



Apprenticeship and Future Income Earnings: Toronto and Ontario

**EXPLORATION OF POSTSECONDARY PATHWAYS AND APPRENTICESHIP:
A Series of Analyses of TDSB linked to Education and Labour Market Longitudinal Platform (ELMLP) Data**

Report #3

Robert S. Brown | *York University*
David Walters | *University of Guelph*
Gillian Parekh | *York University*
Ryan Collis | *York University*
Christine Mishra | *University of Toronto*
Firrisaa Abdulkarim | *York University*

June 2024

Published by:

The Ontario Council on Articulation and Transfer (ONCAT) |
Conseil Ontarien pour l'articulation et le transfert (CATON)

180 Dundas Street W, Suite 1902

Toronto, ON Canada, M5G1Z8

Phone: (416) 640-6951

Web: <https://oncat.ca/>

Copyediting services provided by Beth McAuley, The Editing Company.

Suggested Citation

Brown, R., Walters, D., Parekh, G., Collis, R., Mishra, C., Abdulkarim, F. (2024). Apprenticeship and future income earnings: Toronto and Ontario. Ontario Council on Articulation and Transfer.



Financial support for this research was provided by the Ontario Council on Articulation and Transfer (ONCAT). The interpretations and opinions presented in this report reflect those of the authors and not necessarily those of ONCAT. Copyediting services provided by Beth McAuley, The Editing Company.

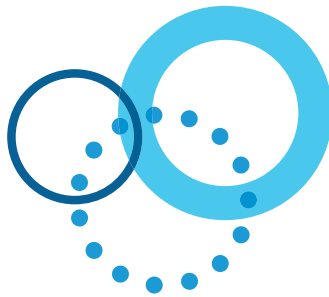


Table of Contents

Executive Summary	1
Examining the differences between the TDSB and the rest of Ontario.	2
Data and Sample	2
Descriptive Results	2
Characteristics of Completion: Age and Duration in Greater Detail	14
Discussion	15
Future Research	16

List of Tables

Table 1 Duration of Apprenticeship	7
Table 2 Outside the TDSB and TDSB by Graduation Status	10
Table 3 Types of Apprenticeship by Gender	12

List of Figures

Figure 1 Apprenticeship by Postsecondary Status	3
Figure 2 Types of Apprenticeship	4
Figure 3 Outside the TDSB and TDSB by Apprenticeship Status	5
Figure 4 Age When Started Apprenticeship	6
Figure 5 Outside the TDSB and TDSB by Age When Entered Apprenticeship	7
Figure 6 Duration of Apprenticeship	8
Figure 7 Graduation Status	9
Figure 8 Apprenticeship by Gender	11
Figure 9 Gender and Apprenticeship Participation	12
Figure 10 Outside the TDSB and TDSB by Gender	13
Figure 11 Age of Entry and Apprenticeship Status	14
Figure 12 Duration by Enrollment Status	15

Executive Summary

This report is based on an Ontario-wide analysis of students who pursue apprenticeship programs, and makes comparisons between those who attended high school in the Toronto District School Board (TDSB) and those who did not. The statistical analysis is based on administrative data linkages between the TDSB and Statistics Canada's Educational Labour Market Longitudinal Platform and provides invaluable insight into the relatively unexplored relationship between public school variables and apprenticeship outcomes. It also provides insight into how similar or disparate postsecondary outcomes are for students within and outside of the TDSB.

The statistical analyses mostly focus on a series of descriptive statistics that describe the types of apprenticeships that students pursue, their age of initiation, program duration, graduation rates, and gender. One of the key findings from this report is that securing a Red Seal or non-Red Seal certificate is incredibly challenging. Across Ontario, just over a third of students (36%) who enter a Red Seal or non-Red Seal apprenticeship program successfully obtain a certificate within six years. For students from the TDSB, the proportion is even lower at 26%. The results also reveal that students outside of the TDSB tend to fare better financially compared to their counterparts within the TDSB across most of the variables. These and other significant findings are highlighted in the report, along with possible explanations for the results.

Examining the differences between the TDSB and the rest of Ontario

The data linkage between the TDSB and Statistics Canada has offered invaluable insights into the relationships between public school variables and postsecondary, apprenticeship, college, and university outcomes. As education is provincially governed and organized, it is important to examine how similar or disparate postsecondary outcomes are for students within and outside of the TDSB. Below we explore the types of apprenticeships students pursue, age of initiation, duration of apprenticeships, graduation rates, and gender. Since the academic achievement variables are only available for observations that are part of the TDSB, only descriptive statistics are performed for this analysis.

Data and Sample

The base for this analysis are the 90,020 apprentices who were identified as Ontario apprentices in the RAIS 2021 dataset, born between 1990 and 1995.¹ This fits with the age range of almost all students in the TDSB 2004-2009 cohorts who were examined in the earlier analyses. The RAIS 2021 dataset has information on apprentices up to the 2021 calendar year.

Information on these Ontario apprentices was linked with (a) the Postsecondary Student Information System (PSIS), up to the 2020-2021 academic (school) year; (b) the T1 Family File (T1FF) with the base of the 2020 calendar year; in case of missing information for 2020, earlier tax records were adjusted for inflation; and (c) the TDSB Grade 9 cohort dataset (value of one if the student was in the TDSB Grade 9 cohort dataset and zero if the student was not).² RAIS, PSIS, and T1FF are datasets from Statistics Canada's Education and Labour Market Longitudinal Platform.

While the baseline of Ontario apprentices was calculated from those whose first (oldest) record of apprenticeship was from Ontario, certificate completion was calculated from the last (most recent) record of certificate completion across Canada, up to and including the 2021 calendar year.

