TECHNICAL APPENDICES

The Research Alliance for New York City Schools

Mentoring, Technology, and Social and Emotional Learning

Findings from the Evaluation of iMentor's College Ready Program

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August 2020

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Appendix A
Student and School Samples

iMentor Schools

The evaluation of the iMentor College Ready Program follows two consecutive cohorts of incoming 9th graders at each of eight participating New York City high schools. As shown in Figure A-1 on the next page, iMentor's rollout in these schools was staggered. Fig, Redwood and Ginkgo high schools represent the first wave of schools that began the program, in the 2012-2013 school year.[1] The first cohort of students in the study sample from these schools was enrolled in the 9th grade in the 2012-2013 school year, and the second cohort was enrolled in 9th grade in 2013-2014 school year. Sequoia, Palm, Maple, Cherry Blossom, and Oak high schools represent the second wave of schools, and they began the iMentor College Ready Program in the 2013-2014 school year. The two cohorts of students in the study sample from these schools were enrolled in the 9th grade in the 2013-2014 and 2014-2015 school years, respectively.[2]

Table A-1 provides a comparison between the iMentor evaluation schools and the remaining NYC schools serving students in grades 9 through 12. The table indicates that the iMentor schools were smaller than the average NYC high school, with an average enrollment of 327 students. Students in iMentor schools were more likely to be Latino, less likely to be White or Asian, and more likely to be English language learners and from low-income families. Students in the iMentor schools also had somewhat lower test scores on the state English Language Arts and Mathematics assessments and were more likely to be chronically absent (missing 18 or more days during the school year).

Comparison Groups

The study relies on two sets of comparison groups in its assessment of iMentor's impact on student outcomes. One group served as a comparison to assess iMentor's impact on social and emotional learning and future planning outcomes. These outcomes were assessed with annual surveys that were administered to students in the iMentor cohorts and in the comparison group. We used another, different comparison group to assess iMentor's impact on educational outcomes. These outcomes were assessed with administrative records provided by the NYCDOE. Below is a more detailed description of these groups and an assessment of their similarities and differences with the iMentor schools and students. As description of the data sources is provided in Appendix B.

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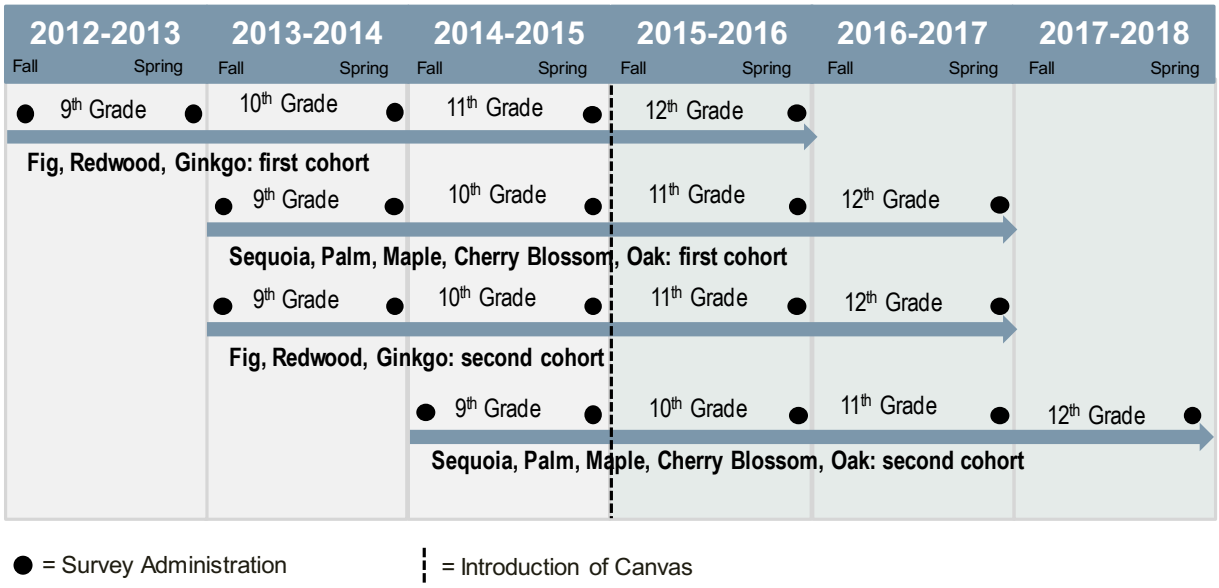
[1] Schools are represented with pseudonyms to keep their identities confidential.

[2] All students within a cohort who were on the participating school's roster as of October 20th of the relevant school year were considered eligible for iMentor.

Figure A-1: Timeline of iMentor Implementation in the Eight Evaluation Schools



Notes: The figure shows timing of iMentor's implementation in the eight participating schools, including the annual administration of the iMentor student survey and the introduction of the Canvas technology platform. The switch to Canvas from the iMi platform affected the first wave of schools' first cohort in the 12th grade, the first wave of schools' second cohort in the 11th grade, the second wave schools' first cohort in the 11th grade, and the second wave schools' second cohort in the 10th grade. For more information about this switch, see Appendix B below.

Comparison Group for Analysis of Social and Emotional Learning. As discussed below, the study drew on annual surveys of students in the iMentor schools to assess social and emotional learning outcomes and postsecondary planning, as well as engagement with mentors and mentor-related activities. These surveys were administered to both cohorts of iMentor students as well as to a comparison group of students who were enrolled in the iMentor schools as 9th graders in the year prior to the implementation of the program.

