WORKING DRAFT

Building "On-Track" Indicators for High School Graduation and College Readiness: Evidence from New York City

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Abstract

Students' engagement and performance in their first year of high school offer strong signals about their prospects for earning a diploma four years later. These performance measures can be used to construct "on-track" indicators to measure a school's performance and to identify needs of specific students who are at risk of dropping out. This paper undertakes a systematic reanalysis of several on-track indicators that predicted the likelihood of graduating with a New York State Regents diploma in New York City. The analytic dataset contains comprehensive longitudinal information for first-time 9th graders between 2001-02 and 2010-11.

The results show that the current New York City Department of Education indicator (earning 10 or more course credits in the 9th grade) offers a reliable prediction of graduation with a Regents diploma. However, an indicator based on "earning 10 or more credits and passing at least one Regents exam" represents a substantial improvement on the current indicator and was used as primary indicator for additional analyses. These analyses showed that this on-track indicator has been reliable and stable across seven cohorts on entering 9th graders. The analysis also shows that the substantial increase 9th grade on-track rates offers a reliable foreshadowing of increase in Regents diploma graduation rates in New York City. Additionally, the on-track indicator was highly predictive for a wide range of student subgroups and helps highlight the prominent gaps in performance along race, gender and economic lines. Finally, the paper highlights the significant variation in on-track rates across schools that should be investigated in future research.

Keywords: high school graduation, drop-out, on-track, at-risk, college ready

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Background

A growing body of evidence shows that, regardless of their performance in elementary and middle school, students' engagement and performance in their first year of high school offer strong signals about their prospects for earning a diploma and being prepared for college four years later (Allensworth and Easton, 2005; Kennelly and Monrad, 2007). Even students who fail just a single academic subject in the ninth grade can be almost half as likely to graduate with their cohort (Allensworth and Easton, 2005). The combination of two or three early warning indicators provides even more reliable predictions of a students' likelihood of earning a high school credential that signals a high likelihood of being prepared to take on college-level work after graduation. For example, research in the Chicago Public Schools showed that students who failed an academic course or did not pass at least five courses during their first year in high school were nearly three and a half times less likely to graduate from high school within four or even five years (Allensworth and Easton, 2005).

Building on this research base, school districts including Chicago, New York City and Baltimore have begun to construct "on-track" indicators both as

components of school performance measurement and accountability systems, and to monitor the progress and address the needs of individual students. For example, New York City's accountability system includes an indicator of the percentage of students who earn a minimum of 10 credits in the 9th grade (44 credits are required for graduation) as a key component of the progress report grade that high schools receive each year as part of the department's accountability system.[1] New York City also uses an indicator of "over age and under credited" (students falling behind on the total number of credits that should be accumulated each year to graduate within four years) to identify students who may need to take an alternative pathway to graduation.

The Research Alliance for New York City Schools is undertaking a systematic reanalysis of factors that most accurately and reliably predict students' prospects for graduating from high school and for earning credentials that would likely prepare them for success in college. The analysis builds on work conducted in Chicago by the Consortium on Chicago School Research and on earlier work conducted in New York City by the Parthenon Group (2008). The project expands on this earlier work in several ways.

First, the Research Alliance has compiled longitudinal data on 10 cohorts of first-time 9th grade students in New York City, including seven cohorts who were scheduled to graduate by 2011. The sample includes a total of over 576,000 students across more than 350 high schools beginning in the 2001-2002 school

year. The large sample of students and schools provides a unique opportunity to assess the reliability and validity of on-track indicators. Second, the analysis presented here provides insights into students' preparation for a New York State Regent's diploma, which has become the minimum expectation for high school graduates in the state. The analysis focuses on factors that predict whether students are on-track for a Regent's diploma or a Regent's diploma with advanced standing, which is regarded as a strong indicator of academic preparation for college. Third, the analysis seeks to track changes over time in both graduation rates and in the rates at which students are on-track for graduation at the end of their 9th grade year. The period covered by the analysis includes changes in the New York State high school graduation requirements, the New York City accountability system, and the implementation of uniquely intensive reforms that dramatically changed the high school landscape in New York City.

Finally, the analysis seeks to identify student, school, and system level characteristics that are associated with students' preparation for graduation and the transition to further education and work. In the last two sections of the paper the analyses focus on comparisons between subgroup of students and on the variation of on-track status across schools. A key goal for this work is to develop indicators and measures that can be used at multiple levels of the education system. These indicators can help inform decisions about how to serve individual students better, how to reform schools in ways that serve the needs of a diverse

student population, and how to monitor school and system-level performance and progress for accountability and continuous improvement.

The current paper confines itself to basic descriptive information about key predictors of high school graduation and changes over time in both the predictors and the accompanying graduation rates. The paper leaves open, however, a number of questions about how schools and school staff can identify students most at risk of falling off-track and how they can intervene to prevent the slide toward dropping out or to help students recover if they fall behind. The Research Alliance's analysis of on-track and college-readiness indicators will continue with further investigation of early indicators that predict college enrollment and success as well as efforts to build tools to help schools monitor and support student success.

Analysis Samples and Data

The samples that are the focus of these analyses include general education students who enrolled in an open enrollment high school in New York City as a first-time ninth grader and who were enrolled in a New York City public school the previous year.[2] The sample encompasses 54,000 to 60,000 first-time 9th graders each year between the 2001-2002 school year and the 2010-2011 school year (see Table A-1). This represents approximately 75 percent of the 75,000 to 80,000 students who enrolled in a New York City public high school as a first-

time 9th grader each year.[3] In all, the sample includes more than 576,000 students from more than 350 New York City High Schools who were first-time ninth graders between 2001 and 2010.[4]

The analyses follow students from their initial entry into New York City public high schools and for up to four years (until October of the year in which they were scheduled to graduate with their cohort). Seven of the 10 cohorts in the sample (those entering high school in September 2001 through September 2007) – nearly 408,000 students – can be followed through their scheduled "on-time" graduation from high school (as late as October 2011). For the purposes of this paper, this is referred to as the four-year graduation rate.

The analyses presented in this paper examine the relationship between measures of students' engagement and performance in grades 8 and 9 and their likelihood of graduating from a New York City high school within four years. The database compiled for this study includes enrollment status information for each student in each of four years of scheduled high school enrollment. Subsequent enrollment statuses include enrolled in a New York City high school, dropped out, discharged, and graduated. The database also includes detailed information about the number of courses students attempted, passed, and failed, and the number of Regents examinations students attempted, passed, and failed. It also includes annual attendance rates, credit accumulation, course grades, and Regents examination grades. Credit and grade information can be distinguished by

academic (math, English, social studies, science, and foreign language) and non-academic courses. Additionally, the database includes information about grade 8 attendance and test scores on the New York State standardized assessments in English language arts (ELA) and mathematics. Finally, it captures demographic information for each student including age, gender, race/ethnicity, poverty status, English language learning (ELL) status, and special education status.

The primary outcome for these analyses is graduating high school with a Regents diploma or a Regents diploma with advanced standing. Additionally, for descriptive purposes we include graduating with a Local diploma in the calculation of graduation rates. Local diplomas have less stringent requirements than the Regents diplomas and are being phased out in New York City and across New York State. This option will not be available to students who entered high school in September 2008 or later. Therefore, due to their past relevance, Local diplomas are included in some descriptive analyses, but they are not part of the primary outcome variable of this paper.

