



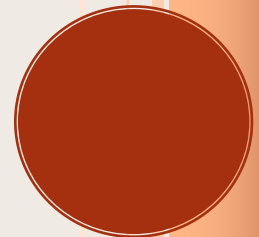
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**The Effect of an Unconditional
Government Income Transfer
on the Labour Supply of Low-
Income Workers**

Kourtney Koebel (University of Toronto)
Dionne Pohler (University of Saskatchewan)

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The Effect of an Unconditional Government Income Transfer on the Labour Supply of Low-Income Workers

Kourtney Koebel and Dionne Pohler*

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Abstract

We use administrative tax data to estimate the effect of the Working Income Tax Benefit (WITB) on the labour supply of single, low-income workers in Canada. Our analytical approach exploits low knowledge of the program, which has two important implications for our research design and identification strategy. First, low program knowledge allows us to treat WITB as an unconditional income transfer. Second, it generates variation in benefit receipt both between and within eligible tax filers over time. We find that benefit receipt has a robust positive effect on employment for single low-income workers, suggesting the additional income helps workers remain attached to the labour market. We also find that WITB receipt reduces labour supply at the intensive margin of work. The positive extensive margin and negative intensive margin results are consistent with a labour-leisure choice model that incorporates the fixed costs associated with working.

***Affiliations:** Koebel (corresponding author): University of Toronto, Department of Economics and Rotman Institute for Gender and the Economy, 150 St. George Street, Toronto, Ontario M5S 3G7 and INSEAD (e-mail: kourtney.koebel@utoronto.ca). Pohler: University of Saskatchewan, Edwards School of Business, 25 Campus Drive, Saskatoon, Saskatchewan S7N 5A7 (e-mail: dionne.pohler@usask.ca). **Acknowledgments:** This study was made possible through access to Statistics Canada confidential microdata in research data centres at the University of Toronto and University of Saskatchewan. The results and conclusions in this study do not necessarily reflect the views of Statistics Canada. The authors gratefully acknowledge doctoral and postdoctoral funding for Koebel from the Social Sciences and Humanities Research Council of Canada and conference funding from the University of Toronto Centre for Industrial Relations and Human Resources. The authors also wish to thank participants at the 2018 Canadian Research Data Centre Network and 2019 Canadian Labour Economic Forum workshop and others who provided invaluable feedback, most notably Michael Baker, Elizabeth Dhuey, Greg Distelhorst, Kelly Foley, David Green, Morley Gunderson, Lauren Jones, Ioannis Georgios Kipouros, Steven Ryan, Tammy Schirle, Jeffrey Smith and Mark Stabile.

Data Availability Statement

This study uses proprietary data from Statistics Canada. Researchers may access these data in-person through the Statistics Canada Research Data Centre (RDC) program. For more information about the datasets available through the Canadian Research Data Centre Network (CRDCN), as well as the requirements for accessing the data, please refer to:

- <https://www.statcan.gc.ca/en/microdata/data-centres/data>
- <https://www.statcan.gc.ca/en/microdata/data-centres/access>

Replication files will be shared in a public repository.

Disclosure Statement

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IRB approval was not obtained for this study because under Canada's Tri-Council Policy Statement on Ethical Conduct for Research Involving Humans (TCPS 2) the research does not require research ethics board review when it relies exclusively on information that is in the public domain or publicly available through a mechanism set out by legislation or regulation and that is protected by law (TCPS 2, Article 2.2).

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1 Introduction

Over the past 50 years, Canada and the United States (US) have made little progress on reducing poverty rates among the working-age population. [Figure 1](#) shows that, apart from a temporary decline in poverty due to COVID-19 pandemic-related income transfers, overall working-age poverty rates have *increased* slightly in both countries since the mid-1970s: in 2019, the working-age relative poverty rate was 11% in Canada and 17% in the US, while in 1976 it was 10.3% and 12%, respectively.

Employment in the formal labour market is often cited by policymakers as the best tool for poverty alleviation. As reported in [Table 1](#), however, in both Canada and the US roughly half of all working-age individuals with income below the poverty line are employed (panel B), working over 30 hours per week for an average weekly income of CDN372.44 and USD608.78 (panel C). Moreover, while those who are employed and experiencing poverty only work 15% (12%) fewer hours than other workers in Canada (US), they earn 69% (45%) less (panel D), suggesting that employment does not guarantee an adequate income.

[Table 1](#) also reveals that conventional approaches for addressing poverty and low incomes, such as welfare and unions, do not sufficiently protect economically marginalized workers. In both countries, welfare has asset testing, high reduction rates and is a measure of last resort, making it inaccessible for many low-wage workers ([Table 1](#), panel C). Additionally, unionization rates among the working poor are roughly half of those among the working non-poor ([Table 1](#), panels C and D), indicating that low-income workers are far less likely to realize wage gains stemming from the bargaining power of unions.

The vulnerability of the working-age poor in the labour market, and their dependence on government intervention for improving their economic welfare, has led to calls for re-imagining the design of labour and social policy, with a guaranteed basic income (GBI) emerging as one tool that could be used to address several contemporary issues that disproportionately impact the working-age poor such as rising income inequality, declining real incomes, structural labour market changes and the inadequacy of welfare (Pohler, 2020).

While static estimates reveal that a GBI would significantly reduce the working-age poverty rate, the policy remains highly contested due to concerns over potential work disincentives associated with providing unconditional government benefits to low-income workers (Koebel & Pohler, 2019; Koebel et al., 2021). Indeed, in Canada, large income transfer programs earmarked for seniors and families with children are less contested because there is no expectation for children or seniors to participate in the labour market.

Concerns about the work disincentives of a GBI mainly stem from the standard labour-leisure choice framework in economics which predicts that, by reducing the cost of leisure, an unconditional income transfer will decrease labour supply (e.g., the income effect). However, as we outline in [Section 2](#), models with alternative assumptions predict null or positive impacts of an unconditional income transfer on labour supply, suggesting theoretical ambiguity. Moreover, there is limited empirical evidence on this question for three primary reasons. First, since most government benefits are available to all tax filers who meet eligibility criteria, there is often little to no variation in benefit receipt across individuals in the target population, making it difficult to generate a plausible control group. Second, estimating the income effect of government benefits is challenging, as programs are often confounded by a substitution effect due to work incentives or high benefit reduction rates. Finally, because there are very few benefit programs targeted towards working-age individuals, especially those without children, there have been limited opportunities to examine the labour supply responses of this specific group to an unconditional government income transfer.

To address these challenges, in this paper, we investigate how the receipt of an unconditional income transfer impacts the labour supply of low-income workers by exploiting low knowledge of the presence and structure of the Working Income Tax Benefit (WITB) in Canada, a program similar in design to the Earned Income Tax Credit (EITC) in the US. In 2007, the federal government introduced WITB to provide financial assistance to low-income individuals/families and increase labour market participation (Department of Finance Canada, 2007). Despite the stated policy goals and design, in [Section 3](#) we document

several contextual factors of WITB which suggest very limited knowledge of the program’s marginal incentives and, more importantly, its existence, even among benefit recipients.

Our analytical approach leverages low knowledge of WITB, which has three important implications for our research design. First, it allows us to treat WITB as an unconditional income transfer. Second, low WITB knowledge impacts the appropriate measurement of benefit receipt and labour supply timing in our empirical estimation. Much of the EITC literature assumes that tax filers have knowledge of the EITC program and structure, and therefore treats the EITC as a work incentive by empirically modeling labour supply simultaneously with the determination of worker benefit eligibility. However, a growing literature in economics suggests that individuals, and especially low-income workers, are often unaware of the tax and transfer policies that affect them (De Bartolome, 1995; Duflo et al., 2006; Aizer, 2007; Chetty et al., 2009; Bettinger et al., 2012; Jones, 2010; Liebman and Luttmer, 2015; Chetty et al., 2013; Chetty and Saez, 2013; Manoli and Turner, 2014; Bhargava and Manoli, 2015; Guyton et al., 2017; Ko and Moffitt, 2020; Linos et al., 2022).

Consistent with the above literature, low knowledge of WITB implies that recipients are less likely to respond to the employment conditionality, marginal work incentives or claw-back rates embedded in the program and, instead, more likely to respond to receipt of the actual income transfer. Due to the nature of Canada’s tax system, in which most transfers from the government are received by tax filers in the year following benefit determination, low WITB knowledge means that we can think of the program as spanning two time periods. As displayed in [Figure 2](#), our empirical approach involves estimating the impact of WITB on labour supply in the year the benefit is received (year $t + 1$) rather than the year in which benefit eligibility and entitlement are determined (year t). In other words, low knowledge of WITB allows us to separate benefit eligibility from receipt of WITB and, in turn, test the effect of receiving the actual benefit income on the labour supply of low-income workers.

Finally, low program knowledge generates variation in WITB receipt between eligible low-income workers each year and within the same eligible worker over time, since not all

eligible tax filers receive WITB. The incomplete and inconsistent take-up of WITB stems from non-automatic enrollment in the program: individuals receive WITB due to quirks associated with different tax filing methods, which we argue generates “as-good-as-random” assignment of WITB among eligible tax filers. Nonetheless, to address concerns about selection and omitted variable bias, we also separately estimate an individual-level fixed effects (FE) model and a lagged dependent variable (LDV) model: while the former model controls for all time-invariant sources of bias, the size and direction of the latter, relative to the former, provides information on time-varying sources of bias, which we find to be negligible (Angrist & Pischke, 2009). We also conduct a robustness check on a sample of eligible tax filers who go from receiving WITB in one year to not receiving WITB the following year, despite eligibility in both years, as these individuals are the least likely to be aware of WITB.

To examine the labour supply effects of WITB, we use Canadian tax data from the 2007-2019 Longitudinal Administrative Databank (LAD) confidential microdata files. We find that receipt of WITB had a statistically significant, positive effect on labour supply at the extensive margin of employment for single working-age individuals. Using employment earnings as a proxy for hours worked, we also find that, among tax filers who do not receive social assistance, WITB receipt had a statistically significant negative effect on labour supply at the intensive margin of work. Due the nature of benefit timing ([Figure 2](#)), our results thus suggest that receipt of WITB enabled low-income workers to maintain their employment, though less intensively. As we outline in [Section 2](#), our estimated positive extensive margin and negative intensive margin effects in response to receiving WITB are consistent with the predictions of economic models that incorporate the fixed costs associated with working.

Our paper is organized as follows. The theoretically ambiguous effects of unconditional income transfers on labour supply are discussed in [Section 2](#). We outline policy details and the institutional context surrounding the implementation and design of WITB, including low salience of the benefit, in [Section 3](#). [Section 4](#) outlines the identification strategy used to estimate the impact of WITB on labour supply. We describe our data in [Section 5](#) and

present our main results in [Section 6](#). We conclude in [Section 7](#) with a discussion of the contributions of our study for research and the design of public policy for low-income workers.

2 Theoretical Considerations

There are several competing theoretical predictions regarding the impact of an unconditional income transfer on labour supply depending on the assumptions used to model human behaviour. In this section, we provide a comprehensive understanding of the theoretical relationship between unconditional income transfers and labour supply by, first, summarizing the predictions of the standard model of labour supply in economics, and second, juxtaposing that model against alternative economic models that incorporate the fixed costs of working and theoretical contributions from other fields.

The theoretical framework most often used to predict the impact of an unconditional income transfer on work and employment decisions is the standard neoclassical model of labour supply, referred to as the labour-leisure choice framework. In the most basic variant of this model, the introduction of an unconditional income transfer (with no taxback rate) results in a parallel outward shift of the budget constraint by the total benefit amount, thereby increasing recipients' purchasing power and time available for non-market activities (a concept formally known as the income effect). This model predicts that, by enabling recipients to purchase a larger quantity of both consumption goods and leisure, the introduction of an unconditional income transfer reduces labour supply either through a reduction in hours worked (the intensive margin) or a withdrawal from the labour market entirely (the extensive margin). Owing to the unambiguous negative labour supply effects predicted in this model, the unconditional income transfer is thought to generate a disincentive to work.

There are several reasons why the simplified model of labour supply may be insufficient for explaining the labour market decisions of a specific sub-population of low-wage workers in receipt of an unconditional income transfer from the government. First, the simplified frame-

work assumes no time or monetary (i.e., fixed) costs associated with entering or remaining in the labour market (Cogan, 1981). This assumption may be unrealistic for understanding the employment decisions of low-wage workers, however, for whom it may be difficult to remain in the labour market if the costs associated with working (such as childcare, transportation, clothing, the welfare wall, etc.) are larger than potential employment earnings.

In a slightly modified version of the labour-leisure choice framework that accounts for the fixed costs of working, the labour supply decision is more complicated. Fixed costs, by acting as a barrier to entering the labour market, increase reservation wages and, in turn, reduce labour force participation. In other words, individuals participate in the labour market only if their potential employment earnings are greater than the fixed cost of entry. Among those participating in the labour market, the model also predicts that the presence of fixed costs will increase hours worked, since workers must compensate the income lost to the entry costs (Cogan, 1981). In a model that accounts for fixed costs, it is possible that an unconditional income transfer might generate an increase in employment/participation if the additional income helps recipients overcome the fixed costs of entering (and staying in) the labour market. In terms of the intensive margin decision, this modified model would also predict that, among those participating in the labour market prior to the introduction of the unconditional income transfer, the increase in non-wage income might generate a reduction in hours worked by partially subsidizing the fixed costs of work and allowing workers to consume more leisure (i.e., the income effect).

Second, implicit in the labour-leisure choice framework is the assumption that every hour of work is a disutility (Rätzl, 2012). That is, the neoclassical model assumes that the primary purpose of employment is to earn an income in order to consume goods and services, and is otherwise an activity to be minimized since it diminishes rather than increases utility (in contrast to leisure). However, institutional-oriented scholars in labour economics and industrial relations have long questioned the assumption that an hour of work always implies a decline in utility (Budd, 2011; Cassar and Meier, 2018; Juster, 1990; Kaplan and

Schulhofer-Wohl, 2018; Nikolova and Cnossen, 2020; Rätzel, 2012), as have sociologists, psychologists and philosophers (see Rosso et al. (2010) for a detailed review).

