni}_i$  is the distance to the nearest university and  $x_i$  is a vector of other FSA characteristics. One challenge with estimating (7) is that any unobserved propensity for high-intensity participation that varies by province/territory and which is correlated with the funding allocation will bias the estimates. For this reason, we include province-territory fixed effects to control for unobserved characteristics that are common within provinces and territories. Funding only varies by the province or territory, so the inclusion of fixed effects absorbs the  $\beta_1 \ln \text{fund}_p$  term. Since  $\beta_1$  represents the marginal effect of funding in FSAs that are zero kilometers from a university, we cannot separately identify the effect of funding from the fixed effect at a distance of zero, but the funding effect is identified at distances greater than zero. If  $\theta_p$  is the provincial-territorial fixed effect, then the model we estimate is,

$$\text{hip}_{ip} = \beta_0 + \beta_2 \text{DistUni}_i + \beta_3 \ln(\text{fund})_p * \text{DistUni}_i + x'_i \beta_x + \theta_p + v_i \quad (8)$$

We report the estimates from four different specifications of (8) in Table 3. To allow for more flexibility, we enter distance to a university as a quadratic, and interact the quadratic with funding. In columns (1) and (2), we use the high-intensity residuals averaged over FSA, population group and gender, while in columns (3) and (4) we averaged over FSA and population group. The cell sizes will tend to be larger in the specifications where gender is pooled, and we can include more FSAs as a result. We control for gender (in the unpooled specifications) and population group, and cluster standard errors by the FSA. In columns (2) and (4), we include a set of controls that are chosen to reflect, as closely as possible, the NARAM components measured in 2010 using the 2011 Census and National Household



Survey FSA profiles. In the first panel of Table 3, we report the marginal effects of funding evaluated at a range of distances from a university.<sup>31</sup>

These results suggest that higher levels of funding are associated with higher shares of high-intensity participation. The importance of funding in determining high-intensity participation increases with distance from a university. For example, using the estimates from column (2), for communities that are 50 kilometers from a university, a one percent difference in funding predicts a 2 percentage point difference in high-intensity participation, while that difference is 8 percentage points in a community that is 200 kilometers from a university.

What Table 3 establishes is that the residual variation in high-intensity participation is correlated with funding interacted with distance from a university. After controlling for individual characteristics, and the contemporaneous labour market conditions, variation in funding should be driven by socio-demographic characteristics from 1996, which are arguably uncorrelated with post-participation outcomes. This is the variation we use in the micro data to identify the effect of high- relative to low-intensity participation in the next sections.<sup>32</sup>

## 6 Results

### 6.1 Participation-Group Differences in Earnings, Any Employment, and EI Receipt

In this section, we turn to our micro data and report the estimated impact of high-intensity relative to low-intensity participation on four key labour market outcomes using the doubly-robust IPW-RA procedure.<sup>33</sup> The four outcomes we study are earnings, any employment

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<sup>31</sup>The full set of coefficients are reported in Appendix B.5.

<sup>32</sup>Although funding interacted with distance to a university is strongly correlated with the high-intensity share, there was not enough variation in the FSA aggregates to use these variables as instruments in an IV estimator. The IV estimates are very imprecise. We do however show in Appendix C.1 that in FSA-level regressions the relative-intensity participation effects are robust to inclusion of funding and other FSA characteristics.

<sup>33</sup>Appendix C.2 reports the impacts on the same outcomes using alternative estimation strategies, which all yield similar results.

in a given year, which is an indicator for having earnings in a given year, whether a person received any EI, and the number of weeks of EI receipt. The results tables are structured such that each column presents the results for a different Indigenous and sex population group, with the first column displaying results for the full sample. The first row of each table displays the pre-participation outcome means of the control group for reference. The next panel displays ATEs in the first and second years following participation and the third panel displays ATTs for the same time period. The ATT effects are qualitative similar, so throughout this section we focus on the ATE estimates.

The estimated effects on earnings, reported in \$1,000s, are found in Table 4. Overall, we find that any effects on average earnings were larger in the second year following participation, which is consistent with the existing literature suggesting that the earnings effects of job training are initially low while participants may still be participating in training activities (Card et al., 2018, 2010). Looking at the ATE panel, in the second post-participation year, on average, across the whole sample high-intensity participants earned just over \$1,000 more than low-intensity participants, a difference of almost 9 percent of the pre-participation low-intensity group mean.

The size of the earnings differences between the participation groups vary markedly across Indigenous population groups. The participation-group earnings differences for Métis men and women were \$2,942 and \$3,303, respectively. The differences were also large for non-Status First Nations men (\$2,074) and women (\$2,738). The size of these effects tends to be on the higher end of effects reported for training programs in other contexts. In Greenberg et al.'s (2003) meta analysis, the mean estimate of the impact of training for men is \$318, though the estimates ranged from -\$2,511 to \$4,703. For women, their mean estimate is larger, at \$1,417, with a range from -\$1,229 to \$4,690. Given that one third of ASETS participants were aged 18-24, and as Greenberg et al. (2003) points out, the range of effect sizes tends to be larger in younger samples, our estimates for Métis and non-Status men and women are plausible. Moreover, on average, the return to investing in human

capital acquisition is high for Indigenous populations (Walters et al., 2004; NIEDB, 2019; Pendakur and Pendakur, 2011; Hu et al., 2019).

The large earnings differences between high- and low-intensity participants that we find for Métis and non-Status First Nations populations are in stark contrast to Status First Nations men and women, for whom average earnings two years after entering ASETS were very similar in both groups. We explore this finding in more depth, in the next section of the paper.

Although the gender differences were dwarfed by the differences across Indigenous population groups, the effects were slightly larger for women in levels, and much larger as a proportion of the pre-participation low-intensity group earnings. Among men, the intensity-group earnings differences were roughly 17 percent of pre-program earnings for Métis and non-Status First Nations populations. In comparison, for women, the analogous percentage differences were 29 and 28 among for Métis and non-Status First Nations populations, respectively. In the context of the existing literature, the meta analyses in LaLonde (1995) and Greenberg et al. (2003) also report larger training impacts among women relative to men, a finding that has been echoed by more recent work (e.g., Andersson et al. (2016)).

In our micro data, we construct and control for measures of local labour market conditions using the full set of participants in any employment benefits and support measures program. However, the outcomes of active labour market program participants will not give a full picture of overall labour market conditions. Using our aggregate data, we check whether our main results are robust to conditioning on aggregate labour market characteristics in Table C.1 of Appendix C.1. The main pattern of estimates are similar in these specifications.

Because our earnings variables come from tax files, earnings “one year” following participation refers to the calendar year following the year of first participation. The number of months that elapsed between first participation and each follow-up year would have varied depending on which month a participant entered ASETS. In Appendix C.3, we separate the

sample into a group who entered ASETS between January and June and those who entered between July and December and estimate the effects separately in these two groups. For Métis and non-Status First Nations men and, the effects were larger in the first follow-up year for those who entered ASETS in the first half of the year. This is also true among Status First Nations men and women, however, even among those who started ASETS in the first half of the year, the difference in average earnings between high- and low-intensity participants were small and statistically insignificant in the first and second post-participation years.

In Table 5, we report the effects of high- relative to low-intensity participation on any employment in a year. An individual had any employment in a given year if they had at least one T4 with earnings in that year. Although this is a coarse measure of employment, it does provide some indication of whether the earnings differences were driven by the extensive margin. Again we estimate larger effects in the second post-program year, though for men the effects were generally small and only marginally significant in the Status First Nations and Métis populations. Among women, the group differences in employment ranged from 1.67 percentage points in the Status First Nations population and 2.58 percentage points among Métis. Among non-Status women, the employment difference was 2.37 percentage points but is statistically insignificant because the sample size is smaller than the other population groups. These employment effects lie in the middle of estimated effects for the non-Indigenous population studied in [Andersson et al. \(2016\)](#).

Compared to the size of the earnings differences, the employment effects were relatively small, suggesting that high-intensity participation likely had an effect on either wages, or hours and weeks of work. We do not observe those outcomes in our data so we cannot investigate this possibility directly. Nonetheless, the ability to study the intensive margin of labour supply is particularly relevant for Indigenous populations, as previous research suggests that the earnings differential between Indigenous and non-Indigenous populations is directly attributable to weeks worked ([Feir, 2013](#)) and the over-representation of Indigenous

workers in non-standard forms of employment (Lamb, 2013). Understanding how adjustments are made along this dimension has important implications for inequality and policy. While we are not able to address that deficit with our micro data, we highlight the need for richer data and more research on this topic.

