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The Impact of Comprehensive Student Support on Crime: Evidence from the Pathways to Education Program

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The Impact of Comprehensive Student Support on Crime: Evidence from the Pathways to Education Program

Abstract

This paper presents estimates of the causal effect of a comprehensive support program for low-income high school students on crime. The program, called Pathways to Education, bundles a number of supports including regular coaching, tutoring, group activities, free public transportation tickets and bursaries for postsecondary education. Our empirical strategy uses administrative data on high school enrollment linked to administrative court records and a difference-in-differences methodology that compares the evolution of crime outcomes of students living in the public housing communities where Pathways operates to similar public housing students who are ineligible for the program. We find that eligibility for Pathways reduces the likelihood of being charged with a crime at its Regent Park location by 6 percentage points (33 percent of the pre-treatment mean) and has no statistically significant effect at its Rexdale and Lawrence Heights locations. Our results suggest that the reductions in criminal activity are driven by the reduction of property crimes.

JEL-Codes: I240, I260, I280, L310.

Keywords: low-income youth, education and crime, youth programs.

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1 Introduction

Growing up in a neighborhood with less economic opportunity is associated with lower education attainment, worse labour market outcomes and more negative interactions with the criminal justice system as an adolescent (Holzer et al., 2008). For example, youth living in low-income neighborhoods in Toronto were at least twice as likely to be charged with a crime as youth living in more affluent areas in 2006 (Charron, 2011). At the individual level, being arrested or incarcerated as an adolescent may increase the likelihood of future arrests, lower human capital accumulation and earnings and lead to riskier health behaviors later in life (Aizer and Doyle Jr, 2015; Baert and Verhofstadt, 2015; Doherty et al., 2022; Garin et al., 2023; Grogger, 1995; Rose, 2015). At the aggregate level, growing up in a neighborhood with high levels of crime is associated with an increased likelihood of being arrested and charged with a crime (Damm and Dustmann, 2014; Looney and Turner, 2018). High levels of crime in a neighborhood may also reduce economic mobility among individuals living in that neighborhood (Sharkey and Torrats-Espinosa, 2017). Consequently, scalable interventions or programs that reduce youth criminal activity have the potential for large social benefits, both for recipients and nonrecipients.

In this paper, we study the effects of introducing a comprehensive support program for at-risk high school students in Toronto, Canada on criminal activity. The program, called Pathways to Education (or simply Pathways), comprises several supports, including regular coaching and tutoring, group activities, and financial assistance to all high school students in the at-risk neighborhoods in which Pathways operates. High school students are eligible to participate in Pathways if they live in a catchment area in which the program is operating. In order to participate in Pathways, students and their parents must register for the program each academic year. Pathways was initially introduced in 2001 in the Regent Park neighborhood of Toronto, one of the lowest-income communities in Canada that has historically faced high rates of crime and poverty. The program subsequently expanded into two additional communities in Toronto, Lawrence Heights and Rexdale in 2007 before

expanding to more than 30 locations across Canada.¹

We estimate the causal effect of eligibility for Pathways at its Toronto locations on long-run crime outcomes using a difference-in-differences (DD) methodology. Our analysis compares the outcomes of high school students eligible for Pathways because they live in a neighborhood where the program is operating to similar low-income students who are ineligible for the program, before and after its introduction. Two institutional features make the estimation of causal effects using a DD methodology ideal for our application. The first is that Pathways was phased-in for successive cohorts of high school students in the locations in which it operated. Specifically, only incoming Grade 9 high school students were eligible to sign-up for the program upon its introduction while older cohorts of students living in the same neighborhood were ineligible. The second important feature of our setting is that Pathways was introduced in communities in which all residents live in public housing. During the period we study, the wait list to move into a public housing unit was several years long (since the demand for public housing in Toronto far exceeds the supply of available units). This fact, combined with the small lead time between the announcement and actual introduction of Pathways implies that it is unlikely that students and their parents would have been able to sort into a community in which the program was operating during the period we study.

Using administrative data on high school enrollment from the Toronto District School Board (TDSB) linked to administrative records from youth and adult criminal courts in Canada between 2005-2019, we track criminal activity from high school through early adulthood. By the end of our study period, the oldest cohort of TDSB students we observe are in their early thirties while the youngest cohort of students are in their mid-twenties. Our DD estimates suggest that eligibility for Pathways at the Regent Park location reduced the likelihood of ever being charged with a crime by 6 percentage points or 33 percent (relative to a pre-Pathways mean of 19 percent). We find that this result is mostly driven by a re-

¹For an up-to-date list of the locations in which the Pathways program is operating, see <https://www.pathwaystoeducation.ca/contact-us/>.

duction in charges for “property crimes”, such as breaking and entering, mischief and theft. Our results suggest that the decrease in the likelihood of ever being charged with a crime is larger for female students and for students who complete more credits in Grade 9. We also estimate the effect of eligibility for Pathways on the number of times an individual is charged, the likelihood they are ever convicted of a crime, and their number of criminal convictions. While the coefficient estimates from these specifications also suggest a reduction in criminal activity, the standard errors are large and we are unable to reject a null effect. For the Lawrence Heights and Rexdale communities, we estimate that eligibility for Pathways had a small and statistically insignificant effect on crime outcomes. Our estimates rule out reductions in the likelihood of being charged with a crime larger than 3 percentage points (19% of baseline mean) at the 2007 expansion sites.

Our paper contributes to a literature evaluating the effects of adolescent-age interventions on criminal behaviour. Adolescent-age interventions found to reduce criminality include mentoring programs (Rodriguez-Planas, 2017), charter schools (Dobbie and Fryer Jr, 2015; McEachin et al., 2020), assistance in moving to higher-income neighbourhoods (for women) (Kling et al., 2005), access to school choice (Cullen et al., 2006; Deming, 2011), cognitive-behavioural therapy-based group activities (Heller et al., 2017), and summer employment programs (Heller, 2014; Gelber et al., 2016; Modestino, 2019; Davis and Heller, 2020). Compared with these papers, our work evaluates a program that offers a comprehensive suite of supports and is available to all high school students in the communities where it is offered.² We are also able to observe students eligible for Pathways and the comparison group into their early-thirties. Thus, a second contribution of our paper is that we are able to estimate the long-run effects of a comprehensive student support program more than 10 years after students stop receiving support.

We also contribute to a literature that studies the impact of interventions aimed at im-

²The fact that we estimate the causal effect of eligibility for Pathways (i.e. an intent-to-treat effect), a program that all high school students are eligible for, means that our estimates can be interpreted as the net effect of offering a scalable program alongside a traditional high-school curriculum.

proving the schooling and labor market outcomes of at-risk adolescents. This literature includes (but is not limited to) papers that study how providing access to charter schools (Cohodes and Parham, 2021), helping students and their families to move to higher-income neighborhoods (Kling et al., 2005, 2007) and allowing for school choice (Deming, 2011; Deming et al., 2014; Lavy, 2021) impacts adolescents. It also includes our own research that estimated the effect of Pathways on education attainment and labor market outcomes (Oreopoulos et al., 2017; Lavecchia et al., 2020). In that prior work, we found that eligibility for Pathways increased high school graduation rates and postsecondary enrollment at all Toronto locations, though the estimated effects were larger for Regent Park. We also found that the program increased earnings in adulthood and reduced the likelihood of having a child by age 28 at the Regent Park location with no detectable effects for the Rexdale/Lawrence Heights communities.

The features of the Pathways program are most similar to the Quantum Opportunity Program (QOP) for at-risk high school students and the Accelerated Study in Associate Programs (ASAP) for community college students. Both programs offer mentoring, academic support and help with life-skills. Rodriguez-Planas (2012, 2017) shows that the QOP program improves academic performance but has mixed impacts on labor market outcomes and risky behaviors. Weiss et al. (2019) show that the ASAP program improves community college graduation rates but do not study the impact of the program on crime outcomes. The reduction in criminal activity due to Pathways that we document complements the research on the QOP and ASAP programs by showing that interventions that bundle multiple student supports can have positive impacts beyond academic achievement and labor market outcomes.³

The remainder of the article is organized as follows. Section 2 describes the Pathways

³Recently, Goldman et al. (2023) study the impact of the Communities in Schools (CIS) program – which shares some similarities with Pathways – on adult earnings. Another similar program whose short-term, but not long-term impacts have been studied is the StudentU program in Durham, North Carolina. Komisarow (2022) studies this program, which provides education, nutrition, and social support services to disadvantaged middle and high school students outside of the regular school day, and finds that the program improved academic performance and reduced student suspensions.

program in more detail. Section 3 describes the data. Section 4 outlines our empirical methodology. Section 5 presents and discusses our results. Section 6 concludes.

2 Institutional Details

Pathways to Education (Pathways) is a non-profit organization that aims to improve the education attainment, labour market outcomes and overall well-being of at-risk adolescents. The organization offers a bundle of community-based services delivered outside of school which attempt to address the multiple barriers that low-income youth face during adolescence.⁴

The Pathways program is organized through four complementary pillars: tailored student social supports, tutoring, mentoring, and financial support. Tailored student social support is offered by pairing each student with a student-parent support worker (SPSW) employed by Pathways. Each SPSW is assigned approximately 50 students each academic year and meet with students at least twice per month. These meetings address academic progress, home life, personal challenges and overall-well being. Through ties that Pathways establishes with local public schools, SPSWs are provided with information on students' school attendance and academic progress on a regular basis. Toward the end of a student's high school career, SPSWs also help students apply for post-secondary school or to enter the labor market. This support includes paying college or university application fees, helping students complete financial aid application forms and helping with resume preparation.