While the idea that individuals receive non-pecuniary benefits from working is not new to economics (see Spencer (2009) and Cassar and Meier (2018) for a review), the potential for work to provide utility beyond the wage received is rarely considered in contemplating the theoretical impact of unconditional income transfers on labour supply in the standard labour-leisure choice framework. However, if individuals receive meaning from their work (at least over some number of hours), an income transfer would likely have no impact on the extensive margin decision of employment. This is because, in a model where employment provides utility, agents are optimizing income (or consumption) *and* the non-pecuniary benefits received from working. As such, the resulting increase in utility from reducing labour supply (or increasing leisure) due to an increase in non-wage income would need to exceed the loss of meaning or utility associated with exiting the labour force. In terms of the intensive margin decision, a model with utility of work over some hours would predict that an unconditional income transfer may generate only a small negative effect on hours worked, since the additional income would incentivize recipients to reduce working hours until the utility received through work is maximized.

Finally, the standard labour-leisure choice framework may not accurately predict the employment effects of an unconditional income transfer because it overlooks the complex relationship between income, employment and health/stress. Economic (Pinna Pintor et al., 2024; Currie and Madrian, 1999) and psycho-social (Ridley et al., 2020; Matthews and Gallo, 2011) health models posit a cyclical relationship between income, mental and physical health and labour supply: health issues can lead to poor economic and labour market outcomes and vice versa. As such, while the causal direction is unclear in these models, they formalize the important role of health as a critical variable in labour supply decisions.

Sergeyev et al. (2023) highlight the intricate relationship between income, health and labour market outcomes by incorporating the impact of financial constraints, and resulting

financial stress, into a dynamic decision-making model. Drawing on insights from psychology, the authors demonstrate that financial constraints generate harmful psychological costs by crowding out important cognitive resources and time. Their formal model suggests that, “lump-sum fiscal transfers can relieve financial stress, *increase labour supply*, and boost aggregate output” (Sergeyev et al., 2023, p. 4, emphasis added). In other words, by alleviating financial stress, unconditional income transfers may generate positive rather than negative labour supply effects contrary to predictions by the standard labour-leisure choice model. As such, while an unconditional income transfer is unlikely to mitigate the adverse effects of genetic-related or long-standing health issues, it may reduce financial stress and/or mental and physical health conditions (for example, through improved food nutrition), and as a result, improve the ability of individuals to join or remain attached to the labour market.

In summary, contrary to the neoclassical prediction that an unconditional income transfer will unambiguously reduce labour supply, if individuals receive utility from work that extends beyond the wage they receive, an unconditional income transfer may have no impact on employment decisions. Alternatively, other theoretical models predict that an unconditional income transfer may improve the likelihood of employment at the extensive and intensive margin if it: i) liberates cognitive resources by reducing financial stress; and/or ii) helps recipients overcome the fixed costs of working, potentially through reducing costs like transportation or childcare. Ultimately, because the alternative theories suggest that an unconditional income transfer could generate negative, positive or no effects on labour supply, the impact of government income transfers on employment decisions remains an empirical question, which we propose to answer by examining the labour supply effects of an income transfer program in Canada using the identification strategy outlined in [Section 4](#).

3 Institutional Context

To study the effects of an unconditional income transfer on the labour supply of low-wage workers, we exploit the 2007 introduction of the Working Income Tax Benefit (WITB) in Canada.¹ WITB was introduced by the federal Progressive Conservative government to provide additional income support to low-wage workers (Department of Finance Canada, 2007).² Similar in design to the EITC in the US (see [Figure 3](#) and [Figure 4](#)), WITB is a refundable tax credit administered through the income tax system by the Canada Revenue Agency (CRA). The main beneficiaries of WITB are low-income workers, with and without children, who earn a minimum of \$3,000 in the labour market through self-employment and/or wage earnings.³ In 2018, roughly \$1.12 billion in WITB payments were distributed to over 1.4 million Canadians (Government of Canada, 2021).

When WITB first launched in 2007, the maximum annual amount received by tax filers with and without children was \$1,000 and \$500, respectively. In 2009, the benefit roughly doubled in size to \$1,680 and \$925 for those with and without children, and, since then, has been indexed to inflation. In 2018, the maximum annual WITB amount was \$1,922 for couples/parents and \$1,059 for unattached persons. While this amount is small relative to other government transfers such as the Canada Child Benefit (CCB), it is not trivial. For single individuals without dependants, WITB could represent approximately 8.8% to 14.6% of their total wage/self-employment earnings, depending on the province, while for couples and tax filers with children, it could represent 11.6% to 18.0% of their total wage/self-employment earnings.⁴ WITB is also large relative to costs of working: in 2018, for tax filers

¹ In 2019, WITB underwent a major reform by the Liberal government and was renamed the Canada Workers Benefit (CWB). This paper focuses on the initial WITB program introduced in 2007, with payments ending in 2019. CWB payments for the reformed program began in 2020 (based on earnings and net income from 2019) during the COVID-19 pandemic.

² WITB payments (based on earnings and net income from 2007) began in 2008 (Department of Finance Canada, 2007).

³ All dollar amounts are reported in Canadian dollars (CDN) unless otherwise indicated.

⁴ These values are calculated by dividing the maximum WITB amount by the plateau earnings range. For unattached, childless tax filers in Manitoba, New Brunswick, Newfoundland, Nova Scotia, Prince Edward Island, Ontario, Saskatchewan, the Yukon and the Northwest Territories, the calculations are:

with children, the maximum WITB amount represented roughly 22% of average child care expenditures across Canada (Financial Accountability Office of Ontario, 2019) and 83% of annual commuting costs in Toronto (Scott and Nanowski, 2018). Additional policy details can be found in [Appendix C](#).

3.1 Low Knowledge of WITB

Although receipt of WITB is conditional on employment, there is compelling institutional evidence that low-income Canadians lack knowledge, not only of the marginal incentive structure of WITB, but also of the existence of the program itself, *even when the benefit is received*. Indeed, the consensus amongst most tax policy experts in Canada is that low-income tax filers are unlikely to know about WITB, in part, due to the program’s positioning within Canada’s complex tax and transfer system. As stated by Battle and Mendelson (2005), “among the current jumble of provincial and federal tax credits and deductions, you would need a degree in accounting to understand the relationship between your earnings and the amount of Working Income Tax Benefit you got...it cannot work as an incentive to keep working if it is incomprehensible” (p. 1-2). Similarly, Milligan (2011) notes that:

When the Working Income Tax Benefit was added to this mix in 2007, many policy analysts cheered the idea of a benefit that provided a work incentive like the US Earned Income Tax Credit. To deliver on this promise, however, time-stressed working parents would have to actually understand how this new benefit fit into the context of the other nine benefits they may receive, in addition to the income tax system, not to mention any payroll deductions for employer-provided benefits that would also affect their take-home pay. It is possible to be skeptical about the ability of even the most capable and attentive policy expert to parse

\$1,059/\$7,236 for the beginning of the plateau and \$1,059/\$12,016 for the end of the plateau. For couples and parents residing in the aforementioned provinces the calculations are: \$1,922/\$10,688 for the beginning of the plateau and \$1,922/\$16,593 for the end of the plateau.

this web of benefits to see even the most carefully-designed incentives trapped within” (p. 7).

In a separate comment regarding WITB, Milligan (2014) also states that “...it is hard to believe that a complex, narrowly targeted tax credit like the Working Income Tax Benefit, when added to the stew of other programs, and delivered once a year as a footnote to the tax forms, would readily be incorporated into the decisions of many families. However precisely designed the incentives may be, they are obscured from view” (p. 58). In other words, because WITB is received as part of an individual’s annual lump-sum refund at tax time in the year following the determination of WITB, the salience of the program’s marginal incentive structure is likely even lower than knowledge of the program’s existence.

Low program knowledge is also exemplified by incomplete take-up of WITB among eligible tax filers. As previously noted, eligible individuals are not automatically enrolled to receive WITB. Instead, tax filers are required to apply for WITB each tax year by completing a supplemental tax form called *Schedule 6* (see [Figure A.1](#)). Due to the lack of auto-enrollment, since the introduction of the program in 2007 a sizeable proportion of eligible tax filers fail to receive WITB each tax year. In 2012, for example, the Department of Finance Canada estimated that only 85% of eligible tax filers received WITB (Department of Finance Canada, 2016).⁵ Compared to other Canadian programs, this coverage rate is low. For instance, a report by Employment and Social Development Canada (2011) states that, in 2009, all eligible tax filing families received the Universal Child Care Benefit (UCCB).⁶

A 2016 government nudge experiment provides more direct evidence that incomplete WITB take-up is, in part, due to low knowledge about the program’s existence. The purpose of the experiment was to test whether increasing access to information about WITB would

⁵ Given that non-tax filers are not considered in this estimate, the take-up rate may be considerably lower (Beeby, 2017). This figure is slightly higher than the take-up rate of the EITC in the US, which is about 80% (Internal Revenue Agency, 2024).

⁶ Schirle (2015) notes that the complete take-up of the UCCB is because, “upon birth of a child, parents are provided with relevant forms and information by hospital staff” (p. 441).

improve take-up among eligible paper filers. The intervention involved inserting informational pamphlets about WITB in all T1 general federal tax forms distributed in the small maritime province of New Brunswick (see [Figure A.3](#) in [Appendix A](#)). Residents in the rest of Canada who did not receive the informational inserts functioned as the control group. Note that the informational insert did not teach recipients about the marginal incentives of WITB; rather, it simply brought attention to the existence of the program. Internal government documents indicate that the informational insert increased WITB take-up among eligible paper filers in New Brunswick by 20 percent (Canada Revenue Agency, 2017a). The results of the pilot therefore suggest that incomplete take-up of WITB is at least partially due to low knowledge about the existence of the program, rather than, for example, a lack of motivation or time constraints that prevent the completion of *Schedule 6*.

The final piece of institutional evidence indicating low knowledge of WITB is the 2016 Report on Federal Tax Expenditures by Finance Canada, which states that, in 2012, individuals who filed paper tax returns had a significantly lower WITB take-up rate (49%) than individuals who filed electronically (86%) or through a professional tax agent (94%). The report concludes that this is likely due to a lack of knowledge of WITB:

Paper filing creates a barrier to claiming the WITB. Individuals filing through the use of tax software or with the assistance of an agent are typically prompted to claim the WITB if other information they provide suggests that they would be eligible for the credit, and the necessary calculations are performed on their behalf. Lack of awareness or understanding of the WITB would not generally be a barrier to individuals filing through these means. By contrast, individuals filing on paper must be aware of, and willing and able to complete, the necessary schedule to their tax return (Department of Finance Canada, 2016).

The statement by the Department of Finance Canada (2016) suggests that receipt of WITB does not imply program knowledge, but rather, that using a professional tax agent or receiving prompts through tax software may increase the likelihood of benefit receipt.

The tax filing statistics also suggest that, even when someone receives a prompt to apply for WITB, they may not realize why they are eligible or understand the eligibility criteria.⁷ In other words, tax filers do not necessarily even have to know about WITB at tax time in order to apply for and receive it. Moreover, consistent with research showing that even tax accountants may not fully understand the intricacies of government programs that affect their clients (Chetty and Saez, 2013), the above statistics show that WITB receipt is not universal among those who file through a tax agent.

The variation in WITB receipt both across and within tax filing method suggests that tax filers receive WITB in the year following the eligibility determination due to idiosyncrasies associated with different tax filing methods. For instance, tax filers may receive WITB because software or a tax accountant completed the application on their behalf. Alternatively, individuals filing online may receive WITB because they check a box or select yes on a drop-down menu in response to a prompt from the tax software. In both cases, knowledge of WITB and/or its incentive structure is not a prerequisite for receipt.

To corroborate the institutional evidence of low program knowledge, after describing our identification and estimation strategy, we provide empirical evidence of low WITB salience using our administrative tax data in [Subsection 6.1](#).

4 Identification and Estimation Strategy

To identify the labour supply effects of WITB, we begin by estimating a model that exploits between-individual variation in WITB receipt by comparing eligible receivers to eligible non-receivers. Specifically, we estimate:

$$Y_{i,t+1} = \alpha + \beta_1 WITBReceipt_{i,t+1} + \beta_2 Eligible_{i,t} + \beta_3 X_{i,t} + \delta_t + \epsilon_{i,t} \quad (1)$$

⁷ An example of a prompt provided by an electronic tax filing system is displayed in [Figure A.2](#) in [Appendix A](#).

where i indexes individuals and t indexes year. The outcome variable $Y_{i,t+1}$ captures labour supply for individual i in the year WITB is received ($t + 1$), which is normally in March or April once taxes are filed for the prior year (t) when WITB eligibility is determined (see [Figure 2](#)).⁸ At the extensive margin, $Y_{i,t+1}$ is measured by an indicator that is equal to one if individual i received T4 income in year t . At the intensive margin, $Y_{i,t+1}$ is measured by a continuous variable equal to the sum of individual i 's T4 employment income and self-employment income. $WITBReceipt_{i,t+1}$ indicates that individual i received WITB in year $t + 1$, while $Eligible_{i,t}$ indicates that individual i was eligible for WITB in the prior tax year t . The model also includes year fixed effects (δ_t) and province, age, presence of an eligible child, disability, gender and welfare receipt fixed effects ($X_{i,t}$).

The take-up gap among eligible tax filers described above provides the between-individual variation in WITB receipt that we use to estimate [Equation 1](#). As such, β_1 in [Equation 1](#) represents the causal effect of receiving WITB on the labour supply of low-wage workers if the propensity to apply for (and receive) WITB is independent of potential labour supply outcomes (conditional on eligibility in year t and the covariates included in $X_{i,t}$). Importantly, it is the lack of WITB knowledge outlined in [Subsection 3.1](#), and variation in the likelihood of receipt both within and across tax filing methods, that generates the conditions under which WITB receipt can be considered “as good as random.”