Similarly, we find very small differences in receipt of regular EI benefits and weeks of EI receipt when comparing high- to low-intensity participants. The estimated effects on receipt of regular EI benefits are reported in Table 6. None of the average treatment effects are statistically significant and most are less than one percentage point in absolute value. Although some of the estimated effects on weeks of EI receipt are statistically significant, as reported in Table 7, the size of the estimates are modest.

The two-year post-participation period that we use is a fairly narrow observation window. We restrict the follow-up period to two years in part because other studies have found that effects on earnings stabilized after two years (Card et al. (2018); Andersson et al. (2016)). Additionally, our panel of earnings ends in 2016 and the two-year post-participation period allows us to estimate effects for the four cohorts, 2010-2014. Although our preferred specification includes all four cohorts, we recognize that it may have taken longer than two years for ASETS participants to experience earnings and employment gains from high-intensity participation. It is also important to understand whether the earnings gains experienced by high-intensity participants were temporary. We explore these issues by restricting our sample to the participants whose first ASETS intervention occurred between 2010 and 2012. We report the effects on earnings in the restricted sample in Figure 5, with results for men presented in the top panel and results for women in the bottom panel.

It is first useful to compare the estimates for one and two years post program in this more limited sample to our previous results to assess whether they are comparable, and thus representative of the overall sample. The estimates in the restricted sample tend to be larger than those in the full sample; however, the patterns are similar. For both men and women and each population group, the estimated participation-group differences in average

earnings in the third and fourth years fall within the 95% confidence interval of the difference in the second year. By the fourth post-participation year, the difference in average earnings between high- and low-intensity participants was \$620 dollars and \$30 dollars for Status First Nations men and women, respectively. Among non-Status First Nations and Métis men and women, the relative effect of high-intensity participation remained large in the fourth year, at roughly \$3,000 and \$4,000 for non-Status First Nations and Métis people, respectively. On balance, the evidence in Figure 5 suggests that the second-year earnings differences were reasonably stable in subsequent years.

## 6.2 Institutional and Contextual Factors Affecting Earnings Differences

Comparing the earnings of high- and low-intensity participants, after conditioning on a wide range of individual characteristics, yields strikingly different estimates for Status First Nations, non-Status First Nations, and Métis populations. In this section, we explore various reasons for those differences, which reveal the importance of contextual factors in not only shaping participants' outcomes, but also in how estimates like ours should be interpreted.

One such important institutional factor is the range of other programs that participants might have been accessing outside of ASETS.<sup>34</sup> For example, a participant might have received Employment Assistance Services from ASETS but attended a Skills Development type program through Labour Market Development Agreement programming. In our data, we can observe when ASETS participants engaged in any employment benefits and support measures funded through ESDC. In Appendix D.1, we report estimates for an alternative measure of high-intensity participation that includes participation in any intervention that we classify as high-intensity under any program, at any time in the follow-up period. Using this definition the fraction of the full sample in the high-intensity group increases from 64% to 71%, but the estimated effects change very little. In particular, the estimated participation-group earnings differences remain large for Métis and non-Status men and

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<sup>34</sup>Jansen et al. (2019) provide a comprehensive description of the range of active labour market programs available in Canada.

women, and small among the Status First Nations participants.

ASETS participants may also have been receiving similar services through provincial, territorial, and federal income assistance programs. Qualified Indigenous people living on reserve access income supports through the federal Income Assistance Program, which is generally aligned with provincial and territorial program parameters. One relevant distinction in the federal program is the reform announced in 2013 that included enhanced case management and \$108.6 million over four years for the First Nations Job Fund, which provided services and supports similar to ASETS to youth living on reserve ([Indigenous and Northern Affairs Canada, 2016](#)). This fund supported the same types of projects and “training-to-employment” activities as those under ASETS but with a focus on those between the ages of 18 to 24 ([McColeman, 2014](#), p 52). In [Figure 5](#), we show that our estimates for Status First-Nations participants are similar when we exclude the 2013 and 2014 cohorts when the First Nations Job Fund had been introduced.

The potential sources of post-secondary financial aid are another important difference across Indigenous population groups. When eligible, First Nations people with Status could access funding for post-secondary education (PSE) through the Post-Secondary Student Support Program (PSSSP), whereas Métis and non-Status First Nations participants would have accessed funding through the usual student financial aid programs that were not specific to Indigenous populations.<sup>35</sup> This might have meant that a Status First Nations person who engaged in a low-intensity ASETS intervention was also referred to PSSSP for PSE funding, whereas a Métis or non-Status First Nations person might have received PSE support through ASETS. We can not observe the exact nature of participants’ interventions, beyond the broad categories coded by ESDC, and we do not have a measure of educational attainment in the data to which we have access. However, the duration of interventions may provide a clue to the nature of the intervention.<sup>36</sup>

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<sup>35</sup>In the 2019 budget, the federal government announced a “Métis Nation Post-Secondary Education Strategy” that provides student financial aid specifically for Métis students.

<sup>36</sup>In fact, [Table D.7](#) in the Appendix shows that, in general, the contrast in earnings between high- and

We report the distribution of intervention lengths for each type of high-intensity category in Table 8. This table groups low-intensity interventions into a separate category. In cases where participants in the high-intensity group had more than one intervention type we use the first high-intensity intervention. We separate participation duration into four categories of 90 days in length, with the final category including programs that lasted more than 270 days. Each row in a panel reports the fraction of the population group in each duration category.

The largest differences in participation durations across population groups occurred in the Skills Development and the Job Creation Partnership (JPC) categories. Less than 4% of the overall sample participated in JPC interventions and less than 1% of Métis were JPC participants. As such, the differences in these durations are unlikely to drive the differences in the relative effect of high-intensity participation across population groups.<sup>37</sup>

Skills development was the most common intervention type, and is how we would expect PSE funded by ASETS to be coded. The participation duration was less than 90 days for more than half of both Status and non-Status First Nations Skills-Development participants. In contrast, among Métis, only 29% of the Skills-Development participation lasted less than 90 days. Indeed, just over a quarter of Métis Skills-Development participants engaged in ASETS interventions for more than 270 days. In comparison, the shares with similar durations of Skills-Development participation were 13% and 17% among the Status and non-Status populations, respectively.

We are unable to confirm why Métis Skills-Development participants spent more time in ASETS interventions. If it was because they were more likely to be attending PSE programs, then the large effect of high-intensity participation could be attributed to high returns to PSE among Métis, as more general studies sponsored by Métis ASETS agreement holders have argued in the past (Howe, 2011, 2013).

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low-intensity participants increased with the duration of the intervention.

<sup>37</sup>In Appendix D.3, we show that the estimates are similar if we include only Skills Development interventions in the high-intensity group, and in Appendix D.2 we show that the estimates are robust to the exclusion of Apprenticeship participants.



Another contributing factor could have been the scale and program delivery capacity of Métis agreement holders. In her work describing the ASETS program in 2015, Wood (2016) reports that there were seven Métis Agreement Holders, and only in Alberta was there more than one in a province. Such centralization and larger scale may have meant that Métis agreement holders were better equipped to offer a fuller set of services. Because we do not observe which Agreement Holder funded each intervention in the data base, we are not able to investigate this further.

Previous studies have also shown that active labour market programs that focus on skills acquisition tend to produce better labour market outcomes (Card et al., 2018), and the fact that Métis Skills-Development participants spent longer in ASETS interventions may have contributed to the larger effect of high- relative to low-intensity participation. However, this is unlikely to also explain why effects on earnings were much smaller among Status First Nations when compared to non-Status First Nations participants. We now turn to contextual factors that might explain why, for Status First Nations populations, post-program earnings among high- and low-intensity participants were so similar.

First Nations people with Status are more likely than both Métis and non-Status First Nations people to live in rural and remote areas where few job opportunities exist. Moreover, the opportunities that do exist may not require the skills that participants obtained through high-intensity interventions, and as a consequence average earnings would be similar to those in the low-intensity group. In Table 9, we report the estimated earnings differences for Status First Nations participants estimated separately by their residence in the year prior to participation.<sup>38</sup> We show estimates for those who lived in remote areas, as defined by living in an FSA that fell within a zone that would qualify one for a Northern tax deduction, those who lived in rural areas that are not remote, and those who lived in neither rural nor remote areas.<sup>39</sup>

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<sup>38</sup>Figures demonstrating the overlapping support for all of the groups in this section are included in Appendix B.1.