Table A-3 provides a description of each of the high school enrollment and completion statuses that are available for the analyses conducted for this paper. It shows that a student must earn one of two types of diplomas by October of their scheduled year of graduation in order to be considered a graduate with at least a Regents diploma in this analysis. The Regents diploma requirements include a minimum of 44 course credits and passage of at least five end-of-course

Regents examinations. Typically students earn one credit for successfully passing a semester-long course. Passing a Regents examination requires a minimum score of 65. The Regents diploma with advanced standing requires seven Regents examinations. All statuses include the summer following June of each cohort's scheduled graduation year. This includes June and August graduates, which is consistent with New York State and New York City reporting standards.

The paper takes the perspective of high school leaders, counselors, and teachers who are seeking to monitor and support students' transition into and through the 9th grade year with the goal of enhancing their prospects of graduating four years later. In several places in the paper, taking this perspective means that the analysis sample and calculation of graduation rates are somewhat different from what are typically reported by the New York City Department of Education and the New York State Education Department. Specifically, when reporting trends in on-track and graduation rates, the analysis sample includes students who were discharged from the New York City public school system after the 9th grade and were believed to have enrolled in another school outside the district. [5] These students are included in the calculation of on-track and graduation rates because, from the perspective of those working with first-time 9th graders, they do not yet know what will eventually happen to these students after the 9th grade year. Thus, it is hoped that they will seek strategies to intervene and support students who are

struggling during the 9th grade year in an effort to maximize their chances of graduating.

However, when assessing the validity of the 9th grade on-track indicators, the analysis does not include students who were discharged from the New York City schools and were assumed to have transferred to a school outside the district. It is possible that some of these students graduated within four years with a Regents diploma and that their 9th grade performance provides a reliable indicator of that outcome. Other discharged students may have dropped out with equally reliable 9th grade performance indicators. Because we do not have information on their actual graduation status, we do not include them in the validation analysis. As noted above, discharged students are included in other calculations of on-track and graduation rates.

9th Grade On-Track Status and the Likelihood of Graduating within Four Years

In New York City, a key component of the Department of Education (NYCDOE) accountability system and key indicator for on-track status captures whether or not students earned 10 or more credits during the 9th grade. This is a relatively simple version of an on-track indicator, as it uses just one criterion to predict graduation within four years.[6] More complex indicators or indices may contain multiple performance and engagement measures or they may weight some

measures or characteristics more heavily than others. For example, the Consortium on Chicago School Research (CCSR) defines on-track status with two dichotomous variables, earning five full course credits during the first year of high school and not failing more than one core subject during the first two semesters (Allensworth & Easton, 2005). An even more complex indicator could be constructed from continuous predictor variables and rely on a statistical model that predicts the likelihood of graduating from high school. From an intervention point of view, a more nuanced continuous indicator could be particularly helpful for teachers or administrators because it can highlight the severity of risk for being off-track or show that students are on-track in some areas but off-track in others. A more complex and flexible on-track system including several predictor variables could also allow one factor to offset or foreshadow another. For example, an encouraging trajectory for credit accumulation could be offset by poor performance on Regents examinations or poor attendance may foreshadow problems with low grades and course failures.

A central question for this paper is how to evaluate and judge the reliability and usefulness of an on-track indicator or index. One of the most straightforward approaches is to apply a 9th grade performance indicator to cohorts of students from previous years and observe directly how many students graduated within four years. Judging the reliability of an on-track indicator in this framework involves determining how many on-track students graduated within

four years and how many off-track students did not graduate within four years. In other words, the overall correct prediction rate for the on-track indicator is a function of the percentage of on-track students who graduate and the percentage of off-track students who do not graduate.

For example, Table 1 shows the relationship between a simplified version of the current NYCDOE on-track indicator – earning 10 or more credits in the 9th grade – and the actual Regents diploma graduation status of students who first entered high school at the start of the 2007-2008 school year.[7] It shows that 39,385 students from the 2007 cohort (74 percent of the cohort) earned 10 or more course credits in their 9th grade year and would therefore be considered on-track. Of these, 74 percent graduated with a Regents diploma within four years of entering high school. For the purposes of this paper, this percentage is referred to as the "correct on-track predication" rate. The on-track prediction is incorrect for the remaining 26 percent of students who were on track at the end of 9th grade, since they earned at least 10 credits but later fell behind and did not graduate with a Regents diploma within four years.

Table 1 also shows that 14,040 of the students in the 2007 cohort (26 percent) earned fewer than 10 credits in their 9th grade year and are therefore considered off-track. Of these, 84 percent did not graduate with a Regents diploma within four years of entering high school. This is referred to as the "correct off-track prediction" rate. The remaining "off-track" students eventually

caught up and graduated with their cohort, even though they did not earn at least 10 credits in their 9th grade year. This reflects an incorrect prediction based on the 9th grade off-track status.

Together, the "correct on-track prediction" rate and the "correct off-track prediction" rate show that the NYCDOE on-track indicator correctly predicted the Regents diploma graduation status for 77 percent of all students in the 2007 cohort. When judging the reliability of various on-track indicators, however, it is important to consider not just the overall correct prediction rate, but the correct prediction rate for both the on-track and off-track statuses. Ideally, it would be desirable to ensure high precision for both on-track and off-track statuses. In some cases, however, it may be preferable to tolerate a somewhat lower precision in predicting off-track status (while maintaining a high overall prediction rate). This would mean that some students who are identified as being off-track might receive extra services or support even though they may have been able to catch up and graduate without the extra help. Alternatively, it may be desirable to err on the side of a somewhat higher correct off-track rate (assuming a similar or higher overall rate) if there is a preference to minimizing the risk of allocating resources to students who may not need them. However, the lower correct on-track rate would mean that more students are incorrectly classified as on-track, but later do not sustain their performance and graduate within four years.

(Table 1 about here)

In short, this version of the current NYCDOE on-track indicator (earning 10 or more credits in the 9th grade year) is a reasonably accurate predictor of the likelihood that a student will graduate with a Regents diploma within four years of entering high school. The next section of the paper investigates other potential on-track indicators to determine if there are even better predictors.

Table 2 shows the correct prediction rates for 14 potential on-track indicators, including the version of current NYC DOE indicator just discussed. The analysis is based on students who entered a New York City high school for the first time at the start of the 2007-2008 school year and who were scheduled to graduate by August 2011. The correct prediction rates are derived from logistic regression models that used the respective indicators to predict whether or not a student graduates with a Regents diploma within four years. The estimates for Models 1, 6, 7 and 12, and 13 are based on continuous and separate specifications for each variable listed. For example, Model 12 includes continuous specifications of credits earned, the number of Regents examinations passed, and attendance rates. The remaining models include a single dichotomous variable that reflects a student's status. For example, Model 8 includes a variable coded as one if a student earned 10 or more credits and the student passed at least one Regents examination in the 9th grade. The variable is coded zero otherwise. The parameter

estimates and summary statistics from these models are presented in Appendix Table A-4.

As noted above, it is important to consider both the overall correct prediction rate and the correct prediction rates for both on- and off-track statuses. Table 2 suggests that the best overall correct prediction rate (79 percent) is derived from Model 12, which includes continuous specifications of credits earned, Regents examinations passed, and attendance rates. This model also provides the best balance between the correct on- and off-track predictions, 81.8 percent and 75.7 percent, respectively.[8] However, an index based on multiple continuous variables can be very difficult to interpret and even more difficult to operationalize because of the many combinations of values that can yield the same prediction rates. Strategies for operationalizing such an index are discussed briefly below. For the purposes of this paper, we focus primarily on identifying dichotomous indicators that maximize the overall correct prediction rate and offer a useful balance between the correct on-track and off-track prediction rates.