A key concern with the estimation strategy modelled by [Equation 1](#), however, is that, since receipt of WITB requires an application, individuals who apply for and receive WITB may be different than those who do not apply for WITB. In other words, there may be selection bias if unobserved covariates influence both WITB receipt and labour supply. There is a possibility, for instance, that those who file taxes through an agent may possess char-

⁸ Note that, in our dataset, we observe the amount of WITB received by tax filers in the tax year the benefit was claimed, not in the year the claimed amount is actually received. In other words, the claimed WITB amount in year t is distinct from the receipt of WITB in year $t + 1$. As such, in our actual empirical estimation, we only lead the dependent variable. We include the $t + 1$ subscript on $WITBReceipt$ in equations 1 through 3 to make it clear that we are estimating the effect of WITB in the year the benefit is received rather than the year the benefit is determined.

acteristics that make them less (or more) likely to work than those who file using online software. Or, alternatively, that those who file taxes online and miss prompts provided by the software are different than those who file online and do not miss such prompts. There are potentially other variables unrelated to tax filing method, that are correlated with WITB receipt and labour supply that may also bias β_1 in Equation 1. To address concerns about selection and omitted variable bias, we relax the causal assumptions implied in Equation 1 by implementing several additional estimation approaches and robustness checks.

Specifically, we exploit the longitudinal nature of our data (described in Section 5) and variation in WITB receipt within individuals over time (see Subsection 6.1) to estimate the effect of WITB on labour supply using: 1) an individual fixed effects (FE) model; and 2) a lagged dependent variable (LDV) model. As summarized in Angrist and Pischke (2009), given their alternative identifying assumptions, “fixed effects and lagged dependent variables estimates [have] a useful bracketing property...think of fixed effects and lagged dependent variables as bounding the causal effect you are after” (Angrist & Pischke, 2009, p. 246), while also providing information about the nature of the time-varying selection bias. In our case, the parameter estimates obtained from the FE and LDV models bracket the causal effect of WITB on labour supply. Practically, the insights of Angrist and Pischke (2009) imply that, because the FE model controls for all time-invariant confounding variables, if time-varying selection is zero, the FE and LDV models will provide similar results.⁹

⁹ Angrist and Pischke (2009) argue that in FE and LDV models, time-varying bias impacts the estimated coefficient in opposing directions. As such, if time-varying bias is negative (i.e., selection into treatment is negative), a positive (negative) treatment effect will be: 1) underestimated (overestimated) if a LDV model is used when the FE model is correct; and 2) overestimated (underestimated) if a FE model is used and a LDV model is correct. Alternatively, if time-varying bias is positive (i.e., selection into treatment is positive), a positive (negative) treatment effect will be: 1) overestimated (underestimated) if a LDV model is used when the FE model is correct; and 2) underestimated (overestimated) if a FE model is used and a LDV model is correct. The decision to adopt a FE or LDV model is therefore a matter of whether time-varying selection into treatment is positive or negative. In our context, there might be positive, negative or no time-varying selection into WITB receipt. Time-varying sources of bias might include moving between provinces or cities, decisions to upgrade skills or increase education, lay-offs, having a child, etc. In our context, assuming a negative treatment effect, if the time-varying selection into WITB receipt is negative (positive) the FE model would be biased upwards (downwards). In contrast, if the time-varying selection into WITB receipt is negative (positive), the estimate from a LDV model would be biased downwards (upwards).

The FE model takes the form:

$$Y_{i,t+1} = \alpha + \beta_1 WITBReceipt_{i,t+1} + \beta_2 Eligible_{i,t} + \beta_3 X_{i,t} + \delta_t + \alpha_i + \epsilon_{i,t} \quad (2)$$

where all the parameters are identical to those in [Equation 1](#) except for α_i , which represents the individual fixed effect. By including individual fixed effects, conditional on eligibility, this model identifies the effect of WITB on labour supply using within-individual variation in WITB receipt over time, while controlling for all potential individual confounds that are time invariant (observed and unobserved) and influence selection into WITB receipt. In other words, if there are no time-varying factors that influence the decision to apply for WITB, β_1 in [Equation 2](#) identifies the causal effect of WITB on labour supply.

However, if selection bias is time-varying, the estimate of β_1 in [Equation 2](#) will be biased. As such, we also estimate a LDV that takes the following form:

$$Y_{i,t+1} = \alpha + \beta_1 WITBReceipt_{i,t+1} + \beta_2 Eligible_{i,t} + \beta_3 X_{i,t} + \beta_4 Y_{i,t} + \delta_t + \epsilon_{i,t} \quad (3)$$

where all the parameters are identical to those in [Equation 1](#) with the exception of $Y_{i,t}$, which is a regressor for the dependent variable lagged by one year (e.g., the previous year’s labour supply or labour supply in the tax year in which WITB eligibility was determined). As noted by Angrist and Pischke (2009), if the estimates of β_1 in [Equation 2](#) and [Equation 3](#) are relatively close, then the FE and LDV estimates provide useful information about the causal effect of WITB on labour supply, as well as the nature of the time-varying selection bias. For the dichotomous measure of extensive labour supply, Equations 1 through 3 are estimated using a linear probability model, while OLS is used to estimate the intensive margin measure of labour supply. All models are estimated using population weights and standard errors are cluster-adjusted at the individual level.

4.1 Timing of WITB Eligibility and Amount Determination Versus Receipt

As illustrated in [Figure 2](#), because WITB is paid to tax filers as part of their annual tax refund, the timing of the determination of benefit eligibility and amount is distinct from actual receipt of WITB. In essence, one must consider the program to be administered across two time periods, year t and year $t + 1$. Individuals work in year t . Depending on the amount of employment income earned in year t , some tax filers will be eligible for WITB and, among those who are, total employment earnings will determine their WITB entitlement. Following the end of year t , tax filers submit taxes for year t income, normally in February or March of year $t + 1$. Assuming that eligible tax filers complete the Schedule 6 tax form as part of their tax return, receipt of the WITB transfer, based on employment in year t , normally occurs in March/April of year $t + 1$. In other words, WITB eligibility based on labour supply and employment income in year t leads to receipt of the WITB income transfer as part of the annual tax refund in year $t + 1$.

Given the differential timing of WITB benefit determination and subsequent receipt, it is necessary to clarify our measurement and timing of the labour supply outcome. If WITB was perceived as a work incentive program, then eligible tax filers would optimize/maximize their benefit by adjusting their labour supply in year t when the WITB eligibility and amount are determined. The relevant question in this case would be whether and how workers respond to the incentive effects of WITB and the appropriate empirical modeling would be to examine labour supply in the same year that WITB eligibility and entitled amount are determined. This is the approach used in the US literature examining the EITC.

As previously outlined, however, in the case of WITB, there is substantial institutional evidence that tax filers lack knowledge of the program. The lack of knowledge about the presence and structure of WITB means that WITB is not operating as a work incentive, but rather, an unconditional income transfer received at tax time. That is, due to low program salience, rather than responding to the work incentive in year t , recipients instead respond

to the actual receipt of the WITB income transfer in year $t + 1$. Importantly, this means that receipt of WITB is not mechanically related to our labour supply outcome, as we model labour supply in the year after WITB eligibility is determined when a tax filer may or may not remain employed.

There are two important implications of our empirical design and estimation strategy regarding the timing of WITB. First, if recipients understand the marginal incentives, and WITB does incentivize work, the timing of variables in our empirical estimation is incorrect. As in the existing EITC literature, the appropriate approach would instead be to estimate the labour supply effects of WITB for the year in which eligibility is determined. This is because if individuals have knowledge of WITB's existence and marginal incentives, tax filers would respond behaviourally by maximizing the amount of WITB received and increasing participation during the tax year in which WITB eligibility is computed. Put simply, if we wish to estimate the income effect of WITB as an unconditional government income transfer on labour supply, our design is only appropriate under the key assumption of low WITB program salience and low knowledge of its marginal incentive structure and employment conditionality. To provide further confidence that our interpretation is correct, we also undertake a robustness check to see if our results hold for a subset of the sample of tax filers for whom we can be most confident do not know about WITB: those who are eligible two years in a row and receive WITB in the first year, but not the second year.

Second, the timing of our labour supply outcomes and WITB receipt are important for understanding and interpreting the results. While individuals need not be employed in the year that taxes are filed and WITB is received ($t + 1$), all individuals must have been working in the prior tax year (t) to be eligible for WITB (and to eventually receive it in $t + 1$). Our study thus estimates the labour supply impact of an unconditional income transfer on a group of low-income individuals who were *already employed* prior to receipt of WITB, and our results cannot be generalized to unconditional income transfer programs distributed to unemployed workers.

5 Data: The Longitudinal Administrative Databank

We use the confidential microdata files of the Longitudinal Administrative Databank (LAD) for the years 2007-2019.¹⁰ The LAD is an administrative dataset comprised of 20% of the population of tax filers in Canada. Individuals are selected for participation in the LAD through random sampling and once selected, remain in the sample until they stop filing taxes (usually due to death). Tax filers are linked longitudinally by their Social Insurance Number (SIN) on an annual basis, and the sample is augmented each year to ensure it always contains approximately 20% of tax filers in Canada.

We restrict our sample to single tax filers with earnings/net income between \$0 and \$50,000 between 2007 and 2019 since the intended beneficiaries of WITB are low-income workers. Our analysis focuses on single individuals because WITB eligibility criteria and receipt are considerably more complex for individuals who are married or in a common-law relationship, as only one adult in such households can claim WITB in their tax return. We also exclude deceased individuals, full-time students which we measure using receipt of education-related tax deductions (ineligible for WITB), non-residents (ineligible for WITB), individuals under 25 years of age, individuals older than 65 years of age, individuals who were ever self-employed, and individuals who were never eligible to receive WITB over our time frame. We also generate the following sub-samples to determine whether there are heterogeneous effects of the WITB transfer on labour supply across demographic groups. These include: i) social assistance recipients; ii) social assistance non-recipients; iii) women with children under 10; iv) men with children under 10; v) women with older or no children; vi) men with older or no children.

Labour supply outcomes in the LAD are measured annually. For estimates at the extensive margin, we generate an employment indicator equal to one if the individual has positive T4 earnings in tax year $t + 1$. Because the LAD does not include measures of hours

¹⁰ The LAD was accessed through Statistics Canada's Research Data Centre (RDC) program.

worked, we proxy for an intensive measure of labour supply using a continuous variable equal to the sum of T4 employment income and self-employment income. The LAD does not provide information on education. As such, we are not able to examine whether there are heterogeneous differences based on educational attainment nor control for it in our specifications. To address concerns about the inability to observe education, we restrict the sample to tax filers aged 25-64, thereby reducing the likelihood that our estimates reflect changes in educational attainment within individuals over time. Moreover, our bracketing approach using the FE and LDV models should provide some confidence that these unobserved (potentially time-varying) confounds are not biasing our results.

5.1 Measurement of WITB Eligibility

Although the LAD reports the exact amount of WITB received by tax filers who claimed it, eligibility is not included in the administrative tax data. In line with our identification strategy, we therefore construct a measure of WITB eligibility by creating an indicator that is equal to one if an individual meets the eligibility criteria outlined in *Schedule 6* of the T1 federal tax return in a given tax year and province. A more detailed description of how we construct the WITB eligibility variable is outlined in [Appendix B](#). In short, because the LAD contains information on different types of income (including employment and social assistance), gender, age, marital status, disability tax credit claimants, education deduction claimants, presence of a child in the household, and province of residence, we are able to quite precisely determine WITB eligibility, as well as calculate the predicted amount that would have been received by every eligible tax filer had they applied to receive the benefit in every year (whether they actually received it or not).¹¹

Given that the LAD contains the actual WITB amount received for those who applied

¹¹ We might inaccurately identify WITB eligibility in cases where incarcerated individuals file a tax return, and where individuals have tax-exempt working income earned on a reserve and/or have received/claimed an emergency volunteer allowance at some point during the tax year. This constitutes a very small percentage of tax filers.

for and received WITB, we can validate the accuracy of our WITB eligibility variable by comparing it to data from the tax forms of filers who we know for a fact received WITB. We first check the known error rate in our data; that is, the proportion of individuals we calculate as ineligible for WITB but who received the benefit (as per their administrative tax information). This error rate is tiny (less than 0.01%).

We also check the accuracy of WITB eligibility coding by comparing our computed WITB take-up rate to that calculated by Finance Canada (Department of Finance Canada, 2016). As depicted in [Figure A.4](#) in [Appendix A](#), for a sample of tax filers who earn employment income either through formal or self-employment, in 2012 we compute a take-up rate of 82% and 81% for eligible tax filers with and without dependants, respectively. These estimates are quite similar to the 85% take-up rate reported for 2012 in the Department of Finance Canada (2016) report, providing further confidence in the accuracy of our constructed eligibility variable. As noted in [Appendix B](#), this small discrepancy is likely due to minor sources of income that are used by the CRA to calculate WITB but are not observable in our data. Additional accuracy tests of our WITB eligibility and amount variables are available in [Appendix B](#).

5.2 Descriptive Statistics

Descriptive statistics are reported in [Table 2](#). Overall, the full sample of tax filers includes 2,387,700 individual-year observations, of which, 926,200 were eligible for WITB between 2007 and 2019. Out of all WITB eligible individual-year observations, 711,400 received the transfer. Note that the employment rate measured using all income included in the CRA’s definition of “earnings” for the purpose of claiming WITB is 100% in the WITB-eligibility subgroups by definition: in order to be eligible for WITB, individuals had to have worked (recall that our estimation examines the impact of WITB receipt on labour supply in the subsequent tax year, where individuals may or may not be working, thereby generating variation in the dependent variable). We also include the employment rate measured using

T4 income.¹²

Earnings, after-tax income and welfare rates are roughly similar in the full sample and the three different eligibility groups. There are, however, some notable differences in poverty and employment. The proportion of tax filers in poverty in the full sample (52%) is much lower than for the subgroups of tax filers who were eligible for WITB (around 70%). The employment rate measured by T4 income in the full sample (78%) is also considerably lower than that in the remaining samples (around 95%). This is due to the fact that our full sample includes tax filers with a net income up to \$50,000 who are less likely to be eligible for WITB due to the benefit phase-out rate.