As shown in Figure A-1, the implementation of iMentor was phased in on a year-to-year basis beginning with 9th graders in 2012, for Fig, Redwood and Ginko, and in 2013 for Sequoia, Palm, Maple, Cherry Blossom, and Oak. As a result, students already enrolled in these schools as 9th graders as of 2011 and 2012, respectively, were not assigned a mentor and did not engage in other iMentor activities during the study period. Importantly, these students chose to enroll in the same schools as the iMentor students and were likely to be drawn from the same communities.

Given their lack of exposure to iMentor and the similarities in their school choices and enrollment, the experiences of these pre-iMentor cohorts are likely to serve as a useful benchmark against which to compare the experiences of students in the iMentor cohorts. In spite of these apparent similarities, it is still important to determine the extent to which the two groups do actually mirror one another—for example, by looking at specific background characteristics and school

performance prior to entering high school. The more similar the two groups were at the beginning of 9th grade, the greater confidence we can have that subsequent differences that may emerge are, in fact, due to one group's exposure to iMentor.

Table A-2 shows the survey response rates for the iMentor and comparison groups at each expected grade level following their 9th grade year. It shows that students in the iMentor group were more likely to complete the surveys each year. This difference in response rates may affect the validity of the results if the respondents in the treatment and comparison groups are meaningfully different. We find that, even with the differential response rates, that the treatment and comparison groups remain similar.

Table A-3 presents the background characteristics of students from both groups who responded to the surveys that were administered during their 12th grade year. Overall, Table A-3 indicates that the two groups are similar across a range of demographic characteristics and middle school performance measures. We use What Works Clearinghouse (WWC) standards for levels of the Hedges G statistic as the basis for this comparison. WWC standards suggest that differences smaller than .25 indicate sufficient pre-treatment comparability among groups to allow for confidence that subsequent differences can be attributed to the treatment. In addition, we ran significance testing and found there were not statistically significant differences between iMentor and comparison groups across students' high school years.

Table A-3 illustrates that even though there were different response rates between treatment and comparison students, the two groups are comparable according to the WWC standards. Much of the difference between the treatment and comparison group is likely due to treatment schools being more invested in the iMentor program and evaluation. Non-respondents had similar profiles as respondents except for attendance. Non-respondents in both the iMentor and comparison groups had higher absenteeism than respondents.

Comparison Group for Analyses of Educational Outcomes. As discussed below, the study utilized a Comparative Interrupted Times Series (CITS) analysis to assess iMentor's impacts on students' educational outcomes, including attendance, progress toward graduation, high school diploma receipt and college enrollment. The CITS analyses compare changes over time in outcomes for students in the iMentor schools against changes over time in those outcomes for students in a set of matched comparison schools. Thus, the study's second comparison group includes students who were enrolled in schools that are similar to iMentor schools, during the same timeframe (i.e., started 9th grade during the same school year). An important factor in the viability of the CITS analysis is the degree to which the iMentor and comparison schools are similar, both in terms of the background characteristics and middle school experiences of students who enrolled in those schools and in terms of the historical trends in key outcomes prior to the school years in which iMentor began its implementation.

To identify high schools that were as similar as possible to the iMentor schools, we used statistical techniques that employ both student- and school-level characteristics to summarize measures of comparability between each iMentor school and each of over 350 other high schools across NYC. Specifically, we used Euclidian Distance Matching to select 16 comparison schools that were statistically similar to the eight iMentor schools in terms of the demographic characteristics and prior performance of incoming 9th graders, as well as the academic trajectories of prior cohorts of 9th graders.[3] Below, we describe the pool of schools from which we selected comparison schools, define the characteristics by which we matched, and specify the model we used to conduct the match. We then briefly assess the quality of the match between the iMentor and comparison schools.

We selected comparison schools from a pool of 356 potential matches that met the following criteria:

- Grade 9-12 high school;
- Not a District 75 (special education), District 84 (charter), or specialized high school;
- Began enrolling students in or before October 2009;
- Has only one admissions method (e.g., screened or limited unscreened, not both); and
- Had at least three years of consecutive cohorts enrolled between 2009 and 2013.

We measured the similarity of iMentor and potential comparison schools using the following characteristics:

- Four-year high school graduation rate, measured at the school level (weighted by a factor of 2);
- Percentage of students who meet the Research Alliance's definition of being "on-track" for high school graduation, as defined passing at least one Regents Exam and earning at least 10 course credits by the end of 9th grade (weighted by a factor of 4);
- The percentage of incoming 9th grade students classified as English Language Learners in the 8th grade;
- The percentage of incoming 9th grade students who qualified for reduced priced lunch in the 8th grade (a measure of poverty);
- The percentage of students in grades 9 through 12 with an Individualized Education Plan;
- The total number of students enrolled in the school;

[3] The Euclidian Distance Matching method we used is described in Chapter 32: The DISTANCE procedure of the SAS 9.2 User's Guide (SAS, 2008).

- The percentage of students deemed chronically absent (missing at least 18 days of school in a year);
- The percentage of students who are Asian or White;
- The slope of grade 8 English Language Arts (ELA) scale scores in the three years prior to iMentor's implementation;
- The intercept of grade 8 ELA scale scores corresponding to the ELA score slope defined above;
- The slope of grade 8 Math scale scores in the three years prior to iMentor's implementation; and
- The intercept of grade 8 Math scale scores corresponding to the Math score slope defined above.

