

The Impact of the Onward We Learn GEAR UP Program on Educational Outcomes of Participants from the SY 2014-15 Cohort

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Introduction

The Onward We Learn GEAR UP (Onward GU) program is designed to serve students in grades 6 through 13 in low-income urban school districts in Rhode Island. In School Year (SY) 2014-15, the Onward GU program was administered in the following school districts: Central Falls, Cranston, Pawtucket, Providence, and Woonsocket. The Onward GU program provides GEAR UP program services to about 3,500 low-income, middle school and high school students each year. Services are targeted for academic enrichment, college and career preparation, as well as personal and social development. These services are complemented by substantial postsecondary scholarship support to many Onward GEAR UP program participants (Onward participants) enrolled in college. In recent years, Onward We Learn has expanded services into colleges by placing counselors at the state's three public colleges. These counselors are charged with assisting Onward participants enrolled in these colleges to persist in college and graduate.

Enrollment in the Onward GU program begins in the 6th grade and once enrolled, withdrawal from the program can only be accomplished with a request from the parent or guardian. This means that regardless of the level of participation, most Onward participants remain part of the Onward GU program until they graduate high school or exit school without earning a high school diploma.

This research paper presents findings from our impact evaluation of the Onward We Learn GEAR UP program on participants who had entered the program in SY 2014-15 as rising sixth and seventh graders in the five (above-mentioned) school districts. The paper begins with a description of the overall evaluation design including the methods and data used in the selection of the comparison group as well as a discussion of the outcome measures that were used to gauge the impact of the Onward GEAR UP program on educational outcomes of participant. Following this description, is a comparison of key background traits of Onward participants and their classmates at the time of their enrollment in the Onward GEAR UP program when they were rising sixth/seventh graders. The traits of Onward participants are compared with the traits of all their sixth/seventh grade classmates and the subset of their sixth/seventh grade classmates that were selected (using propensity score matching method) to serve as the comparison group.

The paper then presents impact estimates of the Onward GEAR UP program on four key outcomes: on-time grade attainment (grade promotion and attrition in middle school and high

school), on-time high school graduation, immediate college enrollment among high school graduates, and a summary level outcome that measures the share of all sixth/seventh graders in SY 2014-15 who had enrolled in college in fall 2020/fall 2021. This summary level outcome measures the cumulative impact of the Onward GEAR UP program on on-time grade attainment, on-time high school graduation, and immediate college enrollment of the SY 2014-15 cohort of Onward participants.

Evaluation Design

Findings presented in this paper are based on the evaluation of the impact of the Onward We Learn GEAR UP program on the educational outcomes of Onward participants who had entered the program in SY 2014-15 as rising sixth or seventh graders. The non-participating classmates of this cohort of Onward participants comprise the comparison universe from which a subset of students was selected to serve as the matched comparison group. The SY 2014-15 cohort of Onward participants (and the SY 2014-15 and SY 2012-13 cohorts) differed from SY 2007-08 to SY 2011-12 cohorts as these three cohorts (SY 2012-13, SY 2013-14, and SY 2014-15) included some students who enrolled in the program as rising seventh graders whereas Onward participants from the five prior cohorts all entered the Onward GU program as rising sixth graders. About 69 percent of Onward participants (410 out of 591) from the SY 2014-15 cohort were enrolled in the Onward GU program as rising sixth graders and the remaining 31 percent (181 out of 591) entered the program as rising seventh graders.

The matched comparison group for this cohort of Onward participants includes 410 sixth graders (out of 3,270 sixth grade classmates of Onward participants in SY 2014-15) that were matched with the 410 sixth-grade Onward participants in SY 2014-15, and 181 seventh graders (out of 4,208 seventh grade classmates of Onward participants in SY 2014-15) matched with the 181 seventh grade Onward participants in SY 2014-15. Using the propensity score matching method, sixth and seventh grade Onward participants were matched with their non-participating classmates based on demographic and economic traits, academic traits, and the climate/quality of their middle school (measured by an index of middle school climate/quality).