The demographic characteristics reported in [Table 2](#) are similar across the four sub-samples. Roughly 60% of each sample is comprised of women, consistent with research demonstrating that women are more likely to experience lower incomes than men. In terms of the presence of children, 40% have an eligible dependant (i.e., a child aged 0 to 18), while only 20% have a child under the age of 10. The average age of tax filers across the four sub-samples is approximately 40 and very few are disabled (roughly 2%).

[Figure 5](#) presents the average WITB amount received for the sample of tax filers who received WITB by year and dependant status. When WITB was introduced in 2007, the average WITB amount received was \$560 and \$360 for single wage earners with and without dependents, respectively. There was a large increase in the average WITB amount received by claimants in 2009, reflecting an increase in the generosity of the program. Following this, average WITB amounts remained relatively flat at roughly \$880 and \$620 for those with and without children until in 2019, when WITB was indexed to inflation.

¹² Tax filers with positive self-employment income are excluded from this measure.

6 Results

6.1 Low Knowledge of WITB in the LAD

In this section, we supplement the qualitative institutional details provided in [Subsection 3.1](#) on low knowledge of WITB in Canada with an empirical exploration of WITB knowledge among low-income tax filers in our data. We begin by estimating several specifications that seek to test the extent to which tax filers have knowledge about the marginal incentives of WITB and its employment conditionality. First, we examine whether WITB receipt in year t predicts whether an eligible tax filer will receive the maximum WITB amount in the following tax year ($t + 1$).¹³ The logic of this test is that if individuals know about the structure and policy details of WITB, and are eligible for the program, they will seek to maximize the total amount they receive in the following year. We find that WITB receipt increases the likelihood of maximizing WITB in the following year by 0.3 percentage points ($p < 0.01$), which is a very small correlation.

Second, using similar logic, we examine whether the receipt of WITB in year t increases the amount of WITB received the following year among tax filers who are eligible for WITB.¹⁴ In this specification, we find that WITB receipt increases the amount of WITB received in the following year by \$9.63 ($p < 0.01$), which is a marginal increase.

There are two possible interpretations of these correlations. Tax filers either do not

¹³ That is, we estimate the following specification: $MaxWITB_{i,t+1} = \beta_1 WITBReceipt_{i,t} + \beta_2 X_{i,t} + \alpha_i + \delta_t + \epsilon_{i,t}$ where $MaxWITB_{i,t+1}$ is an indicator equal to one if the tax filer receives the maximum amount of WITB in the following tax year ($t + 1$) and $WITBReceipt_{i,t}$ is an indicator equal to one if the tax filer receives WITB in year t . The sample for this estimation is restricted to tax filers who are eligible for WITB ($n = 463,370$). The model is estimated using LAD population weights, person, year, province and age fixed effects and controls for presence of an eligible child, disability, gender and social assistance receipt. The individual-clustered standard error for β_1 is 0.001.

¹⁴ That is, we estimate the following specification: $WITBAmount_{i,t+1} = \beta_1 WITBReceipt_{i,t} + \beta_2 X_{i,t} + \alpha_i + \delta_t + \epsilon_{i,t}$ where $WITBAmount_{i,t+1}$ is a continuous variable equal to the actual amount of WITB received in the following tax year ($t + 1$) and $WITBReceipt_{i,t}$ is an indicator equal to one if the tax filer receives WITB in year t . The sample for this estimation is restricted to tax filers who are eligible for WITB ($n = 463,370$). The model is estimated using LAD population weights, person, year, province and age fixed effects and controls for presence of an eligible child, disability, gender and social assistance receipt. The individual-clustered standard error for β_1 is 2.67.

have knowledge about the marginal incentives of WITB or are not able to manipulate their earnings to maximize WITB. In either case, we believe that these analyses provide evidence that tax filers: i) are not overly responsive to the incentives intended by policy makers in the design of WITB and ii) coupled with the institutional details we outline in [Section 3](#), do not have full knowledge of the program’s marginal incentive structure.

Next, we measure the prevalence of individuals who were eligible for WITB but failed to receive it in a given tax year, since an incomplete take-up rate would provide evidence that tax filers lack knowledge of the program’s existence. As previously noted, government reports indicate that not all tax filers who are eligible for WITB receive it (Finance Canada, 2016). As depicted in [Figure 6](#), based on our sample of single wage earners, the WITB take-up rate was lowest in the first year that WITB was introduced (68% in 2007) and has remained between 76-78% in most years since 2010.¹⁵ These statistics reveal that while take-up increased substantially between the initial 2007 introduction of WITB and 2010 (around 10 percentage points), there has been no further progress in terms of increasing the take-up rate of WITB over the past 10 years.

To further test WITB knowledge, we also examine whether receipt of WITB in the previous tax year ($t-1$) increases the likelihood of receiving WITB in the subsequent tax year (t) within a sample of eligible tax filers.¹⁶ We find that receiving WITB last year increases the probability of receiving WITB in the following year by 0.4 percentage points ($p < 0.01$). We would expect a much larger correlation if tax filers had knowledge of the existence of the program.

¹⁵ Note that our estimated take-up rate is closer to that reported in Department of Finance Canada (2016) when we include self-employed workers in the sample (as summarized in [Subsection 3.1](#)). See [Figure A.4](#) in [Appendix A](#).

¹⁶ That is, we estimate the following specification: $WITBReceipt_{i,t} = \beta_1 WITBReceipt_{i,t-1} + \beta_2 X_{i,t} + \alpha_i + \delta_t + \epsilon_{i,t}$ where $WITBReceipt_{i,t}$ is an indicator equal to one if the tax filer receives WITB in year t and $WITBReceipt_{i,t-1}$ is an indicator equal to one if the tax filer receives WITB in year $t-1$. The sample for this estimation is restricted to tax filers who are eligible for WITB ($n = 450,200$). The model is estimated using LAD population weights, person, year, province and age fixed effects and controls for presence of an eligible child, disability, gender and social assistance receipt. The individual-clustered standard error for β_1 is 0.001.

Finally, we investigate whether there is evidence of inconsistent WITB take-up within eligible individuals over time. Our analyses reveal that, among individuals who are eligible for WITB two years in a row, the percentage of people who go from: 1) not receiving WITB to receiving WITB is 8 percent; and 2) receiving WITB to not receiving WITB is 6 percent. While the first group would arguably have gained knowledge or learned about WITB over time, the latter group is highly likely to lack knowledge of WITB, otherwise they would have continued to apply for and receive the transfer each year for which they were eligible. Additionally, the percentage of eligible individuals who do not receive WITB in either year (back-to-back) is about 10 percent. This variation and inconsistency in WITB receipt within eligible tax filers over time provides additional evidence that the program is neither salient, nor well-understood amongst those who are eligible.

Our empirical analyses complement the position of government officials, academic economists, and policy experts in Canada that the marginal incentives of the WITB program are not salient to workers, even among those who have received the benefit. One potential alternative explanation for these patterns is that, because the WITB amount is low in absolute terms, it is not worth workers' efforts to apply for the benefit (Woolley, 2012). We do not find this argument compelling since the amount is relatively substantial for most low-income workers as a proportion of their earnings. Moreover, the most likely way that an individual would know their entitled WITB amount would be to complete the requisite tax form, and having undertaken the work to complete the form, it does not seem logical that tax filers would not then claim the benefit. Nonetheless, to empirically assess this claim, we explore whether the likelihood of WITB receipt increases as the expected benefit amount increases – i.e., whether, conditional on eligibility, our calculated WITB amount for all eligible workers in our sample predicts WITB receipt.¹⁷ We find a very small correlation: for every \$100

¹⁷ That is, we estimate the following specification: $WITBReceipt_{i,t} = \beta_1 WITBAmount_{i,t} + \beta_2 X_{i,t} + \alpha_i + \delta_t + \epsilon_{i,t}$ where $WITBReceipt_{i,t}$ is an indicator equal to one if the tax filer receives WITB in year t and $WITBAmount_{i,t}$ is a continuous variable equal to the predicted amount of WITB received by the tax filer in year t (where WITB is measured in \$100s). The sample for this estimation is restricted to tax filers who are eligible for WITB ($n = 675,400$). The model is estimated using LAD population weights,

increase in the predicted WITB amount, the likelihood that a worker receives the benefit goes up by less than 1 percentage point ($p < 0.01$). In other words, those who were eligible for a larger benefit amount were not much more likely to apply for and receive WITB than those who were eligible for a lower benefit amount.

Altogether, the institutional context detailed in [Subsection 3.1](#), the low-take up rates among eligible tax filers and the inconsistency in take-up within eligible individuals over time suggests that low-income tax filers lack in-depth knowledge and general awareness of WITB. As argued above, the implication of this policy in-cognizance is that WITB should be conceived of as an unconditional income transfer rather than as a work incentive program.

6.2 The Effect of WITB on Employment and Earnings

Columns 1 and 4 of [Table 3](#) present the between-individual results estimated using [Equation 1](#) separately for social assistance recipients and social assistance non-recipients. The results in column 1 indicate that, controlling for eligibility in year t , receipt of WITB in year $t + 1$ increased the likelihood of employment in year $t + 1$ by 7.7 percentage points for social assistance recipients (panel A) and 5.4 percentage points for tax filers who did not receive social assistance (panel B). In terms of the intensive margin of labour supply, column 4 of [Table 3](#) suggests that WITB receipt in year $t + 1$ increased employment earnings in year $t + 1$ by CAD2365.60 for social assistance recipients (panel A) and reduced employment earnings in year $t + 1$ by CAD1134.68 for social assistance non-recipients (panel B). The results for social assistance recipients suggest that the additional income provided by WITB increased attachment to the labour market and potentially helped them work more hours (proxied by the positive earnings coefficient). In contrast, the positive extensive margin effect and negative intensive margin effect for social assistance non-recipients is more consistent with the predictions of the labour-leisure choice model with fixed costs described in [Section 2](#),

person, year, province and age fixed effects and controls for presence of an eligible child, disability, gender and social assistance receipt. The individual-clustered standard error for β_1 is 0.001.

suggesting the additional WITB income helped individuals optimize their hours of work.

In [Table 3](#), we present the FE results estimated using [Equation 2](#) (columns 2 and 5) and the LDV results estimated using [Equation 3](#) (columns 3 and 6), which help to address omitted variable and selection bias concerns associated with the necessity to apply for WITB in the between-individual results. While the coefficients on WITB receipt for these results are slightly smaller than the between-individual results, providing some evidence of selection, the extensive margin results remain positive and statistically significant at the 1% level. In addition, the sign and statistical significance of the FE and LDV intensive margin results also remain similar to the OLS results. The FE results in column 2 of [Table 3](#) indicate that WITB receipt increased the likelihood of remaining employed in year $t + 1$ by 3.6 percentage points for social assistance recipients (panel A) and 2.3 percentage points for tax filers who did not receive social assistance (panel B). Similar to the between-individual results, the fixed effect estimates also indicate that receipt of WITB increased employment earnings by CAD1528.76 for social assistance recipients, and reduced employment earnings by CAD1227.38 for non-recipients.

The results for women and men with children under the age of 10 are presented separately in panels A and B of [Table 4](#), respectively, while the results for men and women with older or no children under the age of 10 are presented in panels A and B of [Table 5](#), respectively. Recall that because our analysis focuses on single tax filers, the sample size of men with young children is small given the low prevalence of single fathers in the data. In terms of the extensive margin of labour supply, the results in [Table 4](#) and [Table 5](#) indicate that WITB receipt increased the likelihood of continued employment in each of these demographic sub-groups. Panel A of [Table 4](#) suggests that receipt of WITB had a particularly large impact on the labour supply of women with young children: columns 2 and 3 indicate that WITB receipt increased the probability of working in the following year by 3.3 percentage points in the FE model and 5.9 percentage points in the LDV model.

While the extensive margin results consistently show a positive effect of WITB on

employment in all of gender by child sub-samples and specifications, the intensive margin results are less informative. The coefficients on the earnings outcome in the LDV models are all statistically significant and negative; however, the FE results are positive and significant only in the case of women with children. Given that the FE earnings results were negative for social assistance non-recipients and positive for social assistance recipients for the main results presented in [Table 3](#), it is probable that the different FE and LDV results for employment earnings for the subgroup analysis presented in [Table 4](#) and [Table 5](#) reflect the fact that these results contain both recipients and non-recipients of social assistance.

Overall, because the extensive margin estimates from the LDV models are slightly larger than those from the FE models, this is indicative of some positive selection into WITB receipt; that is, those with a higher propensity to remain in the labour market are more likely to claim and receive WITB. However, apart from the earnings estimates for tax filers with and without children, the estimates across the LDV and FE models are identical in sign and very close in magnitude for all demographic sub-groups, and the estimates across the LDV and FE models are very similar for many of the demographic groups, including social assistance non-recipients and men without young children. If, according to Angrist and Pischke (2009), we can “think of fixed effects and lagged dependent variables as bounding the causal effect” (p. 246), the true effect of WITB on labour supply lies somewhere in between the FE and LDV estimates presented in Tables 3 through 5. In any case, the fact that the estimates of these two alternative identifying equations are similar suggests that our estimates are not overly subject to selection bias/unobservable confounds.

6.3 Robustness Check: Low Knowledge Tax Filers

It is possible that our results could be explained by tax filers learning about the employment conditionality of WITB at tax time when they receive their refund. As displayed in [Figure A.5](#), WITB is reported as a line in the Notice of Assessment that tax filers receive from the CRA after once their taxes have been processed. Furthermore, Google Trends data

reveals a considerable spike in searches for the phrase, “Working Income Tax Benefit,” in tax filing season each year (i.e., April), suggesting that tax filers who received WITB may be learning about the program on the Internet (see [Figure A.6](#)). Upon learning about the employment conditionality of the WITB, tax filers may therefore remain employed in the subsequent year in order to continue to receive the transfer. If this were the case, it would be inappropriate to treat WITB as an unconditional income transfer. Rather, it would appear that the program had the intended employment incentive effect.