The viability of the CITS design relies, in part, on the comparability of students entering the iMentor and comparison schools prior to and during the implementation of iMentor. Table A-4 provides an assessment of the comparability of the entering 9th grade cohorts for iMentor and comparison schools. Table A-4 shows the average differences in prior educational outcomes over the three years prior to iMentor's implementation in treatment and comparison schools.

Also, because the CITS design is largely based on the trajectory of schools' educational outcomes in the three years before iMentor was first implemented, assessing the equivalence of iMentor and matched comparison schools also requires comparing their pre-iMentor trends. Schools with similar trajectories—i.e., schools with similar rates of change in both their student population and in the academic outcomes of their 9th grade students—are likely to be subject to a similar set of policy influences. They are also likely to respond to any future policy shocks in similar ways (Somers et al, 2013). Table A-5 shows the average differences in educational outcomes over the three years prior to iMentor's implementation.

In general, Tables A-4 and A-5 indicate that matched comparison schools demonstrated similar trends to iMentor schools in terms of prior student performance and student background characteristics. Schools were more difficult to match on credits and on-track rates (of which credits are a component), in part because some of the iMentor schools have distinctive characteristics (e.g., offer CTE programs, or perform better or worse than other schools with demographically similar student populations).

Table A-1: Demographic Profile of iMentor Evaluation Schools and All Other NYC High Schools, 2011-2012

	iMentor Evaluation Schools	All Other NYC High Schools[a]
Gender (%)		
Female	54.0	51.3
Male	46.0	48.7
Race (%)		
Latino	55.0	43.3
Black	38.4	38.4
White	2.4	7.5
Asian	2.7	9.5
English language learners (%)	19.7	12.7
Poverty [b] (%)	81.1	72.0
8th Grade academic performance [c]		
Math scaled score [d]	663.6	670.6
English Language Arts scaled score [e]	641.9	647.4
Chronic absentees (%) [f]	31.0	26.4
Students per school	326.5	553.7
Total number of schools	8	460
Total number of students	2,612	254,706

Source: Research Alliance calculations using data provided by the NYC DOE.

Notes: [a] Includes schools serving students in grades 9-12, other than those in District 79 or District 75 and specialized high schools. [b] Includes students who turned in their free or reduced-price lunch form and those who did not turn in their form but attend a school that receives universal free lunch. Many students who are eligible for free or reduced lunch do not turn in their forms, therefore including universal programs is a more accurate measure of poverty. [c] Slight discrepancy between the calculated number of students based on the listed average school size and the total number of schools is due to rounding. [d] Math Scaled Scores range from 430 to 790 with a standard deviation of 58. [e] ELA Scaled Scores range from 480 to 775 with a standard deviation of 47. [f] Chronic absentees are students who are absent for more than 10 percent of the school days in a year.

Table A-2: Annual Survey Response Rates by Grade

	Treatment (%)	Comparison (%)
Grade		
9	92.1	83.7
10	82.1	75.8
11	78.6	67.4
12	68.9	59.6

Source: Research Alliance calculations based on data obtained from Student survey and the NYC Department of Education.

Table A-3: Baseline Equivalence for iMentor and Comparison Group Survey Respondents for Grade 12

	iMentor Average	Comparison Average	Hedge's G[a]
Gender (%)			
Female	45.6	52.3	-0.13
Male	54.4	47.7	-0.13
Race (%)			
Asian	3.0	2.8	0.01
Black	32.2	34.8	-0.06
Latino	62.2	59.3	0.06
White	1.3	1.1	0.02
Other	1.3	2.0	-0.05
Background Characteristics (%)			
8th Grade Chronic Absentee[b]	22.9	27.2	-0.10
8th Grade NYS ELA Test Score (Z)	-0.6	-0.5	-0.04
8th Grade NYS Math Test Score (Z)	-0.5	-0.4	-0.14
Overage as of 9th grade	35.4	36.4	-0.02
8th Grade Free/Reduced Lunch	88.9	85.2	0.11
8th Grade English Language Learner	28.3	22.9	0.12
8th Grade Special Education	21.0	21.9	-0.02
Number of Schools	8[c]	8	
Number of Students	1,177	501	

Source: Research Alliance calculations based on data obtained from iMentor survey and the NYC Department of Education.
Notes: [a] Hedge's G is the "effect size difference" between groups and is defined as the difference in means divided by the pooled standard deviation. Values of 0.25 or greater are considered not to be equivalent. [b] Chronic Absenteeism is defined as being absent from school for at least 18 days during a single school year. [c] For each school, there are two cohorts of iMentor students.

Table A-4: Baseline Equivalence of Background Characteristics and Middle School Education Outcomes of Students Enrolling in iMentor and Comparison Schools During the Years Prior to iMentor Implementation

	iMentor Schools	Comparison Schools	Hedge's G[a]
Gender (%)			
Female	52.1	57.3	-0.10
Male	47.9	42.7	-0.13
Race (%)			
Asian	2.83	6.29	-0.16
Black	34.83	28.45	0.14
Latino	59.27	60.59	-0.03
White	1.1	1.3	-.06
Other	2.01	1.50	0.04
Background Characteristics (%)			
8th Grade Attendance (%)	87.66	88.16	-0.03
8th Grade NYS ELA Test Score (Z)	-0.49	-0.41	-0.09
8th Grade NYS Math Test Score (Z)	-0.42	-0.39	-0.04
Overage as of 9th grade (%)	36.36	31.85	0.10
Free/Reduced Lunch (%)	92.44	92.27	0.01
English Language Learner (%)	24.91	18.12	0.17
Special Education (%)	17.59	18.40	-0.02
Students per School (per Cohort)	95.50	98.19	
Number of Schools	8	16	

Source: Research Alliance calculations based on data obtained from the NYC Department of Education.