Descriptive Results

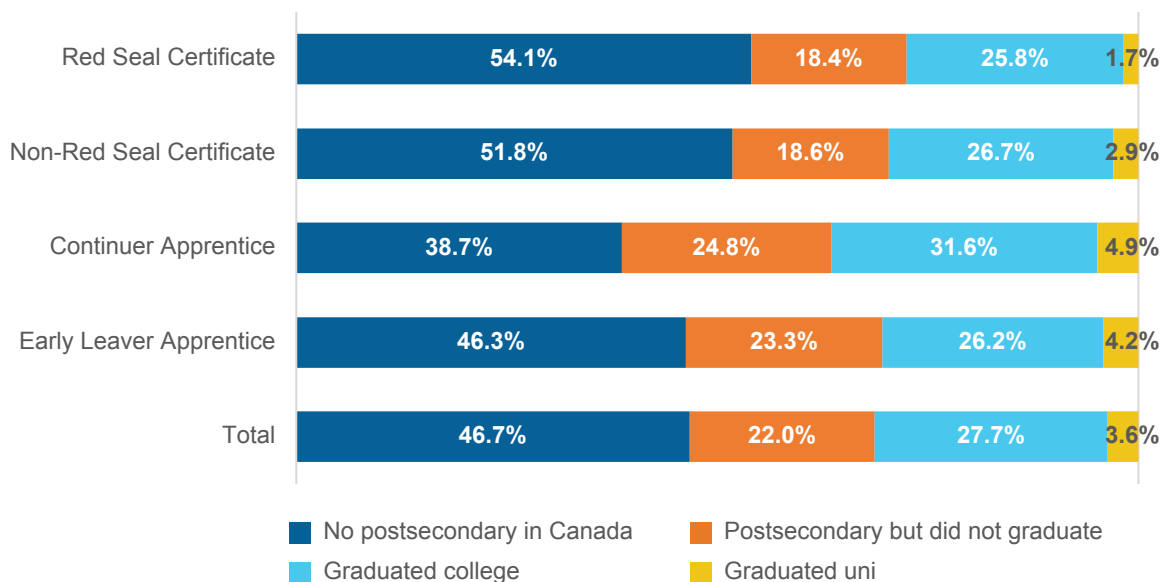
Relationship between apprenticeship programs and college/university participation. Drawing on the provincial picture for the relationships between apprenticeship and college/university participation, the research team drew on a pool of over 90,000 Ontario students who had enrolled in an apprenticeship program. For students who had secured a Red Seal certificate, 54% had not enrolled in any alternate postsecondary program. However, 18% could be characterized as transfer students, that is, students who had enrolled in college or university

1 This was calculated from subtracting age as of first record, from the year of first record, on the RAIS 2021 dataset. Verification of this "age" variable was done by comparing the age of students in one of the TDSB Grade 9 cohorts, taken from TDSB administrative records. Note that the earlier analyses were done with the 2020 RAIS dataset; by the time of this analysis, the 2021 RAIS dataset had become available.

2 Note that this would not be the complete population of apprentices from the City of Toronto. Over a third of Toronto students attend the Toronto Catholic District School Board or private school. As well, because of high Toronto mobility, over a fifth of TDSB Grade 12 students did not start in TDSB Grade 9, generally because of arriving in Canada from other countries. Finally, many apprentices would arrive from outside Toronto after completing their secondary schooling.

but had not yet completed their program. Approximately 26% had graduated with a college credential, and 2% had graduated from university. Interestingly, there were very similar relationships between non-Red Seal certificate holders and postsecondary engagement. For instance, over half of the students who had acquired a non-Red Seal certificate did not pursue any alternate postsecondary credential (52%), with 19% as transfer students, 28% having graduated college, and 3% having graduated university. For students who had not yet secured their apprenticeship certificate, the picture was a bit different with more postsecondary participation in university and college. Comparably, only 39% of those continuing their apprenticeship program had no other postsecondary enrollment, with 25% as transfer students, 32% with a college credential, and 5% with a university degree. For students who left their apprenticeship programs early, their postsecondary trends were similar to students continuing in their programs, with 46% having no other postsecondary education, 23% being transfer students, 26% having graduated college, and 4% having graduated university (Figure 1).

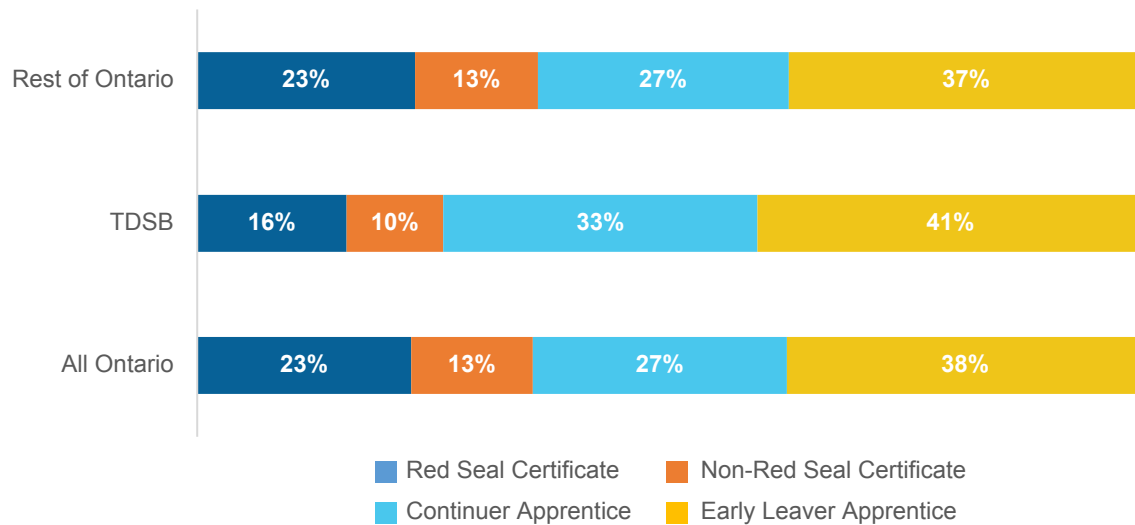
FIGURE 1
Apprenticeship by Postsecondary Status



Relationship between apprenticeship programs, college/university participation, and mean income. Based on an Ontario-wide pool of approximately 90,000 students, we examined mean income of students who had earned a Red Seal certificate or a non-Red Seal certificate, and students who were continuing in or had left their apprenticeship program in relation to PSE graduation status. Interestingly, Red Seal certificate holders with a university degree earned less than the average Red Seal certificate students. The converse is true for non-Red Seal certificate holders, continuers (although with a slight difference), and most notably for students who had left their apprenticeship program. Also interestingly, Red Seal certificate holders, regardless of graduation status, tended to earn in the \$70,000 range, non-Red Seal certificate holders in the \$50,000 range, while continuers and leavers in the \$40,000 range (with the exception of those who left their apprenticeship program and held a university degree).