<sup>39</sup>Information on Northern tax deductions can be found here, <https://www.canada.ca/en/revenue-agency/services/tax/individuals/topics/>

Prior to participation, average earnings were higher among those living in remote areas, likely a reflection of the compensating differential required to offset the high cost of living in the north. The effects of high- relative to low-intensity ASETS participation on earnings were remarkably similar across the residency groups. In the second post-participation year, earnings in the participation groups were not statistically different from each other, independent of whether participants lived in urban and not remote, rural and not remote, or remote areas.

Status First Nations people are also much more likely to live and work on reserves. Previous research has suggested that the returns to education may differ for those living on reserves (George and Kuhn, 1994; Drost, 1994; Feir, 2013) and those living on reserves are not always impacted by skill-acquisition policies in the same way as other Indigenous groups (Kuhn and Sweetman, 2002; Jones, 2020).

While we do not observe precisely where participants lived, for Status First Nations participants, we can construct an indicator for working on reserve using T4 records. Employment income that is earned on a reserve by a person who is registered under the Indian Act, and thus has “Status”, is not subject to income tax. However, because these earnings are insured under EI, they are recorded on a T4, in Box 71. From this information, we create an indicator that equals one if a person had any tax-exempt earnings on any T4 in a given year, and zero otherwise. We then separate the sample of Status First Nations participants based on their earnings in the year prior to ASETS participation: those with tax-exempt earnings, those without tax-exempt earnings but some other non-exempt earnings, and those without earnings. Individuals in the tax-exempt-earnings group may have also had non-exempt earnings, implying that they also worked off reserve.

In each pre-participation earnings group, we report the estimated relative effect of high-intensity participation on post-participation earnings in Table 10. Since the ATE and ATT are again qualitatively similar, we focus on the ATE. In the group of Status First Nations

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[about-your-tax-return/tax-return/completing-a-tax-return/deductions-credits-expenses/line-25500-northern-residents-deductions.html](#)

people who had worked on reserve before entering ASETS, the difference in earnings between the participation groups was negative and statistically significant in the first year, and statistically insignificant in the second year.<sup>40</sup> The differences were similar for those who had no earnings in the year prior to their ASETS participation. In contrast, by the second year, among men and women who had worked off reserve, average earnings in the high-intensity group were higher than those in the low-intensity group by an economically and statistically significant margin. While these effect sizes were smaller than what we find in the Métis and non-Status First Nations groups, these earnings differences represent 7% and 5% of the average pre-participation earnings in the low-intensity group for men and women, respectively.

That earnings were similar in the high- and low-intensity groups for those who had on-reserve employment again points to either a lack of job opportunities or lower returns to skills development. Although some reserves are located in urban areas, many are not. We verify that post-participation earnings were similar in both participation groups for those with pre-participation on-reserve employment by whether they lived in a remote, rural but not remote, or urban but not remote area in Table 11. We do not find an earnings return to high- relative to low-intensity participation in any of these three groups.

To fully understand why the estimated return to high-intensity participation depended on whether an individual worked on or off reserve before ASETS, we also need to understand where people worked in the follow-up period. It is possible that the effect of high-intensity participation depended on employment transitions. Table 12 examines this possibility in greater detail. Here, we show the growth in earnings among Status First Nations people for combinations of pre- and post-participation place of work and for both high- and low-intensity participants. The table also shows the fraction of the sample in each group, as well as the differences between high- and low-intensity groups in earnings growth and the share

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<sup>40</sup>Wages on reserve might be lower than off reserve in compensation for the fact that on-reserve earnings are tax exempt. In Appendix C.5, we calculate after-tax earnings using Milligan's (2016) tax calculator and show that this does not affect the overall pattern of our results.

in each employment transition type. Earnings growth and the shares are weighted by the inverse propensity score estimated in separate samples based on gender and pre-participation employment.

As an example, the first row displays these values for individuals who had some on-reserve employment in the pre-participation period and who continued to have on-reserve employment in the post-participation period. The first column shows the average earnings growth for Status First Nations individuals in the on-reserve to on-reserve employment group who participated in high-intensity programming. The second column reports the share of Status First Nations people who participated in a high-intensity program and who were part of the on-reserve to on-reserve employment transition group. The next two columns report the analogous earnings growth and share values for low-intensity Status First Nations participants. The final two columns show the differences in earnings growth between high- and low-intensity participants as well as the difference in the population shares for the on-reserve to on-reserve employment transition group. The remaining rows display earnings growth and shares for high- and low-intensity participants, and the differences between them, for each combination of pre- and post-participation employment type, excluding the group with no earnings in both the pre- and post-participation periods, because their earnings growth was zero.<sup>41</sup>

Aside from those who transitioned out of employment, earnings growth was the smallest among those who worked on-reserve in both the pre- and post- participation periods; moreover, earnings growth in this employment transition category was similar among those in high- and low-intensity programs, as shown by the small value in the difference column. On average, high-intensity participants who transitioned from on- to off-reserve employment experienced larger earnings growth than similar low-intensity participants. Because a relatively small fraction of people actually made this transition, it contributes less towards the aggregate effect for those with pre-participation tax-exempt earnings in Table 10. Similarly,

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<sup>41</sup>The shares do not sum to 1 because of the exclusion of this group

for those who worked off reserve prior to participating in ASETS, earnings growth was the largest for those who continued to work off reserve in the post-period and this growth was higher for individuals who participated in high-intensity programming. In the case of individuals who worked off-reserve in the pre-participation period, the majority remained in off-reserve employment in the post-participation period. As a result, this group receives a greater weight in the calculation of the aggregate effect for those working off reserve in Table 10.

In effect, Table 12 decomposes the estimated impact of high-intensity training in Table 10 into the portions that are attributable to differences in shares and those attributable to differences in returns for each employment transition category. Among individuals who worked off reserve prior to beginning ASETS, a higher fraction remained in off-reserve employment following ASETS participation. The fact that, in addition to comprising a larger share of participants, in this group high intensity participants experienced higher earnings growth relative to low-intensity participants means that the observed earnings growth in this group dominates the lack of earnings growth among those who transition from off-reserve to on-reserve employment. The overall effect of high-intensity programming for those who worked off reserve prior to participating in ASETS is therefore positive. For individuals who worked on reserve prior to participating in ASETS and who transitioned to working off reserve following ASETS, there was also higher earnings growth among high-intensity relative to low-intensity participants; however, because this group was a relatively small share of the total number of participants, the lack of return to high-intensity programming among those who stayed in on-reserve employment following ASETS participation dominates the overall effect. As a result, the net effect on earnings for those who worked on reserve prior to ASETS participation was close to zero.

It is important to recognize that individuals may live on reserve and work off reserve, so the fact that we only observe a positive return to high-intensity participation for those who worked off reserve in the post-period does not necessarily mean that individuals needed

to leave their communities to find employment or to experience an earnings-return to high-intensity programming.

Nevertheless, since there appears to be a return to participating in high-intensity programming for individuals who worked off reserve following ASETS participation, our results suggest that there may be unique economic factors on reserves that constrain earnings growth for both high- and low-intensity participants. Although the economic environment on reserves is institutionally distinct from other regions in Canada, including other rural or remote areas, there is considerable overlap with Indigenous communities in Australia and Indian reservations in the United States. [DeWeaver \(2010\)](#) details key differences in labour market conditions on and off Indian reservations in the American context. Outside of reservations, most jobs are found in the private sector, upward mobility is achieved through career development and progression, and often individuals have to be geographically mobile to obtain employment or advance in one's career. Jobs on reservations are predominantly found in the public sector, career development is limited by the availability and nature of employment, and often geographic mobility is not a practical option.

While [DeWeaver \(2010\)](#) focuses on the economic conditions on reservations in the United States, many of the challenges he highlights are also present on reserves in Canada. In particular, the presence of significant barriers to entry for private sector firms limit the types of jobs and quantities of jobs available on reserve. Most reserve lands are held in trust by the federal government and thus land-use changes require federal approval.<sup>42</sup> On top of this, many reserves lack zoning and other land regulations that facilitate the establishment of private enterprises. These factors imply it can take significantly longer to open a business on reserve. While this is especially true for non-Indigenous entities ([Richard et al., 2008](#)), barriers to entry also affect Indigenous-owned businesses. Additionally, access to reliable internet constrains business creation ([Canadian Council for Aboriginal Business, 2016](#)) on reserves in both Canada and the United States ([Akee et al., 2018](#); [Feir, 2022](#)).