After selecting a closely matched comparison group, the entire cohort of Onward participants and matched comparison group students were tracked in each successive school year from sixth/seventh grade in SY 2014-15 to on-time high school graduation in the spring of 2021

(for sixth graders) and the spring of 2020 (for seventh graders) (Table 1). In other words, if they were to remain in school and advance each grade on time, sixth graders in this cohort were expected to enter 12th grade in SY 2020-21 and graduate high school in the spring of 2021. Onward participants who entered the program as rising seventh graders in SY 2014-15 were expected to enter 12th grade in SY 2019-20 and graduate high school in the spring of 2020.

Immediate college enrollment is defined in this study as enrollment in college immediately after graduating high school; in the summer or fall academic term following high school completion in spring. For this cohort of Onward participants and their matched comparison group classmates, immediate college enrollment would occur in the summer or fall terms of 2021 for those who were sixth graders in SY 2014-15 and in the summer or fall terms of 2020 for their peers who were seventh graders in SY 2014-15 (Table 1).

Table 1:
Expected On-Time Progress in Each Successive School Year for SY 2014-15 Onward We Learn GEAR UP Program Participants and Their Classmates to On-Time High School Graduation, and Immediate College Enrollment

	Grade Level, High School Graduation, College Enrollment	School Year/Date (Sixth Graders in SY 2014-15)	School Year/Date (Seventh Graders in SY 2014-15)
On-Time Grade Level in Middle and High School	6th grade	2014-15	
	7th Grade	2015-16	2014-15
	8th grade	2016-17	2015-16
	9th grade	2017-18	2016-17
	10th grade	2018-19	2017-18
	11th grade	2019-20	2018-19
	12th grade	2020-21	2019-20
On-time High School Graduation		Spring 2021	Spring 2020
Immediate College Enrollment		Fall 2021 Term	Fall 2020 Term

The evaluation is designed to measure the impact of the Onward GU program on educational outcomes of participants that are listed in Table 1. This paper is based on RIDE data and NSC data that were provided by DataSpark in the summer of 2023. These data contain data for each school year from sixth/seventh grade through high school graduation, and college enrollment data through the fall semester of 2020 and 2021.

The outcomes measured in this paper include on-time grade attainment (promotion and attrition), on-time high school graduation, and immediate college enrollment. These outcomes are measured for Onward participants and for their matched comparison group classmates. The difference between Onward participants and the matched comparison group on each outcome measure is then tested for statistical significance. Differences in outcome measures that meet the threshold of statistical significance are presented as estimates of the impact of the Onward GU program on educational outcomes of participants.

Data for Evaluation

A summative evaluation such as this is heavily reliant on access to high quality data. Annual data for each school year from sixth grade to high school graduation for Onward participants and their matched comparison group classmates were provided by the Rhode Island Department of Education (RIDE). Onward We Learn was able to successfully negotiate a data sharing agreement with the Rhode Island Department of Education (RIDE) to access year-by-year in-school data for all cohorts of Onward participants as well as their sixth/seventh grade classmates beginning with the SY 2007-08 cohort. The data sharing agreement also provided access to semester-by-semester postsecondary enrollment data (after high school graduation) from the National Student Clearinghouse (NSC) for Onward participants as well as the matched comparison group students. The evaluation has also used data from publicly available data sources to build a data set that was used to produce a school quality index for middle schools in which one or more Onward participants were enrolled in SY 2014-15.

Selection of the matched comparison group was based on matching baseline characteristics (sixth/seventh grade traits) of Onward participants and their classmates using RIDE student unit record data for SY 2014-15 (the academic year during which Onward participants were in their first year of program participation). Annual school data from sixth/seventh grade to high school graduation and immediate college enrollment data from the National Student Clearinghouse for Onward participants and their classmates were then merged to create a longitudinal data file of Onward participants and their sixth/seventh grade classmates. This longitudinal data file was used to track the progress of Onward participants and their matched comparison group classmates through middle school, high school, and college.