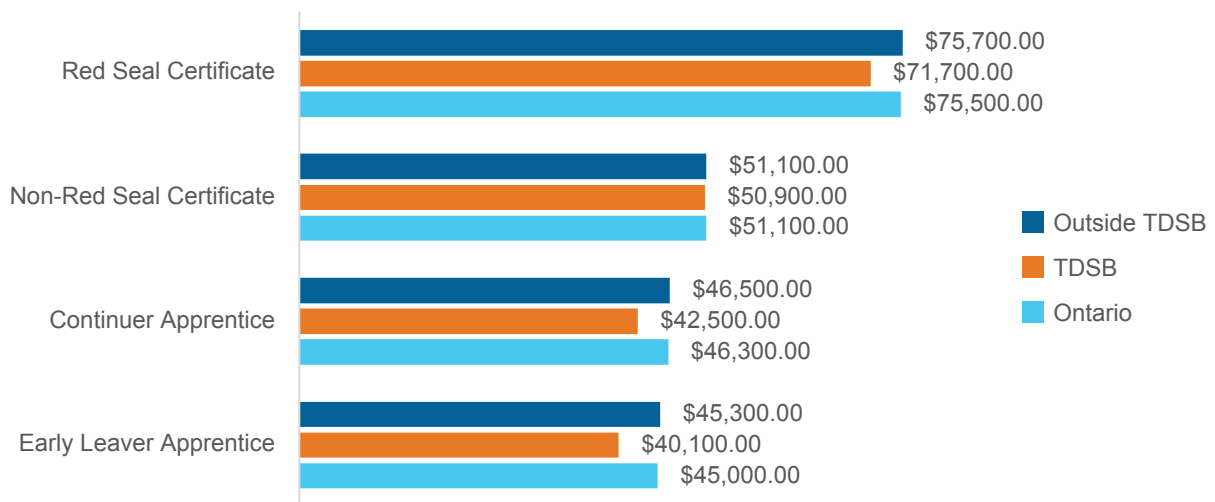
Types of apprenticeships – TDSB and Ontario trends. Overall, completion of an apprenticeship certificate (Red Seal or non-Red Seal) was approximately 35%. This is true for 26% of students in the TDSB and 36% of students outside the TDSB. Students from the TDSB were more likely to continue in or leave their apprenticeship program than students outside the TDSB (Figure 2).

FIGURE 2
Types of Apprenticeship



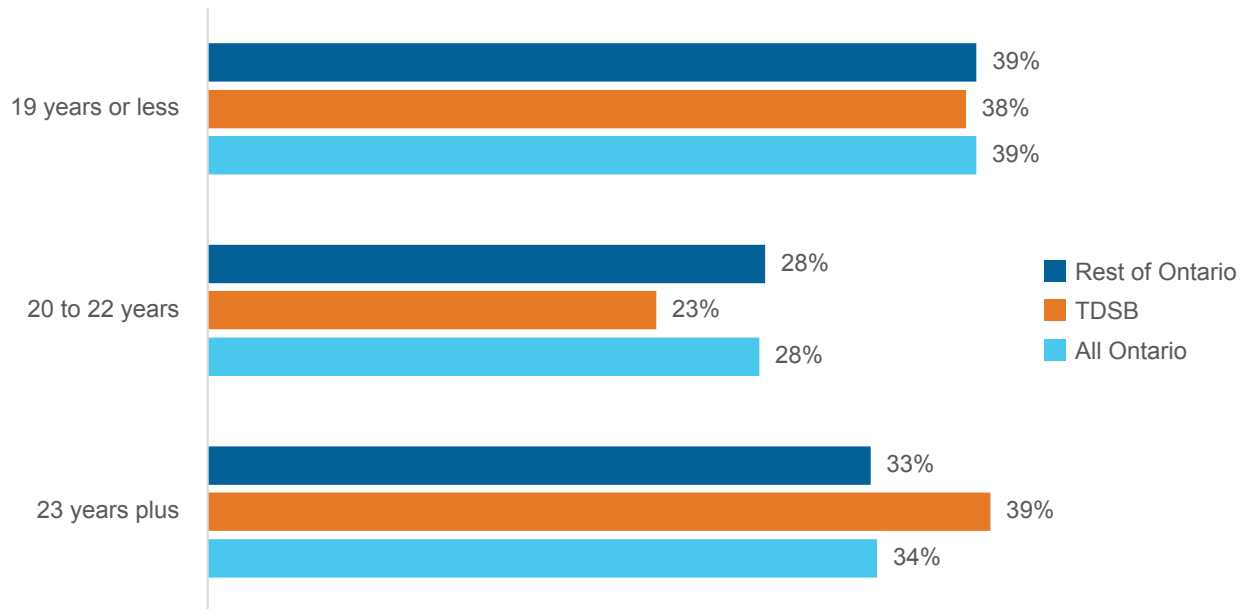
The relationship between mean income and types of apprenticeships – TDSB and Ontario trends. Mean income is an important indicator offering further insight into the apprenticeship pathway. As such, it was important to examine the differences in future income earnings of apprentices between the TDSB, from broader Ontario and Ontario overall. Of all the apprenticeship categories, results show that Red Seal certificate holders tended to earn the highest mean income (average of \$75,500), particularly for apprentices outside of the TDSB. The lowest earning group were former TDSB students who left their apprenticeship program before completion (\$40,100). Across all apprenticeship categories, apprentices outside the TDSB earned more on average (Figure 3).