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<sup>42</sup>This does not apply to Nations who have opted in to the First Nations Land Management Act or those with self-government agreements ([Feir and Scoones, 2022](#)).

A consequence of these barriers to entry is that there are fewer businesses per resident than in similarly sized non-Indigenous communities (Jafri and Alasia, 2019), which may limit employment opportunities or career advancement even if community members upgrade their skills. Thus, policies that directly target human capital accumulation with the goal of increasing earnings and employment will have limited efficacy along these dimensions if labour demand is constrained. Lamb (2013) has pointed this out with respect to off-reserve employment opportunities for Indigenous workers; however, the results of our analysis suggest that this issue may be even more salient on reserves given the constraints to labour demand.

## 7 Conclusion

We evaluate the effects on labour market outcomes of the Aboriginal Skills and Employment Training Strategy (ASETS), a suite of active labour market programs for Indigenous groups in Canada who face differing institutional environments. We use a new data source that contains information on the universe of ASETS participants that has also been linked to tax files and other sources of administrative data. We compare individuals whose participation is characterized as high-intensity to those with low-intensity participation, where the main distinction is in the duration of participation. Our empirical comparison effectively evaluates the intensive margin of ASETS participation.

We find that, in terms of annual earnings, the returns to high- relative to low-intensity programming differed strikingly across legally distinct populations and jurisdictions in Canada. For non-Status First Nations and Métis men and women, relative to those in low-intensity programs, average earnings among high-intensity participants were substantially higher just two years following participation, and there is evidence that those earnings differences were stable. In contrast, average earnings among high-intensity participants were statistically indistinguishable from average earnings among low-intensity participants for Status First Nations men and women. For all groups, gains in employment and receipt of Regular EI

benefits were small relative to the earnings gains.

Our analysis of the mechanisms underlying the heterogeneity in earnings returns points toward related, but distinct, potential explanations for why the effects were larger than average in the Métis population, and why they were smaller than average in the Status First Nations population. Métis high-intensity group members tended to participate in ASETS for much longer durations, which may signal participation in post-secondary education (PSE). The possibility that Métis were more likely to access PSE through ASETS may be subsequently related to the fact that, when ASETS was operational, there were no federal post-secondary supports specifically geared towards Métis students, whereas there were for Status First Nations students. Métis service delivery organizations were also substantially more centralized than many of those serving First Nations, which may also have led to more comprehensive programming among this demographic.

In exploring why average earnings were similar for high- and low-intensity Status First Nations following ASETS participation, we find that this similarity does not depend on whether people lived in remote, rural, or urban areas. Instead, we show that the relative effect of high-intensity participation depended on whether Status First Nations men and women were employed on- or off-reserve prior to their ASETS participation. Indeed, a deeper examination of the returns for Status First Nations participants suggests that those who worked off-reserve in the post-participation period experienced earnings returns to high-intensity participation, which are smaller than the average, but still economically meaningful.

There are limitations to our evaluation that are important to note. We are unable to speak to any potential non-pecuniary returns to ASETS participation. Even if Status First Nations people who continued to work on reserve following ASETS participation did not experience an increase in their individual earnings, they may still have experienced improvements in confidence or higher job satisfaction, and there may have been broader gains to the community in terms of a greater retention of community members. In addition,



because our estimates are conditional on participation, they are not informative of effects outside the population of participants. This would be important if there were reforms to similar programs that substantially changed the nature of participation. Finally, we are unable to evaluate the degree to which racism explains heterogeneity in outcomes, though this may play an important role.

Overall, the diverse experiences of Indigenous groups who participated in ASETS underscores the importance of context in predicting the relative impacts of active labour market programs. When the institutional environment constrains firms, entrepreneurs, and other sources of investment, programs that emphasize skills development may be less effective at improving the labour market outcomes of groups traditionally excluded from opportunities for economic mobility. In these circumstances, active labour market programs may be ineffective until those barriers are dismantled.

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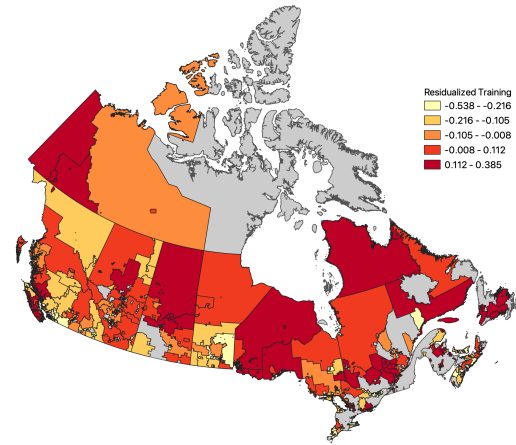
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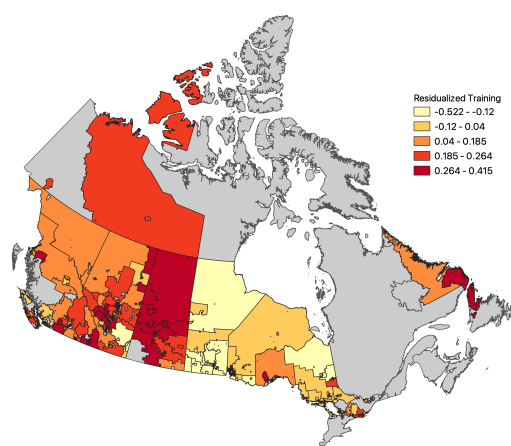
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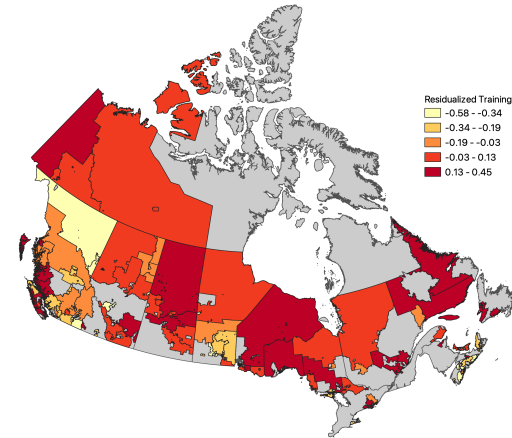
## 8 Figures and Tables



(a) Status First Nations Participants



(b) Métis Participants



(c) Non-Status First Nations Participants

Figure 1: Identifying Variation: Geographic Distribution of Residualized High-Intensity Participation

The figure shows average residualized high-intensity participation at the FSA-level within each population group where there are at least 5 individuals. We obtain residuals from a regression of high-intensity participation on our full set of controls using the individual-level micro data.



Low-Intensity means: Full sample, 11.46; Men; Status FN, 11.30; Non-Status FN, 11.94; Métis, 16.68