Table 2:
Data Used in the Impact Evaluation of the Onward We Learn GEAR UP Program

on Educational Outcomes of Participants from the SY 2014-15 Cohort

Data Source	GEAR UP Participants	Comparison Group of Classmates
Rhode Island Department of Education: Annual data for each school year from sixth/seventh grade to high school graduation across all public-school districts in Rhode Island	✓	✓
National Student Clearinghouse: College enrollment	✓	✓
Publicly available data sources: Used to produce middle school quality index.	Not applicable	Not applicable

The Need for a Comparison Group

Out of a total of 3,680 entering sixth graders in Onward GU school districts in school year 2014-15, 410 students had enrolled in the Onward GU program and the remaining 3,270 students were non-participating classmates of this cohort of Onward participants. This latter group comprised the comparison universe from which a matched comparison group was selected. During the same school year (2014-15), there were 4,389 seventh graders that comprised of 181 Onward participants and 4,208 non-participants. The RIDE data files include demographic and socioeconomic characteristics, in-school behavioral traits, and academic proficiency; traits that are known to be closely related to secondary and postsecondary educational outcomes, for 591 Onward participants and their 7,478 sixth/seventh grade classmates in SY 2014-15.

The comparison of the traits of Onward participants and their classmates reveals major differences between the two groups. At the time of entry in the Onward GEAR UP program in SY 2014-15, students who had enrolled in the program (Onward participants) were more likely than their classmates to be members of a race-ethnic minority and belong to low-income families (eligible for free or reduced-price school lunch (FRL) in SY 2014-15), and less likely than their classmates to have disabilities (Individualized Education Plan (IEP) in SY 2014-15). The SY 2014-15 behavioral and academic traits of Onward participants were also different from that of their sixth/seventh grade classmates. Compared to their sixth/seventh grade classmates, Onward participants had better attendance rates, were less likely to be suspended, and had higher academic proficiencies as measured by their scores on the sixth/seventh grade PARCC ELA test

(standardized test). Because these baseline (SY 2014-15) characteristics of Onward participants are systematically different from those of their classmates, an evaluation that simply compares Onward participant outcomes with those of their sixth/seventh grade classmates will result in a biased measure of impact.

How does one correct for this bias? In the past, researchers frequently used regression analysis to account for the confounding effects of differences in baseline characteristics on outcomes; but increasingly, evaluation studies have come to rely on the propensity score matching (PSM) method to establish equivalence in baseline characteristics and thereby minimize bias in the estimation of impact in quasi-experimental studies; that is, studies that are not based on the Randomized Control Trial method (RCT).¹ The PSM method is considered the most similar alternative to the RCT method. The PSM method requires the selection of a comparison group of non-participants with pre-program traits that are closely matched with the pre-program traits of participants.

Wide differences between the baseline traits of Onward participants and their sixth/seventh grade classmates required the selection of a matched comparison group to produce unbiased estimates of the impact of the GEAR UP program. The Onward GU program lends itself to quasi-experimental evaluation design because of the large group of in-district sixth/seventh grade classmates of Onward participants that provide an ideal universe from which a subset of students could be selected to serve as the matched comparison group.

The comparison group for Onward participants who were in the sixth and seventh grade in school year 2014-15 was selected from their (same grade) classmates separately using the PSM method. The match was made based on key pre-program traits that are known to be closely related to educational outcomes. Included in these pre-program traits upon which the selection of the matched comparison group is based are the demographic traits of gender and race-ethnicity, and their disability status identified by their IEP (Individualized Education Plan) status in the sixth/seventh grade, economic status of their families measured by their eligibility for free or

¹ Randomized Control Trial (RCT) is an experimental evaluation method designed to estimate the impact of the program on outcomes by randomly assigning students to either the treatment (participant) or non-treatment (control) group. Since assignment between the two groups is random and the two groups are equivalent at baseline, any future differences in outcomes are attributed to program participation. Onward GEAR UP is essentially an open enrollment program for all 6th graders in a participating district—that is, all eligible applicants are enrolled. Therefore, random assignment was not possible for this study.

reduced-priced lunch at the time of their entry into the Onward GU program, performance on the sixth/seventh grade standardized (PARCC) ELA test, school attendance rate in the sixth/seventh grade, and a measure of climate and quality of the middle school that they were attending in the sixth/seventh grade. The selection of a well-matched comparison group based on the PSM method provided the pre-program equivalence necessary to produce unbiased estimates of the impact of the Onward GEAR UP program on participant outcomes.