Notes: [a] Hedge's G is the "effect size difference" between groups and is defined as the difference in means divided by the pooled standard deviation. Values of 0.25 or greater are considered not to be equivalent.

Table A-5: Educational Outcomes for iMentor and Comparison Schools During the Years Prior to iMentor Implementation

	iMentor Schools	Comparison Schools	Hedge's G[a]
On-Track[b]	62.69	57.01	0.12
Academic GPA (Weighted)	74.34	72.61	0.12
Chronic Absentee (%)[c]	29.45	30.56	-0.02
Passed One Regents Exam	63.0	60.2	0.09
Credits Earned	12.17	11.32	0.20
Academic Credits Earned	9.29	8.74	0.15
Attendance (%)	88.92	88.31	0.04
Students per School (per Cohort)	105.88	108.31	
Number of Schools	8	16	

Source: Research Alliance calculations based on data obtained from the NYC Department of Education.

Notes: [a] Hedge's G is the "effect size difference" between groups and is defined as the difference in means divided by the pooled standard deviation. Values of 0.25 or greater are considered not to be equivalent. [b] On-Track is defined as passing at least one Regents Exam and earning at least 10 course credits. [c] Chronic Absenteeism is defined as being absent from school for at least 18 days during a single school year.

Appendix B
Data Sources

The iMentor evaluation relied on multiple sources of data in its effort to conduct a rigorous assessment of the program's implementation and impact. Below is a description of the three primary data sources that we used.

Survey Data for Students

Students in iMentor schools completed a baseline survey in the fall of 9th grade (before they are matched with a mentor) and completed a follow-up survey each spring for the next four years. As described in Appendix C, we compared their results to those of the prior cohort of 9th graders in the same schools (i.e., before the introduction of iMentor). See the first report from our evaluation (*Bringing Together Mentoring, Technology, and Whole School Reform*) for the specific items, constructs, response ranges, and internal consistency of the baseline student survey. Student survey administration and initial processing were managed by an external firm, Ewald & Wasserman.

The student survey contains over 100 items, including measures of social and emotional learning, as well as details about their background that cannot be obtained through administrative records. Table B-1 provides a list of the key student outcome measures, the specific items making up each measure, and a common assessment of survey realiability (Chronbach's alpha). Typically, values of 0.70 or higher are considered to be highly reliable (Chronbach, 1955).

iMentor Programmatic Data

iMentor collects data from mentees and mentors via a proprietary online platform. Mentees, mentors, and iMentor staff all have a password-protected account on the platform. The platform was overhauled for the 2016-2017 school year to create a different interface, add new features, and eliminate emailing. For mentees and mentors, the previous iMentor platform, iMi, was largely a place to send and receive emails, fill out surveys, and receive and respond to iMentor event invitations. iMentor staff used the platform to enter and access information about student participation in iMentor classes, emails sent and received as part of the program, and iMentor events. The new platform is called Canvas. In-class lesson content is integrated into Canvas. In place of email, an exchange on Canvas consists of a student submitting a post related to the current lesson and the mentor responding to that post. Students and mentors can also interact through a chat feature. iMentor staff still have access to information about participation, but the backend has also been overhauled to make the information easier to find and more actionable. The Research Alliance used iMentor platform data to track the number of pairs that were matched and sustained for the entire year, the number of iMentor classes held at each school, as well as the amount of pair interaction and event attendance.

Administrative Data

The study drew on administrative data provided by the NYC DOE to develop a descriptive profile on iMentor students prior to their starting high school, including their demographic characteristics and middle school test scores and attendance rates. Administrative records also served as the main source of educational outcomes data, including high school GPA, credits attempted and accumulated, Regents exam scores and passing rates, student enrollment/drop out status, high school graduation and diploma receipt rates, and college enrollment status.

Table B-1: Survey Items and Composite Measures for Social and Emotional Learning Outcomes

Construct	Items	Response Range	Alpha
Personal Initiative	Please indicate how often you do each of the following things. Finish homework without being reminded. Get out of bed for school without being reminded. Clean up after yourself without being reminded.	1-Never 2-Not Much 3-Some 4-A lot	0.65
Curiosity and Love of Learning	I would describe myself as someone who actively seeks as much information as I can in a new situation. I am not the type of person who probes deeply into new situations or things. Everywhere I go, I am out looking for new things or experiences. I frequently find myself looking for new opportunities to grow as a person (e.g., information, people resources) It's very easy for me to get along with new people.	1-Not at all True 2-A little True 3-Somewhat True 4-Very True	0.62
Growth Mindset	What I do and how I do it will determine my successes in life. If I succeed in life it will be because of my efforts. My own efforts and actions are what will determine my future.	1-Strongly Disagree 2-Sort of Disagree 3-Sort of Agree 4-Strongly Agree	0.73
Task Persistence	If something looks too hard, I will not even bother to try it. Failure just makes me try harder. If I can't do a job the first time, I keep trying until I can. I handle unexpected problems very well. I give up easily. I can depend on myself. I am unsure about my ability to do things. I give up on things before finishing them.	1-Strongly Disagree 2-Sort of Disagree 3-Sort of Agree 4-Strongly Agree	0.78
Hope and Sense of Optimism	I have a positive outlook toward life. I can recall happy/joyful times. I can see possibilities in the midst of difficulties. I feel my life has value and worth. I have a sense of direction. I have a faith that gives me comfort. I have deep inner strength. I have short and/or long range goals.	1-Strongly Disagree 2-Sort of Disagree 3-Sort of Agree 4-Strongly Agree	0.79