Pathways students also receive academic support from a trained Pathways tutor. Tutoring support is available for core academic subjects (math, science and English) four nights per week and is conducted in small groups (e.g. 3 or 4 students per tutor). Students whose GPA falls below a certain threshold are required to attend tutoring sessions at least twice per week.

The third pillar of Pathways is mentorship and group activities. Pathways students in Grades 9 and 10 participate in structured mentoring sessions that focus on building social

⁴The discussion in this section borrows from [Oreopoulos et al. \(2017\)](#) and [Lavecchia et al. \(2020\)](#).

skills and fostering friendships among the program’s participants. Recent activities include attending plays, learning martial arts, and participating in a community recycling program. These activities typically involve 15 students and 3 volunteer mentors. As students progress to Grades 11 and 12, they gain more autonomy in selecting group activities that align with their interests.

The financial assistance pillar of Pathways comprises both immediate and long-term support. Pathways students receive free public transportation tickets and supplies during their SPSW meetings. Additionally, Pathways establishes a trust fund for each participant, contributing \$1,000 CAD per year of enrollment (up to a maximum of \$4,000) to be used for post-secondary tuition and related expenses. During the study period (i.e. the 2006-2014 years), this bursary covered approximately 15-20 percent of the tuition expenses for a 4-year university degree and approximately 33 percent of a two-year college diploma in Ontario, Canada.

Pathways launched in September 2001 in the community of Regent Park in Toronto, Canada. In the late 1990s and early 2000s, Regent Park comprised of approximately 7,500 residents paying subsidized rent in a series of public housing apartment buildings.⁵ The community has long been characterized by high rates of poverty and crime. From the 2001 census, 87 percent of family households living in Regent Park were below Statistics Canada’s Low-Income Cut-Off (LICO), 56 percent of residents were single parents, 59 percent of residents had no earnings and only 30 percent of 20-to-24-year-olds had a university degree (Oreopoulos et al., 2017).

A few years after its introduction in Regent Park, Pathways to Education attracted a significant amount of government and private sector funding, some of which was used to expand to the low-income communities of Lawrence Heights and Rexdale in the north west part of Toronto. These communities are smaller than Regent Park (each is about one third of the size of Regent Park) and differ in terms of some neighborhood characteristics, notably the

⁵According to the 2016 census, the population of Regent Park increased to nearly 11,000 residents (City of Toronto, 2018).

fraction of residents that are immigrants to Canada (34 percent compared with 53 percent in Regent Park, see Online Appendix Table A2 in [Lavecchia et al. \(2020\)](#)). Over the last decade, Pathways has continued to expand and now operates in more than 20 communities across eight provinces in Canada, including four locations in Toronto.

In each of its communities, Pathways is available to all students living in the neighborhood catchment area and attending high school. As we discuss in Section 4 below, a helpful feature of the program is that its introduction in a community is always phased in for successive cohorts of Grade 9 students. This feature creates variation in eligibility for Pathways among students within a neighborhood who are very similar in age. Enrollment in the Pathways program is voluntary and both students and their parents must register for the program each year. Through ties with local elementary schools, Pathways identifies students who are transitioning to high school and who are eligible for the program. These ties and a concentrated outreach effort by Pathways staff has resulted in very high sign-up (participation) rates for the program. In particular, [Oreopoulos et al. \(2017\)](#) estimate that approximately 85 percent of eligible students signed up for the Pathways program in Regent Park, Lawrence Heights and Rexdale in the years following the program’s introduction.

3 Data

To evaluate the impact of the Pathways program we merged administrative data from three sources: Toronto Community Housing (TCH), the Toronto District School Board (TDSB) and Statistics Canada’s Integrated Criminal Court Survey (ICCS). In this section, we describe these data and the construction of key variables.⁶

The TDSB dataset provides us with information on all students who enrolled in a TDSB high school between September 2000 and September 2008. We also have enrollment data for the 1999 academic year for a small subset of students who lived in central Toronto before the amalgamation of the city with its suburbs in the late 1990s. Data from the 1999

⁶For additional details about the TCH and TDSB data, see Online Appendix A.1.

Grade 9 cohort from the legacy Metro Toronto School Board provides us with an additional cohort of pre-Pathways students (albeit with a much smaller sample size) and is used to test the sensitivity of our baseline estimates. In addition to information on enrollment, the TDSB data also has information on academic outcomes (e.g. credit accumulation, graduation status) and demographic characteristics, including gender, age in Grade 9, immigrant status, a binary variable equal to one if English was the student’s first language and equal to zero otherwise. Using information on credit accumulation, we construct a binary variable that is equal to one for students who accumulate at least 7 course credits in Grade 9 (the first year of high school) and zero otherwise. In the heterogeneity analysis in Section 5, we refer to those whose value of this variable is one as students with “good Grade 9 grades” and those whose value is zero as students with “bad Grade 9 grades”. In Ontario during the period we study, completing high school within 4 years required that students complete 32 course credits or 8 per academic year. Thus, the good/bad Grade 9 grades variable captures whether course credit completion is “on schedule”.

We identify students who are eligible for Pathways and our comparison groups using the residential address listed on students’ TDSB enrollment forms. Together with the TCH dataset that includes the postal codes for all public housing communities in Toronto, we are able to determine whether a student lived in a public housing community in the city and whether their community eventually received the Pathways program. TCH is the sole public housing provider in Toronto and manages a wide variety of properties, ranging from apartment buildings whose residents all receive a rent subsidy to buildings that feature a mix of tenants paying subsidized rent and market rent. Since our postal code data don’t allow us to identify which apartment units are subsidized in mixed buildings, we restrict our analysis to TCH buildings where all residents receive a subsidy. Thus, our main dataset contains information on approximately 8,000 students who entered grade 9 in a TDSB high school between 2000 and 2008 and lived in one of 70 TCH fully public housing buildings.

An important feature of our setting is that the demand for public housing units far

exceeded supply during the 1990s and 2000s (i.e. the time period when the cohorts we study were in school). The fact that the demand for public housing units in Toronto was oversubscribed during this period meant that the waiting lists for a unit were, on average, five years and offers to applicants were made on a first-come, first-serve basis ([Toronto Social Housing Connections, 1998](#)). Although applicants were able to indicate which TCH communities they preferred, most applicants requested all TCH projects to increase the likelihood that they would be assigned a unit.⁷ The extremely long wait times for a unit during this time period greatly reduces the likelihood that families were able to select into communities where Pathways operated.

We match the TDSB-TCH data to the ICCS for the 2005-2019 years. The ICCS database offers rich information on appearances, charges, and convictions in Canadian youth and adult criminal courts.⁸ TDSB public housing students are matched to records in the ICCS using their first, last name and date of birth. Individuals not matched to any ICCS charges are coded as having no criminal activity during the 2005-2019 period.

When estimating the effect of Pathways for the Regent Park location, we restrict the sample to the 2000-2006 Grade 9 TDSB cohorts. This is because the Lawrence Heights and Rexdale communities are part of the comparison group before 2007. When studying effects of the Lawrence Heights and Rexdale programs, we exclude Regent Park students from the analysis and use data from the 2000-2008 cohorts. These sample restrictions lead to a sample of 5,840 students for the Regent Park analysis and 6,470 students for the Lawrence Heights and Rexdale analysis.⁹

Our analysis focuses on four “primary” dependent variables. The first is a binary variable equal to one if individual was ever charged with a crime (i.e. the individual had at least one criminal charge against them in our matched ICCS data between 2005 and 2019) and

⁷Exceptions to this first-come first-serve process were reserved for households that were exceptionally challenged, such as those facing domestic violence.

⁸Note that appeal courts, federal courts, the Supreme Court of Canada, and Ontario superior courts are not included in this database.

⁹Note that these sample size figures have been randomly rounded due to Statistics Canada confidentiality requirements.

equal to zero otherwise. The second is a binary indicator for whether an individual was ever convicted of a crime. The third and fourth variables are the total number of charges and the total number of convictions an individual faced by 2019. We supplement the analysis of the effect of Pathways on these three primary dependent variables by considering the impact by type of crime. For this analysis, we categorize charges and convictions according to Statistics Canada’s Common Offense Classification (COC). There are 32 COCs, including homicide, attempted murder, robbery, breaking and entering, and sexual assault, among many others.

Because our dependent variables measure whether an individual has ever been charged with a crime and the number of charges and convictions an individual faces by 2019, it is important to note that the youth in our sample vary in age by the end of the sample period. In particular, the first cohort of students eligible for Pathways in Regent Park in 2001 were mostly age 32 in 2019.¹⁰ By contrast, the first cohort of students eligible to participate in Pathways in Lawrence Heights and Rexdale were 26, on average, in 2019.

We supplement the analysis from our main dataset with neighborhood-level demographic and economic averages extracted from the 1996 and 2001 Census of Canada. Specifically, we extract neighborhood averages for Regent Park and the combined other public housing (i.e. TCH) communities for families with at least one child who enrolled in high school between 1995 and 2006.¹¹ Given that our main dataset only includes one pre-Pathways cohort of students from Regent Park, the census data allow us to observe neighborhood level trends between Regent Park and other TCH communities for up to six years before the program was introduced. This allows us check whether neighborhood level changes in demographic or socioeconomic status of households were occurring around the time of the introduction of Pathways in Regent Park that might bias our estimates.

Table 1 reports summary statistics for our main dataset. Columns 1, 2, 4 and 5 report

¹⁰Most students enroll in high school at age 14, though in each cohort a few students start at 13 or 15.