Propensity Score Matching

As noted above, the selection of a matched comparison group was necessary to minimize differences in pre-program characteristics between Onward participants and their classmates. Using the propensity score matching (PSM) method, we selected a matched comparison group of students from the sixth/seventh grade classmates of the SY 2014-15 cohort of Onward participants.

The first step in propensity score matching, entails estimating propensity scores for all individuals in the study—those who receive the treatment and those who do not. In the case of the 2014-15 cohort of Onward participants, propensity scores were estimated for 3,680 sixth grade students consisting of 410 Onward participants and their 3,270 sixth grade classmates who did not participate in the Onward GU program. Similarly, for seventh graders, propensity scores were estimated for 181 Onward participants and their 4,208 non-participating classmates. The propensity score measures the probability of being in the treatment group. The PSM method uses logit regression models to predict the probability that an individual will be in the treatment group, based on pre-program characteristics that are likely to affect post-program outcomes. Our selection of variables to include in propensity score regression models is guided by research on predictors of success in postsecondary education.² Propensity scores for the entire group of 3,680 sixth graders and 4,389 seventh graders in SY 2014-15 were estimated using logit regression with predictor variables representing the following pre-program (in the sixth/seventh grade) characteristics of these students; demographic traits, economic status of their family, academic

² For a brief review of education research that identifies student characteristics, skills, behaviors, and other variables that predict future academic success, see: Hein, Vanessa, Becky Smerdon, and Megan Sambolt, *Predictors of Postsecondary Success*, College and Career Readiness and Success Center, American Institutes of Research, November 2013.

proficiencies, in-school behavioral traits, and school climate. The list of variables included in the regression model to estimate propensity scores is presented in Table 3.

Table 3:
List of Covariates Included in Estimating the Propensity Score for SY 2014-15 Cohort of Onward We Learn GEAR UP Participants and their Non-Participating Classmates

Pre-Program Traits	Variables Measuring Pre-Program Traits
Demographic traits	Gender and race-ethnicity; disability status (Individualized Education Plan) in the sixth/seventh grade
Economic status	Free or reduced-price school lunch in the sixth/seventh grade
Academic traits	Performance on the sixth/seventh grade PARCC ELA test
Behavioral traits	Attendance rate in the sixth/seventh grade
School climate	Composite index of school climate/quality

The inclusion of a school climate variable in the estimation of propensity scores was necessary to ensure that the school climate of students in the matched comparison group was similar to that of Onward participants. The propensity score matching would have been desirable at the individual middle school level so that each comparison group student was selected from the same middle school as the Onward GU participant with whom the comparison student was matched. However, since student populations and the number of Onward participants in some of the middle schools' SY 2014-15 sixth and seventh grade class were sometimes quite small, we could not perform matching at the individual school level. Instead, we created a composite index of middle school climate/quality for each of the 21 schools attended by Onward participants in SY 2014-15. The composite index was designed to serve as a measure of the school climate/quality.

The middle school composite index that we constructed was based on the following five key indicators of school climate/quality: (1) percent of students in the school who were eligible for free or reduced-price school lunch, (2) percent of students in the school who were race-ethnic minorities, (3) mean attendance rate of students at the school, (4) school stability rate: the school stability rate is measured as the number of students enrolled on or before October 1 of a school year (beginning of the school year) who are still enrolled on June 1 of the same school year (end of the school year), divided by total enrollment on October 1 of the school year; and (5) percent who met or exceeded expectations on the SY 2014-15 PARCC ELA and math tests.

A composite index of school climate/quality was computed for each of the 21 schools in SY 2014-15. The schools were then arranged from the highest to the lowest composite index score and then divided into four equal groups or quartiles of composite index of school climate/quality. Dividing 21 schools into quartiles resulted in four quartiles containing 5 schools each. Based on the school in which Onward participants and their classmates were enrolled in the sixth/seventh grade (school year 2014-15), each student in this study was assigned the school climate/quality quartile of their school in SY 2014-15.

