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EDUCATION POLICY

Evaluating Student Performance in Pathways to Education

by

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- Canadian students from poor socio-economic backgrounds continue to be disadvantaged compared to students from more affluent backgrounds.
- Pathways to Education is a comprehensive support program for students from poor socio-economic backgrounds that started in Toronto and is now expanding across the country.
- We compare high-school students eligible for Pathways at its initial site (Regent Park) against similar students in other public housing sites, before and after the program was introduced. Our baseline estimates show that eligibility for Pathways increased high-school graduation rates by 15 percentage points, postsecondary application rates by 17 percentage points, and postsecondary enrolment rates by 19 percentage points.
- Our research shows that eligibility for Pathways had a smaller, but still significant effect on high-school and postsecondary outcomes for students at two additional Toronto sites.
- A better understanding of Pathway's mechanisms and why the estimated impact for the newer sites is smaller, could help enable it, or similar programs, to expand and improve.

Children from very poor socio-economic backgrounds are subject to many stresses while growing up. They are more at risk of ending up poor, incarcerated, unhealthy, and unhappy than children from more affluent backgrounds.

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The Pathways to Education program (Pathways) is a prominent example of a community-driven, comprehensive youth-support program developed to improve academic outcomes among those entering high school from disadvantaged backgrounds. The program includes mentoring, tutoring, counselling, postsecondary transition assistance, and immediate and long-term incentives for students to excel.

The program began in 2001 for grade 9 students in the Regent Park public housing site in Toronto, and has since expanded to three additional Toronto sites as well as locations in Halifax, Hamilton, Kingston, Kitchener, Montreal (two locations), Ottawa, Shawinigan, and Sherbrooke, as well as Aboriginal-focused programs in Mashteuiatsh and Winnipeg.

Given the program's growth and the significant government funding it receives, measuring Pathways' impact on students is essential. In comparing the outcomes of students who are eligible for the program to those of students in other districts or in the same districts before and after the program began, we observe that high-school completion rates for Regent Park students increased rapidly after Pathways was introduced, from 44 percent to 59 percent, and postsecondary enrolment rates increased from 38 percent to 57 percent.

If the size of these effects could be replicated in other settings, scaling up the Pathways program, or similar programs, could be a highly effective strategy for helping disadvantaged youth across the country.

How the Program Works

Pathways began as a grassroots effort by staff at the Community Health Centre at Regent Park, in Toronto, Canada's oldest and largest public housing site. In 2001, 87 percent of family households living in Regent Park fell below Statistics Canada's low-income cut-off. In the 1990s, the high-school dropout rate in Regent Park was about twice that of the rest of Toronto.

In the mid-1990s, the board of directors of the Community Health Centre began to form an action plan to help Regent Park youth. One of the most important aspects of the plan was a multifaceted educational program to provide mentoring, academic, and social support, assistance with college and professional school applications, and scholarship information and university contacts. The program began in the 2001-02 academic year for approximately 115 students living in Regent Park and transitioning into grade 9. Each year, another cohort was eligible to sign up.

By 2004-05, enrolment reached 615. Just under half (47 percent) of the financial support for Pathways comes from national, provincial, and local levels of government. The rest comes from foundation (20 percent), corporate (19 percent), individual (8 percent), and other (6 percent) support.

Eligibility for Pathways is based solely on residence. Participation is voluntary, but open to all students who live in a particular catchment area, and students and parents must agree each year in writing to the program's conditions and high expectations. Pathways assigns each student to a full-time student-parent support worker (SPSW). Through relationships with high schools, SPSWs monitor students' absenteeism, grades, and other participation in Pathways activities. SPSWs often serve as the go-to people for dealing with any issues that might arise at home, school, or around the community. Each is responsible for approximately 50 students over a school year.

Pathways participants also receive extensive academic support in the form of free local evening tutoring, provided up to four nights a week, and mandatory at least twice a week unless the student's grades are above 70 percent. Tutors are volunteers who receive some training and provide help for an average of about five hours per week. Students in grades 9 and 10 also receive social support in the form of group mentoring.