To address this concern, we perform a robustness check to rule out the possibility that the results in [Table 3](#) are driven by tax filers who received WITB and learned about the program. To do so, we estimate equations 1 through 3 using the sample of eligible tax filers who receive WITB in one year but fail to receive WITB in a subsequent year despite remaining eligible. More specifically, we generate an indicator variable equal to one if the individual received WITB in year t but not in year $t + 1$ despite eligibility in $t + 1$. Each individual with a positive indicator is then assigned to the low knowledge sample every year they are present in the tax data.

The results of these estimations for the sample of low knowledge tax filers are presented in [Table 6](#) by social assistance receipt. For both social assistance recipients and social assistance non-recipients, the magnitude of the coefficients obtained using the low knowledge sample are substantially larger than those estimated using all tax filers. For example, columns (3) and (4) indicate that WITB receipt increased the likelihood of remaining employed among social assistance non-recipients (panel B) by 4.7 percentage points in the FE model and 5.4 percentage points in the LDV model (compared to 2.3 percentage points and 2.8 percentage points for the full sample). The coefficients are particularly large for low knowledge social assistance recipients (panel A), suggesting that receipt of the transfer may have provided considerable assistance in overcoming the welfare wall.

7 Discussion and Concluding Remarks

In this paper, we explore the effect of a government income transfer program on the labour supply of single low-income workers in Canada. Institutional details surrounding WITB, complemented by our own empirical evidence using administrative tax data, suggest that low-income workers are not well-aware of the program's existence, much less its marginal incentive structure. We exploit this lack of knowledge to overcome challenges associated with evaluating the effect of government income transfer programs that target low-income workers. More specifically, low salience of WITB enables us to treat benefit receipt as an unanticipated lump-sum income transfer rather than as a work incentive. Additionally, quirks associated with different tax filing methods enable us to treat assignment into WITB receipt as unconfounded with potential labour supply outcomes, conditional on eligibility, though we also relax these assumptions in subsequent analyses using FE and LDV models.

Contrary to the prediction of the standard neoclassical labour-leisure choice framework that an income transfer will negatively impact labour supply, we find evidence of a robust and substantial positive effect of WITB receipt on the extensive margin of employment in our overall sample of single low-income workers. Consistent with the neoclassical model, however, at the intensive margin, we also find that WITB receipt reduces employment earnings, particularly among tax filers who do not receive social assistance.

Importantly, our study measures the effect of an unanticipated income transfer on those who are already participating in the labour market, requiring a specific interpretation of our results: low-income individuals who receive WITB are more likely to continue working than those who were working and did not receive WITB, though less intensively. Our estimated positive extensive margin and negative intensive margin effects are consistent with the labour supply predictions of a labour-leisure choice model that incorporates the fixed costs of working. Indeed, we also find that the positive extensive margin labour supply effects are largest among single individuals with young children and social assistance recipients, suggesting that WITB potentially assisted workers who face the highest fixed costs of working

(as a proportion of their income) to remain employed.

Our results challenge widespread beliefs that most low-income workers would exit the labour market in response to government income transfers absent work requirements or costly (and stigmatizing) monitoring. Our results are also consistent with several recent papers examining the impact of other types of government benefits on labour supply. For instance, Jones and Marinescu (2022) find that an annual transfer of \$2,000 in Alaska had no effect on employment overall and led to an increase in part-time employment. In Canada, studies of a family-based demogrant, the UCCB, found that the annual transfer of \$1,200 decreased the labour market participation of lower-educated married mothers (Schirle, 2015), but increased employment and participation for single, divorced mothers (Koebel and Schirle, 2016). More recent research evaluating the Canada Child Benefit (CCB) found no adverse labour supply effects of the unconditional income transfer on maternal labour supply, and some evidence of an increase in employment (Baker et al., 2023).

Our paper makes several important and novel contributions to the literature examining the effects of government income transfers on labour supply. First, although WITB has been criticized for not achieving its intended policy goals as a work incentive (Milligan, 2014), to our knowledge there are no empirical studies investigating the impact of the WITB policy on labour supply decisions. Our study is therefore the first to examine the impact of WITB on labour supply and is thus relevant to policymakers across Canada. Second, examining WITB also provides an opportunity to explore the labour supply effects of an unconditional income transfer on a sub-group of single low-income workers without children, which is rare given that most major benefits in Canada and the US are targeted towards parents.

Empirically, we also contribute relatively more externally valid evidence to the literature investigating the effect of unconditional income transfers on labour supply. To date, the main strategies researchers have used to obtain a causal estimate of the labour supply effects of an unanticipated positive income shock include guaranteed annual income (GAI) experiments and studies of lottery winners.

The GAI-NIT experiments conducted in Canada and the US during the 1960s and 1970s suggest that receipt of the unconditional income transfer reduced labour supply by a small amount (see Marinescu (2018) for a comprehensive summary). However, recent replications and reassessments of these experiments suggest that the effect of the benefit on labour supply may have been positive among single mothers on welfare after correcting for randomization error (Riddell and Riddell, 2024). In addition to these conflicting findings, the relevance of these experiments is increasingly limited as they were conducted over 60 years ago. Since then, there have been significant structural changes in the labour market including the decline of unionization rates (Statistics Canada, 2015; Bureau of Labour Statistics, 2019), larger shares of gig workers (Jeon et al., 2021), more self-employed workers (Boeri et al., 2020) and higher female participation rates in the labour market (Drolet et al., 2016) and college (Goldin et al., 2006). It is also unclear whether the labour supply decisions of individuals who were aware of their participation in a short-term experimental pilot would be consistent with their “normal” labour market behavior, undermining the external validity of these findings (Hoynes and Rothstein, 2019; Koebel and Pohler, 2019). The implementation of these experiments also suffers from potential political and activist interference, as well as sample attrition and deliberate misreporting of earnings by participants to maximize the transfer received (Marinescu, 2018).

Lottery winners have also provided opportunities to examine the labour supply effects of positive income shocks, since lottery prizes are random, unconditional, unanticipated and typically not subject to a tax-back rate. These studies find that, conditional on buying lottery tickets, winning the lottery has a small negative effect on employment earnings (Cesarini et al., 2017; Imbens et al., 2001). However, as in the GAI experimental setting, the extent to which these results are generalizable to a broader group of low-income workers is unclear. Lottery winners are more likely to go bankrupt (Hankins et al., 2011), which may generate the adverse earnings effects observed in these studies. Lottery winners also typically receive large sums of money which are not comparable to smaller government benefits received annually

and targeted toward low-income workers. Finally, there are likely different social norms regarding acceptable behaviour surrounding receipt of income via luck (i.e., the lottery) versus through public funds. For example, theoretical models suggest that behavioural responses to government programs might be more constrained if there exist pro-social values regarding reciprocity and cooperation (Boadway and Martineau, 2016).

The major contributions of our paper lie in demonstrating the importance of incorporating institutional details surrounding the implementation of a particular policy into the design of studies that estimate the effects of government programs on worker behavior (Kleven, 2024). Much of the existing EITC literature examining the impact of tax and transfer programs on labour supply assumes the study population has knowledge of the eligibility criteria, tax structure and marginal incentives of those programs, even in the presence of substantial evidence contradicting this assumption. By demonstrating evidence of low WITB knowledge using both institutional and quantitative evidence, we make a novel contribution to the literature on wage subsidies by separating eligibility from actual receipt of the benefit, allowing us to test the income effect of an unconditional government income transfer on labour supply. Our paper thus has important methodological implications for future research examining the effects of policy interventions on labour supply where knowledge of program existence and/or incentives may be low.

A limitation of our study is that we are not able to analyze the mechanisms underlying the positive effect of WITB receipt on the extensive margin of labour supply. Although our results are consistent with labour supply models that incorporate fixed costs of working, suggesting that income transfers may increase the ability of recipients to remain employed by helping them overcome fixed costs such as child care or transportation, this potential explanation cannot be validated in absence of analyses examining the impact of WITB on household spending. In Canada, there does not exist longitudinal spending data that would enable this type of analysis. Other potential explanations for the positive effect of WITB receipt on labour market participation can also not be ruled out. For instance,

having insufficient income to meet basic needs creates financial-related stress that reduces physical and mental health and might therefore hinder the ability of low-income individuals to continuously participate in the labour market. Partially relieving this stress through income transfers might allow low-income workers to look beyond how they will pay for their next meal or maintain their residence, and thus enable them to focus on their work.

Future research investigating the mechanisms through which income transfers impact labour supply would be valuable for improving how we understand the labour supply decisions of low-income workers, as well as to develop more effective approaches at the intersection of labour and social policy to alleviate poverty among working-age individuals.

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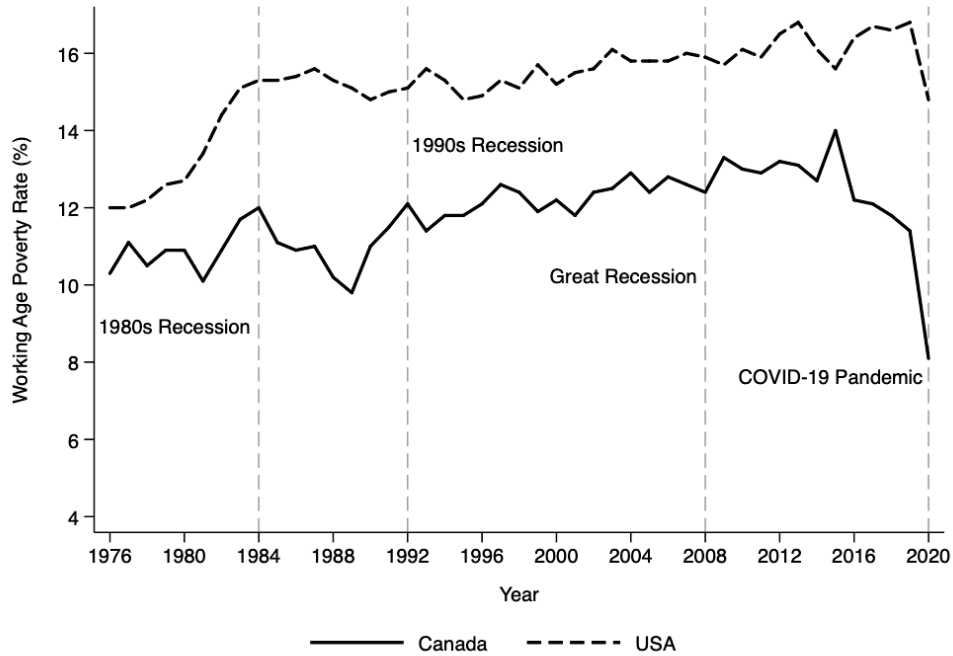
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Figure 1: Working age (18-64) relative poverty rate, Canada and the United States



Notes: The poverty rate is measured using the relative income poverty rate, or the percent of individuals aged 18-64 in households with income below 50% of the median equivalised household disposable income.

Source: For Canada, data come from the OECD Poverty Rate Indicator (OECD, 2024). For the United States, data come from the Annual Social and Economic Supplement (ASEC) of the Current Population Survey (CPS), 1977-2021 and the Historical Supplemental Poverty Measure data (Wimer et al., 2023). Tabulations by authors.