Using the variables listed in Table 4, a propensity score was estimated for each of the 410 Onward participants and their 3,270 sixth grade classmates using a logistic regression model with Onward GEAR UP participation status (1, 0) as a dependent variable and gender, race-ethnicity, sixth grade PARCC ELA test performance, sixth grade special education (IEP) status, free or reduced lunch program eligibility in the sixth grade, sixth grade attendance rate, and the quartile of middle school composite index as predictor variables. The estimated propensity scores (ranging from 0 to 1) represented the probability of enrolling in the GEAR UP program. This procedure was repeated separately for 181 Onward participants in the seventh grade in SY 2014-15 and their 4,208 classmates.

After estimating propensity scores for each sixth/seventh grader in the cohort we estimated a multivariate Mahalanobis distance metric using the background variables listed in Table 3 along with the propensity score. The propensity score was included with other background variables in estimating the Mahalanobis distance metric as its inclusion is found to yield better matches.³ GEAR UP participating students were then matched with their non-participating sixth/seventh grade classmates based on the ‘nearest neighbor’ matching estimator using the Mahalanobis distance nearest-neighbor matching technique.⁴ The matching was

³ Donald B. Rubin and Neal Thomas, “Combining Propensity Score Matching with Additional Adjustments for Prognostic Covariates,” *Journal of the American Statistical Association*, Vol. 95, No. 450 (June 2000), pp. 573- 585; Donald B. Rubin and Paul R. Rosenbaum, “Constructing a Control Group Using Multivariate Matched Sampling Methods that Incorporate the Propensity,” *The American Statistician*, Vol. 39, No. 1, February 1985, pp. 33-38.

⁴ See: Donald B. Rubin, “Bias Reduction Using Mahalanobis-Metric Matching,” *Biometrics*, Vol. 36, No. 2, June 1980, pp. 293-298.

performed on a 1:1 basis without replacement using a caliper⁵ width of .2 that is recommended by researchers.⁶

Characteristics of Onward We Learn GEAR UP Participants and their Sixth/Seventh Grade Classmates

In this section, we present background traits of all 591 (sixth and seventh graders combined) Onward GEAR UP participants with the traits of their 7,478 (sixth and seventh graders combined) classmates and separately with the subgroup of 591 sixth/seventh grade classmates who were selected with the propensity score matching (PSM) method for the matched comparison group. A total of 8,069 sixth and seventh graders attending middle schools in which the SY 2014-15 cohort of Onward participants were enrolled, are included in this study.

Out of the 3,680 sixth graders, 410 or 11.1 percent had enrolled in the Rhode Island GEAR UP program and the remaining 3,270 had not enrolled in the program. Out of 4,389 seventh graders, 181 or 4.1 percent had enrolled in the GEAR UP program and the remaining 4,208 had not enrolled. The matched comparison group for the 410 Onward participants who were in the sixth grade in SY 2014-15 was selected from their 3,270 sixth grade classmates and the matched comparison group for the 181 seventh grade Onward participants from this cohort was selected from their 4,208 seventh grade classmates.

The propensity score matching to select the comparison group was performed separately for sixth and seventh graders. Analysis of educational outcomes was also done separately for sixth and seventh graders. However, findings in the remainder of this report are presented for sixth and seventh graders combined; generated from separate analysis for sixth and seventh graders.

Gender

GEAR UP participants from SY 2014-15 cohort were slightly more likely to be female whereas their classmates were more less likely to be female. Female students comprised 50.4 percent of Onward participants and only 47.6 percent of their SY 2014-15 classmates. Thus, girls

⁵ Caliper is a maximum standard deviation of the distance measure permitted between matched groups.

⁶ Austin, Peter C., "Optimal caliper widths for propensity-score matching when estimating differences in means and differences in proportions in observational studies," *Pharmaceutical Statistics*, vol. 10, no. 2, March/April 2011, pp. 150-161.

were slightly more likely than girls to seek out services and programs from the GEAR UP program to help them advance in school and college.