¹¹Since almost all students in Ontario enroll in high school in the year they turn 14, we assign census households to Grade 9 cohorts based on the year when any child in the household turned 14. For example, if a household has a child who is 12 years old in the 1996 census, that household is assigned to the 1998 Grade 9 cohort.

the averages for our primary dependent variables and the covariates for students from Regent Park, Rexdale, Lawrence Heights and other public housing communities. In columns 1 and 2 (resp. 3 and 4), we report the means for the cohort of Grade 9 students that enrolled in high school in September 2000 (resp. 2006), the year before Pathways was introduced in Regent Park (resp. Rexdale and Lawrence Heights). Columns 3 and 6 report the means for students not living in public housing. While there are some differences in the demographic characteristics of the public housing communities (e.g. the fraction of residents that are immigrants), we find that the inclusion of these variables as covariates does not impact our estimates. The much larger and statistically significant differences are between students in public housing and students not in public housing. These differences support our decision to focus the analysis on high school students living in an exclusive TCH community.

4 Empirical Methodology

We estimate the effects of eligibility for Pathways on crime outcomes using a difference-in-differences methodology. Our analysis of the causal effect of eligibility for Pathways at its Regent Park location compares the change in average outcomes of former TDSB students who lived in Regent Park and enrolled in high school before and after Pathways was introduced in 2001 to the outcomes of students from other public housing communities in Toronto over the same period.¹² Specifically, we estimate the following regression model:

$$y_{i(pc)} = \beta T_{pc} + \delta' X_{i(pc)} + e_p + e_c + e_{i(pc)}, \quad (1)$$

The variable $y_{i(pc)}$ is a crime outcome (e.g. a binary variable capturing ever being charged with a crime) for individual i who lived in housing project p and enrolled in high school in year c (i.e. Grade 9 cohort c), $T_{i(pc)}$ is a dummy variable indicating whether an individual is eligible for the Pathways program at one of its three communities in Toronto and $X_{i(pc)}$

¹²Our analysis of the Rexdale and Lawrence Heights programs is analogous.

is a vector of the individual’s demographic characteristics (sex, age in grade 9, immigrant status, and a dummy for whether English is the primary language spoken at home). All specifications include housing project fixed effects (e_p) and cohort fixed effects (e_c). The coefficient of interest is β , the average effect of being eligible to participate in the Regent Park Pathways program. In other words, β is an estimate of the “intent to treat”. As mentioned previously, we estimate the effect of eligibility for Pathways separately for its Regent Park and Rexdale/Lawrence Heights locations. We pool the Rexdale and Lawrence Heights locations because both communities are quite small. The Regent Park analysis is based on data from the 2000-2006 Grade 9 cohorts while the Rexdale/Lawrence Heights analysis is based on data from the 2000-2008 cohorts.¹³

Our results are unbiased estimates of the causal effect of eligibility for Pathways on crime outcomes if the parallel trends assumption holds in this setting. This assumption requires that average outcomes in communities where Pathways was introduced (Regent Park, Lawrence Heights, Rexdale) would have followed the same trends as the average outcomes in the Toronto public housing communities in the absence of the introduction of the program. Researchers typically assess the plausibility of the parallel trends assumption by examining the trends in outcomes for the treated and comparison groups before the intervention begins. While the pre-trends for the Rexdale/Lawrence Heights analysis is reassuring, we are unable to examine pre-trends for the Regent Park analysis with only one pre-Pathways cohort.

Instead, we provide support for the parallel trends assumption for the Regent Park analysis using two alternative approaches. Firstly, we obtained data for the 1999 Grade 9 cohort for those who lived in the legacy City of Toronto (i.e. the smaller boundaries of the City of Toronto before its amalgamation with its suburbs of Etobicoke, North York and Scarborough in 1998). This data provides a second pre-intervention cohort, albeit for a much smaller sample. Secondly, we use data from the 1996 and 2001 Census of Canada to examine how the demographic and economic characteristics of families with children entering high

¹³For the Regent Park analysis, students from Rexdale and Lawrence Heights are excluded. For the Rexdale and Lawrence Heights analysis, students from Regent Park are excluded.

school varied around the introduction of Pathways in Regent Park. Importantly, this data provides us with information on changes in neighborhood-level characteristics up to 5 years before the first introduction of Pathways in 2001. As we demonstrate in Section 5.3 below, both approaches support the plausibility of the parallel trends assumption in our setting.

Inference for the estimates presented below is based on standard errors that are clustered at the housing project level. Clustering in this way allows for the correlation of outcomes over time for students residing in the same public housing community, which is appropriate if students and young adults living in the same community face common shocks.¹⁴

For all results discussed below, we also report false discovery rate (FDR) q -values alongside the standard errors. Given that we estimate several regression models for multiple dependent variables, it is possible that we will reject a true null hypothesis of no statistically significant impact of Pathways by chance. We calculate the FDR q -values using the procedure outlined in and Stata code accompanying Anderson (2008). Specifically, we store the p -values from all estimates presented in the paper, apply the two-stage correction procedure described by Anderson (2008) and then find the smallest level q at which each estimate’s null hypothesis would be rejected. Although these q -values are generally larger than the p -values computed based on the clustered standard errors, our conclusions about the impact of the Pathways program remain similar.

5 Results

5.1 Regent Park Results

Figure 1 shows our main result for Regent Park graphically. Figure 1a plots the fraction of former TDSB students that were ever charged with a crime by Grade 9 cohort, separately for Regent Park and the other TCH communities. The fraction of students in the 2000 Grade 9

¹⁴Following Cameron and Miller (2015), with 70 housing projects (clusters) in the main dataset, inference is based on the critical values of the t-distribution with $70-1=69$ degrees of freedom.

cohort ever charged with a crime is around 20 percent for both Regent Park and the other public housing communities. However, starting in 2001 the series for Regent Park begins to diverge from the comparison group so that by the 2006 cohort, Regent Park students are more than 10 percentage points less likely to be charged with a crime. To check whether the divergence in outcomes in Figure 1a is driven by differences in demographics, Figure 1b plots the event study coefficients from the estimation of equation 1; the omitted coefficient is for the 2000 cohort. The coefficients in Figure 1b suggest that the introduction of Pathways reduced the likelihood that students were ever charged with a crime by a statistically 4-7 percentage points. Notably, the coefficient estimates are stable over time. Under the parallel trends assumption, this result suggests that the introduction of Pathways reduced the likelihood individuals were ever charged with a criminal offense.

Table 2 reports the coefficient estimates, standard errors and FDR q-values corresponding to the estimation of Equation 1 for the period 2000-2006. The estimate in row 1 of column 1 implies that eligibility for Pathways at the Regent Park location reduces the likelihood of being charged with a crime by 6 percentage points. One way to put this estimate in context is to compare it to the pre-Pathways fraction of Regent Park students ever charged with a crime, as shown in Table 1. 19 percent of the 2000 Grade 9 cohort were ever charged with a crime. Compared with this statistic, eligibility for Pathways reduces the likelihood of being charged with a crime by approximately 33 percent ($-0.0612/0.1875$). Moreover, the FDR-sharpened q-value of 0.04 suggests that this estimate is statistically significant, even after accounting for multiple hypothesis testing.

The estimates in rows 2-7 of column 1 suggest that the effect of eligibility for Pathways on the likelihood of ever being charged with a crime is largest in absolute value for female students and those with stronger Grade 9 academic performance. For example, the estimate in row 3 suggests that eligibility for Pathways reduces the likelihood that female students are ever charged with a crime by a statistically significant 8.1 percentage points whereas the estimate in row 3 suggests that eligibility for the program reduced the likelihood that

male students were ever charged with an offence by a statistically insignificant 4.6 percentage points. This pattern is consistent with estimates for our prior work which documents larger impacts of eligibility for Pathways on high school graduation rates, labor force participation and reliance on social assistance for female students (Oreopoulos et al. (2017); Lavecchia et al. (2020)).

The estimates in columns 2-4 suggest that eligibility for Pathways in Regent Park reduces the number of times an individual is charged with a crime, the likelihood of ever being convicted of a crime and the number of convictions. However, estimates for both the full sample and most subgroups are not statistically significant. One exception is the fact that eligibility for Pathways reduces the number of charges and the likelihood of ever being convicted of a crime for female students.

5.2 Rexdale/Lawrence Heights Results

Figure 2a plots the fraction of students from Rexdale/Lawrence Heights and other public housing that were ever charged with a crime by Grade 9 cohort. There are two takeaways from this figure. Firstly, while the series are noisy, the pre-trend in the dependent variable for Rexdale/Lawrence Heights is similar to the trend for the other public housing sites. Secondly, there is no evidence of a divergence in the fraction of students ever charged with a crime between those eligible for Pathways and the comparison group. The event study estimates presented in Figure 2b (where the $T_{i(pc)} \times 2006$ cohort interaction is omitted) corroborate the visual evidence in Figure 2a event after controlling for the demographic variables.

Table 3 presents the estimates from equation 1 for the full sample and various subgroups. The estimates for the full sample (first row) suggest that eligibility for Pathways has a small and statistically insignificant impact on the likelihood of ever being charged with a crime, the likelihood of ever being convicted of a crime or the number of charges and convictions. Furthermore, none of the coefficient estimates for the subgroups are statistically significant after accounting for multiple hypothesis testing.

That the Rexdale and Lawrence Heights programs do not appear to generate the same benefits as the Regent Park program is consistent with our earlier work. In particular, we find that estimates of the impact of eligibility for Pathways in Rexdale and Lawrence Heights on high school graduation rates, employment and earnings are all smaller (albeit still positive) than those in Regent Park (Oreopoulos et al. (2017); Lavecchia et al. (2020)).