FIGURE 3
Outside the TDSB and TDSB by Apprenticeship Status



Age of apprenticeship initiation – TDSB and Ontario trends. Interestingly, the rate of starting an apprenticeship at 19 years old or younger was similar across the TDSB and the province at roughly 38% to 39%. However, students outside the TDSB were more likely to start their apprenticeship program at 20 to 22 years of age (28% compared to 23%) and less likely to start their apprenticeship programs at 23 years of age or over (33% compared to 39%) (Figure 4).

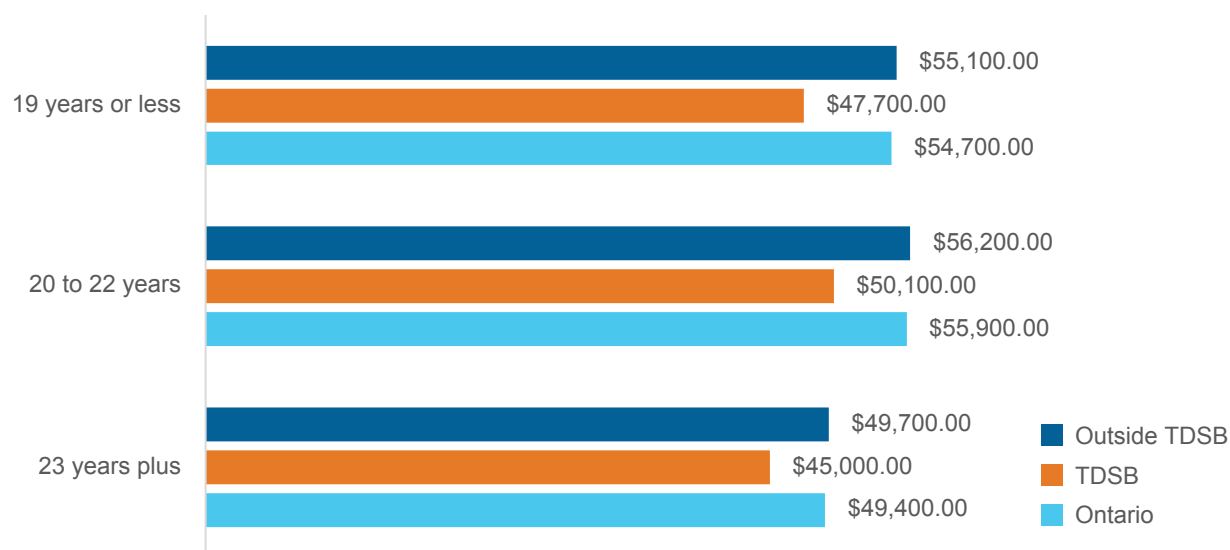
FIGURE 4
Age When Started Apprenticeship



Age of apprenticeship initiation and median income – TDSB and Ontario trends.

Interestingly, students who entered their apprenticeship program between the age of 20 and 22 years earned notably more than students who entered under 19 years or over 23 years of age. The largest difference was between former TDSB students entering an apprenticeship at age 23 or above, earning \$45,000, compared to students outside the TDSB entering between 20 and 22 years of age, earning \$56,200. In line with other findings, students outside the TDSB earned more for every age of entry category (Figure 5).

FIGURE 5
Outside the TDSB and TDSB by Age When Entered Apprenticeship



Duration of apprenticeship program – TDSB and Ontario trends. From our analysis, TDSB students were more likely to spend a longer time within an apprenticeship program than students outside the TDSB. For instance, 30% of both TDSB and Ontario students participated in an apprenticeship program for 1 to 3 years, with TDSB students being more likely to spend 7 plus years in an apprenticeship program, representing 27% of TDSB students compared to 24% of Ontario students (Table 1).

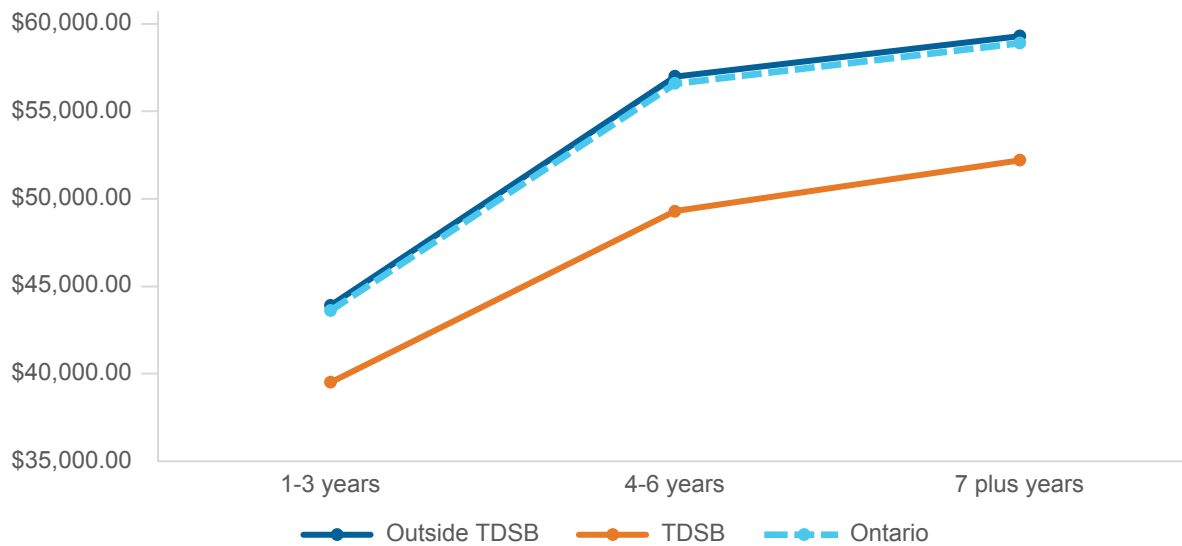
TABLE 1
Duration of Apprenticeship

	1-3 years	4-6 years	7 plus years
Rest of Ontario	30%	46%	24%
TDSB	30%	42%	27%
All Ontario	30%	46%	24%

Median income and duration of apprenticeship program - TDSB and Ontario trends.