Table 2 suggests that Model 8, which adds a variable indicating that a student passed at least one Regents examination to the current NYCDOE on-track indicator, offers some important advantages over the current on-track indicator shown in Model 2 and others. First, the overall correct prediction rate is somewhat higher for Model 8 compared to the other models with dichotomous indicators. Second, the correct on-track prediction rate is more than 11 percentage

points higher for Model 8 compared to the current NYCDOE on-track indicator in Model 2, for example. While the correct off-track prediction rate is 13 percentage points lower, it may be more advisable to tolerate a larger error in this rate. To see this, consider the fact that the lower correct off-track prediction rate means that some of the students identified as off-track actually recover from their low 9th grade credit accumulation. At the same time, it is not clear which students this will be. Thus, it may be prudent to err on the side of flagging some students as being off-track and ensure that they get extra services and support to maximize the likelihood that they actually graduate.[9] Finally, by maximizing the correct on-track prediction rate, schools can minimize the likelihood of neglecting students who are most likely to need extra help.

It is also worth noting that Models 9, 10 and 11 provide somewhat higher correct on-track prediction rates compared to Model 8. However, the correct off-track prediction rates fall below 70 percent, increasing the likelihood of misclassifying students as being off track even though they are likely to recover and go on to graduate anyway. It is difficult to provide a scientific rationale for how low this percentage should be before the risk of misclassification becomes an unreasonable burden. Making further judgments about the costs and benefits tradeoffs of these indicators, and the two sides of their correct predictions, lies beyond the scope of the current paper. Thus, for the remainder of the paper, we

focus primarily on the on-track indicator from model 8: earning 10 or more credits and passing at least one Regents examination.

(Table 2 about here)

Finally, Model 14 shows the accuracy of an indicator that is based on the CCSR on-track indicator, which uses two criteria: 1) passing 5 or more courses and 2) failing no more than one semester in an academic course. In the New York City context, this is equivalent to earning 11 or more credits and failing no more than one semester academic course. Table 2 shows that the CCSR has an overall correct prediction rate of 71.1 percent, but that its correct off-track prediction rate is 61.4 percent. This low rate indicates that a sizable proportion of students who are identified as being off-track are likely to catch up and go on to graduate. This may be due in part to some of these students being classified as being off-track because they failed a semester academic course and still managed to earn at least 11 credits and pass at least one Regents examination.

Figure 1 illustrates the compelling nature of the on-track indicator. It shows that students who earned 10 or more credits and passed at least one Regents examination by the end of 9th grade were more than three times as likely to graduate with a Regents diploma within three years than those who were off-track based on these criteria. This difference is particularly dramatic for an

advanced Regents diploma where less than one percent of students who were off-track at the end of 9th grade reached this goal. The figure also shows that students who were on track were highly unlikely to earn a local diploma while nearly a third of students who were off-track did so.

(Figure 1 about here)

Change Over Time in On-Track Rates and Graduation

Before moving on to examine the interaction between 8th grade performance indicators and on-track statuses and differences in on-track rates across student subgroups and among high schools, this section of the paper assesses the stability over time in the relationship between on-track indicators and the likelihood of graduation with a Regents diploma.

Figure 2 shows the correct prediction rates for each entering cohort of 9th grade students from 2001 through 2007. These reflect the on-track indicator based on earning 10 or more credits and passing at least one Regents examination during the 9th grade. The solid line shows the overall correct prediction rate and the dashed line shows the correct off-track prediction rate. The figure indicates a high degree of stability overall in the relationship between the on-track indicator and students' actual graduation status. The overall correct prediction rate fluctuates between 77 and 82 percent with a slight decline after the 2003 cohort.

The correct off-track prediction rate decreased steadily over time from a high of 87 percent for the 2001 cohort to 70 and 71 percent for the 2006 and 2007 cohorts, respectively. The decline reflects the fact that a growing proportion of students who would have been identified as off-track in 9th grade ended up graduating within four years. The decline in correct off-predictions may be due, in part, to targeted efforts by New York City to identify and assist students who fell behind and provide a range of opportunities to catch up and graduate. These strategies included alternative high schools which offered opportunities for credit recovery and multiple pathways to graduation. The current study does not allow for an analysis that could establish a causal link between these trends.

(Figure 2 about here)

Reports issued by the New York City Department of Education (citation) and the New York State Education Department (citation) show that New York City has seen a steady increase in graduation rates over the past decade. Figure 3 illustrates this trend for students included in the present analyses, who first entered a New York City high school between September 2001 and September 2007 and who were scheduled to graduate in 2005 through 2011, respectively.[10] The bars in the figure show that the overall graduation rates increased from 47 percent for students who entered high school in 2001 to 63 percent for those who

entered high school in 2007. The figure indicates that most of the increase occurred in the percent of students earning a Regents and advanced Regents diploma (represented by the two lower portions of each bar) while the proportion of students graduating with a Local diploma decreased steadily. Regents diplomas comprised 64 percent of the diplomas awarded to graduates from the 2001 cohort compared to nearly 86 percent of the diplomas awarded to graduates from the 2007 cohort.

(Figure 3 about here)

The line in Figure 3 indicates the percentage of students in each cohort who were identified as being on-track at the end of the 9th grade. Here, on-track is defined as having earned 10 or more credits and passing at least one Regents examination in 9th grade. Although somewhat lower than the Regents diploma graduation rate, the increase in the on-track rate parallels that of the graduation rate for each cohort from 2001 through 2007 (with the exception of the 2003 cohort).[11] Specifically, the Regents diploma graduation rates increased from 30 percent for the 2001 cohort to nearly 54 percent for the 2007 cohort. Over the same period, the on-track rate increased from 38 percent to 51 percent with a substantial decline between the 2001 and 2003 cohorts. In short, at least for the later cohorts, the on-track rates provide a compelling foreshadow of the future

graduation rate for successive cohorts of first-time ninth graders. Assuming that the eight-year stability of the relationship between the 9th on-track status and the subsequent graduation status continues, Figure 3 suggests that New York City is highly likely to see continued increases in its Regents diploma graduation rates through 2014.

The Interaction between 8th Grade Performance and 9th On-Track Status

Students' performance in the elementary and middle grades is a critical indicator of their likely performance in high school. For example, among students who entered high school in 2007, those who arrived with proficient scores in 8th grade math and English Language Arts (ELA) were one and a half times more likely to be on-track for graduation at the end of 9th grade than those who were proficient in only one of those subjects and nearly four times more likely than those who did not reach proficiency in either subject. [12] Yet, being on-track at the end of the 9th grade can supersede prior performance as a crucial signal about students' prospects for graduating with a Regents diploma. In other words, regardless of their performance in earlier grades, students' work in the 9th grade provides the strongest indication of a healthy or high risk trajectory through high school and toward post-secondary education.

Figure 4 shows the 9th grade on-track and high school graduation rates for four groups of students from the 2007 cohort of entering 9th graders defined by

their proficiency levels on the 8th grade New York State ELA and math tests. Proficiency on the New York State assessments is defined as scoring at Level 3 or 4. The first set of bars represent students who did not score at Level 3 or 4 on either the math or ELA assessments. The last set of bars represent students who scored at Level 3 or 4 on both the math or ELA assessments. The middle two sets of bars represent students who scored at Level 3 or 4 on one assessment but not the other. The left bar in each pair shows the Regents diploma graduation rate for students who were on-track at the end of the 9th grade and the right bar shows the Regents diploma graduation rates for those who were off-track. The figure shows that being on-track at the end of 9th grade substantially increased the likelihood of graduating with a Regents diploma within four years, regardless of one's 8th grade performance in ELA and math. In fact, the graduation rate among on-track students who entered high schools without proficiency in either math or ELA (79 percent and 78 percent) is substantially higher that the graduation rate for students who entered high school proficient in both subject but were off-track at the end of 9th grade (49 percent).