Women; Status FN, 8.82; Non-Status FN, 9.36; Métis, 11.95

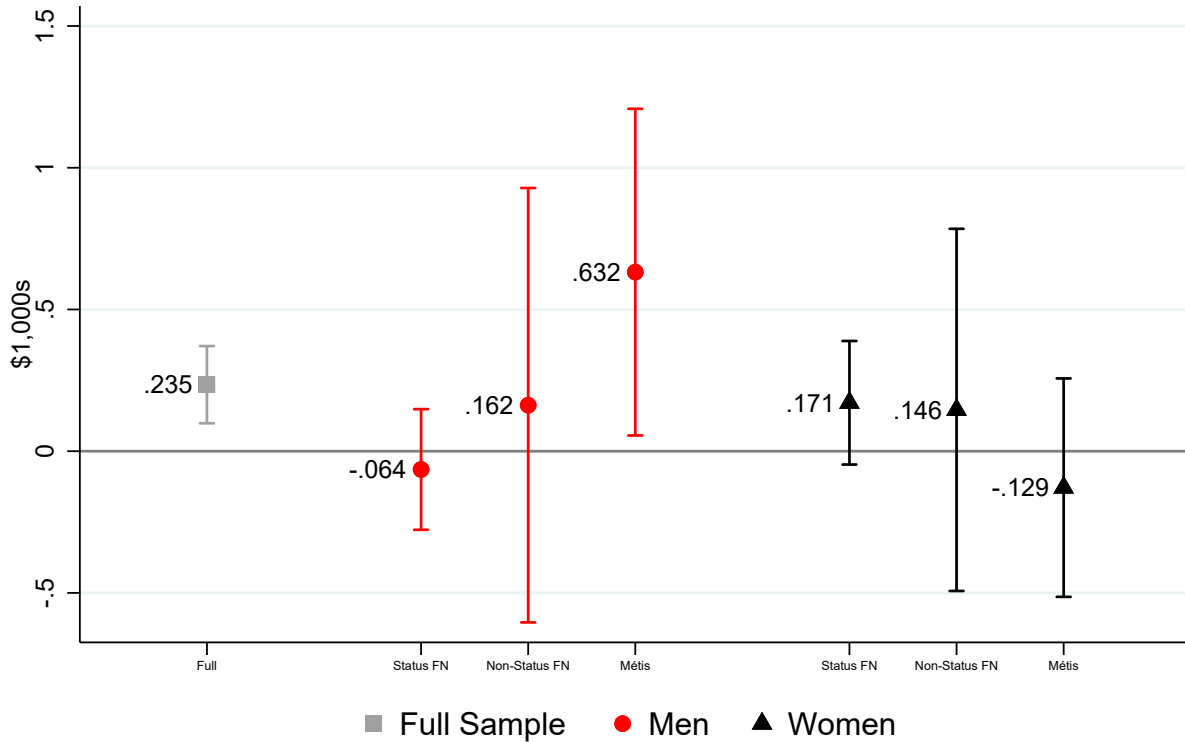


Figure 2: Pre-Participation Effects: Earnings

The figure shows the estimated effect for the outcome one period before participants enter ASETS. The pre-participation effect is estimated using inverse propensity score weighting. The controls in the estimated propensity score include lagged outcomes from the prior periods 2 through 5 and the other controls that are time invariant in the period that is two years prior to entering ASETS. All dollars are real 2010 Canadian dollars. Confidence intervals were constructed using standard errors clustered by Forward Sortation Area.

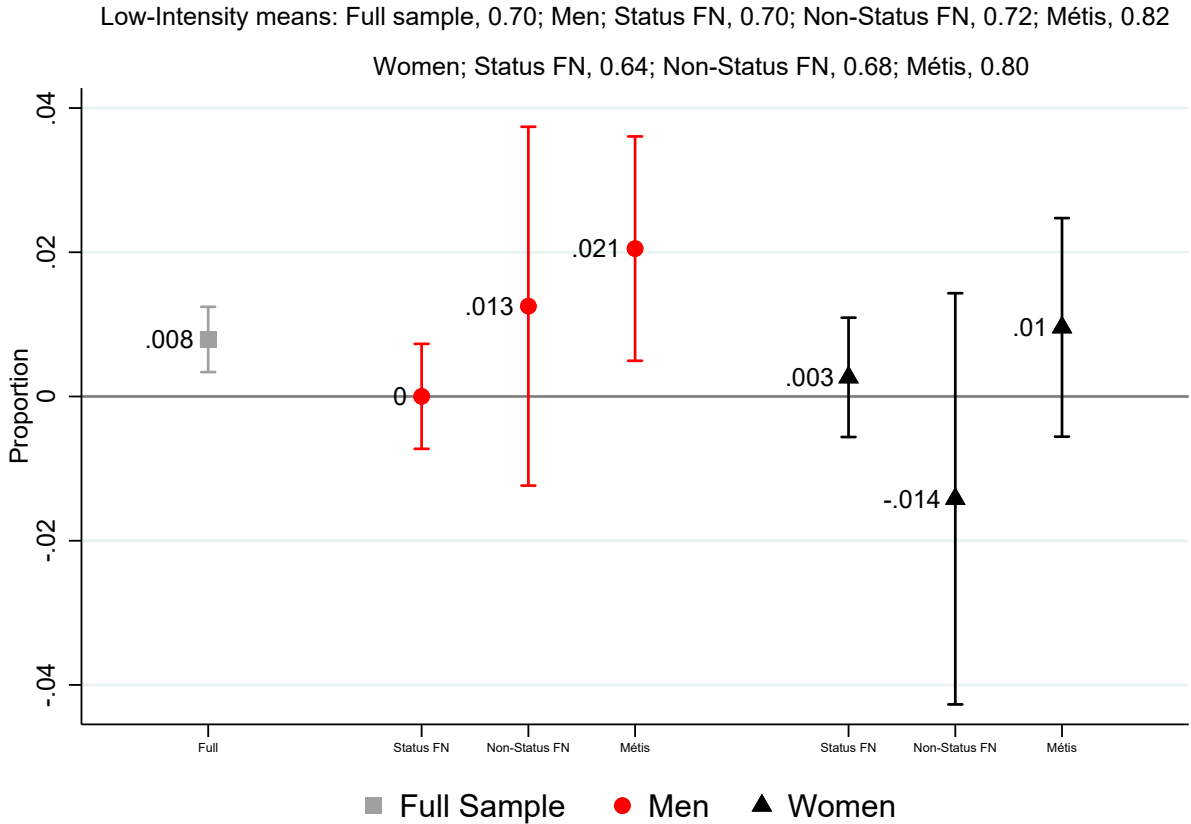


Figure 3: Pre-Participation Effects: Employment

The figure shows the estimated effect for the outcome one period before participants enter ASETS. The pre-participation effect is estimated using inverse propensity score weighting. The controls in the estimated propensity score include lagged outcomes from the prior periods 2 through 5 and the other controls that are time invariant in the period that is two years prior to entering ASETS. All dollars are real 2010 Canadian dollars. Confidence intervals were constructed using standard errors clustered by Forward Sortation Area.