Figure 2: Timeline of WITB eligibility determination and receipt

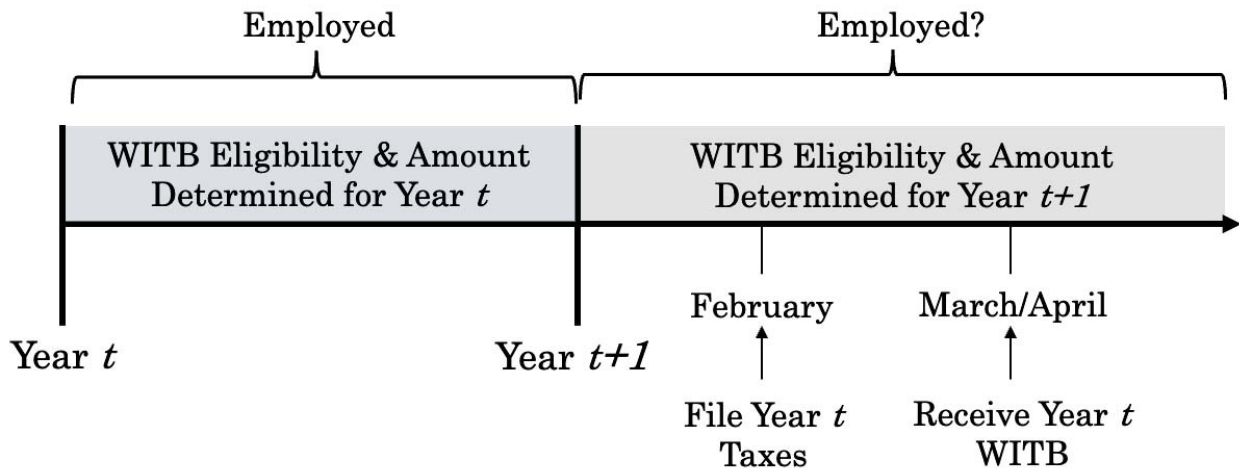
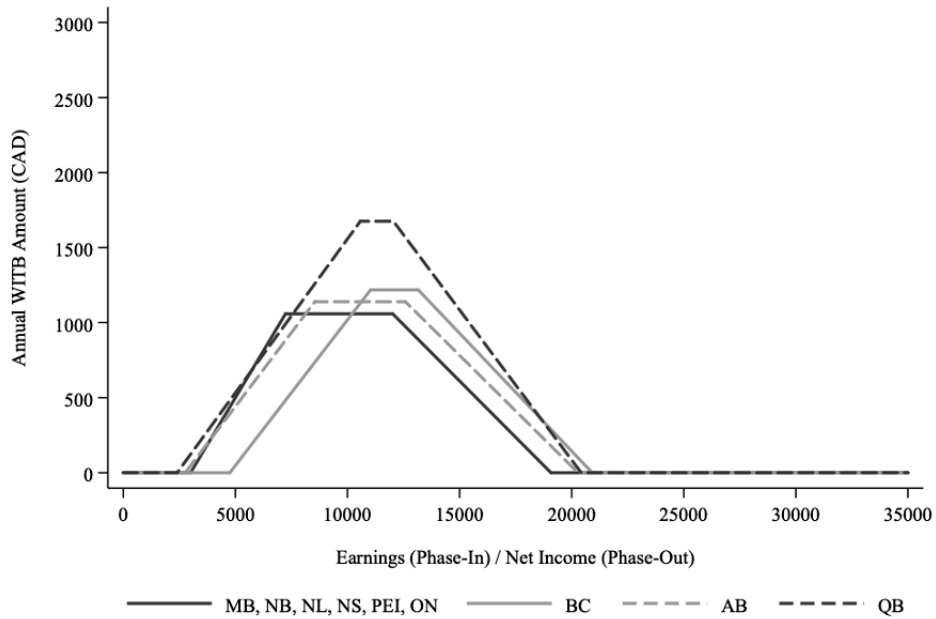
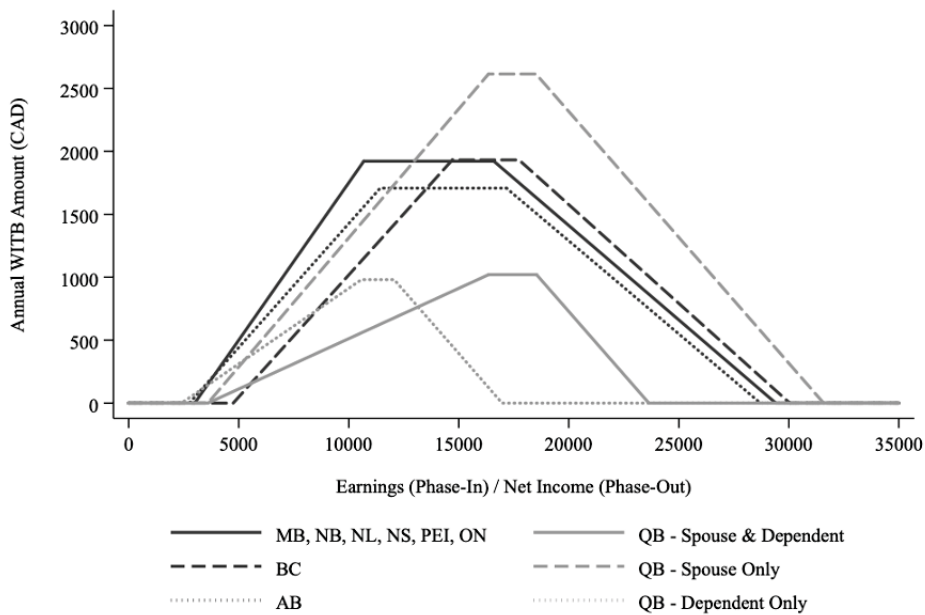


Figure 3: WITB structure for single individuals with no dependent(s) by province, 2018



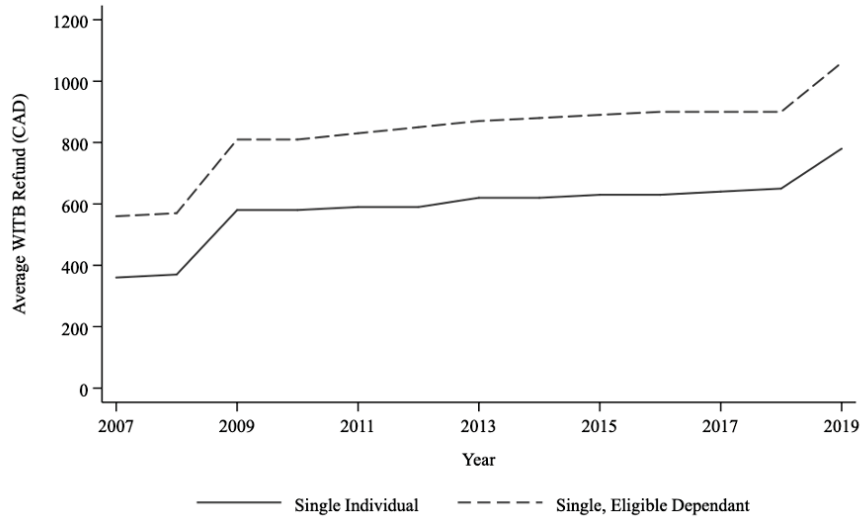
Source: *Schedule 6* of the 2018 T1 General federal tax return. Compilation and figure by authors.

Figure 4: WITB structure for individuals with a spouse and/or dependent(s) by province, 2018



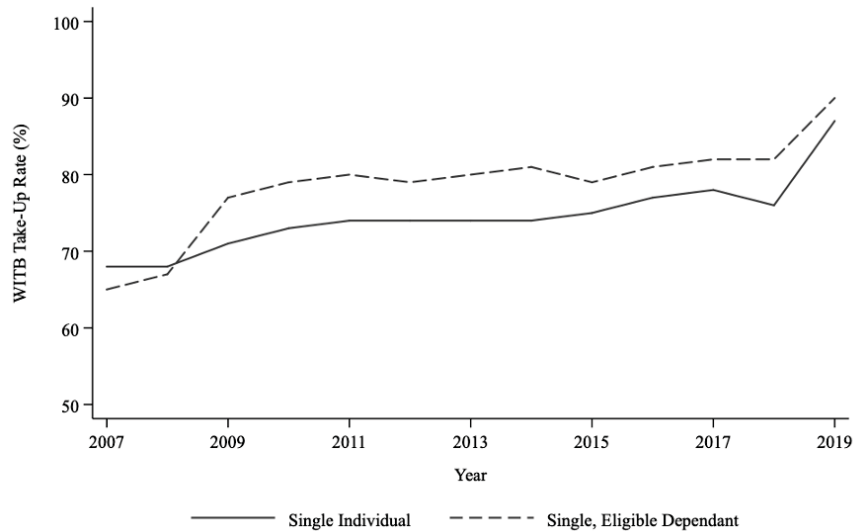
Source: *Schedule 6* of the 2018 T1 General federal tax return. Compilation and figure by authors.

Figure 5: Average WITB amount received, single wage earners who claimed WITB, aged 25-64, by dependent status, 2007-2019



Notes: The sample includes single, non-student wage earners and self-employed workers between the ages of 25 and 54 with earnings/net income under \$50,000 who claimed WITB. Descriptive statistics are calculated using LAD population weights.
 Source: Longitudinal Administrative Databank, 2007-2019. Tabulations by authors.

Figure 6: WITB take-up rate among single wage earners who were eligible for WITB, aged 25-64, by dependent status, 2007-2019



Notes: The sample includes single, non-student wage earners between the ages of 25 and 54 with earnings/net income under \$50,000 who were eligible for WITB. Descriptive statistics are calculated using LAD population weights.
 Source: Longitudinal Administrative Databank, 2007-2019. Tabulations by authors.

Table 1: Working-age poverty in Canada and the US, 2019

	Canada	United States
<i>Panel A: Age 18-64</i>		
Poverty rate	0.11 (0.32)	0.17 (0.37)
Working poor	0.06 (0.24)	0.08 (0.27)
<i>Panel B: Age 18-64, Below Poverty Line</i>		
Welfare receipt	0.30 (0.46)	0.02 (0.15)
Employed	0.52 (0.50)	0.47 (0.50)
<i>Panel C: Age 18-64, Working Poor</i>		
Welfare receipt	0.14 (0.35)	0.01 (0.12)
Weekly hours	31.29 (14.51)	34.55 (12.99)
Weekly earnings*	372.44 (631.98)	608.78 (476.58)
Unionized	0.14 (0.34)	0.06 (0.23)
<i>Panel D: Age 18-64, Working Non-Poor</i>		
Welfare receipt	0.07 (0.25)	0.01 (0.07)
Weekly hours	37.13 (10.79)	39.43 (12.03)
Weekly earnings*	1209.81 (1694.91)	1111.17 (730.61)
Unionized	0.32 (0.47)	0.12 (0.32)

Notes: The poverty rate is measured using the relative income poverty rate, or the percent of individuals aged 18-64 in households with income below 50% of the median equivalised household disposable income. Summary statistics are computed with survey weights. Standard deviations in parentheses. * Earnings reported in Canadian dollars (CDN) for Canada and American dollars (USD) for US.

Source: For Canada, data come from the Canadian Income Survey, 2019). For the United States, data come from the Annual Social and Economic Supplement (ASEC) of the Current Population Survey (CPS), 2020 and the Historical Supplemental Poverty Measure data (Wimer et al., 2023). Tabulations by authors.

Table 2: Descriptive statistics, single tax filers, aged 25-64, 2007-2019

	Full Sample (1)	Eligible (2)	Eligible	
			WITB Receipt (3)	No WITB Receipt (4)
<i>Income</i>				
Earnings	\$15,350.00 (\$13,208.56)	\$12,630.00 (\$6,822.14)	\$13,120.00 (\$6,810.13)	\$11,010.00 (\$6,605.77)
After-Tax Income	\$22,120.00 (\$12,442.97)	\$19,730.00 (\$10,272.59)	\$20,600.00 (\$10,467.21)	\$16,850.00 (\$9,018.24)
Poverty	0.52 (0.50)	0.72 (0.45)	0.7 (0.46)	0.76 (0.43)
Social Assistance	0.23 (0.42)	0.19 (0.39)	0.19 (0.39)	0.18 (0.38)
<i>Labour Supply</i>				
Employed (all income)	0.81 (0.39)	1 (0.00)	1 (0.00)	1 (0.00)
Employed (T4)	0.78 (0.41)	0.95 (0.22)	0.95 (0.21)	0.93 (0.25)
<i>Tax Credits</i>				
WITB Eligible	0.39 (0.49)	-	-	-
WITB Receipt	0.3 (0.46)	0.77 (0.42)	-	-
WITB Amount	\$210.00 (\$425.24)	\$550.00 (\$528.83)	\$710.00 (\$496.90)	-
<i>Demographics</i>				
Female	0.63 (0.48)	0.64 (0.48)	0.66 (0.47)	0.59 (0.49)
Eligible Dependant	0.35 (0.48)	0.39 (0.49)	0.4 (0.49)	0.36 (0.48)

Child under age 10	0.21 (0.41)	0.25 (0.43)	0.26 (0.44)	0.2 (0.40)
Age	41.2 (11.01)	39.06 (10.90)	39.02 (10.88)	39.16 (10.95)
Disabled	0.02 (0.13)	0.02 (0.13)	0.02 (0.14)	0.01 (0.10)
N	2,387,700	926,200	711,400	214,800

Notes: The sample includes single, non-student wage earners between the ages of 25-64 with earnings/net income under \$50,000. Column (1) presents summary statistics for the full sample of single wage earners. Column (2) presents summary statistics for the sample of single wage earners who are eligible for WITB in any given tax year. Column (3) presents summary statistics for the sample of wage earners who are eligible for WITB and received WITB. Column (4) presents summary statistics for the sample of wage earners who are eligible for WITB and did not receive WITB. Descriptive statistics are estimated using LAD population weights. Standard deviations in parentheses. Unweighted sample sizes reported. Sample sizes are rounded to nearest 100 as per Statistics Canada vetting rules. Dollar amounts are rounded to nearest \$10 as per Statistics Canada vetting rules.

Source: Longitudinal Administrative Databank, 2007–2019. Tabulations by authors.

Table 3: Effect of WITB receipt on employment and earnings, single tax filers, aged 25-64, by welfare receipt

	Employed (t+1)			Earnings (t+1)		
	OLS (1)	FE (2)	LDV (3)	OLS (4)	FE (5)	LDV (6)
<i>Panel A: Social Assistance Recipients</i>						
WITB Receipt (t + 1)	0.077*** (0.003)	0.036*** (0.004)	0.062*** (0.003)	2365.604*** (68.835)	1528.755*** (68.105)	636.970*** (62.294)
Employed (t)	-	-	0.537*** (0.002)	-	-	-
Earnings (t)	-	-	-	-	-	0.778 (0.003)
Eligible (t)	0.339*** (0.003)	0.169*** (0.0034)	-0.004 (0.003)	4520.422*** (61.118)	2258.540*** (58.937)	1220.675*** (56.800)
N	414,600	380,600	414,600	414,600	414,600	414,600
<i>Panel B: Social Assistance Non-Recipients</i>						
WITB Receipt (t + 1)	0.054*** (0.002)	0.023*** (0.001)	0.028*** (0.001)	-1134.681*** (45.171)	-182.352*** (45.124)	-2150.171*** (39.993)
Employed (t)	-	-	0.685*** (0.001)	-	-	-
Earnings (t)	-	-	-	-	-	0.733*** -0.001
Eligible (t)	0.018*** (0.002)	0.012*** (0.001)	-0.066*** (0.001)	-3323.320*** (45.755)	-1227.384*** (42.318)	3211.844*** (38.502)
N	1,290,300	1,212,600	1,290,300	1,290,300	1,212,600	1,290,300

Notes: The sample includes single, non-student tax filers between the ages of 25-65 with earnings/net income under \$50,000. Employment is a dichotomous variable equal to 1 if T4 employment income are greater than \$0. Earnings is a continuous variable equal to the total sum of T4 employment income and self-employment income. Column (1) is estimated using Equation 1. Column (2) is estimated using Equation 2. Column (3) is estimated using Equation 3. All regressions estimated using LAD population weights. All specifications include controls for year fixed effects, province fixed effects, age fixed effects and controls for the presence of an eligible child, disability, gender, receipt of social assistance, and WITB eligibility. Individual-clustered standard errors reported in parentheses. Unweighted sample sizes reported. Sample sizes are rounded to nearest 100 as per Statistics Canada vetting rules. *** denotes statistical significance at the 1% level.