(Figure 4 about here)

On-Track Status and Student Background Characteristics

Table 3 shows the on-track rates and Regents diploma graduation rates for subgroups of first-time 9th graders defined by their gender, race/ethnicity, free or reduced price lunch eligibility, and English Language Learning (ELL) status. The table shows substantial differences in both on-track and graduation rates among the subgroups. At the same time, the table shows generally Regents diploma graduation rates by on-track status. In other words, regardless of differences in on-track rates across subgroups, students who are on-track at the end of 9th grade are substantially more likely to graduate with a Regents diploma within four years than those who are not on track.

(Table 3 about here)

The first line in Table 3 shows the overall on-track and Regents diploma graduation rates as well as the graduation rates for students who were on- and off-track at the end of 9th grade. The table also shows that the on-track rate of young women is five percentage points higher than the rate for young men. In parallel with that difference, the Regents diploma graduation rate is seven percentage points higher for young women. Despite these differences, both young women and young men who are on-track at the end of 9th grade are substantially more likely to graduate than their counterparts who are off track.

The same pattern can be seen among subgroups of students defined by race/ethnicity where the overall differences among groups are even more dramatic. It is important to note that the gender and race/ethnicity gaps in Regents diploma graduation rates are narrower among students who are on-track at the end of 9th grade, although the gaps persist. For example, the overall Regents diploma graduation rate for African-American and Hispanic young men is approximately 44 percent compared to 67 percent for White young men and 70 percent for Asian/Pacific Islander young men. This gap is much narrower among those who were on-track at the end of 9th grade; approximately 76 percent of African-American and Hispanic young men graduated with a Regents diploma compared to 86 and 87 percent of White and Asian young men, respectively.

There are two important implications of the patterns exhibited in Table 3 regarding gender and race gaps in on-track and graduation rates. First, African-American and Hispanic young men are much less likely to be on-track at the end of 9th grade compared to the White and Asian counterparts. This means that efforts to close the graduation gaps must start in the 9th grade (as well as earlier in the educational pipeline). A second implication is that even when students are on-track at the end of 9th grade, differences in ultimate graduation rates persist among gender and race subgroups. Further analysis is required to understand the sources of this remaining gap and to determine which factors are likely to be influenced by high schools. In short, however, focusing on the elements of the on-track

indicator appears to hold promise for addressing a substantial portion of the graduate gap among gender and race subgroups of students, although he challenges of such efforts should not be underestimated.

Variation in On-Track Rates within and Across Schools

A final strand of preliminary analysis undertaken for this paper focuses on understanding how on-track rates vary within and across New York City schools. This question may be of special interest to policy makers and educators as they consider strategies for identifying and supporting struggling students. For example, it may be useful to know whether on-track or off-track students are concentrated in relatively few schools or spread more evenly across a large number of high schools. If there are high concentrations of off-track students in a small number of high schools, it may be particularly effective and efficient to target these schools in an effort to maximize the number of struggling students who may benefit from special interventions and services. If, on the other hand, off-track students are spread widely across a majority of high schools, it would be important to consider strategies to help all school to identify the struggling students in their buildings and to target services and supports to these students rather than build a school-wide intervention that may not be needed by a large percentage of students.

The most straightforward strategy for assessing how much of the variation in on-track rates occurs within schools and how much occurs across schools is displayed in Figure 5. The figure shows the distribution of on-track rates across the 321 high schools with at least 50 students from the 2007 9th grade cohort. The figure offers several perspectives on the distribution of on-track rates. First, it shows that approximately 55 percent of the schools have on-track rates between 30 and 70 percent (represented by the middle four bars in the graph). In short, more than half of the city's high schools have a mixed population of on- and off-track students. Thus, making progress on preventing students from falling off track or helping students get back on track is likely to require a broad-based strategy that encompasses the majority of the city's schools. Given the mix of on- and off-track students in these schools, it is also likely that these strategies will require targeted identification and intervention approaches rather than a comprehensive school-wide approach.

(Figure 5 about here)

Figure 5 also indicates that for approximately 25 percent of New York City high schools, more than 70 percent of students were off track at the end of 9th grade. This high concentration of off-track students is likely to require a dramatic, school-wide intervention or turnaround strategy.

Finally, the figure indicates that for approximately 22 percent of the high schools more than 70 percent of students were on-track at the end of 9th grade. Addressing the needs of off-track students in these schools is likely to require even more careful targeting given their relatively low representation.

A further and more scientific approach to assessing the sources of variation in on-track rates is known as a variance components analysis. A simple version of this analysis separates the variation into two components: the proportion of variation that occurs across schools – and thus can be explained by school-level characteristics -- and the proportion that occurs among students within each school – and thus, can be explained by student-level characteristics (Gelman & Hill, 2007). The results of this approach indicate that 61 percent of the variation in on-track rates can be explained by individual student-level characteristics (both measurable and unmeasurable characteristics). This further reinforces the perspective that addressing problems associated with students falling off track is should be a priority for most of New York City's high schools and should include strategies for identifying and targeting individual students within those schools.

The variance components analysis also indicates, however, that 39 percent of the variation in on-track rates can be explained by school-level characteristics (again, both measureable and unmeasureable characteristics). This suggests that, holding constant the differences in student characteristics across schools, there is

still a wide range of differences in on-track rates among those schools. This means that some schools appear to be better at keeping the same students on-track who would likely fall off track had they attended another school. From an analytic and substantive standpoint, this provides a unique opportunity to learn about programs and practices that might prevent students from getting off-track. Analytically, this variation may also afford the opportunity to assess the "value-added" that high schools provide for students coming out of middle schools and to identify the characteristics schools that "beat the odds" in providing effective supports for students who enter high school at high risk of getting off-track.

The striking contrast in variation in the distribution of on-track students within and across schools raises a wide range of questions that should be addressed to help schools and the New York City Department of Education build more capacity to identify and help struggling students.

Summary and Discussion

The analyses presented in the paper highlight the power of relatively simple measures of 9th grade performance to assess students' prospects for graduating with a Regent diploma. A close proxy for the NYCDOE's current indicator (earning 10 or more credits) correctly predicted students' subsequent Regent diploma graduation status at a rate of 74 percent for the most recent cohort of students to graduate. However, this indicator has a relatively high rate of

misclassifying students who were identified as on track in the 9th grade, but subsequently failed to graduate with a Regents diploma within four years.

A stronger indicator includes the accumulation of 10 or more credits and the passage of at least one Regents examination by the end of the 9th grade. This on-track indicator correctly predicted students' Regents diploma graduation status at a rate of 85 percent for the 2007 9th grade cohort and that rate has actually improved over time. It is important to note, however, that this indicator has a somewhat lower correct off-track prediction rate. In other words, it does not capture some students who graduated with a Regents diploma, but had not met the on-track criteria of 10 or more credits and passing at least one Regents examination by the end of 9th grade. The paper suggests that this limitation may be less problematic than a lower correct on-track prediction rate, because it would identify students for extra services or supports even though they may not need them rather than neglecting students who appear to be on-track but are still likely to struggle.

Further analysis shows that this on-track indicator has remained a stable predictor of students' Regents diploma graduation rates over seven cohorts of entering 9th graders. As a result, the increase in 9th grade on-track rates over time foreshadows the subsequent increases in Regents diploma graduation rates four years later. The continued increase in on-track rates through the 2010 9th grade cohort suggests that New York City is likely to see increases in its Regents

diploma graduation rate at least through 2014. It is important to recognize, however, that this may be mitigated by ongoing changes in graduation requirements, school reform strategies and other factors.