Our data do not allow us to answer conclusively why the Pathways program appears to have been more successful at reducing criminal activity in Regent Park than Rexdale and Lawrence Heights. One candidate explanation is that the delivery of the program on the ground differed across the three locations even though the structure of the program was the same. For example, the SPSWs may have been more effective in Regent Park than in Rexdale and Lawrence Heights. Unfortunately, records on student-SPSW assignments during the initial years of the Pathways program were not kept so we are unable to investigate this possibility. Similarly, records of attendance in the tutoring and mentoring sessions were not of high quality during the early and mid 2000s (Oreopoulos et al. (2017)). A second candidate explanation is that the Pathways program is more effective for students with certain demographic characteristics and that those characteristics are more prevalent in Regent Park compared with Rexdale and Lawrence Heights. While some demographic differences exist between Regent Park, Rexdale and Lawrence Heights (e.g. a higher proportion of residents in Regent Park list English as their second language), the estimates in row 5 of Table 3 for students whose second language is English are not statistically significant. Thus, differences in demographic characteristics between communities do not fully account for the documented variation in the impact of the Pathways program.

5.3 Robustness of Regent Park Result

In this section, we explore the robustness of our estimated impacts of eligibility for the Pathways program on crime outcomes in Regent Park. With only one pre-Pathways cohort in our main dataset, our main objective is to assess the plausibility of the parallel trends as-

sumption in our setting by (i) considering alternative comparison groups and (ii) examining the evolution of demographic and economic characteristics in Regent Park and the comparison group over a wider window to check whether neighborhood characteristics between the communities diverged around the introduction of Pathways in 2001.

Table 4 reports estimates of equation 1 under a number of alternative comparison groups and when the dependent variable is equal to 1 if an individual has ever been charged with a crime and equal to 0 otherwise. The first column repeats the estimate in column 1 of Table 2 as a reference point. The estimates in column 2 add data from students in the 1999 Grade 9 cohort. Recall that data from the 1999 cohort is only available for a few public housing communities (including Regent Park) in the legacy Metro Toronto School Board. As a result, the estimates in column 2 are based on a comparison of Regent Park between 1999-2006 to students from (a) public housing communities in the legacy Metro Toronto area between 1999-2006 and (b) public housing communities in the suburbs between 2000-2006.¹⁵ The estimates reported in column are similar to the baseline estimates in column 1. For example, the coefficient estimate in row 1 suggests that eligibility for Pathways reduces the likelihood of ever being charged with a crime by 5 percentage points. Figure 3a plots the fraction of students ever charged with a crime by Grade 9 cohort for the sub-sample in column 2 and Figure 3b presents the corresponding event study estimates (and 95% confidence intervals). Reassuringly, the pre-tends (albeit for only 2 pre-Pathways cohorts) appear to be stable. The estimates reported in column 3 of Table 4 exclude students from the suburbs, thereby focusing the analysis only on students from public housing communities in downtown Toronto between 1999-2006. This restriction causes the sample size to fall by approximately two-thirds. The estimate in row 1 of column 3 suggests that eligibility for Pathways reduces the likelihood of being charged with a crime by 3.5 percentage points. Although this estimate is smaller in absolute value than the estimate in column 1, the standard errors are much larger and we cannot reject the null hypothesis that the two estimates are the same.

¹⁵The inclusion of a dummy variable capturing whether data is available from 1999-2006 or 2000-2006 is not necessary because it would be perfectly collinear with the housing project fixed effects, e_p in equation 1.

The remaining columns of Table 4 restrict the comparison group to large housing projects (column 4) and to students who live in city-designated “at-risk” neighborhoods (column 5). For both sub-groups, the estimated effect of eligibility for Pathways on the likelihood of being charged with a crime is similar to the baseline sample, both for all students and for the various demographic groups. Our takeaway is that the estimates based on the various alternative comparison groups do not overturn our baseline estimates.

Next, we document the evolution of various demographic and economic characteristics of families in Regent Park with at least one child whose age is 14 (the age when the vast majority begin high school) around 2001 to the characteristics of families living in the other public housing communities who also have at least one 14-year old. For this analysis, we rely on the data from the Census of Canada described earlier. In the absence of information on crime outcomes for multiple years before the introduction of Pathways, the evolution of demographic and economic characteristics of families with high school age children provides insights into whether any pre-existing differences between Regent Park and other public housing communities in Toronto were stable around 2001. Figure 4 plots the average values of various neighborhood characteristics for Regent Park and other public housing communities between 1995-2006. The average values of most neighborhood characteristics (e.g. the fraction of parents with a high school diploma, family size, number of rooms in the home) are similar for Regent Park and the comparison group throughout the 1995-2006 period.¹⁶ For other characteristics (e.g. fraction families whose head is a non-native English speaker), there are some differences between Regent Park and the other public housing communities but these differences are stable over time.

Table 5 presents estimates of equation 1 when the dependent variable is one of the neighborhood characteristics from the census.¹⁷ Of the 23 characteristics, only two vary dif-

¹⁶Given that the average annual cohort size for Regent Park is much smaller than the combined value of the other public housing communities, the series for Regent Park tends to be noisier.

¹⁷Below is a full list of the neighborhood characteristics from the census. Binary variables measuring the fraction of families whose head is: female, an immigrant (not born in Canada), first language is not English, Indigenous/Aboriginal, has a disability, has a high school diploma, has some non-university post secondary credential, has a university degree, employed, is a single mother, is a single father, moved within the last

ferentially after 2001 for families from Regent Park. Specifically, families from Regent Park were less likely to make major repairs on their home within the last year but more likely to make minor repairs on their home after 2001 compared with families living in other public housing communities. On the other hand, the evolution of family employment income, family transfer income, family size, education and other characteristics evolve similarly for Regent Park and the comparison group around the introduction of Pathways in 2001. Our interpretation is that these estimates confirm the visual evidence in Figure 3, thereby supporting the plausibility of the parallel trends assumption in our setting and the causal interpretation of the results in Section 5.1.

In the Online Appendix we report the results from a two of other sensitivity checks. For example, Appendix Table A1 reports the results from the estimation of equation 1 after first collapsing the data to averages at the housing project-by-cohort level. Online Appendix Table A2 reports the results of Poisson regressions when the dependent variable is count of total charges and criminal convictions. The results reinforce our main findings that eligibility for Pathways reduced the likelihood that students were ever charged with a crime with effects on the total number of charges and convictions that are estimated imprecisely.

5.4 Mechanisms

There are several potential channels through which the Regent Park Pathways program could have reduced the likelihood of being charged with a crime. One possibility is that the Pathways program induced adolescents and young adults to substitute crime with human capital investments. Indeed, (Oreopoulos et al., 2017) found that eligibility for Pathways led to higher enrollment in two-year colleges and four-year universities. Table 6 reports the results from the estimation of equation 1 when the sample is restricted to individuals in one year and had to make repairs in the home (both major and minor). We also have total employment income for the family, total transfer income for the family, total employment plus transfer income for the family, family size and number of total rooms and bedrooms in the home. The regression constant represents the predicted value for the dependent variable for the year 1995 and provides a useful reference for interpreting the β coefficients.

of three age groups: those age 19-23, 24-28 and 29-33. We first define a new dependent variable that measures whether an individual ever is charged with a crime when they were in age group a . Similarly, we define a new variable for the number of charges, number of convictions and a dummy variable for ever being convicted of a crime when they were in age group a . We then estimate equation 1 with these subsamples and new dependent variables.

The estimates reported in Table 6 the reduction in criminal activity is concentrated in the age 19-23 period. In particular, we estimate that eligibility for Pathways reduces the likelihood of ever being charged with a crime by a statistically significant 4.9 percentage points during the age 19-23 period. Importantly, this estimate is statistically significant at the 5 percent level even after accounting for multiple hypothesis testing. Estimates of the effect of eligibility for Pathways during the age 24-28 and age 29-33 years are much smaller in absolute value (1.9 and 1.4 percentage points, respectively) and are not statistically significant after accounting for multiple hypothesis testing. This suggests that eligibility for the Pathways program had the biggest impact on crime during the years immediately after students were exposed to the program. Similar to the baseline results in Section 5.1, estimates of impact of Pathways on the number of charges and number of criminal convictions are negative but imprecise.

Next, we augment equation 1 by adding the individual’s cumulative GPA in Grades 11 and 12 and a dummy variable measuring whether or not the student graduated from high school within five years as covariates. Clearly, these variables are endogenous to the introduction of Pathways (Oreopoulos et al. (2017) show that the program improved academic outcomes). However, we include them to check whether eligibility for Pathways affects criminal activity after accounting for education attainment. The β coefficient estimates are reported in Table 7. Including the high school academic achievement variables as covariates tends to reduce the absolute value of the coefficient estimates by 30-50 percent. For example, the estimate in row 1 of column 1 suggests that eligibility for Pathways reduces the likelihood of being charged with a crime by 4.4 percentage points. As a reference point, the estimate in row

1 of column 1 in Table 2 suggests that the program reduced the likelihood of being charged with a crime by 6.1 percentage points. Importantly, the estimates in Table 7 mostly remain statistically significant even after accounting for multiple hypothesis testing.

Finally, we explore the heterogeneity of our estimates by type of crime. Table 8 presents estimates of equation 1 where the dependent variable is a binary variable equal to one if an individual was ever charged with one of 32 types of crimes. The coefficient estimates suggest that eligibility for Pathways reduced the likelihood of being charged with a crime primarily by reducing property, youth and traffic charges. For example, the estimate in Panel D, column 1 suggests that eligibility for Pathways reduces the likelihood of being charged with breaking and entering by 3.8 percentage points. Similarly, eligibility for the program reduces the likelihood of being charged with mischief and traffic offenses by 2.9 and 0.8 percentage points, respectively. All of the aforementioned estimates are statistically significant even after accounting for multiple hypothesis testing. Taken together, these results suggest that eligibility for Pathways reduces criminal activity primarily for young adults age 19-23 by reducing the likelihood of being charged with property crimes.