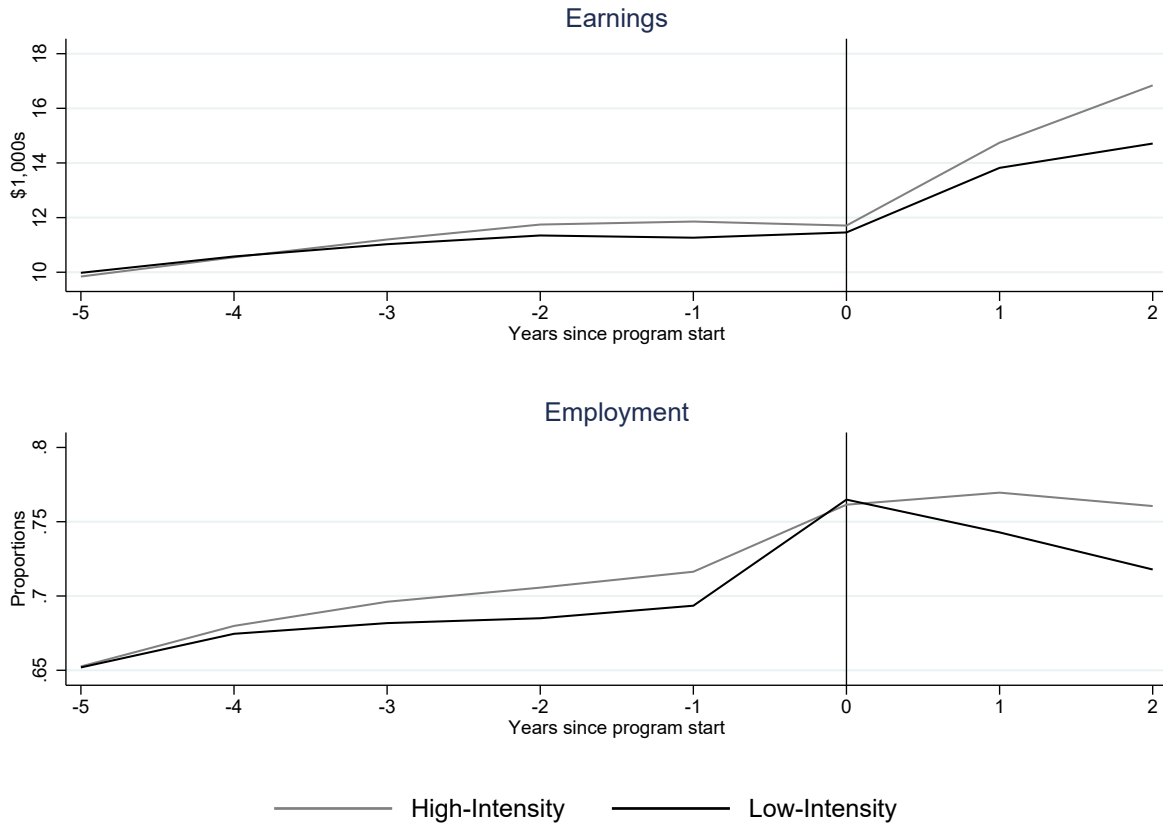


Figure 4: Prior Trends in Earnings and Employment in the Full Sample

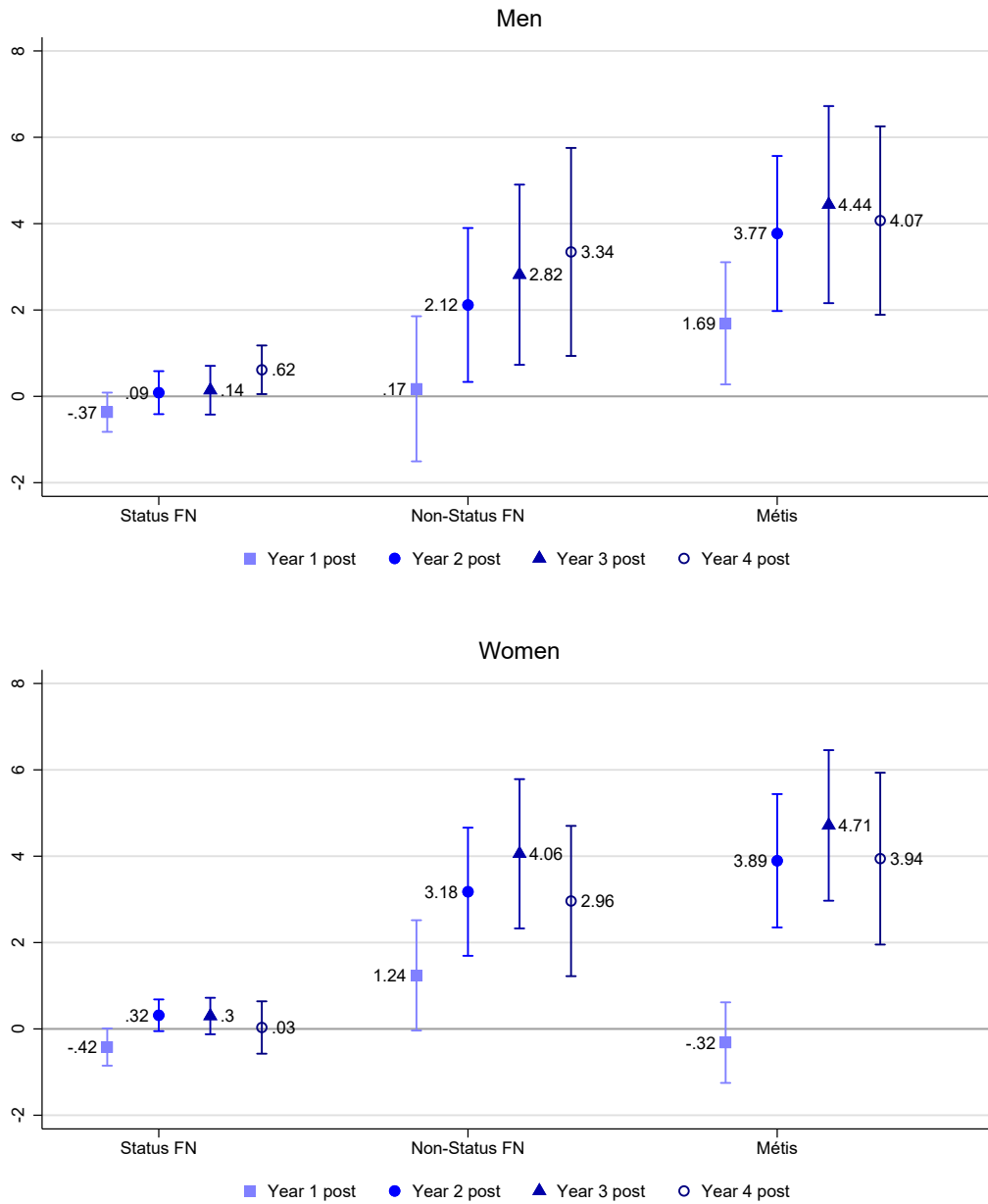


Figure 5: Treatment Effect on Earnings in One to Four Years Post (2010-2012 Entering Cohorts)

So that we can follow participants up to four years after they entered ASETS, we restrict the sample to individuals who first participated in ASETS in 2010 to 2012. We use a doubly-robust inverse propensity score weighting and regression adjusted estimator. All dollars are real 2010 Canadian dollars. Confidence intervals were constructed using standard errors clustered by Forward Sortation Area.

Table 1: Percentage of High- and Low-Intensity Participation and Median Participation Duration

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	<b>Full Sample</b>			
	<b>Low-Intensity</b>	<b>High-Intensity</b>		
Percentage	35.6	64.04		
Median Duration	7	82		
Sample Size	42,870	76,341		
	<b>Men</b>		<b>Women</b>	
	<b>Low-Intensity</b>	<b>High-Intensity</b>	<b>Low-Intensity</b>	<b>High-Intensity</b>
<b>Status First Nations</b>				
Percentage	35.31	64.69	34.37	65.63
Median Duration	4	54	9	87
Sample Size	17,286	28,043	13,113	24,029
<b>non-Status First Nations</b>				
Percentage	48.91	51.09	47.00	53.00
Median Duration	29	77	32	92
Sample Size	1,640	1,713	1,279	1,442
<b>Métis</b>				
Percentage	34.37	65.63	30.41	69.59
Median Duration	17	105	6	228
Sample Size	2,588	4,941	2,620	5,997

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The duration of ASETS participation is the number of days recorded in all ASETS interventions during the first ASETS spell. The days when there was a break in participation are not included in the count.

Table 2: High- and Low-Intensity Group Means for the Full Sample, Differences in Means, and Normalized Differences in Means

	<b>High-Intensity</b>		<b>Low-Intensity</b>		<b>Difference</b>	<b>Normalized</b>
	<b>Mean</b>	<b>S.D.</b>	<b>Mean</b>	<b>S.D.</b>		<b>Difference</b>
Status First Nations	0.673	0.469	0.704	0.456	-0.031*** (0.003)	-0.068
Non-Status First Nations	0.041	0.199	0.067	0.249	-0.025*** (0.001)	-0.112
Métis	0.150	0.357	0.124	0.330	0.026*** (0.002)	0.075
Inuit	0.040	0.197	0.011	0.106	0.029*** (0.001)	0.184
Unspecified, Indigenous	0.095	0.293	0.093	0.291	0.002 (0.002)	0.006
Female	0.465	0.499	0.435	0.496	0.029*** (0.003)	0.059
Age	31.789	10.765	33.114	11.005	-1.325*** (0.068)	-0.122
Lives in a rural area	0.547	0.498	0.438	0.496	0.109*** (0.003)	0.219
Earnings 1 year prior (\$1000's)	12.124	17.413	11.754	17.664	0.370*** (0.109)	0.021
Any Employment 1 year prior	0.742	0.438	0.720	0.449	0.021*** (0.003)	0.048
No prior T4S records	0.018	0.134	0.016	0.127	0.002** (0.001)	0.015
Working when starting ASETS	0.137	0.343	0.148	0.355	-0.012*** (0.002)	-0.033
<b>Sample Size</b>	71,915		40,812			

Table 3: Correlation between Residual High-Intensity Participation and Funding Interacted with Distance

	(1)	(2)	(3)	(4)
<b>Marginal Effect of Natural Log of Funding, by Distance from a University</b>				
50 km	0.0178*** (0.0040)	0.0195*** (0.0050)	0.0177*** (0.0038)	0.0192*** (0.0046)
100 km	0.0355*** (0.0079)	0.0391*** (0.0098)	0.0352*** (0.0074)	0.0386*** (0.0090)
200 km	0.0703*** (0.0153)	0.0783*** (0.0191)	0.0699*** (0.0143)	0.0774*** (0.0175)
400 km	0.1379*** (0.0286)	0.1568*** (0.0364)	0.1378*** (0.0268)	0.1561*** (0.0333)
<b>Coefficients</b>				
Female	0.0281*** (0.0067)	0.0295*** (0.0066)		
Métis	0.0954*** (0.0167)	0.1024*** (0.0157)	0.0987*** (0.0150)	0.1057*** (0.0141)
non-Status First Nations	-0.0589*** (0.0159)	-0.0534*** (0.0151)	-0.0546*** (0.0126)	-0.0490*** (0.0120)
Female x Métis	-0.0004 (0.0099)	-0.0009 (0.0098)		
Female x non-Status First Nations	0.0055 (0.0184)	0.0030 (0.0183)		
Natural Log of Working Age Population		0.0196 (0.0134)		0.0181 (0.0128)
% Not in the Labour Force		-0.8616*** (0.3182)		-0.8257*** (0.3073)
% Unemployed		-0.2906 (0.7600)		-0.2777 (0.7324)
% Less than High School		0.0206 (0.1953)		-0.0081 (0.1889)
% With Employment Income		-0.0107*** (0.0031)		-0.0104*** (0.0030)
% Lone Parent		0.2219 (0.2113)		0.2154 (0.2038)
% Speaking Indigenous Language		0.0853 (0.0594)		0.0856 (0.0582)
Sample Size	2,134	2,130	1,570	1,562

The dependent variable is the average residual from a regression of high-intensity participation on our full set of controls. In columns (1) and (2), the average is taken across FSA, sex and population groups. In columns (3) and (4), the average is taken across FSA and population groups. Funding is the total funding for ASETS in each province in the years 2010 - 2014. Distance to the nearest university is calculated As the crow flies". The distance is entered as a quadratic and is interacted with ln funding. All regressions include province fixed effects. FSA characteristics are taken from the 2011 Census and National Household Survey FSA profiles. All regressions are weighted by the cell size used to estimate the average residualized high-intensity participation. Standard errors clustered at the FSA level are reported in parentheses.