The findings also show that the on-track indicator provides strong signals about students' prospects for graduating with a Regent diploma independent of their ELA and math proficiency in middle school and independent of other background characteristics such as gender, race/ethnicity, poverty status, and English Language Learning status. Although there are sizable differences in the on-track and graduation rates across these subgroups of students, those who are on-track at the end of 9th grade a much more likely to graduate with a Regents diploma within four years than those who are off-track. In fact, students who enter high school with limited proficiency in both ELA and math, but are on-track at the end of 9th grade, are more likely to graduate from high school with a Regents diploma than students who are proficient in both math and ELA, but are off track at the end of 9th grade.

The paper highlights the substantial gaps in on-track and Regents diploma graduation rates among subgroups of students defined by gender, race and ethnicity, poverty status, and English language learning status. Despite these differences, however, the on-track indicator remains a powerful mechanism for identifying students who are most likely to need help meeting the requirements for graduation. Importantly, among students who are on track at the end of 9th

grade, the Regents diploma graduation rate gaps are narrowed considerably for most student subgroups. Still, noteworthy gaps remain and the substantial challenges of ensuring that students stay on track should not be underestimated.

Directions for Further Research and Application

In many ways, this paper is a starting point for a wide range of analytic and intervention development activities aimed at identifying and supporting students at risk of leaving high school underprepared for college. In this final section of the paper we outline several important avenues for further research and the use of data to gain a better understanding of the actionable antecedents to students' success in high school and beyond and to tools for intervening early what students start to falter. The diversity of New York City public school system and its extraordinary archive of longitudinal data that is available to researchers provide unique opportunities to pursue these activities. The Research Alliance for New York City Schools is pursuing many of these lines of inquiry.

Extend the on-track analysis to validate indicators on college access and success. The analyses conducted for this paper focus on predictors of student graduation from high school with a New York State Regents diploma. While the Regents diploma is a useful proxy for students' likely access to college (particularly colleges under the State University of New York and the City

University of New York), it is important to validate systematically the connection between high school performance and actual college enrollment, persistence and performance. Thus, ongoing analyses should incorporate data from such sources at the National Student Clearinghouse, the City University of New York, and the State University of New York to better anchor predictors on true college readiness and success.

Develop finer grained and more nuanced on-track indicators for practitioners. The indicators discussed in the paper focus on end-of-year summary measures and do not easily translate into actionable monitoring devices that can direct practitioners' attention to high need students. Additional analyses should be undertaken to examine attendance rates and course grades on a semester-by-semester basis (perhaps even month-to-month) to test their predictive power and susceptibility to intervention. It will also be important to develop and assess on-track indicators beyond the 9th grade. As noted in this paper, some students who are on-track at the end of 9th grade fall behind in later grades and do not graduate with a Regents diploma. Other students are off track at the end of the 9th grade and manage to catch up and graduate with their cohort. Monitoring student performance on a continuing basis offers the opportunity to intervene with struggling students on a timely basis and to direct and redirect support resources in a maximally efficient manner.

Build transparent and actionable tools to identify struggling students. New York City has been at the center of efforts to build and deploy data systems that put information into the hands of educators to inform administrative and instructional decisions at the school and classroom levels. Little is known about how widely these data systems are actually used in schools and whether teachers, counselors and administrators find the information useful and actionable. Some networks of schools have begun develop their own systems to monitoring student progress, although it is not clear that the information in these systems offer valid indicators of longer term success. Given the growing expectations for a "data-informed" culture in New York City, it seems particularly important to link the type of analytic work discussed in this paper with both ongoing and new efforts to put better information into the hands school-based staff as well as system-level administrators and policy makers.

Examine variation in on-track rates across schools. The analyses presented in this paper provide only a preliminary assessment of variation in on-track rates across schools. While the findings highlight the fact that nearly all non-selective schools have a sizable proportion of students who fall off track, some schools have especially high on-track rates and others have particularly high concentrations of off-track students. Further analyses of this variation should seek

to understand the influence of school selectivity (for example, the capacity to attract students who are unlikely to fall off track) and the influence of school supports (for example, the capacity to keep high need students on track). In addition to identifying schools that “beat the odds” by helping high-risk students stay or get back on track, these analyses should delve deeper into the distinctive characteristics and strategies that may account for their effectiveness.

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Footnotes

[1] This indicator also includes requirements that students earn credits in the core academic subjects of English, math, science, and social studies. The New York City Department of Education accountability system also includes indicators for the percentage of students who pass New York State Regents Examinations in Math, English, Science, U.S. History and Global History. For a complete overview of the methods used for the New York City Department of Education accountability system, see New York City Department of Education (2011b).

[2] First-time ninth graders were identified as being enrolled in the 9th grade in either October or June of a given school year and not enrolled in any high school grade during the previous school year. Open enrollment high schools include those that that do not require passing scores on the specialized high school entrance examination.

[3] The sample does not include some important subgroups of schools and students that would be examined in separate analyses from that being undertaken here. Specifically, the sample does not include New York City's nine highly selective and specialized public high schools, which enrolled a total of up to 4,000 first-time ninth grade students each year. The sample also does not include students who were identified for special education services in either Grades 8 or 9. This encompasses up to 2,500 first-time 9th grade students each year. The

sample does not include the 8,000-10,000 students each year who entered a city high school for the first time from a private school, a charter school, or another district. Finally, the sample does not include approximately 3,500 students each year who enrolled in a New York City high school for a short time but left the district to re-enroll in a school in another district before the end of their first year in high school.

[4] Appendix Table A-2 presents background characteristics of students in each cohort included in the study sample.

[5] The New York State Education Department and the New York City Department of Education calculate graduation rates retrospectively based on cumulative information available four or five years after student first enter high school. In an effort to capture graduation rates for students who fall under the jurisdiction of a given school at the end of high school, graduation rates do not include discharged students who left that school and enrolled in another school.

[6] As noted above, the NYCDOE also requires that at least six of these credits be earned in math, English, science, or social studies. As discussed below, this additional requirement does not affect the accuracy of the 10 credit on-track indicator or other on-track indicators.

[7] As noted above, this analysis does not include students were discharged from the New York City school system after the 9th grade.

[8] Note that including requirements that students earn credits in core academic courses including math, English, science and social studies does not improve the prediction of Regents diploma graduation rates. This can be seen by comparing Models 6 and 7 and by comparing Models 11 and 12. The reason for this is that students who earn a minimum of 10 credits and pass at least one Regents examination almost universally earn at least six credits in the academic core subjects.

[9] Some New York City high schools establish policies in which students do not take Regents examinations until the 10th grade. This may account, in part, for the relatively low "correct off-track" rates for models that include Regents indicators. In other words, some students may appear to be off track at the end of the 9th grade simply because their school did not schedule them for a Regents examination until 10th grade. Some of the students would appear to catch up and go on to graduate. Further analyses are needed to assess the prevalence of this phenomenon.

[10] The graduation rates presented in Figure 2 are different from those report by the New York City Department of Education and the New York State Education Department for New York City. Most importantly, as noted above, the sample used for Figure 3 in these analyses does not include students from the city's specialized high schools, students who entered a New York City high

school from another school district, a private school, or a charter school, students who were classified for special education services in the 8th or 9th grade, or students who transferred to another school district during the 9th grade. Also, as discussed above, the sample does include students who transferred to schools in other districts after the 9th grade. These students are included among the non-graduates in Figure 3.