In later grades, students participate in a wider set of agreed-upon social activities that best matches their individual interests. Students also receive free public transportation and school supplies, but must meet with their SPSWs to get them. One of the more expensive components of the Pathways program is a trust fund for each participant. For each year of participation, the program sets aside \$1,000, up to a maximum of \$4,000, that students can use toward tuition and other postsecondary expenses after high-school graduation.

In 2005, a new charitable foundation, Pathways Canada, was established to raise money and oversee the program's expansion across the country. Pathways Canada secured funding to expand in 2007 to two more sites in Toronto among the city's 13 "priority neighbourhoods" – inner-city areas with a combination of high crime and high social service needs. Pathways chose to expand to the Rexdale and Lawrence Heights communities, starting with grade 9 students and phasing in an additional grade 9 cohort each year.

Assessing the Program

A previous study of Pathways to Education found that students in the program had a lower high-school dropout rate than students who lived in the neighbourhood before the program was introduced (Boston Consulting Group 2011). Without a credible comparison group or looking over several years, however, such a comparison might have conflated the effect of the Pathways program with the overall decline in the high-school dropout rate that was occurring across the city or with other effects.

As well, one must be careful not to assume that Pathways was effective at improving results if, instead, students who were otherwise motivated to improve their academic performance sought out the program and would have succeeded without it. Therefore, we compare students from Regent Park and other Toronto housing sites entering high school between 2000 and 2008 to produce a more convincing and clear evaluation of the program's initial impact on high-school completion, postsecondary enrolment, and intermediate academic attainment in high school.

Our data come from three main sources: the Toronto District School Board (TDSB), Toronto Community Housing (TCH), and Pathways administrators. We use TDSB data to determine whether students from TCH sites have sufficient credits to complete their Ontario Secondary School Diploma by the end of their fifth year in high school. We also obtained information on whether the grade 9 students entering Pathways applied to and accepted a college or university program within five years; we found, in fact, that virtually all who were accepted confirmed their intention to enrol.

As well, given the long wait times of families seeking access to social housing and the consequences of turning down an initial offer at any location in the city, families have little control over which housing site they end up in and when. This means that there is little likelihood that our data reflect the transfer of more focused eligible students to areas where the Pathways program was available.

Results

Of 7,901 students who entered grade 9 in a TDSB school between 2000 and 2008 from a TCH site, 1,420 were from Regent Park, 856 from Rexdale and Lawrence Heights, and 5,625 from other housing sites. In the first year of the program at Regent Park, 58.8 percent of eligible students registered, in the second year 80.7 percent did so, and in the third year the fraction climbed to 89.3 percent. Through 2008, the fraction

remained constant or exceeded 90 percent, a remarkable take-up rate for an education improvement program targeted at disadvantaged youth.¹

Only 38.2 percent of students from Regent Park who entered grade 9 in 2000 – the year before the introduction of the Pathways program, and hence not eligible for it – graduated from high school by their fifth year. Of those who entered grade 9 in the first year of Pathways in 2001, however, 52.0 percent graduated from high school. The rate increased to 60.0 percent for the 2002 grade 9 cohort, then remained stable through 2008. In contrast, although the graduation rate of students in public housing sites was initially higher than that of Regent Park students before Pathways was introduced, it improved only modestly over the same period.

By assuming the graduation rate in Regent Park would have followed the same pattern as that in other housing sites if Pathways had not been introduced there, we can estimate the program's overall impact. The Regent Park graduation rate rose by 14.2 percentage points relative to other public housing sites between the 2000 and 2001 grade 9 cohorts – the period over which Pathways was introduced (Figure 1).