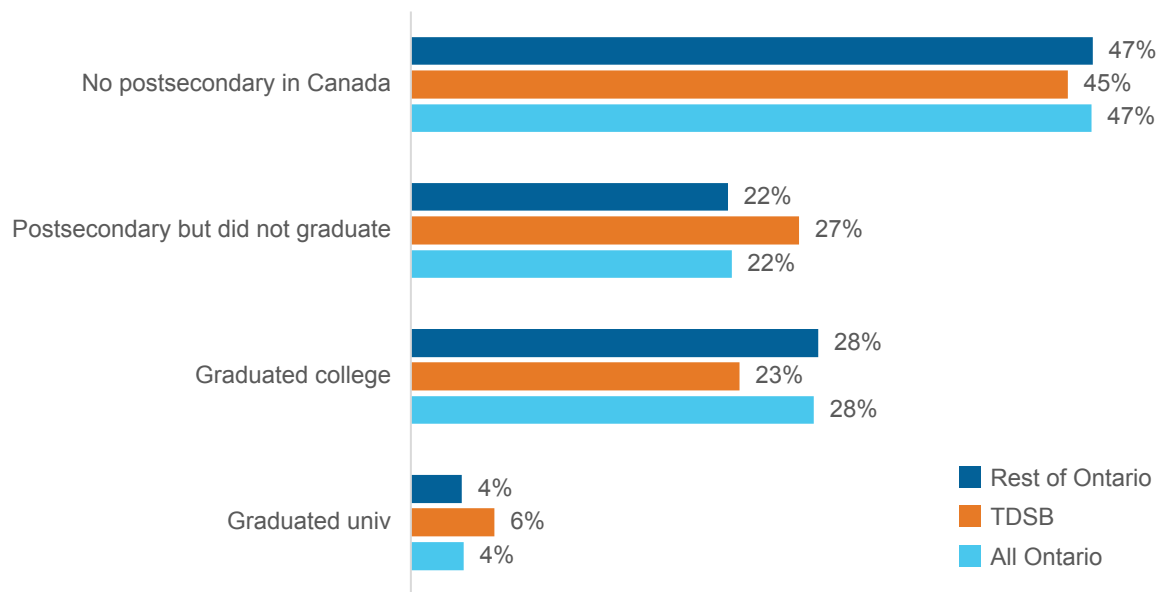
There appears to be a direct relationship between years spent in an apprenticeship program and future income. Overall, students who spent 1 to 3 years in their apprenticeship program earned, on average, \$43,600. Students who spent 4 to 6 years or 7 plus years in an apprenticeship program earned substantially more, \$56,600 and \$58,900, respectively. Regardless of the duration of the apprenticeship program, students outside the TDSB consistently earned more within every duration category (Figure 6).

FIGURE 6
Duration of Apprenticeship



Postsecondary graduation rate – TDSB and Ontario trends. For students enrolled in an apprenticeship program, similar rates of students did not pursue alternate postsecondary education (47% for Ontario, 45% for TDSB). However, TDSB students were more likely to be transfer students, having started but not completed either a college or university program (27% for TDSB, 22% for Ontario). Students outside the TDSB were more likely to have graduated college (28% compared to 23% for TDSB), and were less likely to graduate university (4% compared to 6% for TDSB) (Figure 7).

FIGURE 7
Graduation Status



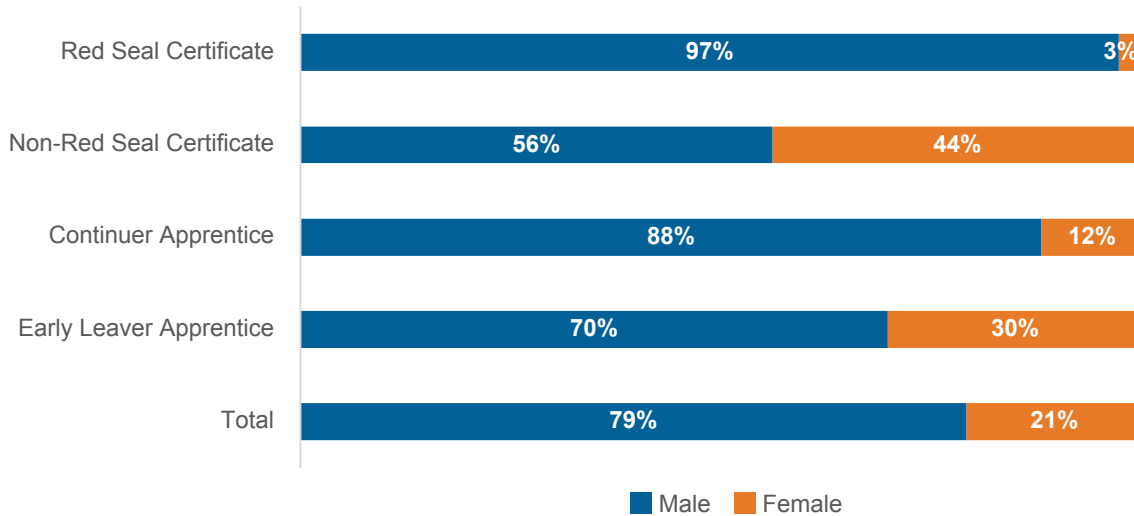
Relationship between PSE graduation status and mean income – TDSB and Ontario trends. Mean income is an important indicator offering further insight into the apprenticeship pathway. As such, it was important to examine the differences in future income earnings of apprentices between the TDSB, from broader Ontario and Ontario overall. Results show that regardless of PSE graduation status, apprentices coming from the TDSB earned less overall than their Ontario-wide counterparts. Students who had enrolled in a postsecondary credential program but did not graduate earned the least, while students who had a university degree earned the most. However, there was only a \$4,300 difference between the two credential categories for apprentices outside of TDSB and a \$7,200 difference for former TDSB students (Table 2).