[11] The anomalous dip in on-track rates for the 2003 cohort appears to be an artifact of the course transcript data files for the 2003-2004 school year. It is not clear what accounts for the discrepancy.

[12] Research Alliance calculations from data compiled for this paper.

Appendix

Table A-1
Full Cohort Sample and Analytic Sample

		First-time 9th grader cohort (as of September)										All
		2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	
	Analysis sample	53,901	57,592	59,115	60,263	59,896	59,008	58,188	56,551	57,095	54,815	576,424
Stepwise Exclusions ↑	Specialized high schools	2,862	2,960	2,961	3,108	3,333	3,513	3,362	3,642	3,849	3,787	33,377
	Special education students	1,003	1,039	1,281	1,580	1,549	1,640	1,587	1,637	1,708	1,767	14,791
	Students with no 8th grade data	8,293	8,160	8,402	8,404	8,270	7,676	7,177	7,173	7,813	7,196	78,564
	Students discharged during 9th grade	3,576	3,251	3,711	4,087	3,967	3,378	2,949	2,503	2,474	2,296	32,192
	Students associated with a school ID with 50 students or fewer	3,126	3,274	3,131	1,963	2,781	2,834	3,164	3,830	4,228	5,404	33,735
	Students in the 2001-2007 cohort with no outcome information	153	80	120	82	66	39	36	0	0	0	576
	Full sample	72,914	76,356	78,721	79,487	79,862	78,088	76,463	75,336	77,167	75,265	769,659

Source. Research Alliance calculations based on its comprehensive data archive of NYC Department of Education's individual student administrative records.

Table A-2
Background Characteristics of Students in the Study Sample by Cohort

		Cohort (as of September)										
		2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Overall
Gender												
Female	%	51.4	51.3	51.2	51.1	51.1	51.1	51.3	51	51.2	51.3	51.2
Male	%	48.6	48.7	48.8	48.9	48.9	48.9	48.7	49	48.8	48.7	48.8
Race/Ethnicity												
Hispanic	%	36.9	37.6	38.2	39.7	40.6	40.8	41.4	41.3	41.7	41.1	39.9
African-American	%	36.2	35.8	36.2	35.7	35.5	35.1	34.4	33.5	32.8	31.2	34.7
Asian	%	12.2	12.4	12.1	12.1	11.9	12	12.4	13	13.3	14.7	12.6
White	%	14.6	13.9	13.2	12.2	11.7	11.6	11.3	11.7	11.7	12.5	12.4
Other	%	0.2	0.3	0.3	0.3	0.4	0.5	0.5	0.5	0.5	0.5	0.4
Free and reduced price lunch eligibility	%	77.5	79.0	69.4	73.6	84.3	81.4	81.5	79.3	76.9	84.2	78.7
English language learners	%	12.6	12.3	11.7	11.7	11.1	11.5	11.1	10.2	8.6	11.1	11.2
Home language not English	%	53.3	51.9	52.2	52.1	53.8	55.4	55.9	56.4	55.5	54.7	54.1
Age	Mean	14.7	14.7	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8
Overage	%	21.4	22.8	23.3	24.9	26	26.2	25.7	24.5	25.3	24.6	24.5
Sample size	N	53,901	57,592	59,115	60,263	59,896	59,008	58,188	56,551	57,095	54,815	576,424

Source. Research Alliance calculations based on its comprehensive data archive of NYC Department of Education's individual student administrative records.
Note. Free and Reduced Price Lunch Eligibility includes students whose family income meets the US Department of Agriculture's income criteria or who attend a universal meal school.

Table A-3
New York State High School Completion Statuses

High school completion status	Description	Notes
Graduated	Student earned a local, Regents, or advanced Regents diploma	Reflects status as of October of the scheduled year of graduation based on initial high school enrollment. This includes June and August graduates.
Earned local diploma	Student earned a minimum of 44 credits, including 8 each in English and Social Studies and 6 each in Math and Science. Student passed five Regents examinations with minimum score of 55.	Students earn 2 credits for a full year course and 1 credit for a semester course. Regents passing score changed over time. Local diploma was phased out and eliminated for students who entered high school in September 2008. This includes June and August graduates.
Earned Regents diploma	Student met Local diploma requirements and passed five Regents examinations with a minimum score of 65.	This includes June and August graduates.
Earned advanced Regents diploma	Students met local diploma requirements passed seven Regents examinations with a minimum score of 65.	This includes June and August graduates.
Still enrolled in high school	Student enrolled in a New York City high school or alternative high school program as of October of scheduled graduation year.	
Dropped out	Student classified as dropout on Department of Education enrollment files as of October of scheduled graduation year.	Dropout status is indicated when students are absent from school for 45 or more consecutive days and either the student did not provide proof of relocation or transfer outside the district or no notification of re-enrollment elsewhere has been received.
Discharged	Student classified as relocating outside the school district or re-enrolling in a private school or a school in another district.	Discharge status is indicated when either the student provided proof of relocation or transfer outside the district or re-enrollment elsewhere has been verified. For the purposes of this analysis, students who earned a special education diploma are also classified as discharged from the general school population. Neither the New York City Department of Education nor the New York State Education Department includes discharged students in their annual graduation rate calculations. They are included in the current analysis to capture all entering ninth grade students.

Table A-4

Logistic Regression Models Predicting Graduation With a Regents Diploma For First Time 9th Graders in 2007 (as of September)

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10	Model 11	Model 12
	B	B	B	B	B	B	B	B	B	B	B	B
Parameter	(SE)	(SE)	(SE)	(SE)	(SE)	(SE)	(SE)	(SE)	(SE)	(SE)	(SE)	(SE)
Intercept	**-2.92** (.034)	**-1.66** (.023)	**-1.49** (.021)	**-1.19** (.017)	**-0.80** (.014)	**-2.83** (.035)	**-0.89** (.014)	**-0.86** (.014)	**-0.77** (.013)	**-0.59** (.012)	**-6.12** (.130)	**-0.46** (.012)
Total # of credits	**0.27** (.003)					**0.19** (.003)					**0.14** (.003)	
10 or more credits		**0.03** (.000)										
11 or more credits			**0.03** (.000)									
12 or more credits				**0.02** (.000)								
13 or more credits					**2.18** (.020)							
# of Regents exam passed						**1.06** (.014)					**1.01** (.014)	
10 or more credits, 1 or more Regents exam passed							**0.03** (.000)					
11 or more credits, 1 or more Regents exam passed								**2.66** (.022)				
12 or more credits, 1 or more Regents exam passed									**0.03** (.000)			
13 or more credits, 1 or more Regents exam passed										**2.61** (.024)		
9th grade attendance rate											**0.04** (.002)	
11 or more credits, 1 or less academic courses failed (CCSR Indicator)												**2.03** (.021)

Source. Research Alliance calculations based on its comprehensive data archive of NYC Department of Education's individual student administrative records.

Note. Statistical significant parameter estimates (p<.05) are printed in bold.

Tables

Table 1

On-Track and Off-Track Prediction Rates of First-Time 9th Graders in 2007-2008

		On-track indicator (10 or More Credits)	
		Yes	No
Graduated with a Regents diploma	Yes	73.9%	-
	No	-	84.1%
Total	N	39,345	14,040

Source. Research Alliance calculations based on its comprehensive data archive of NYC Department of Education's individual student administrative records.