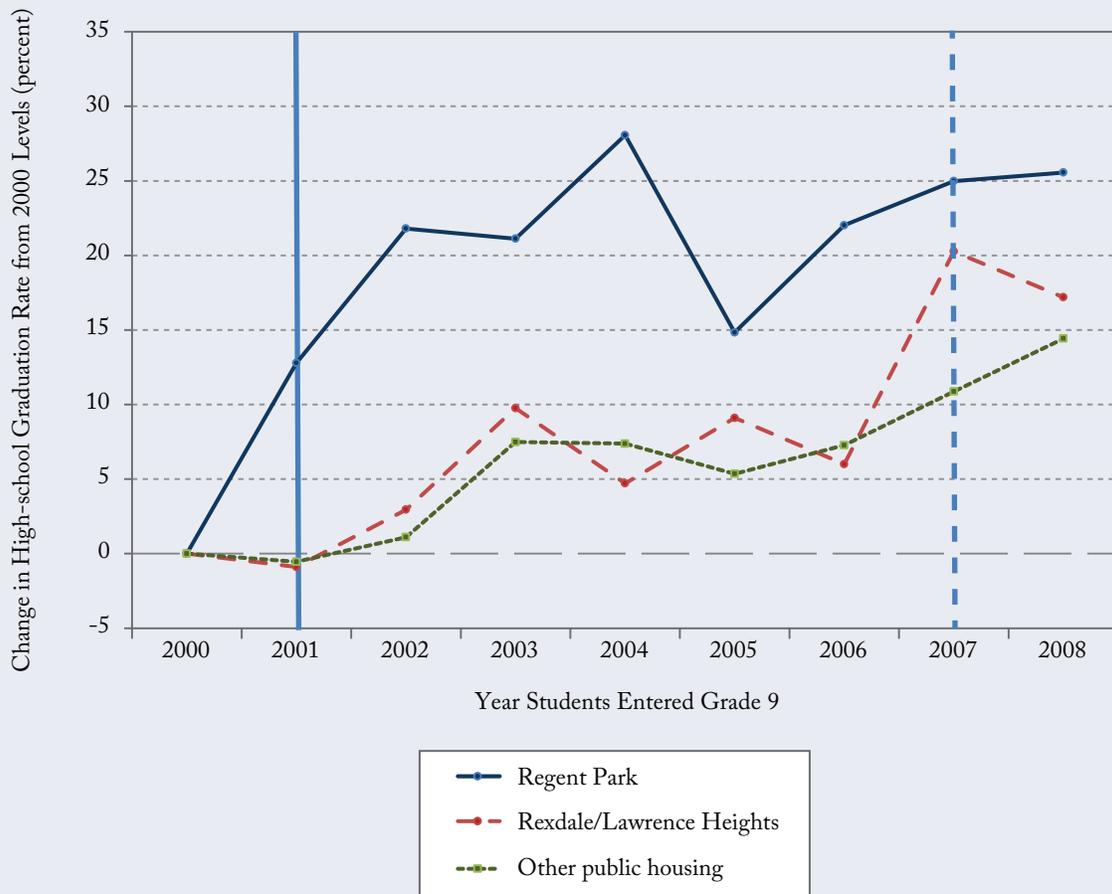
Over the 2000-06 period (before the new Pathways sites at Rexdale and Lawrence Heights opened), the five-year graduation rate grew 14.6 percentage points faster for Regent Park students than for those in other public housing sites. In a regression model that controls for the effect of age when entering high school, gender, immigrant status, primary language spoken at home, housing site and other factors, we find that eligibility for Pathways raises the high-school graduation rate by 15.2 percentage points for students in Regent Park.²

Eligibility for Pathways had a smaller, but still significant effect on high-school graduation rates at two additional Toronto sites. Students entering grade 9 in 2007 at the Rexdale and Lawrence Heights sites (when Pathways was introduced) increased their graduation rate by 5.7 percentage points relative to students in other public housing sites.³ The graduation rate at Rexdale and Lawrence Heights followed that observed for other public housing sites until 2006, then jumped from 49.0 percent to 64.4 percent in 2007 and 60.5 percent in 2008, after Pathways was introduced. Across all sites, Pathways benefited females more than males wherever it was offered (see Oreopoulos, Brown, and Lavecchia 2014).