TABLE 2
Outside the TDSB and TDSB by Graduation Status

Graduation Status	Outside TDSB	TDSB	Ontario
No postsecondary in Canada	\$ 54,500.00	\$ 47,500.00	\$ 54,100.00
Postsecondary but did not graduate	\$ 50,400.00	\$ 44,700.00	\$ 50,000.00
Graduated college	\$ 54,500.00	\$ 48,100.00	\$ 54,200.00
Graduated uniV	\$ 54,700.00	\$ 51,900.00	\$ 54,400.00
Total	\$ 53,600.00	\$ 47,200.00	\$ 53,300.00

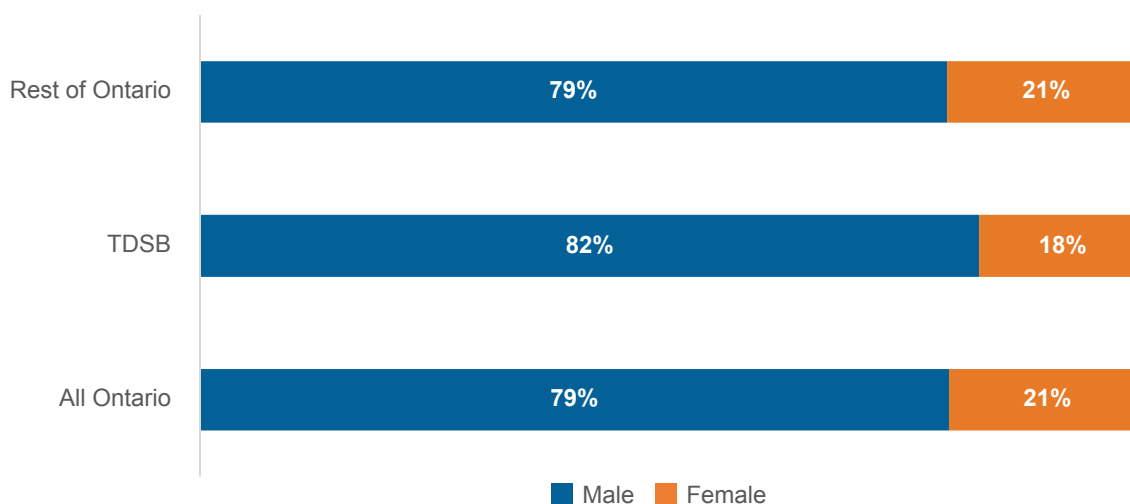
Relationship between gender and apprenticeship participation. Based on a pool of over 90,000 students across Ontario who had been involved in an apprenticeship program, the proportion of female students who had secured a Red Seal certificate was less than 3%, and the greatest gender parity for non-Red Seal certificate holders were female students who made up 44% of the group. For students continuing in their apprenticeship program, 88% were male as were 70% of those who had left (Figure 8).

FIGURE 8
Apprenticeship by Gender



Relationship between gender and apprenticeship participation – TDSB and Ontario trends. Although we have examined gender rates across apprenticeship outcomes for both TDSB and the province earlier in the report, it was important to provide an overall picture. Note that although there was an overall gender split of 79% male and 21% female participating in apprenticeship programs in Ontario, TDSB students were more likely to be male (82% compared to 79% for students outside TDSB) and less likely to be female (18% compared to 21% for students outside the TDSB) (Figure 9).

FIGURE 9
Gender and Apprenticeship Participation



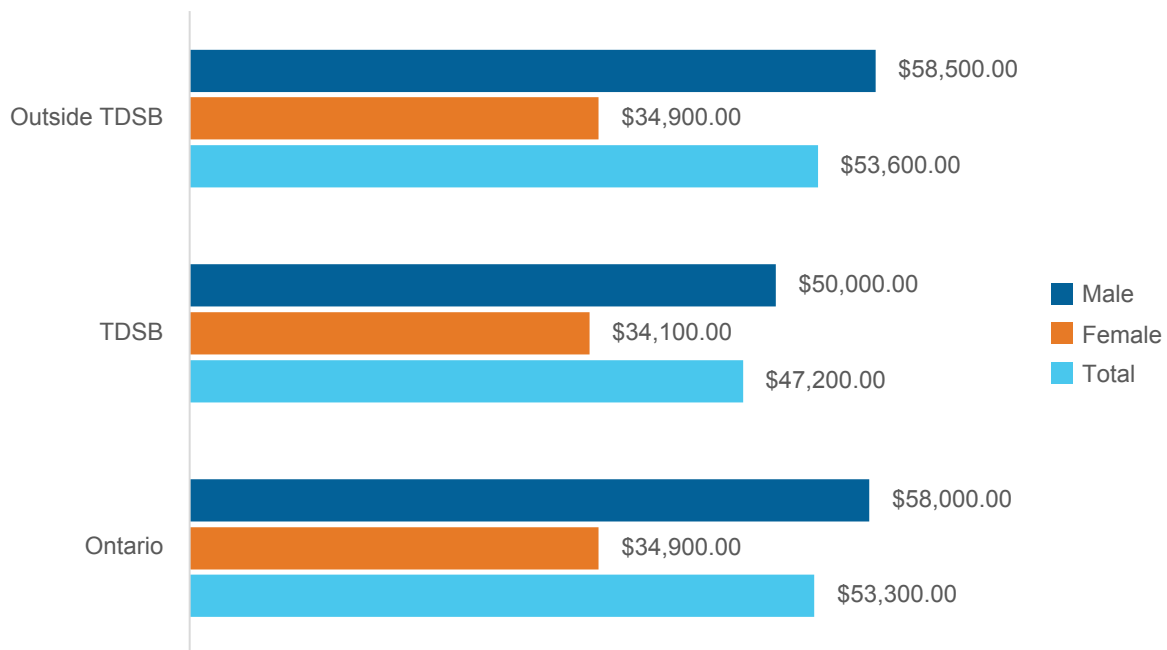
Relationship between gender and mean income for apprenticeship pathways. Gender was also notably connected to mean income. For certificate holders, the largest disparity was between male apprentices who had obtained a Red Seal certificate (\$76,100) and female apprentices with a non-Red Seal certificate (\$33,000). In fact, female students who were continuing in or had left their apprenticeship programs were more likely to earn slightly more than their female peers with non-Red Seal certificates. Although females with Red Seal certificates earned on average \$22,800 less than their male counterparts with Red Seal certificates, females with non-Red Seal certificates earned far less (\$31,600) than their male peers with non-Red Seal certificates (Table 3).