6 Conclusion

In this paper, we study the impact of a comprehensive student support program for at-risk high school students on criminal activity. We find that eligibility for the Pathways program reduces the likelihood of ever being charged with a crime by 6 percentage points or 33 percent at its Regent Park location. This result appears to be driven by a reduction in property crimes and youth and traffic offenses when individuals are age 19-23. We also find that the program has generally small and statistically insignificant impacts on criminal activity at its other sites in Toronto (Rexdale and Lawrence Heights). These findings are consistent with our prior research that finds larger impacts of the Pathways program at its Regent Park location (Oreopoulos et al., 2017; Lavecchia et al., 2020) and contribute

to a developing literature on the impacts of youth support programs on criminal activity. Differences in the estimated impacts of the Pathways in its three communities do not appear to be explained by differences in the demographic characteristics of students. Developing a better understanding of how the delivery of the program on the ground and the effectiveness of local staff affects the results is important for future research.

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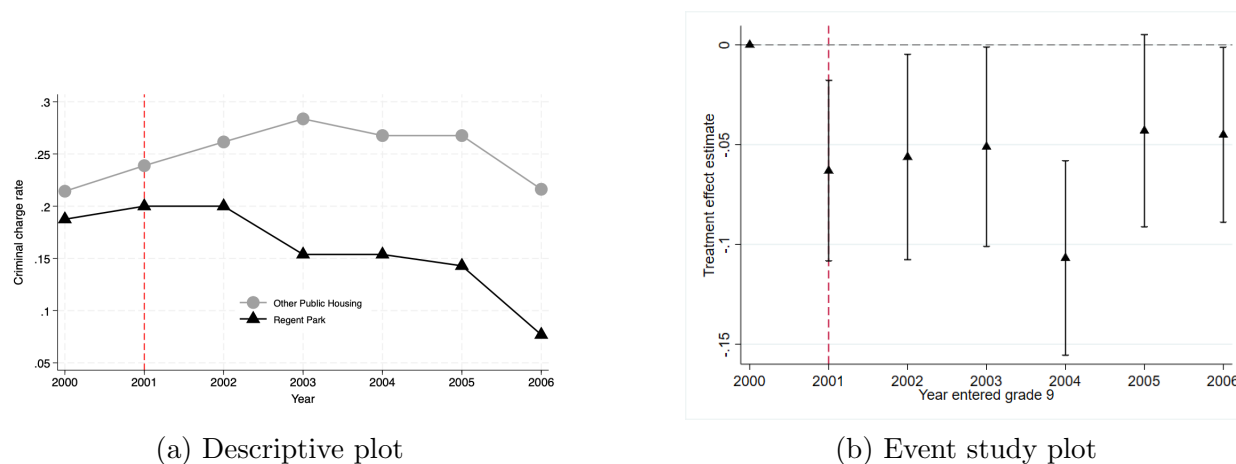
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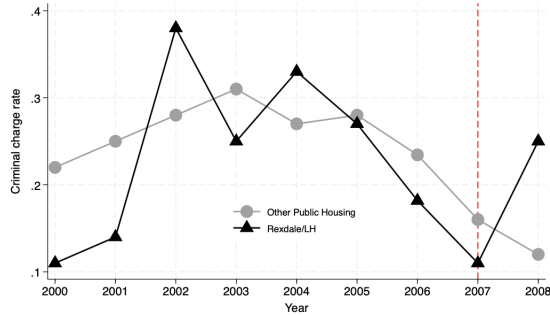
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Figure 1: Effect of Regent Park Pathways Eligibility on Likelihood of Being Charged with a Crime

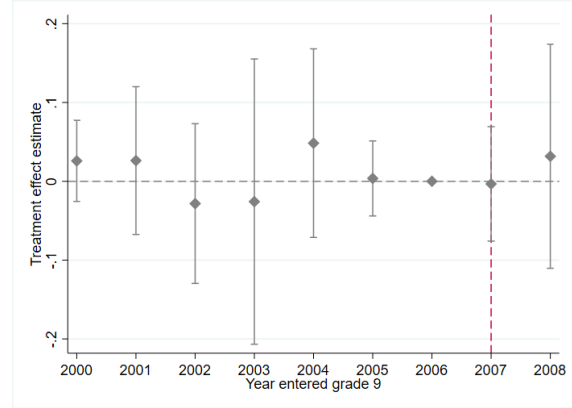


Note: This figure depicts the effect of eligibility for the Regent Park Pathways program on the likelihood of being charged with a crime. Figure 1a plots the likelihood of ever being charged with a crime by grade 9 cohort for Regent Park students vs. students from other public housing projects (including Rexdale and Lawrence Heights). These means are randomly rounded in accordance with Statistics Canada confidentiality requirements. Figure 1b presents annual treatment effect estimates from a Regent Park Pathways eligibility event study that regresses a binary variable indicating whether an individual is ever charged with a crime on an event time indicator, cohort fixed effects, housing project fixed effects, and the following control variables: age (in grade 9), female, immigrant, and English as a second language. Confidence intervals are based on standard errors clustered at the housing project level.

Figure 2: Effect of Rexdale/Lawrence Heights Pathways Eligibility on Likelihood of Being Charged with a Crime



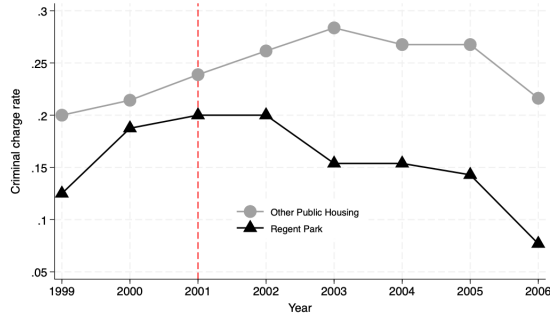
(a) Descriptive plot



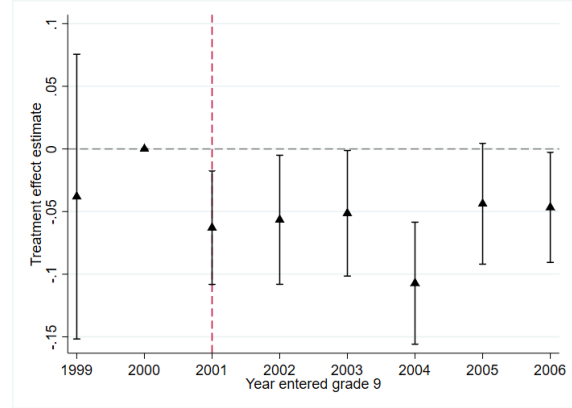
(b) Event study plot

Note: This figure depicts the effect of eligibility for the Rexdale and Lawrence Heights Pathways programs on the likelihood of being charged with a crime. Figure 2a plots the likelihood of ever being charged with a crime by grade 9 cohort for Rexdale and Lawrence Heights students vs. students from other public housing projects (not including Regent Park). These means are randomly rounded in accordance with Statistics Canada confidentiality requirements. Figure 2b presents annual treatment effect estimates from a Rexdale/Lawrence Heights Pathways eligibility event study that regresses a binary variable indicating whether an individual is ever charged with a crime on an event time indicator, cohort fixed effects, housing project fixed effects, and the following control variables: age (in grade 9), female, immigrant, and English as a second language. Confidence intervals are based on standard errors clustered at the housing project level.

Figure 3: Effect of Regent Park Pathways Eligibility on Likelihood of Being Charged with a Crime (including 1999 grade 9 cohort)