Table 2
Prediction Rates of On-Track Indicators of First-Time 9th Graders in 2007-2008

Model	9th grade on-track indicator	Correct prediction rate (%)	Correct on-track prediction rate (%)	Correct off-track prediction rate (%)
1	Total # of credits	77.3	75.7	80.7
2	10 or more credits	76.6	73.9	84.1
3	11 or more credits	77.3	76.0	80.1
4	12 or more credits	76.6	78.4	73.7
5	13 or more credits	74.0	80.9	66.2
6	# of credits, # of Regents exams passed	78.8	81.6	74.8
7	# of credits, # of Regents exams passed, # of academic credits	78.8	81.6	74.8
8	10 or more credits, 1 or more Regents exam passed	78.5	85.2	71.0
9	11 or more credits, 1 or more Regents exam passed	78.0	86.1	69.7
10	12 or more credits, 1 or more Regents exam passed	76.4	87.2	66.8
11	13 or more credits, 1 or more Regents exam passed	73.4	88.8	62.6
12	# of credits, # of Regents exam passed, 9th grade attendance	79.3	81.8	75.7
13	# of credits, # of Regents exam passed, 9th grade attendance, # of academic	79.3	81.8	75.7
14	11 or more credits, 1 or fewer academic courses failed (CCSR indicator)	71.1	82.7	61.4

Source. Research Alliance calculations based on its comprehensive data archive of NYC Department of Education's individual student administrative records.
Notes. Results are based on logistic regression models using the 9th grade on-track indicators to predict graduation with a Regents or advanced Regents diploma.
Overall Correct Prediction Rate is defined as the proportion of students for which graduation with a Regents or not was correctly predicted.
Correct Off-Track Prediction Rate is defined as the proportion of students for which off-track status was correctly predicted.
Correct On-Track Prediction Rate is defined as the proportion of students for which on-track status was correctly predicted.

Table 3
On-Track and Graduation Rates by Subgroups of First-Time 9th Graders in 2007-2008

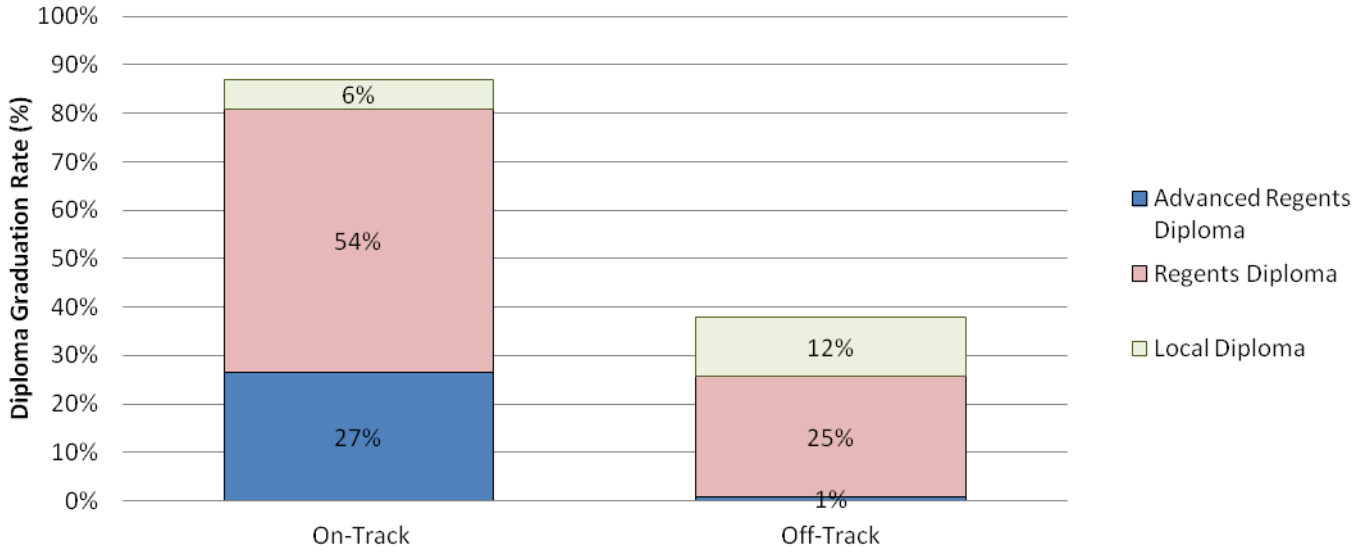
	Sample	On-track	Regents diploma graduation rate	Regents diploma graduation rate (%)	
				On-track	Off-track
	N	(%)	(%)		
All	58,188	50.9	53.8	81.0	25.6
Gender					
Young women	29,840	53.0	57.3	83.0	28.3
Young men	28,348	48.6	50.1	78.6	23.1
Race/Ethnicity					
Hispanic	24,113	45.7	48.1	76.7	24.1
African-American	20,008	43.7	47.7	78.2	23.9
Asian/Pacific Islander	7,226	73.0	74.8	88.9	36.6
White	6,574	67.8	70.5	87.6	34.5
Other	267	43.4	46.1	82.8	17.9
Young women					
Race/Ethnicity					
Hispanic	12,437	47.3	51.5	79.2	26.6
African-American	10,500	46.7	51.6	80.1	26.7
Asian/Pacific Islander	3,515	76.7	79.5	91.2	40.9
White	3,250	70.2	74.5	89.5	38.9
Other	138	45.7	44.9	79.4	16.0
Young men					
Race/Ethnicity					
Hispanic	11,676	43.9	44.6	73.8	21.6
African-American	9,508	40.5	43.3	75.8	21.1
Asian/Pacific Islander	3,711	69.4	70.3	86.5	33.6
White	3,324	65.4	66.6	85.6	30.8
Other	129	41.1	47.3	86.8	19.7
Free and reduced price lunch eligibility					
Eligible	47,395	49.3	52.2	80.1	25.1
Not eligible	10,793	57.7	60.6	84.2	28.6
English proficiency status					
English proficient	51,101	53.1	55.7	82.1	25.9
English language learners	7,087	35.1	40.1	69.2	24.3

Source. Research Alliance calculations based on its comprehensive data archive of NYC Department of Education's individual student administrative records.
Notes. On-track for Regents diploma is defined as earning 10 or more credits and passing 1 or more Regents exams by the end of 9th grade.
Free and Reduced Price Lunch Eligibility includes students whose family income meets the US Department of Agriculture's income criteria or who attend a universal meal school.

Figures

Figure 1

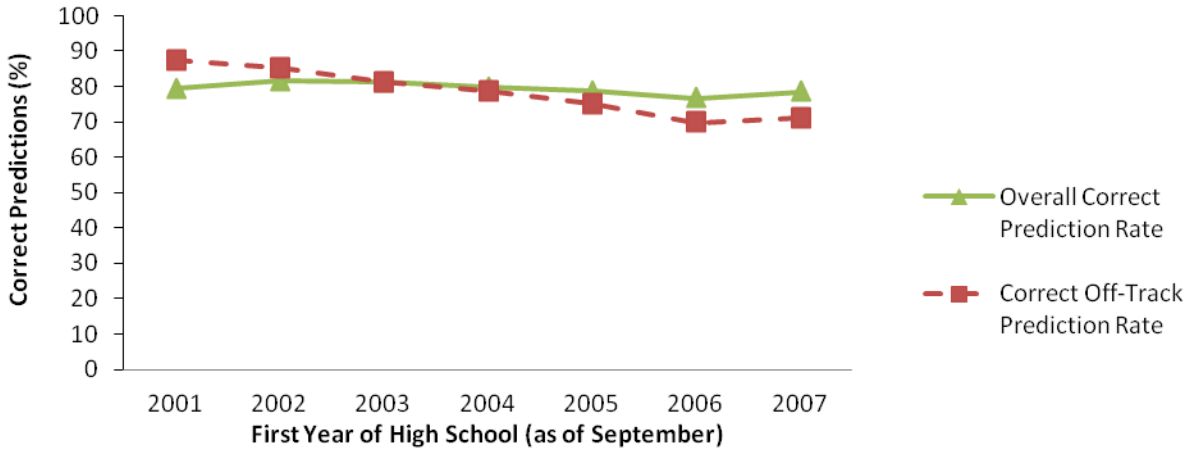
Graduation Outcomes for On-Track and Off-Tracks First-Time 9th Graders in 2007-2008



Source. Research Alliance calculations based on its comprehensive data archive of NYC Department of Education's individual student administrative records.