Pathways has also been successful at helping at-risk high-school students towards postsecondary education. Application rates for postsecondary education by students at Regent Park increased by 16.7 percentage points between 2000 and 2006, while the acceptance rate in a two-year community college program increased by

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- 1 Registration rates were similar for males and females, English-speaking and non-English-speaking students, and for low- and high-performing students. Such a large take-up rate means there was limited potential for selection bias to drive our results. Pathways participation rates in the initial year at Rexdale and Lawrence Heights were also impressive, at 83.3 and 87.7 percent, respectively, though they fell the following year to 72.2 and 74.7 percent, respectively.
 - 2 Some caution may be warranted in concluding such large effects using only one pre-program year of data (for Grade 9s in 2000). We were able to obtain data for Grade 9s in 1999 for students in the old City of Toronto (not the suburbs of Etobicoke, Scarborough, York, and North York), and for high-school graduation outcomes. When using this smaller sample, Pathways is estimated to have increased graduation rates by 9.0 percentage points instead of 15.2 percentage points. These estimates are notably lower, but less precise because of the smaller comparison sample in 1999.
 - 3 We compare the increase in high-school graduation rates for students entering grade 9 in Rexdale and Lawrence Heights between 2001-2006 and 2007-2008 against those in other public housing sites (including Regent Park that already adopted Pathways in 2001) over this period.

Figure 1: Rising Graduation Rates after 2000



Note: Solid vertical line indicates the first year of the Pathways program, in which incoming high-school students from Regent Park would have been eligible to sign up for the program. The dashed vertical line is the first enrolment year for participants from Rexdale and Lawrence Heights.

Source: Authors' calculations based on data from Toronto District School Board, Toronto Community Housing, and Pathways.

9.5 percentage points and the university acceptance rate increased by 9.3 percentage points. Similarly, postsecondary application rates by students in Rexdale and Lawrence Heights increased by 8.6 percentage points after Pathways was introduced and acceptances of two-year community college program offers increased by 6.4 percentage points.

Policy Implications

Since its start in 2001, the Pathways to Education program has attracted national public and media interest. The Boston Consulting Group concluded that "Pathways is one of the most successful programs we have found

Table 1: Improvement in Student Postsecondary Application Rates and Enrolment

	Average Change in Students' Education Outcome			
	Applied to Postsecondary Education	Enrolled in Postsecondary Education	Enrolled in College	Enrolled in University
	<i>(percentage points)</i>			
Increase in Regent Park students' education outcomes	16.7*	18.8*	9.5*	9.3*
Increase in Lawrence Heights and Rexdale students' education outcomes	8.6*	3.5	6.4*	-2.8

Note: Regressions control for student characteristics, such as age of student (in grade 9) and if the student is female, immigrant, and speaks English as a second language.

* denotes estimates that are statistically significant at the 95 percent level or greater.

Source: Authors' calculations based on data from Toronto District School Board and Toronto Community Housing.

anywhere in North America" (Pathways to Education 2008). The program has since expanded to 14 other communities across Canada, and efforts for further expansion continue.

Pathways costs approximately \$3,500 per year per student (in 2010 dollars), and \$1,200 in head office administrative costs. Of direct operating costs, public transportation tickets account for 20 percent, scholarship expenditures for 15 percent, and staff, tutoring, and group activity operations the remainder. For the average eligible student's entire time in high school, Pathways costs an estimated \$11,100 in present value direct operating costs (Boston Consulting Group 2011),⁴ plus the costs of the student's extended enrolment in school.

A simple cost-benefit analysis, looking only at the private returns to education, suggests that Pathways generates significantly higher lifetime earnings for those eligible for the program. Since eligibility for Pathways leads to higher high-school graduation rates and increased postsecondary enrolment, the program likely increases lifetime earnings through both the premium that high-school graduates expect to earn over high-school dropouts, as well as the return to enrolling in college or university, even for marginal students (Oreopoulos and Petronijevic 2013).

⁴ The estimated direct operating cost per student is approximately \$14,000. We scaled this amount by 0.80 to reflect the fact that the benefits of the Pathways program are calculated by estimating the impact per eligible student – that is, for every student who resides in a community that offers the Pathways program when they enter Grade 9 – and that the average participation rate was 80 percent during the first few years of the program.