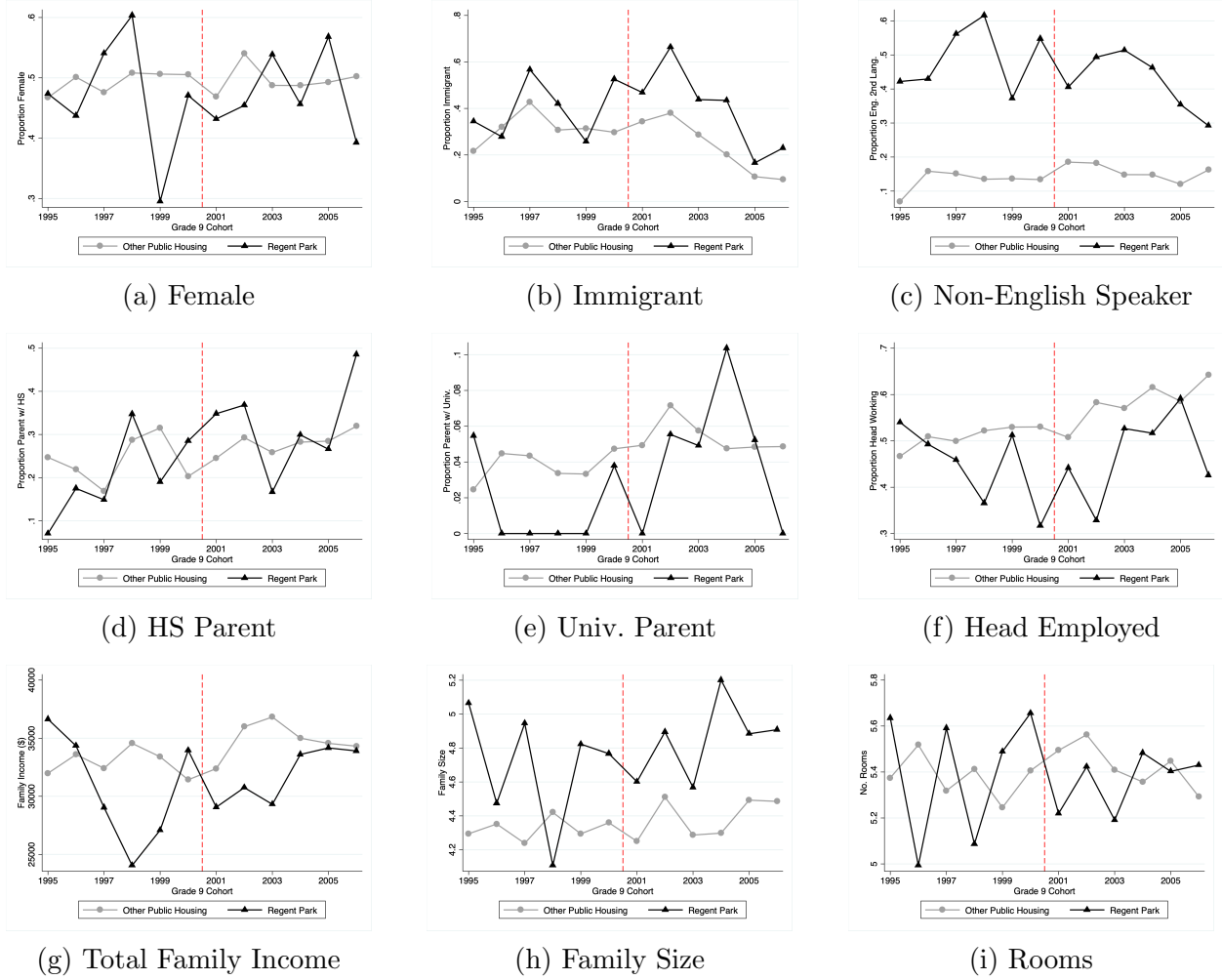
(a) Descriptive plot



(b) Event study plot

Note: This figure depicts the effect of eligibility for the Regent Park Pathways program on the likelihood of being charged with a crime with available data from 1999 grade 9 cohorts included. Figure 3a plots the likelihood of ever being charged with a crime by grade 9 cohort for Regent Park students vs. students from other public housing projects (including Rexdale and Lawrence Heights). These means are randomly rounded in accordance with Statistics Canada confidentiality requirements. Figure 3b presents annual treatment effect estimates from a Regent Park Pathways eligibility event study that regresses a binary variable indicating whether an individual is ever charged with a crime on an event time indicator, cohort fixed effects, housing project fixed effects, and the following control variables: age (in grade 9), female, immigrant, and English as a second language. Confidence intervals are based on standard errors clustered at the housing project level.

Figure 4: Evolution of Census Neighborhood Characteristics



Note: This figure plots the average values of various neighborhood characteristics for Regent Park and other public housing communities (OPH) for the period 1995-2006. The dashed vertical line represents the year the Pathways to Education program was introduced in Regent Park.

Table 1: Summary Statistics: Pathways communities, other public housing (OPH) and non-public housing communities (NPH)

Variable	Regent Park 2000	OPH 2000	NPH 2000	Rexdale/LH 2006	OPH 2006	NPH 2006
<i>Crime Variables</i>						
Ever charged	0.1875	0.2143	0.1190***	0.1818	0.2344	0.1063***
# of charges	2.1765	2.7286	1.0085**	4.0000	2.4286	0.9513***
Ever convicted	0.1250	0.1286	0.0592**	0.1000	0.1111	0.0370***
# of convictions	0.5000	0.5217	0.2255*	0.3000	0.4286	0.1602
<i>Demographic Variables</i>						
Female	0.4706	0.5362	0.4715	0.4545	0.4603	0.4836
Age in Gr. 9	13.5294	14.2319	14.0513	14.7000	13.9375	14.0305
Immigrant	0.6471	0.5362***	0.4536***	0.3000	0.2698	0.3500***
English 2nd lang.	0.7500	0.3714***	0.4194***	0.6000	0.4688	0.5250
<i>Academic Variables</i>						
Graduated w/in 5 yrs.	0.4375	0.4348	0.6046***	0.5455	0.5469	0.7158***
Gr. 9 Credits	0.4375	0.3333	0.1715***	0.4000	0.2344	0.1033***
Gr. 10 10 literacy	0.2941	0.2609	0.5083***	0.4545	0.4844	0.7095***
Gr. 11-12 GPA	-0.5385	-0.5000	0.0332***	-0.5000	-0.5614	0.0389***

^a For each row, this table presents the mean values of the relevant variable for TDSB students in select Grade 9 cohorts. Column 2 reports means among TDSB students who were in Grade 9 in 2000 and lived in Regent Park. Columns 3 and 6 report means for TDSB students living in public housing projects (OPH) that were never eligible for Pathways programs in 2000 and 2006, respectively. Column 3 includes observations from Rexdale and Lawrence Heights (Rexdale/LH). Column 6 does not contain observations from Regent Park. Columns 4 and 7 report means for TDSB students who did not live in public housing in 2000 and 2006, respectively. Column 5 reports means for students who were in grade 9 in 2006 and lived in either Rexdale or Lawrence Heights.

^b Due to Statistics Canada confidentiality requirements, the means presented here are not the exact sample means, but rather result from a random rounding procedure.

^c The stars on some values in Columns 3 and 4 reflect p-values obtained from running a t-test comparing the Regent Park 2000 mean to the relevant non-Regent Park 2000 mean. Similarly, the stars on values in Columns 6 and 7 reflect p-values obtained from running a t-test comparing the Rexdale/Lawrence Heights 2006 mean to the relevant non-Rexdale/Lawrence Heights 2006 mean.

^d * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 2: Estimated Effects of Regent Park’s Pathways Program on Crime Outcomes for Various Subgroups

	Ever Charged	# of Charges	Ever Convicted	# of Convictions
Full sample	-0.0612 (0.0203)*** {0.0380}††	-0.3678 (0.4276) {1.0000}	-0.0027 (0.0142) {1.0000}	-0.1057 (0.1074) {0.9420}
Males	-0.0457 (0.0332) {0.5840}	-0.1667 (0.7833) {1.0000}	0.0378 (0.0255) {0.5270}	-0.0916 (0.1969) {1.0000}
Females	-0.0809 (0.0165)*** {0.0010}†††	-0.4241 (0.2145)* {0.2340}	-0.0412 (0.0119)*** {0.0130}††	-0.0498 (0.0418) {0.7420}
English 1st lang.	0.0509 (0.0254)** {0.2330}	-1.6671 (0.6085)*** {0.0680}†	-0.0017 (0.0202) {1.0000}	-0.6127 (0.1422)*** {0.0020}†††
English 2nd lang.	-0.1051 (0.0221)*** {0.0010}†††	-0.0626 (0.4725) {1.0000}	0.0057 (0.0157) {1.0000}	0.0470 (0.1241) {1.0000}
Good Gr9 grades	-0.0946 (0.0197)*** {0.0010}†††	0.2451 (0.3293) {1.0000}	-0.0082 (0.0144) {1.0000}	0.0807 (0.0932) {1.0000}
Bad Gr9 grades	0.0031 (0.0385) {1.0000}	-1.2588 (0.9328) {0.6080}	0.0069 (0.0306) {1.0000}	-0.4276 (0.2810) {0.4880}

^a This table reports estimated intent to treat (ITT) effects on four different crime outcomes for eligible students living in Regent Park post-Pathways (students who enrolled in grade 9 in the 2001–2 to 2006–7 academic years).

^b All regressions include cohort (year) fixed effects, housing project fixed effects, and the following control variables: age (in grade 9), female, immigrant, and English as a second language.

^c Numbers in round brackets are standard errors clustered at the housing project level; numbers in curly brackets are q-values.

^d * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. † $q < 0.10$, †† $q < 0.05$, ††† $q < 0.01$

Table 3: Estimated Effects of Rexdale and Lawrence Heights' Pathways Programs on Crime Outcomes for Various Subgroups

	Ever Charged	# of Charges	Ever Convicted	# of Convictions
Full sample	0.0092 (0.0221) {1.0000}	0.0920 (0.5474) {1.0000}	0.0077 (0.0106) {1.0000}	0.0685 (0.0826) {1.0000}
Males	0.0213 (0.0236) {1.0000}	0.4994 (0.9165) {1.0000}	0.0235 (0.0198) {0.7420}	0.1602 (0.1602) {0.9280}
Females	-0.0089 (0.0297) {1.0000}	-0.3389 (0.2006)* {0.3720}	-0.0063 (0.0086) {1.0000}	0.0188 (0.0330) {1.0000}
English 1st lang.	0.0401 (0.0196)** {0.2230}	0.5172 (1.0997) {1.0000}	-0.0055 (0.0220) {1.0000}	0.2155 (0.0956)** {0.1700}
English 2nd lang.	-0.0236 (0.0380) {1.0000}	-0.4300 (0.4102) {0.8990}	0.0116 (0.0106) {0.8570}	-0.1172 (0.0922) {0.6770}
Good Gr9 grades	-0.0121 (0.0155) {1.0000}	-0.2537 (0.4944) {1.0000}	-0.0039 (0.0138) {1.0000}	0.0231 (0.0661) {1.0000}
Bad Gr9 grades	0.0782 (0.0479) {0.4050}	0.6512 (1.2586) {1.0000}	0.0408 (0.0247) {0.3950}	0.0398 (0.2531) {1.0000}

^a This table reports estimated intent to treat (ITT) effects on four different crime outcomes for eligible students living in Rexdale or Lawrence Heights post-Pathways (students who enrolled in grade 9 in the 2007–8 to 2008–9 academic years).

^b All regressions include cohort (year) fixed effects, housing project fixed effects, and the following control variables: age (in grade 9), female, immigrant, and English as a second language.

^c Numbers in round brackets are standard errors clustered at the housing project level; numbers in curly brackets are q-values.