Table 4: The Effect of High- Relative to Low-Intensity Participation on Earnings

	Full Sample	Men			Women		
		Status FN	Non-Status FN	Métis	Status FN	Non-Status FN	Métis
<b>Earnings (\$1,000s)</b>							
Pre-Program Low-Intensity Mean	11.457	11.301	11.936	16.681	8.824	9.360	11.953
<i>Average Treatment Effect</i>							
1 Year Post	0.0570 (0.1537)	-0.3592** (0.1816)	0.2017 (0.6696)	0.9729** (0.4913)	-0.5267** (0.2086)	0.4916 (0.5341)	0.0676 (0.3489)
2 Years Post	1.0200*** (0.1556)	0.0615 (0.2020)	2.0739*** (0.6854)	2.9417*** (0.5854)	0.1667 (0.1701)	2.7384*** (0.5727)	3.3028*** (0.5439)
<i>Average Treatment Effect on the Treated</i>							
1 Year Post	0.0487 (0.1782)	-0.4503** (0.1925)	-0.2146 (0.7677)	0.9897* (0.5648)	-0.5766** (0.2386)	0.4185 (0.5978)	0.2854 (0.3083)
2 Years Post	1.0371*** (0.1794)	-0.0516 (0.2164)	1.6305** (0.7533)	3.0153*** (0.6599)	0.1209 (0.1915)	2.9525*** (0.6638)	3.6873*** (0.5821)
Sample Size	111,442	43,098	3,208	6,995	33,890	2,543	7,578

Standard errors in parentheses clustered by Forward Sortation Area. Effects are estimated using a doubly-robust inverse propensity score weighted and regression adjusted estimator. All dollars are real 2010 Canadian dollars.



Table 5: The Effect of High- Relative to Low-Intensity Participation on Employment

	Full Sample	Men			Women		
		Status FN	Non-Status FN	Métis	Status FN	Non-Status FN	Métis
<b>Proportion</b>							
Pre-Program Low-Intensity Mean	0.705	0.704	0.722	0.818	0.638	0.680	0.804
<i>Average Treatment Effect</i>							
1 Year Post	0.0033 (0.0031)	-0.0008 (0.0045)	-0.0001 (0.0145)	0.0124 (0.0075)	-0.0032 (0.0050)	0.0036 (0.0174)	0.0057 (0.0093)
2 Years Post	0.0144*** (0.0028)	0.0079* (0.0046)	-0.0037 (0.0132)	0.0165* (0.0090)	0.0167*** (0.0050)	0.0237 (0.0171)	0.0258*** (0.0091)
<i>Average Treatment Effect on the Treated</i>							
1 Year Post	0.0046 (0.0033)	-0.0002 (0.0046)	0.0063 (0.0173)	0.0163** (0.0080)	-0.0027 (0.0051)	0.0010 (0.0179)	0.0103 (0.0099)
2 Years Post	0.0150*** (0.0029)	0.0071 (0.0050)	-0.0003 (0.0144)	0.0198** (0.0097)	0.0165*** (0.0050)	0.0299* (0.0182)	0.0319*** (0.0097)
Sample Size	111,442	43,098	3,208	6,995	33,890	2,543	7,578

Standard errors in parentheses clustered by Forward Sortation Area. Effects are estimated using a doubly-robust inverse propensity score weighted and regression adjusted estimator. All dollars are real 2010 Canadian dollars.

Table 6: The Effect of High- Relative to Low-Intensity Participation on Any EI Receipt

	Full Sample	Men			Women		
		Status FN	Non-Status FN	Métis	Status FN	Non-Status FN	Métis
<b>Proportion</b>							
Pre-Program Low-Intensity Mean	0.185	0.203	0.214	0.237	0.151	0.170	0.160
<i>Average Treatment Effect</i>							
1 Year Post	0.0021 (0.0036)	0.0062 (0.0058)	0.0020 (0.0143)	-0.0006 (0.0109)	-0.0036 (0.0045)	-0.0198 (0.0144)	-0.0075 (0.0086)
2 Years Post	0.0055 (0.0035)	0.0046 (0.0052)	0.0102 (0.0140)	0.0036 (0.0115)	0.0023 (0.0047)	-0.0222 (0.0150)	0.0034 (0.0095)
<i>Average Treatment Effect on the Treated</i>							
1 Year Post	0.0025 (0.0040)	0.0073 (0.0064)	0.0066 (0.0159)	0.0017 (0.0122)	-0.0040 (0.0049)	-0.0207 (0.0158)	-0.0078 (0.0091)
2 Years Post	0.0056 (0.0039)	0.0050 (0.0057)	0.0176 (0.0160)	0.0043 (0.0130)	0.0022 (0.0051)	-0.0291* (0.0175)	0.0015 (0.0105)
Sample Size	111,442	43,098	3,208	6,995	33,890	2,543	7,578

Standard errors in parentheses clustered by Forward Sortation Area. Effects are estimated using a doubly-robust inverse propensity score weighted and regression adjusted estimator.

Table 7: The Effect of High- Relative to Low-Intensity Participation on Weeks of EI Receipt

Weeks	Full Sample	Men			Women		
		Status FN	Non-Status FN	Métis	Status FN	Non-Status FN	Métis
Pre-Program Low-Intensity Mean	2,300	2,746	2,600	2,583	1,870	1,839	1,422
<i>Average Treatment Effect</i>							
1 Year Post	0.1092* (0.0629)	0.1958** (0.0970)	-0.0068 (0.2539)	0.0176 (0.2484)	0.0383 (0.0756)	0.0293 (0.1872)	-0.0299 (0.1145)
2 Years Post	0.1828*** (0.0569)	0.1783** (0.0899)	0.5565** (0.2323)	0.0808 (0.2075)	0.1476** (0.0699)	-0.1320 (0.2154)	0.1845 (0.1277)
<i>Average Treatment Effect on the Treated</i>							
1 Year Post	0.1228* (0.0704)	0.2454** (0.1123)	-0.0189 (0.3225)	0.0440 (0.3164)	0.0327 (0.0813)	-0.0313 (0.2259)	-0.0349 (0.1277)
2 Years Post	0.1846*** (0.0633)	0.1992* (0.1021)	0.7108** (0.2762)	0.0963 (0.2590)	0.1455* (0.0759)	-0.3127 (0.2638)	0.1820 (0.1456)
Sample Size	111,442	43,098	3,208	6,995	33,890	2,543	7,578

Standard errors in parentheses clustered by Forward Sortation Area. Effects are estimated using a doubly-robust inverse propensity score weighted and regression adjusted estimator.