	I am able to give and receive caring/love.		
	I feel alone.		
	I feel scared about my future.		
	I believe that each day has potential.		
Critical Thinking	I compare each possible solution with the others to find the best one to solve my problem. I look at a problem from many different viewpoints. When solving a problem, I look at all possible solutions. I try to get all the facts before trying to solve a problem. I try to look at the long term results of each possible solution.	1-Never 2-Rarely 3-Sometimes 4-Often 5-Always	0.76
Self-Advocacy	I talk proudly about my experiences I let people know about things I do well. I let others know that I am valuable to groups I belong to (like my school, club, or team). I let people know about my accomplishments	1-Never 2-Rarely 3-Sometimes 4-Often 5-Always	0.81
Help-Seeking	Even if the work was too hard to do on my own, I wouldn't ask for help in class. If I were having trouble understanding the material in class, I would ask someone who could help me understand the general ideas I would rather do worse on an assignment I couldn't finish than ask for help. Getting help would be one of the first things I would do if I were having trouble in class. If I didn't understand something in class I would guess rather than ask someone for help.	1-Not at all True 2-A little True 3-Somewhat True 4-Very True 5-Completely true	0.69
Adult Social Supports	**How many non-relative adults…** could you go to if you're having problems in school with classmates or teachers? could you ask about a career you are interested in? could you ask about what it's like to be in college? do you know who graduated from high school? do you know who graduated from college? do you know who have graduate degrees (e.g., MD, JD, PhD, MA/MS)? do you know who could help you get an after-school, weekend, or summer job? do you know who could help you with schoolwork or homework? do you know who could help you with problems or stuff that is bothering you? do you know who you could hang out or do fun things with?	Number of adults 0 1 2 3 4 5 or more	0.92

Appendix C
Analysis of Impacts on Social and Emotional Learning

An important part of iMentor's theory of action is teaching social and emotional (SEL) skills to students. We measured students' progress on SEL skills through surveys administered throughout their four years of high school. The surveys also asked about students' views on college and career and their relationship with their mentor.

We conducted quantitative analysis on data for these questions and constructs by comparing survey responses for iMentor students to those from students in the same schools but in the cohort before iMentor was introduced.[4] Students were surveyed at the beginning of their 9th grade year; these responses were used as "baseline" measurements. This allows us to account for the fact that some students enter high school with different social and emotional skills, feelings about college, etc. In our analysis, we accounted for students' demographic characteristics, ensuring that those factors are not driving measured differences in survey responses.

We designed a lagged cohort study to test if students eligible to receive the iMentor intervention had better outcomes at the end of 12th grade than comparison students who did not. All students in grades that iMentor serves are eligible to participate. The analytic model we used to test this statement is a student-level fixed effects model. In this model, the comparison and treatment students are enrolled in the same school—the comparison students entered 9th grade in the year prior to the treatment students. We used school fixed effects to control for differences between the eight evaluation schools. We also controlled for additional student characteristics enumerated below using variables from the NYC Department of Education administrative data, as well as other measures from the iMentor survey. Most importantly, we controlled for their baseline status on each survey outcome. The variable TREAT below equals 1 if a student was enrolled in 9th grade when iMentor was implemented and 0 if a student was enrolled prior to implementation. The coefficient on the treatment indicator ($TREAT_i$) is the effect of iMentor.

$$Outcome_i = INT + BL_i + SCH_i + TREAT_i + ELAG08_i + MTHG08_i + Female_i + FstGEN_i + ABSPCTROL_i + Race_i + SelfEff_i + FREDLUNCH_i + SPED_i + ELL_i + OVAGE_i + e_i$$

[4] With the exception of two students, those in the comparison group stayed in that group even if they did not advance to the next grade and were thus nominally in the same grade as students receiving the iMentor program.

$Outcome_i$ = Student spring score on SEL construct

BL_i= Student fall (baseline) score on SEL construct

SCH_i = School fixed effect

$TREAT_i$= Indicator of being eligible to participate in iMentor (1 = treatment)

$ELAG08_i$ = Percentile score (0-100) for 8th grade ELA Achievement Score

$MTHG08_i$ = Percentile score (0-100) for 8th grade Math Achievement Score

$Female_i$= Indicator of being female

$FstGEN_i$ = Indicator of being a potential first generation college student, defined as having a mother/sibling who has not attended any college

$ABSPCTROL_i$ = Indicator of being chronically absent in the 8th grade year

$Race_i$ = Indicator of race/ethnicity category from follow-up survey (i.e. Asian, Black, Latino, White, or Other), the reference group is Black

$SelfEff_i$= Measure of student self-efficacy as determined from the baseline study

$FREDLUNCH_i$ = Indicator of receiving Free or Reduced priced lunch

$SPED_i$= Indicator of having a related service in 8th grade

ELL_i= Indicator of having an ELL designation in 8th grade

$OVAGE_i$ = Indicator of being 15 at the start of 9th grade

e_i= error

For students with an outcome variable, any missing predictor variables were imputed using a multiple imputation process based on all remaining variables. No outcome variables were imputed.