^d * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. † $q < 0.10$, †† $q < 0.05$, ††† $q < 0.01$

Table 4: Effect of Regent Park’s Pathways Program on Likelihood of Being Charged with a Crime For Alternate Comparison Groups

	Baseline	Any OPH (99-06)	Legacy Toronto (99-06)	Large projects	”At-risk” neighbourhoods
Full sample	-0.0612 (0.0203)*** {0.0380}††	-0.0499 (0.0238)** {0.2100}	-0.0353 (0.0327) {0.9280}	-0.0496 (0.0223)** {0.2330}	-0.0680 (0.0284)** {0.1890}
Males	-0.0457 (0.0332) {0.5840}	-0.0683 (0.0335)** {0.2230}	-0.0240 (0.0594) {1.0000}	0.0103 (0.0395) {1.0000}	-0.0132 (0.0468) {1.0000}
Females	-0.0809 (0.0165)*** {0.0010}†††	-0.0381 (0.0268) {0.5710}	-0.0521 (0.0399) {0.7420}	-0.1063 (0.0198)*** {0.0050}†††	-0.1185 (0.0210)*** {0.0030}†††
English 1st lang.	0.0509 (0.0254)** {0.2330}	0.0442 (0.0364) {0.7420}	0.0251 (0.0713) {1.0000}	0.0483 (0.0256)* {0.3500}	0.0633 (0.0387) {0.4720}
English 2nd lang.	-0.1051 (0.0221)*** {0.0010}†††	-0.0960 (0.0246)*** {0.0050}†††	-0.0478 (0.0270) {0.4560}	-0.0716 (0.0269)** {0.1560}	-0.1181 (0.0335)*** {0.0400}††
Good Gr9 grades	-0.0946 (0.0197)*** {0.0010}†††	-0.0946 (0.0197)*** {0.0010}†††	-0.0564 (0.0327) {0.4720}	-0.0764 (0.0213)*** {0.0400}††	-0.1046 (0.0289)*** {0.0380}††
Bad Gr9 grades	0.0031 (0.0385) {1.0000}	0.0031 (0.0385) {1.0000}	-0.0299 (0.0746) {1.0000}	-0.0235 (0.0449) {1.0000}	-0.0175 (0.0532) {1.0000}

^a This table reports estimated intent to treat (ITT) effects on the likelihood of being charged with a crime for eligible students living in Regent Park post-Pathways (students who enrolled in grade 9 in the 2001–2 to 2006–7 academic years) using different control groups.

^b Column 1 presents the baseline estimates, which match those presented in the first column of Table 2. Column 2 adds students from the 1999 grade 9 cohort to the analysis, though we only have data on a small subset of this cohort: students living in the old City of Toronto. Column 3 uses data from the 1999 to 2006 cohorts, but restricts the sample to only include students living in the old City of Toronto. Column 4 uses data from the 2000 to 2006 cohorts and restricts the sample to only include students living in largest housing projects in Toronto (Alexandra Park, Bleecker Street, East Mall, Edgeley Village, Jane Finch, Firgrove Crescent, Flemingdon Park, Lawrence Heights, Malvern Moss Park, Pelham Park, Regent Park, Rexdale and Warden Woods). Column 5 uses data from the 2000 to 2006 cohorts and restricts the sample to only include students living in housing projects within the city-designated “at risk” neighbourhoods: Duncanwoods Drive, Edgeley Village, Firgrove Crescent, Flemingdon Park, Lawrence Heights, McCowan Road, Pelham Park, Rexdale, Scarlettwoods, Yorkwoods Village and a combined ‘other’ housing project group.

^c All regressions include cohort (year) fixed effects, housing project fixed effects, and the following control variables: age (in grade 9), female, immigrant, and English as a second language.

^d Numbers in round brackets are standard errors clustered at the housing project level; numbers in curly brackets are q-values.

^e * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. † $q < 0.10$, †† $q < 0.05$, ††† $q < 0.01$

^f Note that the estimates in the bottom two rows of the first two substantive columns are identical because we do not have data on grade 9 course credits for the 1999 grade 9 cohort. Thus, the relevant regressions omit observations from that cohort.

Table 5: Evolution of Neighborhood Characteristics (Census Data)

VARIABLES	(1) Female	(2) Age	(3) Immigrant	(4) NonEnglish	(5) Aboriginal
RegentPark*Post	0.001 (0.054)	0.582 (0.393)	0.079 (0.056)	-0.098 (0.051)*	-0.010 (0.011)
Constant	0.482 (0.028)***	13.405 (0.354)***	0.238 (0.033)***	0.065 (0.020)***	-0.001 (0.011)
VARIABLES	(6) Disabled	(7) HS_Parent	(8) Nups_Parent	(9) Univ_Parent	(10) Head_Employed
RegentPark*Post	0.007 (0.027)	0.079 (0.056)	-0.064 (0.029)*	0.012 (0.020)	-0.050 (0.060)
Constant	0.089 (0.028)***	0.177 (0.079)**	0.271 (0.025)***	0.051 (0.029)	0.534 (0.077)***
VARIABLES	(11) FamilyEmp_Inc	(12) FamilyTransfer_Inc	(13) FamilyTot_Inc	(14) Family_LICO	(15) Family_size
RegentPark*Post	-2,740.575 (2,724.127)	1,457.360 (1,147.590)	-999.863 (2,624.291)	0.078 (0.052)	0.085 (0.190)
Constant	21,265.464 (4,001.034)***	10,234.845 (480.900)***	35,331.595 (3,851.551)***	0.712 (0.025)***	4.494 (0.234)***
VARIABLES	(16) Single_mother	(17) Single_father	(18) Moved_last_year	(19) Bedrooms	(20) Rooms
RegentPark*Post	-0.021 (0.067)	0.026 (0.019)	-0.022 (0.010)*	-0.115 (0.133)	-0.098 (0.162)
Constant	0.568 (0.032)***	0.018 (0.022)	0.041 (0.021)*	2.882 (0.165)***	5.490 (0.146)***
VARIABLES	No_repairs (21)	Major_repairs (22)	Minor_repairs (23)		
RegentPark*Post	(0.044) -0.041 (0.062)	(0.029)*** -0.120 (0.048)**	(0.028)** 0.161 (0.036)***		
Constant	0.584 (0.053)***	0.123 (0.053)**	0.293 (0.014)***		
Year FE	Y	Y	Y	Y	Y
Observations	24	24	24	24	24

^a This table reports estimated intent to treat (ITT) effects of eligibility for Pathways in Regent Park on various covariates.

^b The coefficient on the RegentPark*Post interaction is the β coefficient from equation 1. The regression constant is the predicted value of the dependent variable for the year 1995.

^c All regressions include year fixed effects and a dummy variable for Regent Park.

^d Heteroskedasticity robust standard errors are reported in the parenthesis.

^e * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. † $q < 0.10$, †† $q < 0.05$, ††† $q < 0.01$

Table 6: Estimated Effects of Regent Park’s Pathways Program on Crime Outcomes at Different Ages

	Ever Charged	# of Charges	Ever Convicted	# of Convictions
Age 19-23 sample	-0.0488 (0.0168)*** {0.0430}††	-0.1090 (0.2264) {1.0000}	-0.0172 (0.0124) {0.5840}	-0.0142 (0.0580) {1.0000}
Age 24-28 sample	-0.0186 (0.0127) {0.5310}	-0.0695 (0.1418) {1.0000}	0.0003 (0.0076) {1.0000}	-0.0351 (0.0408) {1.0000}
Age 29-33 sample	-0.0144 (0.0080)* {0.3010}	-0.0572 (0.0690) {1.0000}	-0.0052 (0.0051) {0.9280}	-0.0510 (0.0161)*** {0.0270}††

^a This table reports estimated intent to treat (ITT) effects on four different crime outcomes for eligible students living in Regent Park post-Pathways (students who enrolled in grade 9 in the 2001–2 to 2006–7 academic years).

^b All regressions include cohort (year) fixed effects, housing project fixed effects, and the following control variables: age (in grade 9), female, immigrant, and English as a second language.

^c Numbers in round brackets are standard errors clustered at the housing project level; numbers in curly brackets are q-values.

^d * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. † $q < 0.10$, †† $q < 0.05$, ††† $q < 0.01$

Table 7: Estimated Effects of Regent Park’s Pathways Program on Crime Outcomes for Various Subgroups with Academic Controls

	Ever Charged	# of Charges	Ever Convicted	# of Convictions
Full sample	-0.0435 (0.0212)** {0.2230}	0.1621 (0.4071) {1.0000}	0.0079 (0.0139) {1.0000}	0.1469 (0.0998) {0.5270}
Males	-0.0586 (0.0342)* {0.3620}	-0.0780 (0.7896) {1.0000}	0.0315 (0.0243) {0.6410}	0.1877 (0.1954) {0.9630}
Females	-0.0427 (0.0215)* {0.2340}	-0.1065 (0.2161) {1.0000}	-0.0281 (0.0121)** {0.1560}	0.0235 (0.0396) {1.0000}
English 1st lang.	0.0611 (0.0263)** {0.1560}	-0.4453 (0.6044) {1.0000}	-0.0095 (0.0201) {1.0000}	-0.0320 (0.1415) {1.0000}
English 2nd lang.	-0.0861 (0.0234)*** {0.0080}†††	0.2030 (0.3414) {1.0000}	0.0164 (0.0158) {0.9100}	0.1842 (0.0847)** {0.1890}
Good Gr9 grades	-0.0781 (0.0211)*** {0.0070}†††	0.3123 (0.3348) {0.9630}	0.0038 (0.0147) {1.0000}	0.1189 (0.0906) {0.6230}
Bad Gr9 grades	0.0381 (0.0454) {1.0000}	-0.6097 (0.9865) {1.0000}	0.0122 (0.0350) {1.0000}	0.1196 (0.2669) {1.0000}

^a This table reports estimated intent to treat (ITT) effects on four different crime outcomes for eligible students living in Regent Park post-Pathways (students who enrolled in grade 9 in the 2001–2 to 2006–7 academic years).