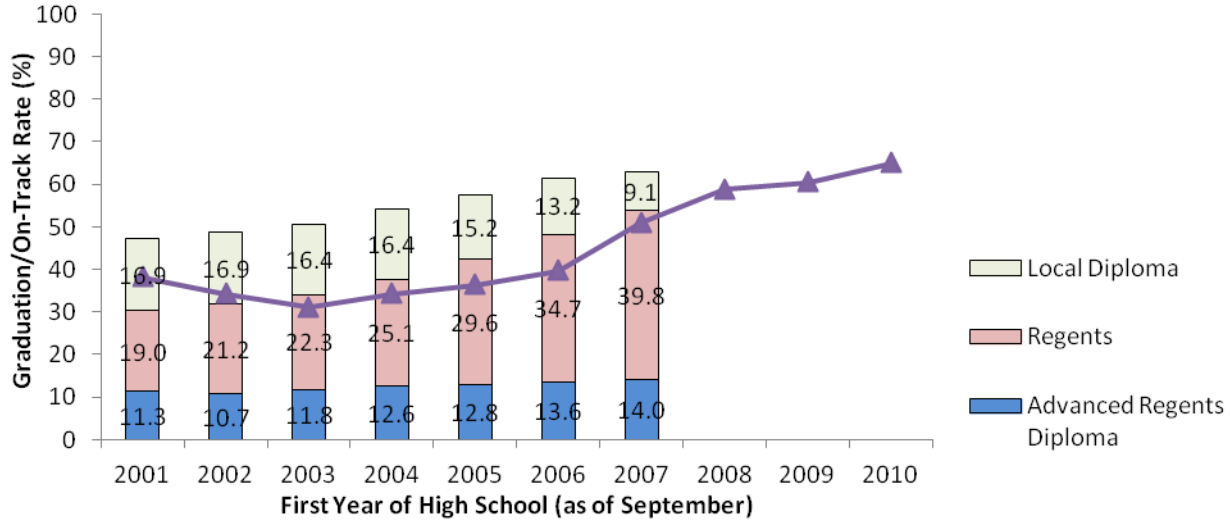
On-track for a Regents diploma is defined as earning 10 or more credits and passing 1 or more Regents exam by the end of 9th grade.

Figure 2
Prediction Rates of On-Track Indicator of First-Time 9th Graders 2001-2002 to 2007-2008



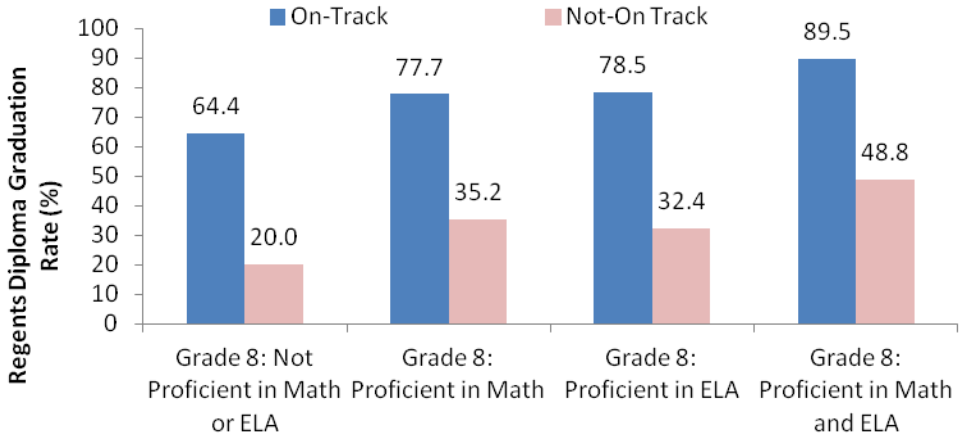
Source. Research Alliance calculations based on its comprehensive data archive of NYC Department of Education's individual student administrative records.
Notes. On-track is defined as earning 10 or more credits and passing 1 or more Regents exam by the end of 9th grade.
Overall Correct Prediction Rate is defined as the proportion of students for which graduation with a Regents or not was correctly predicted.
Correct Off-Track Prediction Rate is defined as the proportion of students for which off-track status was correctly predicted.

Figure 3
Graduation and On-Track Rates of First-Time 9th Graders 2001-2002 to 2010-2011



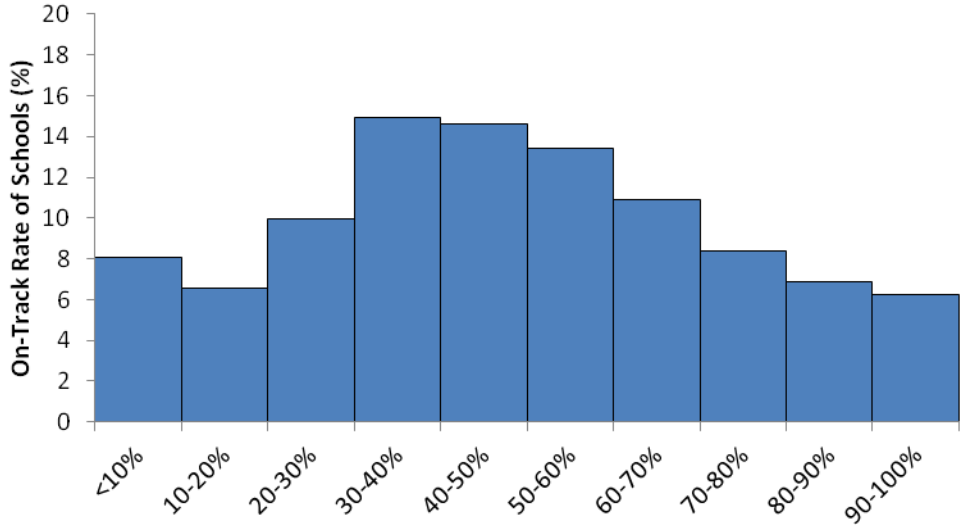
Source. Research Alliance calculations based on its comprehensive data archive of NYC Department of Education's individual student administrative records.
Note. On-track for Regents diploma is defined as earning 10 or more credits and passing 1 or more Regents exams by the end of 9th grade.

Figure 4
Regents Diploma Graduation Rate by Grade 9 On-Track Status and Grade 8 Proficiency in Math and ELA for First-Time 9th Graders in 2007-2008



Source. Research Alliance calculations based on its comprehensive data archive of NYC Department of Education's individual student administrative records.
Note. On-track for Regents diploma is defined as earning 10 or more credits and passing 1 or more Regents exams by the end of 9th grade.

Figure 5
Distribution of On-Track Rates (First-Time 9th Graders in 2007-2008)



Source. Research Alliance calculations based on its comprehensive data archive of NYC Department of Education's individual student administrative records.
Note. On-track for Regents diploma is defined as earning 10 or more credits and passing 1 or more Regents exams by the end of 9th grade.