Suppose that high-school dropouts earn \$20,000 annually, on average,⁵ and that dropouts work from age 16 until age 65 with a 1.5 percent annual real earnings increase. Recent research shows that the returns to an additional year of high school for marginal students are in the range of 10 percent per year (Angrist and Krueger 1991; Oreopoulos 2007; Autor, 2014). We also assume that students who complete high school because of Pathways, have on average, two more years of high-school education than they otherwise would have without the program.

That would increase their annual earnings by about 20 percent compared to those who did not graduate, leading to about \$25,000 in annual real earnings from approximately age 18 until age 65. For those that attend college or university, recent studies estimate that the earnings return to enrolling in postsecondary education for students at the margin of enrolling is about 22 percent relative to those who stop at high school (Oreopoulos and Petronijevic 2013; Zimmerman, 2014).

With these assumptions, we estimate the private return to being eligible for Pathways separately for both the Regent Park site and the expansion Rexdale and Lawrence Heights communities. In Regent Park, where Pathways increased high-school graduation by about 15 percentage points and postsecondary enrolment by 19 percentage points, eligibility for the program increases expected present value lifetime earnings by \$36,900, using a 3 percent real discount rate. For Rexdale and Lawrence Heights, where the impacts on high-school and postsecondary attainment were lower, eligibility for the program increases expected present value lifetime earnings by \$10,100. Overall, the private return to Pathways, through the increase in expected lifetime earnings, is greater than the program's direct operating costs, given current expenses.

Given these significant private returns, especially at the Regent Park site, the public return on investment for Pathways may also be large. Using an average tax rate of 30 percent – in line with that found by Laurin and Poschmann (2011) for such earners – the increase in lifetime tax revenue alone finances a significant fraction of the program's direct operating expenses.

The fact that high-school and postsecondary graduates are less likely to access government services, such as welfare, suggests that the program may have even larger fiscal benefits. Adding the many possible non-pecuniary benefits from more schooling (Oreopoulos and Salvanes 2011), as well as the social benefits from the likely reductions in crime and improvements to health (Lochner 2011) due to the program further reinforces its return on investment.

A better understanding of the mechanisms that drive the estimated impact of Pathways could suggest ways to improve the program (or any such program), as well as to understand why the impacts at the Rexdale and Lawrence Heights sites are smaller.

Our findings indicate that the program's bundle of features successfully assists disadvantaged students, but our approach cannot disentangle which program components work and which do not. Previous research, however, offers evidence of large impacts from some Pathways components in isolation. For example, tutoring, after-school assistance, and a culture of high expectations are key to highly effective charter schools (Dobbie and Fryer 2009), while personalized and regular coaching, at least at the college level, is effective at increasing education persistence (Bettinger and Baker 2014).

5 This is close to the average annual employment income of people ages 20 to 24, without a high-school degree, working full time in Toronto in 2010.

Assistance with college transition and applications, including paying application fees, also markedly increases college enrolment (Bettinger et al. 2012; Carrell and Sacerdote 2013). In New Brunswick, a study that offered grade 9 students college trust funds of \$2,000 each year to a maximum of \$8,000 reduced dropout rates by about 8 percentage points and increased postsecondary enrolment rates by about 10 percentage points (Ford et al. 2012).

It is not possible to tell from our findings whether only a few components of the Pathways program are driving the results or whether the integration of the program's various components is crucial. Education policymakers should seek to understand this question better as they consider continued support for such programs. Clearly, however, Pathways' initial introduction looks as though it was effective in improving educational attainment for a sample of very disadvantaged youth.

Conclusion

Pathways to Education, especially in Regent Park, has proven to be a successful model for assisting disadvantaged students, and increasing academic results, graduation rates, and university application rates. Education policymakers should explore further the program's mechanisms and the sources of its apparent success as they consider its wider applicability in various parts of the country that might benefit from it.

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