Source: Longitudinal Administrative Databank, 2007–2019. Tabulations by authors.

Table 4: Effect of WITB receipt on employment and earnings, single tax filers with children under the age of 10, aged 25-64, by gender

	Employed (t+1)			Earnings (t+1)		
	OLS (1)	FE (2)	LDV (3)	OLS (4)	FE (5)	LDV (6)
<i>Panel A: Women</i>						
WITB Receipt (t + 1)	0.094*** (0.003)	0.033*** (0.003)	0.059*** (0.002)	145.695* (86.100)	393.65*** (84.627)	-1122.723*** (75.969)
Employed (t)	-	-	0.606*** (0.002)	-	-	-
Earnings (t)	-	-	-	-	-	0.739 (0.002)
Eligible (t)	0.134*** (0.003)	0.071*** (0.003)	-0.073*** (0.002)	597.922*** (88.737)	912.874*** (81.001)	1830.501*** (73.774)
N	368,000	350,300	368,000	368,000	350,300	368,000
<i>Panel B: Men</i>						
WITB Receipt (t + 1)	0.080*** (0.011)	0.022*** (0.0024)	0.045*** (0.008)	-506.322* (285.951)	443.436 (301.420)	-648.688*** (248.411)
Employed (t)	-	-	0.610*** (0.007)	-	-	-
Earnings (t)	-	-	-	-	-	0.676*** (0.007)
Eligible (t)	0.106*** (0.010)	0.047*** (0.0023)	-0.083*** (0.008)	1032.039*** (277.894)	787.694*** (271.128)	1845.001*** (228.448)
N	25,500	529,900	25,500	25,500	22,300	25,500

Notes: The sample includes single, non-student tax filers between the ages of 25-65 with earnings/net income under \$50,000 and children under the age of 10. Employment is a dichotomous variable equal to 1 if T4 employment earnings are greater than \$0. Earnings is a continuous variable equal to the total sum of T4 employment income and self-employment income. Column (1) is estimated using Equation 1. Column (2) is estimated using Equation 2. Column (3) is estimated using Equation 3. All regressions estimated using LAD population weights. All specifications include controls for year fixed effects, province fixed effects, age fixed effects and controls for disability, receipt of social assistance, and WITB eligibility. Individual-clustered standard errors reported in parentheses. Unweighted sample sizes reported. Sample sizes are rounded to nearest 100 as per Statistics Canada vetting rules. *** and * denotes statistical significance at the 1% and 10% levels. Source: Longitudinal Administrative Databank, 2007–2019. Tabulations by authors.

Table 5: Effect of WITB receipt on employment and earnings, single tax filers with older or no children under the age of 10, aged 25-64, by gender

	Employed (t+1)			Earnings (t+1)		
	OLS (1)	FE (2)	LDV (3)	OLS (4)	FE (5)	LDV (6)
<i>Panel A: Women</i>						
WITB Receipt (t + 1)	0.0470*** (0.002)	0.024*** (0.002)	0.034*** (0.002)	-653.783*** (57.498)	-8.862 (54.060)	-1644.908*** (49.362)
Employed (t)	-	-	0.676*** (0.002)	-	-	-
Earnings (t)	-	-	-	-	-	0.769*** (0.001)
Eligible (t)	0.083*** (0.002)	0.055*** (0.002)	-0.057*** (0.001)	-2640.742 (56.499)	-721.307*** (50.219)	2839.815*** (46.813)
N	748,000	712,400	748,000	748,000	712,400	748,000
<i>Panel B: Men</i>						
WITB Receipt (t + 1)	0.037*** (0.0026)	0.022*** (0.0024)	0.025*** (0.0018)	-807.774*** (68.610)	109.747* (66.426)	-1566.817*** (61.557)
Employed (t)	-	-	0.637*** (0.0018)	-	-	-
Earnings (t)	-	-	-	-	-	0.706*** (0.002)
Eligible (t)	0.076*** (0.0025)	0.047*** (0.0023)	-0.065*** (0.0017)	-1540.698*** (65.412)	-455.044*** (59.633)	3503.079*** (56.528)
N	563,300	529,900	563,300	563,300	529,900	563,300

Notes: The sample includes single, non-student tax filers between the ages of 25-65 with earnings/net income under \$50,000 and older or no children under the age of 10. Employment is a dichotomous variable equal to 1 if T4 employment earnings are greater than \$0. Earnings is a continuous variable equal to the total sum of T4 employment income and self-employment income. Column (1) is estimated using Equation 1. Column (2) is estimated using Equation 2. Column (3) is estimated using Equation 3. All regressions estimated using LAD population weights. All specifications include controls for year fixed effects, province fixed effects, age fixed effects and controls for disability, receipt of social assistance, and WITB eligibility. Individual-clustered standard errors reported in parentheses. Unweighted sample sizes reported. Sample sizes are rounded to nearest 100 as per Statistics Canada vetting rules. *** and * denotes statistical significance at the 1% and 10% levels.

Source: Longitudinal Administrative Databank, 2007–2019. Tabulations by authors.

Table 6: Effect of WITB receipt on employment, single “low knowledge” tax filers, aged 25-64, by welfare receipt

DV: Employed (t+1)	OLS (1)	FE (2)	LDV (3)
<i>Panel A: Social Assistance Recipients</i>			
WITB Receipt (t + 1)	0.134*** (0.006)	0.116*** (0.007)	0.128*** (0.006)
Employed (t)	-	-	0.523*** (0.008)
Eligible (t)	0.309*** (0.007)	0.167*** (0.008)	-0.003 (0.008)
N	33,400	31,500	33,400
<i>Panel B: Social Assistance Non-Recipients</i>			
WITB Receipt (t + 1)	0.071*** (0.004)	0.047*** (0.003)	0.054*** (0.003)
Employed (t)	-	-	0.719*** (0.005)
Eligible (t)	0.040*** (0.005)	0.026*** (0.003)	-0.069*** (0.003)
N	85,900	83,800	85,900

Notes: The sample includes single, non-student tax filers between the ages of 25-65 with earnings/net income under \$50,000 who are “low knowledge” tax filers that receive WITB in year t , but do not receive WITB in year $t + 1$ despite being eligible in year $t + 1$. Employment is a dichotomous variable equal to 1 if T4 employment earnings are greater than \$0. Column (1) is estimated using Equation 1. Column (2) is estimated using Equation 2. Column (3) is estimated using Equation 3. All regressions estimated using LAD population weights. All specifications include controls for year fixed effects, province fixed effects, age fixed effects and controls for the presence of an eligible child, disability, gender, receipt of social assistance, and WITB eligibility. Individual-clustered standard errors reported in parentheses. Unweighted sample sizes reported. Sample sizes are rounded to nearest 100 as per Statistics Canada vetting rules. *** denotes statistical significance at the 1% level.

Source: Longitudinal Administrative Databank, 2007–2019. Tabulations by authors.

Appendix A

Figure A.1: *Schedule 6* of the T1 General federal tax return, 2018

Protected B when completed
Schedule 6

T1-2018 Working Income Tax Benefit

The working income tax benefit (WITB) is for low-income individuals and families who have earned income from employment or business. The WITB consists of a basic amount and a disability supplement.

Complete this schedule and **attach** it to your return to claim the WITB if you meet **all** of the following conditions in 2018:

- you were a resident of Canada throughout the year
- you earned income from employment or business
- at the end of the year, you were 19 years of age or older or you resided with your spouse or common-law partner or your child

You **cannot claim** the WITB in 2018 if any of the following apply to you:

- you were enrolled as a full-time student at a designated educational institution for a total of more than 13 weeks in the year, unless you had an eligible dependant at the end of the year
- you were confined to a prison or similar institution for a period of at least 90 days during the year

Notes: If you were married or living in a common-law relationship but did not have an **eligible spouse** (defined below) or an **eligible dependant** (defined below), complete this schedule using the instructions as if you had neither an eligible spouse nor an eligible dependant.

If you are completing a final return for a deceased person who met the above conditions, you can claim the WITB for that person if the date of death was after June 30, 2018.

Eligible spouse – For the purpose of the WITB, an eligible spouse is a person who meets **all** the following conditions:

- was your spouse or common law partner on December 31, 2018
- was a resident of Canada throughout 2018
- was not enrolled as a full time student at a designated educational institution for a total of more than 13 weeks in the year, unless they had an eligible dependant at the end of the year
- was not confined to a prison or similar institution for a period of at least 90 days during the year
- was not exempt from income tax in Canada for a period in the year when the person was an officer or servant of another country, such as a diplomat, or a family member or employee of such a person at any time in the year

Eligible dependant – For the purpose of the WITB, an eligible dependant is a person who meets **all** the following conditions:

- was your or your spouse's or common law partner's child
- was under 19 years of age and lived with you on December 31, 2018
- was not eligible for the WITB for 2018

Complete Step 1 on the next page.
The WITB is calculated based on the following amounts:

- working income (calculated in Step 1 - Part A)
- your adjusted family net income (calculated in Step 1 - Part B)

Adjusted family net income levels	You had neither an eligible spouse nor an eligible dependant	You had an eligible spouse or an eligible dependant
Basic WITB Adjusted family net income (line 15 in Step 1)	less than \$19,076	less than \$29,407
WITB disability supplement (you are eligible for the disability tax credit) Adjusted family net income (line 15 in Step 1)	less than \$22,600	less than \$32,937
WITB disability supplement (you had an eligible spouse and both of you are eligible for the disability tax credit) Adjusted family net income (line 15 in Step 1)	not applicable	less than \$36,464

Continue on the next page.

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Figure A.1: Continued

Protected B when completed

Step 1 – Calculating your working income and adjusted family net income

Do you have an eligible dependant? **381** Yes 1 No 2

Do you have an eligible spouse? **382** Yes 1 No 2

Part A – Working income

Complete columns 1 and 2 if you had an eligible spouse on December 31, 2018. Otherwise, complete column 1 only.

	Column 1 You	Column 2 Your eligible spouse
Employment income and other employment income reported on line 101 and line 104 of the return	3	3
Taxable part of scholarship income reported on line 130	383 +	384 +
Total self-employment income reported on lines 135, 137, 139, 141, and 143 of the return (excluding losses and income from a communal organization)	+	+
Tax-exempt part of working income earned on a reserve (see note below) or an allowance received as an emergency volunteer	385 +	386 +
Add lines 3 to 6. Enter the amount even if the result is "0".	=	387 =
Add the amounts from line 7 in columns 1 and 2. Enter this amount on line 16 on the next page.	Working income	8

Note: This includes the tax exempt part of employment income, other employment income, business income (excluding losses), and scholarship income earned on a reserve.

You can claim the basic WITB (Step 2) if the working income (amount on line 8 above) is more than \$3,000.
If you are eligible for the WITB disability supplement (Step 3), your working income (amount on line 7 above) must be more than \$1,150.

Part B – Adjusted family net income

Net income amount from line 236 of the return	9	9
Tax-exempt part of all income earned or received on a reserve less the deductions related to that income, or an allowance received as an emergency volunteer	388 +	389 +
Total of universal child care benefit (UCCB) repayment (line 213 of the return) and registered disability savings plan (RDSP) income repayment (included on line 232 of the return)	+	+
Add lines 9, 10, and 11.	=	=
Total of UCCB (line 117 of the return) and RDSP income (line 125 of the return)	-	-
Line 12 minus line 13 (if negative, enter "0")	=	390 =
Add the amounts from line 14 in columns 1 and 2. Enter this amount on line 23 and line 35 on the next page.	Adjusted family net income	15

If your adjusted family net income is less than the amount specified in the chart on the previous page, you need to continue completing this form to find out if you are entitled to the WITB.
If your adjusted family net income is more than the amount specified in the chart on the previous page, you are not entitled to the WITB.

Are you claiming the basic WITB? **391** Yes 1 No 2 If yes, complete Step 2 on the next page.

If you are eligible for the disability tax credit, do you want to claim the WITB disability supplement amount? **392** Yes 1 No 2 If yes, complete Step 3 on the next page.

Is your eligible spouse eligible for the disability tax credit for themselves? **394** Yes 1 No 2 If yes, your eligible spouse must complete steps 1 and 3 on a separate Schedule 6.

Continue on the next page.

5000-S6

Figure A.1: Continued

Protected B when completed

Step 2 – Calculating your basic WITB

If you had an eligible spouse, **only one of you** can claim the basic WITB. However, the person who received the WITB advance payments for 2018 is the person who **must** claim the basic WITB for the year. If you had an eligible dependant, **only one person** can claim the basic WITB for that eligible dependant.

Working income amount from line 8 on the previous page			16
Base amount	-	3,000.00	17
Line 16 minus line 17 (if negative, enter "0")	=		18
Rate	x	25%	19
Multiply line 18 by line 19.	=		20
If you had neither an eligible spouse nor an eligible dependant, enter \$1,059.			21
If you had an eligible spouse or an eligible dependant, enter \$1,922.			21
Enter the amount from line 20 or line 21, whichever is less .	▶		22
Adjusted family net income amount from line 15 on the previous page			23
Base amount:			
If you had neither an eligible spouse nor an eligible dependant, enter \$12,016.			24
If you had an eligible spouse or an eligible dependant, enter \$16,593.	-		24
Line 23 minus line 24 (if negative, enter "0")	=		25
Rate	x	15%	26
Multiply line 25 by line 26.	=		27
Line 22 minus line 27 (if negative, enter "0")	=		27
Enter the amount from line 28 on line 453 of your return unless you complete Step 3 .	=		28

Step 3 – Calculating your WITB disability supplement

If you had an eligible spouse and **one of you** is eligible for the disability tax credit, that person **should** claim both the basic WITB and the WITB disability supplement. If you had an eligible spouse and **both of you** are eligible for the disability tax credit, **only one of you** can claim the basic WITB. However, each of you must claim the WITB disability supplement on a separate Schedule 6.