TABLE 3
Types of Apprenticeship by Gender

Gender	Red Seal Certificate	Non-Red Seal Certificate	Continuer	Leaver
Male	\$ 76,100.00	\$ 64,900.00	\$ 47,900.00	\$ 49,400.00
Female	\$ 53,300.00	\$ 33,300.00	\$ 34,700.00	\$ 34,700.00
Total	\$ 75,500.00	\$ 51,100.00	\$ 46,300.00	\$ 45,000.00

Relationship between gender and mean income for apprentices – TDSB and Ontario trends. Overall, the average income for males who had participated in an apprenticeship program was \$58,000; it was notably higher for students living outside the TDSB (+\$8,500). Female students who had participated in apprenticeship programs earned substantially less overall (average \$34,900) and female students outside the TDSB did not experience a similar income bump on par with their male colleagues (only \$800). Overall, male students participating in an apprenticeship program earned 1.7 times more than their female peers, with an income difference of \$23,100 (Figure 10).

FIGURE 10
Outside the TDSB and TDSB by Gender



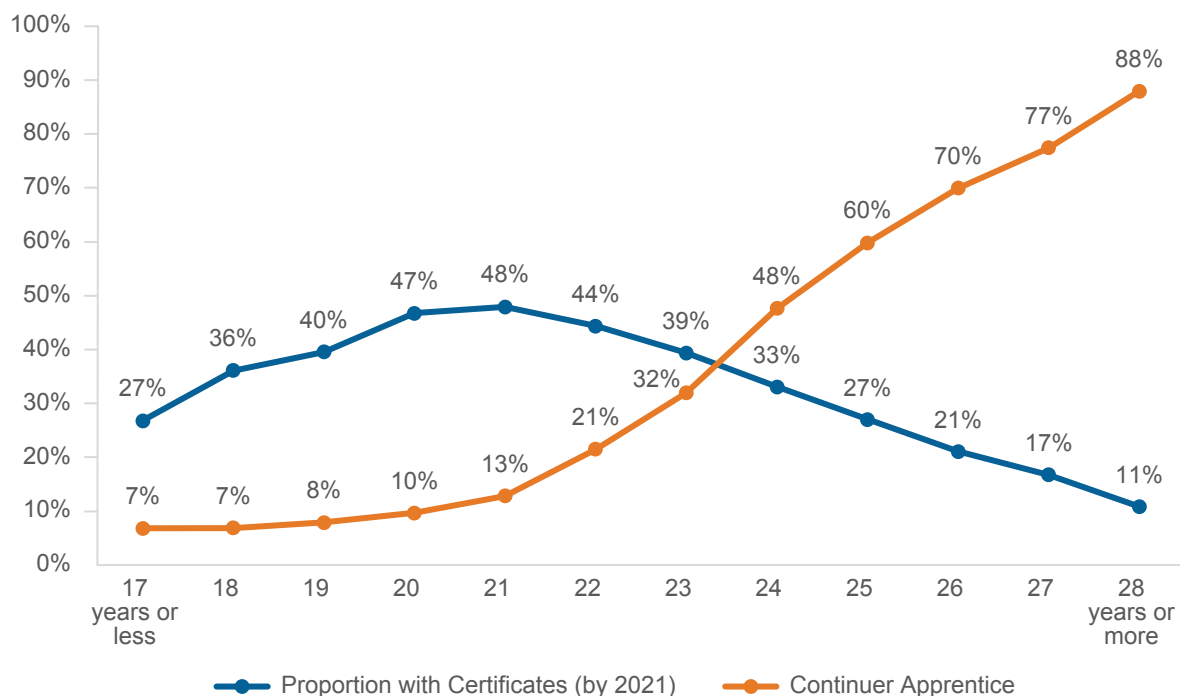
Characteristics of Completion: Age and Duration in Greater Detail

To provide more detail on certificate completion patterns, Ontario apprentices were examined according to the age when they started apprenticeship, and duration.

Age and Apprenticeship Completion. Most students who start an apprenticeship program before the age of 20 leave prior to completing a certificate. As we can see in **Figure 11**, less than 10% of the 17-year-old apprentices continued in their program. Since this accounts for most students leaving directly from school to apprenticeship, this points to a greater need for transition planning, and is also a caution for the current Ministry proposal to enable students to begin apprenticeship prior to completion of secondary school (People for Education, 2023). Most students who started at age 25 or more were still in the apprenticeship program (continuer) as of 2021. It should be cautioned that since the timeframe for completion appears to be quite long, we need to follow these older students for more years to get their final outcomes.

Students who start between the ages of 20 and 22 have the highest rate of certificate completion, although even the highest rate of completion by age 21 does not quite reach half of apprentices gaining a certificate (Figure 11).