Table 8: Duration of ASETS Participation by First Intervention Type

Duration (days)	Skills Development				Apprenticeships			
	<b>1-90</b>	<b>91-180</b>	<b>181-270</b>	<b>&gt; 270</b>	<b>1-90</b>	<b>91-180</b>	<b>181-270</b>	<b>&gt; 270</b>
Status FN	57.48	18.92	10.5	13.11	39.82	30.73	13.87	15.58
non-Status FN	52.46	20.05	10.00	17.49	35.29	32.35	16.47	15.88
Métis	28.93	18.59	27.01	25.47	47.08	25.00	13.8	14.12
Duration (days)	Essential Skills				Wage Subsidy			
	<b>1-90</b>	<b>91-180</b>	<b>181-270</b>	<b>&gt; 270</b>	<b>1-90</b>	<b>91-180</b>	<b>181-270</b>	<b>&gt; 270</b>
Status FN	70.14	13.16	7.09	9.61	32.52	38.06	15.99	13.43
non-Status FN	62.75	19.22	9.41	8.63	37.14	31.02	15.92	15.92
Métis	68.93	15.38	4.44	11.24	31.09	39.88	12.61	16.42
Duration (days)	Job Creation Partnerships				Low-Intensity			
	<b>1-90</b>	<b>91-180</b>	<b>181-270</b>	<b>&gt; 270</b>	<b>1-90</b>	<b>91-180</b>	<b>181-270</b>	<b>&gt; 270</b>
Status FN	57.51	31.15	7.04	4.3	91.93	6.68	1.02	0.37
non-Status FN	43.36	34.27	9.09	13.29	88.87	8.91	1.68	0.55
Métis	32.95	38.64	20.45	7.95	90.9	7.66	1.00	0.44

The duration of ASETS participation is the number of days recorded in all ASETS interventions during the first ASETS spell. The days when there was a break in participation are not included in the count. If the first ASETS intervention was either job counselling or employment assistance training, but there was a subsequent high-intensity intervention, we use the first high-intensity intervention.

Table 9: The Effect of High- Relative to Low-Intensity Participation on Earnings for the Status First Nations Participant Group Separately For Participants Living in Remote, Rural but not Remote, and Urban but not Remote

	Remote		Rural Not Remote		Urban Not Remote	
	Men	Women	Men	Women	Men	Women
<b>Earnings (\$1,000s)</b>						
Pre-Program Low-Intensity Mean	14.077	10.178	11.901	9.067	11.557	8.520
<i>Average Treatment Effect</i>						
1 Year Post	-0.5300 (0.6409)	-1.0843 (0.7222)	-0.5691** (0.2724)	-0.3462 (0.2732)	-0.0288 (0.2652)	-0.7168*** (0.2019)
2 Years Post	-0.1387 (0.4458)	0.3706 (0.5481)	-0.1879 (0.3257)	0.2940 (0.2240)	0.2622 (0.2940)	-0.1238 (0.2032)
<i>Average Treatment Effect on the Treated</i>						
1 Year Post	-0.4971 (0.7342)	-1.0325 (0.7405)	-0.5614** (0.2665)	-0.4297 (0.2727)	-0.1720 (0.2991)	-0.7869*** (0.2045)
2 Years Post	-0.2021 (0.5147)	0.4322 (0.5959)	-0.1935 (0.3204)	0.1899 (0.2531)	0.1545 (0.3235)	-0.2041 (0.2110)
Sample Size	6,185	4,619	15,854	11,379	18,192	18,511

Standard errors in parentheses clustered by Forward Sortation Area. Remote areas are defined to correspond with FSA's that fall within Zones A and B, which qualify residents for the Northern Residents Deduction on Federal Income Tax. Effects are estimated using a doubly-robust inverse propensity score weighted and regression adjusted estimator. All dollars are real 2010 Canadian dollars.

Table 10: The Effect of High- Relative to Low-Intensity Participation on Earnings for the Status First Nations Participant Group, Estimated Separately For Participants with Pre-Program Tax-Exempt Earnings, Non-Exempt Earnings, or No Earnings

	Tax-Exempt		Non-Exempt		None	
	Men	Women	Men	Women	Men	Women
<b>Earnings (\$1,000s)</b>						
Pre-Program Low-Intensity Mean	16.466	15.226	16.789	13.039	0.000	0.000
<i>Average Treatment Effect</i>						
1 Year Post	-0.5833** (0.2643)	-0.8424*** (0.2761)	0.4057 (0.3098)	-0.4831 (0.3575)	-0.5444*** (0.1954)	-0.5356*** (0.1923)
2 Years Post	0.1557 (0.3208)	-0.2387 (0.2694)	1.1966*** (0.3133)	0.6839** (0.3481)	-0.3076 (0.2564)	0.3594** (0.1819)
<i>Average Treatment Effect on the Treated</i>						
1 Year Post	-0.6372** (0.2883)	-0.8302*** (0.2918)	0.5267 (0.3618)	-0.4715 (0.4478)	-0.5677*** (0.1958)	-0.5777*** (0.1882)
2 Years Post	0.0968 (0.3461)	-0.2588 (0.2968)	1.3175*** (0.3257)	0.7843* (0.4248)	-0.3324 (0.2623)	0.2777 (0.1873)
Sample Size	12,640	9,930	15,530	10,804	10,668	9,937

Standard errors in parentheses clustered by Forward Sortation Area. Tax-exempt earnings refers to employment income that is earned on a reserve and is not subject to federal income tax under the *Indian Act* (box 71 on a T4). Effects are estimated using a doubly-robust inverse propensity score weighted and regression adjusted estimator. All dollars are real 2010 Canadian dollars.

Table 11: The Effect of High- Relative to Low-Intensity Participation on Earnings for the Status First Nations Participant Group who had Tax-Exempt Earnings in the Year Prior to Participation, Estimated Separately For Participants Living in Remote, Rural but not Remote, and Urban but not Remote Areas

	Remote		Rural Not Remote		Urban Not Remote	
	Men	Women	Men	Women	Men	Women
<b>Earnings (\$1,000s)</b>						
Pre-Program Low-Intensity Mean	16.571	13.720	16.093	14.631	16.057	15.348
<i>Average Treatment Effect</i>						
1 Year Post	-1.1093* (0.6203)	-0.4852 (0.9497)	-0.7506* (0.3859)	-0.6146* (0.3147)	-0.9961** (0.4209)	-0.8344** (0.4077)
2 Years Post	0.0607 (0.6388)	0.4404 (0.4373)	-0.2758 (0.4372)	-0.1088 (0.3430)	-0.3691 (0.5921)	-0.8342** (0.4024)
<i>Average Treatment Effect on the Treated</i>						
1 Year Post	-1.0923 (0.7256)	-0.4642 (0.9620)	-0.8147* (0.4166)	-0.6917** (0.3105)	-0.9203** (0.4459)	-0.6707* (0.4046)
2 Years Post	0.0312 (0.7925)	0.3535 (0.5636)	-0.2645 (0.4564)	-0.2090 (0.3734)	-0.2760 (0.6316)	-0.8547** (0.4252)
Sample Size	2,190	1,535	7,099	5,161	4,203	4,378

Standard errors in parentheses clustered by Forward Sortation Area. Remote areas are defined to correspond with FSA's that fall within Zones A and B, which qualify residents for the Northern Residents Deduction on Federal Income Tax. Effects are estimated using a doubly-robust inverse propensity score weighted and regression adjusted estimator. Tax-exempt earnings refers to employment income that is earned on a reserve and is not subject to federal income tax under the *Indian Act* (box 71 on a T4). All dollars are real 2010 Canadian dollars.

Table 12: Earnings Growth From One Year Prior to Two Years Post-Participation by Employment Transitions for Status First Nations

	High-Intensity Group		Low-Intensity Group		Differences	
	Earnings Growth	Share	Earnings Growth	Share	Earnings Growth	Share
On Reserve-On Reserve	3.414 (0.176)	0.202	3.790 (0.246)	0.195	-0.376	0.007
On Reserve-Off Reserve	6.519 (0.397)	0.069	5.008 (0.474)	0.074	1.511	-0.005
On Reserve-No Earnings	-10.648 (0.354)	0.054	-9.699 (0.299)	0.056	-0.949	-0.002
Off Reserve-On Reserve	5.466 (0.420)	0.064	5.304 (0.461)	0.061	0.162	0.003
Off Reserve-Off Reserve	5.650 (0.204)	0.249	4.815 (0.230)	0.245	0.835	0.004
Off Reserve-No Earnings	-7.973 (0.247)	0.066	-8.579 (0.267)	0.072	0.606	-0.006
No Earnings-On Reserve	12.245 (0.237)	0.075	13.043 (0.321)	0.069	-0.798	0.006
No Earnings-Off Reserve	11.635 (0.233)	0.096	11.765 (0.272)	0.096	-0.13	0.000

On-reserve employment means the participant had tax exempt earnings, where tax-exempt earnings refers to employment income that is earned on a reserve and is not subject to federal income tax under the *Indian Act* (box 71 on a T4). Both the average earnings growth and the shares are weighted by the inverse propensity score. The propensity scores were estimated in separate samples defined by their pre-participation employment. Participants who had no earnings in both time periods are not included in the table because their earnings growth is zero.