^b All regressions include cohort (year) fixed effects, housing project fixed effects, and the following control variables: age (in grade 9), female, immigrant, English as a second language, a student’s cumulative GPA in Grades 11 and 12 and a dummy variable capturing whether the student graduated from high school within five years.

^c Numbers in round brackets are standard errors clustered at the housing project level; numbers in curly brackets are q-values.

^d * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. † $q < 0.10$, †† $q < 0.05$, ††† $q < 0.01$

Table 8: Estimated Effects of Regent Park’s Pathways Program on Likelihood of Being Charged with Each Type of Crime

Panel A: COCs 1-4			
Homicide	Attempted murder	Robbery	Sexual assault
-0.0018 (0.0018) {0.9420}	0.0076 (0.0042)* {0.3040}	-0.0057 (0.0085) {1.0000}	0.0087 (0.0038)** {0.1560}
Panel B: COCs 5-8			
Other sexual offenses	Major assault	Common assault	Uttering threats
0.0023 (0.0034) {1.0000}	-0.0138 (0.0116) {0.7420}	-0.0156 (0.0112) {0.5840}	-0.0190 (0.0083)** {0.1640}
Panel C: COCs 9-12			
Criminal harassment	Other crimes against persons	Motor vehicle theft	Theft
-0.0027 (0.0029) {0.9630}	0.0033 (0.0044) {1.0000}	0.0076 (0.0046) {0.3870}	-0.0322 (0.0122)** {0.0860}†
Panel D: COCs 13-16			
Break and enter	Fraud	Mischief	Possess stolen property
-0.0383 (0.0044)*** {0.0010}†††	0.0237 (0.0093)** {0.1020}	-0.0286 (0.0071)*** {0.0040}†††	0.0065 (0.0110) {1.0000}
Panel E: COCs 17-20			
Other prop. crimes	Fail to appear	Probation breach	Unlawfully at large
-0.0082 (0.0066) {0.7220}	0.0069 (0.0072) {0.9630}	-0.0105 (0.0085) {0.7220}	-0.0002 (0.0020) {1.0000}
Panel F: COCs 21-24			
Fail to comply w/ order	Other admin. justice	Weapons	Prostitution
-0.0246 (0.0133)* {0.3000}	-0.0071 (0.0076) {0.9630}	-0.0007 (0.0113) {1.0000}	0.0032 (0.0004)*** {0.0010}†††
Panel G: COCs 25-28			
Disturbing the peace	Other Crim. Code	Impaired driving	Other traffic
-0.0033 (0.0035) {0.9630}	-0.0094 (0.0071) {0.6180}	-0.0024 (0.0044) {1.0000}	-0.0169 (0.0045)*** {0.0070}†††
Panel H: COCs 29-32			
Drug possession	Other drug offences	Youth Criminal Justice Act	Residual federal statutes
-0.0150 (0.0113) {0.6180}	0.0214 (0.0098)** {0.1840}	-0.0089 (0.0034)** {0.0920}†	-0.0039 (0.0016)** {0.1190}

^a The top row of each cell reports the estimated intent to treat (ITT) effect for eligible students living in Regent Park post-Pathways (students who enrolled in grade 9 in the 2001–2 to 2006–7 academic years).

^b All regressions include cohort (year) fixed effects, housing project fixed effects, and the following control variables: age (in grade 9), female, immigrant, and English as a second language.

^c Numbers in round brackets are standard errors clustered at the housing project level; numbers in curly brackets are q-values.

^d * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

^e † $q < 0.10$, †† $q < 0.05$, ††† $q < 0.01$

A Online Appendix

A.1 Data Appendix

This appendix provides additional details about the datasets described in Section 3 as well as the definitions of key variables.

A.1.1 Toronto Community Housing (TCH) Data

Toronto Community Housing (TCH) is the public housing agency of the City of Toronto. The TCH manages over 2,100 buildings that house more than 92,000 residents in 106 neighborhoods.¹⁸ TCH residents benefit from a housing subsidy in the form of rents that are capped at 25-30 percent of gross household income.

During the late 1990s and early 2000s when students in our sample were enrolling in high school, the demand for TCH units far exceeded supply. Units are allocated on a first-come, first serve basis with exceptions for the homeless and those facing domestic violence. Even with these priorities, the average wait time for a unit in 1998 was more than 5 years (([Toronto Social Housing Connections, 1998](#))). In this paper, we focus on the 113 public housing projects that were built before 1976. We combine some small public housing sites for data confidentiality reasons. Consequently, we end up with a dataset of 70 public housing projects whose residents all pay rent geared to income.

A.1.2 Toronto District School Board (TDSB) Data

The TDSB data contain information on the demographic characteristics and academic performance of students that entered Grade 9 in a TDSB school between September 2000 and September 2008. Importantly, the data also include information on students' first and last names, date of birth and address, including postal codes. This information allows us to match the TDSB data to the TCH data.

¹⁸See <https://torontohousing.ca/about-us>.

A.1.3 Integrated Criminal Court Survey (ICCS) Data

The Integrated Criminal Court Survey (ICCS) is an annual census of court appearances, charges and case outcomes across Canada. The ICCS is conducted by Statistics Canada and the survey encompasses all federal criminal charges/cases brought to provincial and territorial and superior courts.¹⁹ For each case, the ICCS contains information on the demographics (age and sex) of the accused, the case outcomes and court process metrics (e.g. processing times, completion rates). The ICCS is available from 2005 to the present.

We merge the TCH and TDSB data to the ICCS by matching on first names, last names and dates of birth. Put another way, all individuals with the first names, last names and dates of birth that appear in both the TDSB data and the ICCS are coded as being charged with a crime. We assume that all TDSB students that do not appear in the ICCS have never committed a crime.

¹⁹The ICCS excludes cases brought before appeal courts, federal courts and the Supreme Court of Canada

A.2 Appendix Tables

Table A1: Estimated Effects of Regent Park’s Pathways Program on Crime Outcomes for Various Subgroups - Grouped Means Difference-in-Differences

	Ever Charged	# of Charges	Ever Convicted	# of Convictions
Full sample	-0.0778 (0.0317)** {0.1240}	-0.7922 (0.7025) {0.8240}	-0.0104 (0.0270) {1.0000}	-0.2942 (0.1610)* {0.3000}
Males	-0.0781 (0.0457)* {0.3620}	-1.8146 (0.9866)* {0.3000}	0.0006 (0.0402) {1.0000}	-0.5802 (0.2789)** {0.2150}
Females	-0.0907 (0.0338)*** {0.0760}†	0.0782 (0.6425) {1.0000}	-0.0275 (0.0249) {0.8450}	0.0319 (0.0919) {1.0000}
English 1st lang.	0.0316 (0.0369) {1.0000}	-1.5354 (0.7772)* {0.2340}	0.0013 (0.0318) {1.0000}	-0.6351 (0.1819)*** {0.0120}††
English 2nd lang.	-0.1305 (0.0351)*** {0.0070}†††	-0.4108 (0.4484) {0.9960}	-0.0228 (0.0211) {0.8800}	-0.0281 (0.1485) {1.0000}
Good Gr9 grades	-0.0884 (0.0302)*** {0.0430}††	0.3553 (0.6483) {1.0000}	-0.0077 (0.0273) {1.0000}	0.0066 (0.1238) {1.0000}
Bad Gr9 grades	-0.0059 (0.0598) {1.0000}	-1.7488 (1.5219) {0.7890}	0.0222 (0.0510) {1.0000}	-0.4258 (0.4040) {0.8990}

^a This table reports estimated intent to treat (ITT) effects on four different crime outcomes for eligible students living in Regent Park post-Pathways (students who enrolled in grade 9 in the 2001–2 to 2006–7 academic years).

^b Data is collapsed into averages at the housing project level. Regressions include cohort (year) fixed effects, housing project fixed effects, and the following control variables: average age (in grade 9), percent female, percent immigrant, and percent of students with English as a second language.

^c Numbers in round brackets are standard errors clustered at the housing project level; numbers in curly brackets are q-values.

^d * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. † $q < 0.10$, †† $q < 0.05$, ††† $q < 0.01$

Table A2: Estimated Effects of Regent Park’s Pathways Program on Crime Outcomes for Various Subgroups - Poisson Regression

	# of Charges	# of Convictions
Full sample	-0.0768 (0.1357) {1.0000}	-0.1159 (0.1717) {1.0000}
Males	-0.0080 (0.1432) {1.0000}	-0.0727 (0.1787) {1.0000}
Females	-0.5126 (0.3123) {0.3870}	-0.4803 (0.4862) {0.9280}
English 1st lang.	-0.3353 (0.1518)** {0.1700}	-0.5123 (0.1763)*** {0.0380}††
English 2nd lang.	0.0549 (0.2863) {1.0000}	0.3418 (0.3439) {0.9280}
Good Gr9 grades	0.3668 (0.1550)** {0.1320}	0.3933 (0.2105)* {0.2720}
Bad Gr9 grades	-0.2401 (0.1809) {0.6120}	-0.3493 (0.2812) {0.7020}

^a This table reports estimated intent to treat (ITT) effects on four different crime outcomes for eligible students living in Regent Park post-Pathways (students who enrolled in grade 9 in the 2001–2 to 2006–7 academic years).

^b All Poisson regressions include cohort (year) fixed effects, housing project fixed effects, and the following control variables: age (in grade 9), female, immigrant, and English as a second language.

^c Numbers in round brackets are standard errors clustered at the housing project level; numbers in curly brackets are q-values.

^d * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. † $q < 0.10$, †† $q < 0.05$, ††† $q < 0.01$