Amount from line 7 in column 1 on the previous page.			29
Base amount	-	1,150.00	30
Line 29 minus line 30 (if negative, enter "0")	=		31
Rate	x	25%	32
Multiply line 31 by line 32.	=		33
Enter the amount from line 33 or \$529, whichever is less .	▶		34
Adjusted family net income amount from line 15 on the previous page			35
Base amount:			
If you had neither an eligible spouse nor an eligible dependant, enter \$19,073.			36
If you had an eligible spouse or an eligible dependant, enter \$29,410.	-		36
Line 35 minus line 36 (if negative, enter "0")	=		37
Rate: If you had an eligible spouse and they are also eligible for the disability tax credit, enter 7.5%. Otherwise, enter 15%.			38
Multiply line 37 by line 38.	=		39
Line 34 minus line 39 (if negative, enter "0")	=		40
If you completed Step 2, enter the amount from line 28. Otherwise, enter "0".	+		41
Add lines 40 and 41.	=		41
Enter this amount on line 453 of your return.	=		42

See the privacy notice on your return.

5000-S6

Notes: *Schedule 6* of the 2018 T1 General federal tax return used by the following provinces: Manitoba, New Brunswick, Newfoundland, Nova Scotia, Ontario, Prince Edward Island and Saskatchewan.

Source: Canada Revenue Agency (2018).

Figure A.2: Example of a prompt received by an electronic tax filer to apply for WITB

Working Income Tax Benefit

The working income tax benefit (WITB) is a refundable tax credit for lower-income individuals and families. Learn more.

Claim the WITB? ?

Claim the WITB disability supplement for yourself? ?

Do you have an eligible dependant? ?

Are you an officer or a servant of another country, such as a diplomat, or a family member or employee of such a person and don't have to pay tax at any time in the taxation year? ?

Amount of tax exempt allowance received as an emergency volunteer, if any

Source: Canada Revenue Agency (2017b).

Figure A.3: Tax form insert used in the 2016 New Brunswick WITB awareness pilot

Stop! You may be eligible for up to \$1,868*

The **working income tax benefit** (WITB) provides tax relief for working individuals and families. If you worked during 2016 and your income was less than \$28,576*, you may be eligible to get the WITB on your 2016 tax return—even if you don't owe taxes.

To see if you are eligible and calculate how much you could get, complete **Schedule 6**. Be sure to enter your claim for the WITB on **line 453** of your tax return.

16-135(1)

*Amounts vary based on eligibility criteria. The amounts quoted are for families. For more information, go to canada.ca/working-income-tax-benefit

Source: Canada Revenue Agency (2017b).

Figure A.4: WITB take-up rate among single wage earners and self-employed workers who were eligible for WITB, aged 25-64, by dependent status, 2007-2019

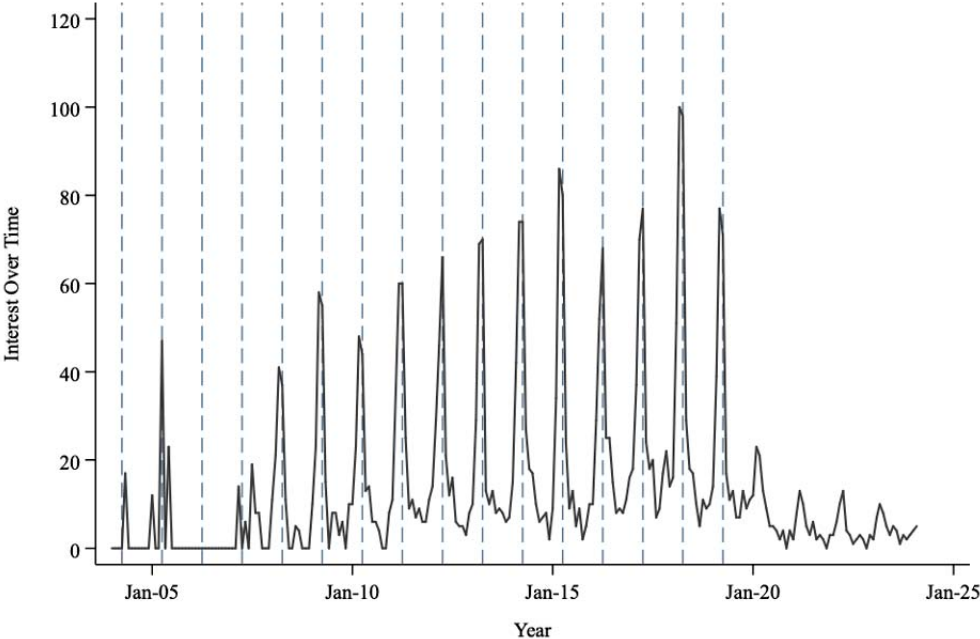


Notes: The sample includes single, non-student wage earners and self-employed workers between the ages of 25 and 54 with earnings/net income under \$50,000 who were eligible for WITB. Descriptive statistics are calculated using LAD population weights.
 Source: Longitudinal Administrative Databank, 2007-2019. Tabulations by authors.

Figure A.5: Example of a CRA Notice of Assessment, 2008

Canada Revenue Agency		Agence du revenu du Canada		NOTICE OF ASSESSMENT		T451 E (08)	
Date	Name	Social insurance no.	Tax year	Tax centre	2		
May 1, 2008		000 000 000	2007	Surrey BC V3T 5E1			
Summary						000000	
Line	Description					\$ Amount	
150	Total income					17,000	
236	Net income					17,000	
260	Taxable income					17,000	
350	Total federal non-refundable tax credits					1,000	
6150	Total British Columbia non-refundable tax credits					515	
420	Net federal tax					0.00	
435	Total payable					0.00	
437	Total income tax deducted					0.00	
453	Working income tax benefit					300.00	
	Subtotal credits					300.00	
	British Columbia sales tax credit					50.00	
479	Total British Columbia tax credits					50.00	
482	Total credits					400.00	
	(Total payable minus Total credits)					(400.00)	
	Balance from this assessment					CR 400.00	
	Direct deposit					CR 400.00	

Figure A.6: Google search data for “Working Income Tax Benefit,” 2004-2024



Notes: The dashed vertical lines indicate April of each year.
Source: Google Trends Data, 2004-2024. Tabulations by authors.

Appendix B Constructing WITB Eligibility and Benefit Amount

To generate the WITB eligibility indicator, we begin by limiting the sample to single individuals, with and without children, who meet all of the criteria listed on Schedule 6 of the tax return. To be eligible for WITB, a tax filer must:

- i) Be a resident of Canada throughout the tax year;
- ii) Earn income through employment or business;
- iii) Be 19 years or older at the end of the tax year unless residing with an eligible dependant;
- iv) Not be enrolled as a full-time student at a designated educational institution for more than 13 weeks in the year, unless residing with an eligible dependant; and
- v) Not confined to a prison or similar institution for a period of at least 90 days

Using residency status in the LAD, we first remove all non-residents from the sample. As noted in [Subsection 5.2](#), we also limit the sample to individuals who are between the ages of 25 and 64. We select this age range as we are not able to directly observe student status and because we do not want to include retirees in our analysis. Although dropping all wage earners below the age of 25 should eliminate most full-time post-secondary students, we also drop tax filers who, for the tax years 2007-2016, claim the full-time education deduction and, for the years 2017-2019, are enrolled in full-time post-secondary education for more than 13 weeks of the year (provided in the LAD for 2017-2019 only). We are unable to observe whether an individual was incarcerated in the LAD.

Using this sample, we then create an eligibility variable using the parameters in Schedule 6 that depends on the tax year and the following individual-level information: province of residence, working income, adjusted net income, and presence of a dependant. We define the eligibility indicator in every province and year (from 2007 until 2019) since the minimum

working income and adjusted net income thresholds that determine eligibility vary across time and province. Within every year and province, we also redefine the eligibility indicator based on whether an eligible child (defined as the presence of a child under the age of 19) is residing with the tax filer and whether the tax filer is disabled (defined as receipt of the disability tax credit greater than \$0).

The CRA defines income at the individual level.¹⁸ To reflect the fact that WITB is phased-in using employment income and phased-out using adjusted net income, we use two different definitions of income to construct our eligibility variable. As defined in Schedule 6 of the tax return, working income is calculated as the sum of: i) employment income (lines 101 and 104 of the tax return); ii) taxable scholarship income (line 130); iii) total self-employment income (excluding losses; lines 135, 137, 139, 141 and 143); iv) tax-exempt income earned on a reserve; and v) allowances received as an emergency volunteer. The sum of these lines constitute the “working” income used by the CRA to determine if individuals earned the minimum amount (\$3,000) required for WITB eligibility and the phase-in portion of the program. The LAD does not contain two components of working income as defined in Schedule 6: i) taxable part of scholarship income reported on line 130; and ii) allowance received as an emergency volunteer. We do not believe these missing sources of income impact our calculation of working income and WITB eligibility, as limiting the sample to tax filers older than 25 should drop most students from the sample, making taxable scholarship income irrelevant in the computation.

The second income measure, adjusted net income, corresponds to the sum of: i) net income (line 236 on the tax return); ii) tax-exempt income earned on a reserve; iii) allowances received as an emergency volunteer; iv) the total value of the Universal Child Care Benefit (UCCB) repayment (line 213); and v) the total value of the Registered Disability Savings Plan (RDSP) repayment (line 232). The total value of the UCCB and RDSP income are

¹⁸ For couples, the adjusted net income used for the phase-out is for the family; however, our sample only consists of single individuals.

then subtracted from this amount. This income measure is used by the CRA to reduce the benefit once an individual's income places them on the plateau and phase-out segments of WITB. A filer is thus deemed ineligible for WITB if they have sufficient adjusted net income (i.e., non-labour income), despite low employment earnings. The LAD does not contain two components of adjusted net income as defined in Schedule 6: i) registered disability savings plan (RDSP) income repayment; and ii) allowance received as an emergency volunteer.

Tax filers are then determined to be eligible for WITB if they have: i) working income that is greater than or equal to the minimum working income necessary to be eligible (\$3,000 in most provinces); and ii) net income that is less than or equal to the maximum net income necessary to be eligible. Both these elements vary by province, year and presence of an eligible child. We create two separate eligibility variables for able-bodied filers and disabled filers to account for the WITB disability supplement. The final eligibility indicator variable in the estimating equations takes a value of one if the individual is eligible for WITB **or** the WITB disability supplement.

Once eligibility is defined, we also compute the potential WITB amount received for each eligible tax filer in the LAD, whether they actually received the transfer or not, using the income definitions described above. Although the amount of WITB received is directly observable in the LAD, we perform this exercise to validate our code and compare our resulting computed WITB amount against the actual WITB amount received in the tax data. Comparing our predicted WITB amount to the actual WITB amount observed in the data among those who received WITB (plus or minus \$50 to account for rounding and some minor sources of income that we are missing), we have an error rate of only 6.5%, which is likely due to the minor sources of income we are not able to observe noted above. This check indicates that our constructed WITB amount variable is highly accurate.

Appendix C Additional Policy Details

To be eligible for WITB, a tax filer must have: i) been a resident of Canada throughout the tax year; ii) earned income from employment or business; iii) been older than 19 years of age, or resided with a spouse, common-law partner or a dependent child; iv) not been enrolled as a full-time student for more than 13 weeks of the year unless residing with a dependent child; and v) not been incarcerated during the tax year. In addition to the basic WITB, individuals could receive a WITB disability supplement if they were eligible for the disability tax credit. For eligible married or common-law couples, only one spouse could claim the basic WITB benefit, but both spouses could claim the WITB disability supplement. If an eligible dependant was present, only one tax filer could claim WITB for that dependant.

Although WITB was a federal refundable tax credit program, provinces were permitted to negotiate specific changes to design parameters, so long as the proposed changes: i) built on other programs intended to improve work incentives for low-income workers; ii) were cost-neutral; iii) ensured a minimum benefit level; and iv) preserved the harmonization of WITB with other federal transfer programs (Department of Finance Canada, 2007). These stipulations reflected the federal government’s goal to ensure the harmonization of WITB with other provincial income-maintenance schemes while also recognizing that the provinces have primary jurisdiction over labour and social policy. As of 2018, only four provinces/territories – British Columbia, Alberta, Quebec and Nunavut – had amended their WITB programs with very minor variations in program structure.¹⁹

Figure 3 and Figure 4 depict the 2018 WITB schedule by province for single individuals without children and individuals with an eligible spouse/dependant, respectively. In most provinces, to be eligible for WITB, both singles and couples/parents were required to earn at

¹⁹ We do not exploit provincial variation in WITB for several reasons. First, WITB was introduced on a national basis, so there are no obvious provincial pre-post control/treatment groups. Second, cross-provincial differences in program parameters or eligibility criteria provide insufficient variation for estimation. Finally, because provincial governments change WITB parameters based on other programs they offer to residents, the variation in WITB eligibility criteria across provinces is not exogenous to other provincial policy choices that might also impact labour supply.

least \$3,000 in the labour market. Once wage earnings or self-employment income surpassed \$3,000, WITB consisted of three segments: the benefit was phased-in linearly as employment income increased, then plateaued over a small income range as adjusted net income increased to a threshold, and finally, phased-out linearly as adjusted net income increased past that point. Note that an individual's employment earnings were only relevant for the phase-in segment of WITB; the other two segments were based on adjusted net income. As a result, individuals who had low employment earnings, but derived substantial income from other sources, would therefore not qualify for WITB. In most provinces, the phase-in and phase-out rates of WITB were 25% and 15%, respectively, for both single tax filers and couples/parents.

There are some additional program details worth mentioning in brevity. Tax filers were also able to apply for advance WITB payments, which amounted to a maximum of 50% of the benefit the filer expected to claim in the tax year. Take-up of this option was very low: in 2012, only 500 tax filers across Canada received advanced payments (Department of Finance Canada, 2016). The majority of claimants received WITB as part of their annual lump-sum tax refund in the first few months of the year immediately following the tax year in which their eligibility was determined. WITB benefits were not considered taxable income, and WITB was not used to calculate provincial social assistance (i.e., welfare) payments, though social assistance income was used to compute the WITB benefit amount in the plateau and phase-out portions of the program.