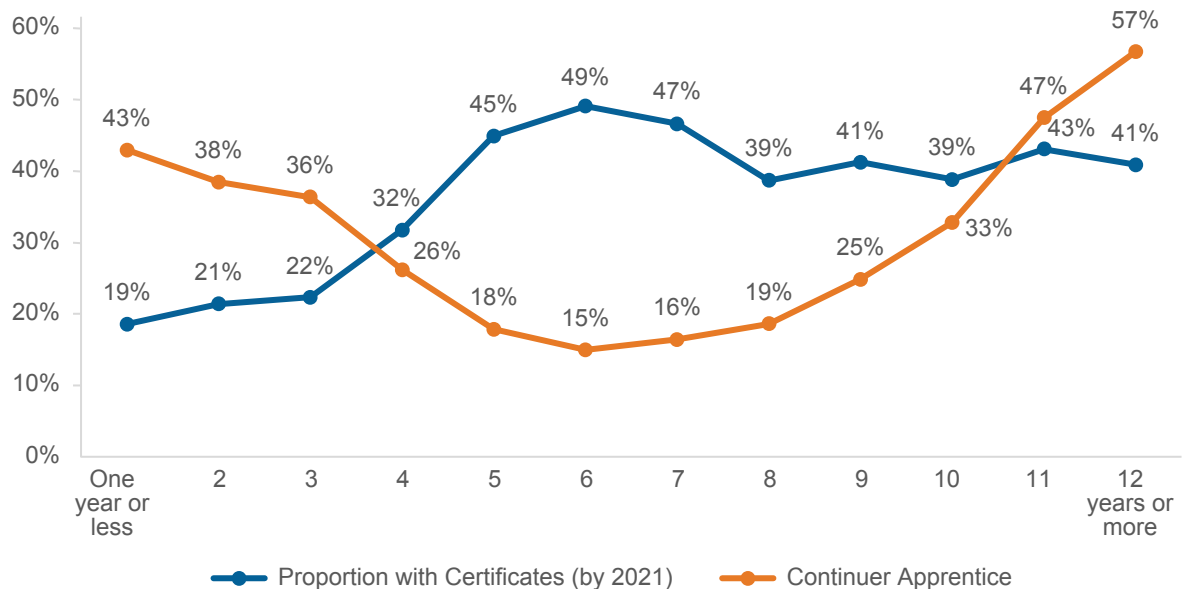
FIGURE 11
Age of Entry and Apprenticeship Status



Duration and Certificate Completion. In theory, apprentices can complete their certificate prerequisites in one to three years. While some do, both the literature and our examination of apprentice duration show that “timely” certificate completion is not generally the case in Ontario. The “sweet spot” appears to be six years, where almost half of apprentices have completed a certificate (Figure 12).

There are a number of apprentices who have been in the program a decade or longer, sometimes as continuers. These very long-serving apprentices (5,510 or 6% of all apprentices) deserve further study. Although the postsecondary paradigm focuses on completion of credentials, it may be that for many of these apprentices, the employment benefits of being an apprentice may be as important as the official goal of certificate completion.

FIGURE 12
Duration by Enrollment Status³



Discussion

One of the key findings from the Ontario-wide analysis is that securing a Red Seal or non-Red Seal certificate is incredibly challenging. Across Ontario, just over a third of students (35%) who enter a Red Seal or non-Red Seal apprenticeship program successfully obtain a certificate within six years. For students from the TDSB, the proportion is even lower at 26%. This means that close to two thirds (65%) of apprentice hopefuls are either still enrolled in their program or have left.

³ Duration measures the difference between first and last record, and so, in some cases, apprentices may have left and then returned or transferred apprenticeship programs.

Another key finding from this analysis is that apprentices outside of the TDSB tend to fare better financially compared to their counterparts within the TDSB across most of the variables. Age of entry also appears to be an important factor with students entering between age 20 and 22 earning the highest income earnings. This could be an important implication when considering the province's proposal to enable 16-year-old students to interrupt their high school studies in order to pursue an apprenticeship. The gender divide in income earnings is also interesting. Although male apprentices earned substantively more outside the TDSB than when from the TDSB (\$8,500), female apprentices outside the TDSB only received an income bump of \$800. Either within or outside the TDSB, female apprentices earned notably less (approximately \$23,000 annually) than their male counterparts.

There are a great deal of positives around enrollment into apprenticeship programs, in particular for students often identified with lower postsecondary success, for example, those with disabilities and lower marks. However, there are also a number of cautions. Most notably, the pronounced gender gap (especially around Red Seal certificate completion) means that this may not be an optimal pathway for many female students. As well, there is a troubling relationship of certificate completion to age: those who would have gone directly into an apprenticeship program from high school and those who are somewhat older are less likely to end up with a certificate, at least within the timeframe examined. This, plus the uncertainty around the time taken for certificate completion, would suggest that a pathway into apprenticeship while in high school, which is currently being undertaken by the Ontario government, should be approached cautiously for many students.

Future Research

The apprenticeship completion rate (that is, those with an awarded credential) increases over time, but the difference between entry and completion may be closer to that of graduate doctoral programs (around 50%: see Wollast, et al., 2018, 143) than more standard undergraduate programs which are typically much higher. Future studies should investigate factors that predict time to completion among various apprenticeship programs.

The pronounced differences between TDSB students and those in Ontario but outside the TDSB also points to the importance of considering geographical differences across apprenticeship programs in future analyses.

The very large gender gap is most noticeable in terms of Red Seal certificates, but is consistent across all apprenticeship categories (both among TDSB and all Ontario apprentices). This study did not investigate specific types of apprenticeship programs (e.g., hair stylist, plumbing). However, the relationship among specific apprenticeship programs and gender, duration, geographical location, and income deserve further study.

References

- People for Education. (2023). Risky business: June 2023 The unanswered questions in Ontario's proposed apprenticeship plan. https://peopleforeducation.ca/wp-content/uploads/2023/06/Ontarios-Apprenticeship-Plan_ENG_June2023_28June.pdf
- Wollast, R., Boudrenghien, G., Van der Linden, N., Galand, B., Roland, N., Devos, C., De Clercq, B., Klein, O., & Frenay, M. (2018). Who Are the Doctoral Students Who Drop Out? Factors Associated with the Rate of Doctoral Degree Completion in Universities. *International Journal of Higher Education* Vol. 7, No. 4. URL: <https://doi.org/10.5430/ijhe.v7n4p143>