Before conducting these analyses, we conducted a sensitivity test to assess if being a member of the treatment cohort was predictive of having higher baseline scores. We found that for three outcome variables, participating in iMentor was predictive of higher baseline scores. However, once other student characteristics, such as race, gender, and free lunch status, were incorporated into the model, the association between participating in iMentor and baseline scores was no longer statistically significant. This suggests that there were differences between cohorts in the same school on the outcomes of interest, but that these differences could be controlled for using other student-level characteristics.

Table C-1: Supplemental Table - Social and Emotional Learning and Support Outcomes for All Four Years of High School

Student Outcomes	iMentor Students	Comparison Students	Estimated Difference
Social Support			
Grade 9	3.0	3.0	0.0
Grade 10	3.0	2.9	0.1
Grade 11	3.3	3.3	0.0
Grade 12	3.3	3.3	0.0
Task Persistence			
Grade 9	3.2	3.1	0.0
Grade 10	3.2	3.2	0.0
Grade 11	3.3	3.3	0.0
Grade 12	3.3	3.3	-0.1
Personal Initiative			
Grade 9	3.0	3.0	0.0
Grade 10	NA	NA	NA
Grade 11	3.2	3.2	0.0
Grade 12	3.2	3.1	0.0
Critical Thinking			
Grade 9	NA	NA	NA
Grade 10	3.0	3.0	0.1*
Grade 11	3.1	3.2	0.0
Grade 12	3.2	3.2	0.1*
Hope and Optimism			
Grade 9	3.3	3.3	0.0
Grade 10	NA	NA	NA
Grade 11	3.3	3.3	0.0
Grade 12	3.3	3.3	0.0
Curiosity and Love of Learning			
Grade 9	NA	NA	NA
Grade 10	3.0	2.9	0.0
Grade 11	3.2	3.2	0.0
Grade 12	3.2	3.2	0.1
Growth Mindset			
Grade 9	3.6	3.5	0.0
Grade 10	NA	NA	NA
Grade 11	3.1	3.0	0.1
Grade 12	3.1	3.1	0.0

Help Seeking			
Grade 9	3.7	3.8	-0.1
Grade 10	NA	NA	NA
Grade 11	3.8	3.9	0.0
Grade 12	3.8	3.8	0.0
Self-Advocacy			
Grade 9	3.7	3.6	0.1
Grade 10	3.7	3.7	0.1
Grade 11	3.7	3.5	0.1*
Grade 12	3.7	3.5	0.2*
Sample Sizes			
Grade 9	1439	680	
Grade 10	1267	607	
Grade 11	1149	541	
Grade 12	999	441	

Source: Research Alliance calculations based on data obtained from the iMentor student survey and NYC Department of Education.

Notes: Sample is based on students who responded to at least half of the items in each survey construct. * Denotes statistical significance and the 5 percent level. Not all constructs were surveyed each year.

Table C-2: Supplemental Table - Future Planning Outcomes for Grades 10-12

Student Outcomes	iMentor Students	Comparison Students	Estimated Difference
Researched Possible Career Paths			
Grade 10	52%	45%	7%*
Grade 11	65%	59%	6%*
Grade 12	89%	89%	0%
Developed a Resume			
Grade 10	48%	28%	19%***
Grade 11	56%	51%	5%
Grade 12	82%	80%	3%
Researched Colleges			
Grade 10	57%	54%	3%
Grade 11	79%	74%	6%*
Grade 12	96%	96%	0%
Participated in a Program/Special Event on a College Campus			
Grade 10	36%	37%	0%
Grade 11	45%	44%	1%
Grade 12	61%	58%	4%
Visited a College Campus in NYC			
Grade 10	67%	63%	4%
Grade 11	74%	76%	-2%
Grade 12	92%	91%	1%
Visited a College Campus outside NYC but in NY State			
Grade 10	40%	45%	-5%
Grade 11	54%	59%	-5%
Grade 12	70%	74%	-3%
Visited an Out of State College			
Grade 10	24%	26%	-2%
Grade 11	37%	39%	-1%
Grade 12	50%	51%	-2%
Completed Common App			
Grade 12	74%	67%	7%
Researched a College Major			
Grade 10	30%	33%	-4%
Grade 11		57%	-1%
Grade 12	91%	92%	0%
Participated in an SAT/ACT prep class			
Grade 10	17%	20%	-4%
Grade 11	52%	57%	-5%
Grade 12	66%	69%	-3%
Took a practice ACT/SAT Test			
Grade 10	37%	40%	-4%

Grade 11	73%	73%	0%
Grade 12	85%	86%	-1%
Spent time on your own studying for ACT/SAT			
Grade 10	17%	23%	-6%***
Grade 11	55%	60%	-5%
Grade 12	69%	70%	0%
Financial Aid Activities			
Filed a FAFSA	88%	86%	2%
Applied for a scholarship	57%	57%	0%
Submitted a SAR	59%	52%	7%
Compared financial aid offers	77%	72%	5%*
College Application Activities			
Taken the SAT/ACT	89%	90%	-1%
Taken on or more AP course	53%	54%	-2%
Sat in on a College Course	60%	60%	0%
Did you make a college list?	83%	77%	5%
Completed and submitted an application to CUNY	92%	92%	0%
Completed and submitted an application to a non-CUNY college	75%	74%	0%
Did you apply to college?	95%	96%	-1%
College List Support (How much support did you get from …)			
Family	3.2	3.3	-0.1
Friends	3.1	3.0	0.1
Teachers	3.4	3.4	0.0
Guidance Counselors	3.4	3.5	-0.1
Mentors	3.2	2.6	0.6***
Other	2.9	2.5	0.4***
College Selection Support (How much support did you get from …)			
Family	3.3	3.4	-0.1
Friends	3.2	3.2	0.0
Teachers	3.3	3.3	0.0
Guidance Counselors	3.3	3.5	-0.2**
Mentors	3.2	2.6	0.6***
Other	2.9	2.6	0.3**
College Application Support (How much support did you get from …)			
Family	3.3	3.4	-0.1
Friends	3.2	3.2	0.0
Teachers	3.4	3.4	0.0
Guidance Counselors	3.4	3.5	-0.1*
Mentors	3.2	2.6	0.6***
Other	2.9	2.6	0.3**

Source: Research Alliance calculations based on data obtained from the iMentor student survey and NYC DOE.

Notes: Sample is based on students who responded to at least half of the items in each survey construct. * Denotes statistical significance and the 5 percent level; ** Denotes statistical significance at the .01 level; *** Denotes statistical significance and the <.001 percent level.

Appendix D
Analysis of Impacts on Educational Outcomes

Though iMentor does not focus directly on academic outcomes, such as credit accumulation and preparation for high school graduation, our evaluation recognizes that academic qualification for college, especially high school graduation, is a significant hurdle for students. For this reason, we track students' progress on academic and attendance outcomes throughout high school. We compared iMentor students with a set of similar students— however, unlike in our survey analysis, we did not use students in the same school as the comparison group. Instead, we used statistical techniques to search for schools that, aside from participation in iMentor, were otherwise similar with respect to student demographics and prior achievement. Students in those schools are the comparison group for analysis of administrative data, allowing us to account for pre-existing trends in academic achievement at the schools.

We also ensured our results accounted for differences in student characteristics, like prior achievement, special education and English Language Learner status, indicators of family poverty, and whether or not students were foreign-born. Some of the students in the sample were either not in a NYC school in 8th grade or, for various reasons, exempt from taking the New York State Math and ELA exams. For these students, we conducted a 'multiple imputation' method for constructing our best estimate for these values and included them in the analysis.

Our analysis compares iMentor students to students in the schools we selected as being very similar (i.e., the comparison group). For both groups of students, we constructed a statistical projection of expected academic achievement (measured by attendance, GPA, Regents scores, and credit accumulation), accounting for student demographics and prior achievement. We then compared their actual academic outcomes to that projection.

The Comparative Interrupted Time Series (CITS) analyses are based on multi-level regression models that estimates differences in changes over time in outcomes for students in the iMentor schools and changes over time in those outcomes for students in matched comparison schools. Specifically, the models estimate trends in student outcomes during the years leading up to the start of iMentor implementation, as well as deviations from those trends for students enrolled in the schools after iMentor implementation began. The trends and deviations for comparison schools reflect the influence of other factors on similar students in similar schools during the same period. Thus, the differences in deviations from historical trends between iMentor schools and comparison schools represent the impact of iMentor over and above other potential influences.

The multi-level structure of the models accounts for the fact that the outcomes are measured for clusters of students in each school year and each school. It is important to account for such clustering because the variation in student outcomes is likely to be influenced, at least partially, by

the particular school year and the particular school within which students are clustered. If this source of variation were ignored, then the estimates generated by the analysis would appear to have less variability and more precision than they actually have. In other words, the estimates might appear to be statistically significant when, in fact, they are not.

For example, the CITS analysis of impacts on 9th grade student outcomes follows the multi-level model below for students enrolled in iMentor schools during the implementation period:

$$Y_{ijt} = \beta_0 + \beta_1\, RELYR_{jt} + \beta_2\, iMentor_j + \beta_3\, RELYR_{jt} * iMentor_j + \beta_4\, iMentor_IMPYR_{jt} + \beta_5\, iMentor_IMPYR_{jt} * iMentor_j + \alpha_{1x}\boldsymbol{X_{ijt}} + u_{tjy} + e_{ijt}$$

Where:

Y_{ijt} Outcome for student *i* in school *j* in year *t* (relative to the first year of iMentor implementation).

$RELYR_{jt}$ Continuous variable for time period, relative to the first year of iMentor implementation, centered on the first year iMentor implementation (=0).

$iMentor_j$ Dichotomous variable indicating that school *j* was an iMentor school (=1) or a comparison school (=0).

$\boldsymbol{X_{ijt}}$ Vector of student characteristics and pre-high school performance measures to control for differences among students across schools and cohorts.

$iMentor_IMPYR_{jt}$ Dichotomous variable (=1) for outcomes that occurred for students during iMentor implementation, (=0 otherwise).

u_{tjy} Random error associated with clustering of time points (relative to the first year of iMentor implementation) within schools and within an iMentor implementation year (y).

e_{ijt} Estimation error associated with clustering of students within schools and school years.

This CITS model estimates the following quantities for 9th grade outcomes, for example:

β_1 Estimate of the trend (or slope) of the outcome over the years leading up to the start of iMentor implementation for the comparison schools.

β_2 Estimate of the fixed difference in the outcome between the iMentor schools and the comparison schools during the years leading up to the start of iMentor implementation.

β_3 Estimate of the difference in the outcome trend (or slope) between the iMentor schools and the comparison schools over the years leading up to the start of iMentor implementation.

β_4 Estimate of the deviation in the outcome from the pre-iMentor period for the comparison schools.

β_5 Estimate of the difference in the deviations from the pre-iMentor period between the iMentor and comparison schools.

α_{1x} Vector of fixed effect estimates of the differences in background characteristics and middle school outcomes among students across schools and school years.

Table 3 in our report includes three columns of numbers derived from this CITS model, in addition to the baseline projection of the outcomes in the year iMentor implementation:

$\beta_4 + \beta_5$ Listed in the second column of numbers as "iMentor School Change." This represents the deviation from the outcome trend in the years prior to the start of iMentor implementation for the iMentor schools. It provides an indication of the degree to which outcomes were different for students who were enrolled in the iMentor schools as the programs were being implemented compared to their peers who were enrolled in the same schools prior to the start of iMentor.

β_4 Listed in the third column of numbers as "Comparison School Change." This represents the deviation in the outcome trend in the years prior to the start of iMentor implementation for the comparison schools. It is an estimate of the degree to which outcomes were changing for students in schools that were similar to the iMentor schools but were not selected for the initiative. This is intended to account for policies, programs, or initiatives other than the implementation of iMentor that may have influenced school behaviors and changed student outcomes.

β_5 Listed in the fourth column of numbers as "Estimated Impact." It is an estimate of the difference in the deviations from the pre-iMentor trends for the iMentor and comparison schools. This represents the impact of iMentor over and above the influence of other influences on outcomes for students in otherwise similar schools.

The model above and the resulting estimates represent analyses of impacts on 9th grade outcomes for students who entered 9th grade during the iMentor implementation period. The report provides estimates of the cumulative impact of iMentor on these students' outcomes, over the course of their high school career and college enrollment. Our analyses focused on these students because they received the longest and most extensive exposure to the supports and services provided by iMentor. The analysis of impacts on outcomes measured during these students' scheduled 10th grade, 11th grade and 12th grade years (including graduation outcomes) rely on the statistical model described above with three additional terms:

$RELYR_1_{jt}$ Dichotomous variable (=1) for outcomes that occurred for students during the second year of iMentor implementation, (=0 otherwise).

$RELYR_2_{jt}$ Dichotomous variable (=1) for outcomes that occurred for students during the third year of iMentor implementation, (=0 otherwise).

$RELYR_3_{jt}$ Dichotomous variable (=1) for outcomes that occurred for students during the fourth year of iMentor implementation, (=0 otherwise).

These terms reflect outcomes measured during the iMentor implementation period, and they correspond to students' scheduled 10th, 11th, and 12th grades. Each of these terms were interacted with the iMentor indicator to reflect the difference in the deviations from the pre-

iMentor trends between the iMentor and comparison schools. The differences in these deviations represent the impact of iMentor on outcomes measured during students' scheduled 10th, 11th, and 12th grades. As noted, our report focuses on the 12th grade year. The analysis combines both iMentor cohorts into a single estimate to provide the most statistical power.

Appendix E
Other College Readiness and Mentoring-Related Programs That iMentor Evaluation Schools Were Implementing

We investigated other programs at the evaluation schools, and found that while iMentor schools did offer other college readiness programs, they were constant across the treatment and comparison cohorts. Not all schools offered the same college readiness programs, and some schools offered more than one. The table below lists all the college readiness programs that were being offered at one or more evaluation school.

Organization	Relevant Outcomes	Description
Blue Engine	College Readiness	Blue Engine partners with public high schools serving low-income communities and aims to increase academic rigor and prepare dramatically greater numbers of students for postsecondary success. To ensure that students build strong academic foundations in high school, Blue Engine recruits, trains, and supports Blue Engine Teaching Assistants (BETAs), recent college graduates who collaborate with teachers to help students develop advanced skills in mathematics, literacy, and social cognition before they set foot on campus. (http://blueengine.org/)
Bottom Line	College Readiness / College Retention	Bottom Line is dedicated to helping disadvantaged students get into college, graduate, and go far in life. Bottom Line provides low-income and first-generation students with one-on-one guidance through the application process and during college. Students participating in the College Success Program continue to receive personalized guidance for up to six years after high school graduation or until they earn their degrees. (http://www.bottomline.org/locations/worcester/leadership.aspx)
College Access: Research & Action (CARA)	College Readiness	CARA works with schools and organizations to equip them with tools that help young people build "knowledge about college," strengthen navigational skills, and develop multicultural college-going identities. (http://caranyc.org/)
College for Every Student (CFES)	College Readiness / Mentoring	CFES is committed to raising the academic aspirations and performance of underserved youth, so that they can prepare for, gain access to, and succeed in college. CFES has developed mentoring initiatives, partnerships with regional colleges, and student leadership programs. These programs aim to improve academic achievement and attendance, build leadership capacity and civic engagement, and ultimately ensure that targeted students, the "CFES Scholars," graduate from high school and get to and through college.(http://www.collegefes.org/)

Organization	Relevant Outcomes	Description
College Summit	College Readiness	College Summit aims to transform the lives of low-income youth by connecting them to college and career. College Summit uses peer leadership, custom curricula, real-time student performance data and technology to help get these high school students from low-income communities to and through college. (http://www.collegesummit.org/)
CollegeBound Initiative (CBI)	College Readiness	CBI places full-time college guidance experts in public schools to work one-on-one with every student as early as the sixth grade. CBI counselors work to maximize students' college awareness, access, and financial aid awards.

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