Numerous research studies have documented a clear and growing gender gap in postsecondary attainment with females more likely than males to stay in school, graduate high school, enroll in college, and graduate with a college degree.⁷ A National Student Clearinghouse report documented a 7.1 percentage point higher six-year college completion rate among women compared to men in the cohort of students who had first enrolled in college in fall of 2016 (65.6 percent six-year completion rate among females versus 58.5 percent among males).⁸

Given the better educational performance of female students compared to male students, any differences between Onward participants and the comparison group in gender composition is likely to bias estimates of impact. A proper balance between the gender composition of Onward participants and the PSM matched comparison group is necessary to ensure that the educational advantage of Onward participants is not attributable to higher/lower shares of males/females among participants compared to their classmates. Our selection of the matched comparison group achieved a better balance in the gender distribution of the two groups. While Onward

Table 4:
Percentage Distribution of the SY 2014-15 Cohort of Onward We Learn GEAR UP
Participants and their Non-Participating Classmates, by Gender
(All and Matched Comparison Group)

	BEFORE MATCHING			AFTER MATCHING		
	GEAR UP Participants	All Non-Participating Classmates	Difference (Percentage Points)	GEAR UP Participants	Matched Comparison Group of Non-Participating Classmates	Difference (Percentage Points)
Total Number	591	7,478	---	591	591	---
Percent of Total:						
Female	50.4	47.6	2.8	50.4	49.7	0.7
Male	49.6	52.4	-2.8	49.6	50.3	-0.7

⁷ Martha J. Bailey and Susan M. Dynarski, “Gains and Gaps: Changing Inequality in U.S. College Entry and Completion,” National Bureau of Economic Research, Working Paper 17633, Cambridge, Massachusetts, December 2011.

⁸ Causey, J., Lee, S., Ryu, M., Scheetz, A., & Shapiro, D., Completing College: National and State Report with Longitudinal Data Dashboard on Six- and Eight-Year Completion Rates. (Signature Report 21), Herndon, VA: National Student Clearinghouse Research Center, November 2022. Retrieved from: https://nscresearchcenter.org/wp-content/uploads/Completions_Report_2022.pdf.

participants were slightly more likely to be female than their classmates (50.4% versus 47.6%), the post-matching gap in the female share between the two groups was much smaller (50.4% female among Onward participants and 49.7% female among the matched comparison group) (Table 4).

Race-Ethnicity

Research literature has found that college enrollment and success rates vary by race-ethnicity. While gaps between the college enrollment rates of African-American and Hispanic high school graduates and their white peers have narrowed over the last decade, inequalities between race groups still remain.⁹ Students who are African-American or Hispanic have consistently been found to be less likely to continue their education to the postsecondary level than their peers who are white.¹⁰ Nationally, while 38.3 percent of 18-24 year old whites were enrolled in college in 2021, 36.7 percent of their Hispanic peers and just 33.4 percent of their African-American peers were enrolled.¹¹ These uneven enrollment rates by race-ethnicity are also reflected in college graduation outcomes. Recent national data finds that while nearly 68 percent of white students and about 73 percent of Asian students who started college in fall 2014 completed two or four year colleges within six years, only four out of ten African-American students (41.9%) and just half of all Hispanic students (67.7%) who had enrolled in fall 2014

⁹ Baum, Sandy, Jennifer Ma, and Kathleen Payea, *Education Pays 2013: The Benefits of Higher Education for Individuals and Society*, New York, NY: College Board, 2013.

¹⁰ ACT. *Crisis at the Core: Preparing All Students for College and Work*. Iowa City, IA. 2004; Allensworth, Elaine M. *Update to: From High School to the Future, a First Look at Chicago Public School Graduates' College Enrollment, College Preparation, and Graduation from Four-Year Colleges*, Chicago, IL: Consortium on Chicago School Research at the University of Chicago, October 2006; Aughinbaugh, Alison, "Who Goes to College? Evidence from NLSY97," *Monthly Labor Review Online*, 131(8) (August 2008): 33-43. Retrieved from: <http://www.bls.gov/opub/mlr/2008/08/art3abs.htm>; Fry, Richard. *Hispanics in Higher Education: Many Enroll, Too Few Graduate*, Washington, DC: Pew Hispanic Center, 2002; Knaggs, Christine M., Toni A. Sondergeld, and Becky Schardt, "Overcoming Barriers to College Enrollment, Persistence, and Perceptions for Urban High School Students in a College Preparatory Program," *Journal of Mixed Methods Research*, July 29, 2013; McDonough, Patricia M. *The School-to-College Transition: Challenges and Prospects*, Washington, DC: American Council on Education, Center for Policy Analysis, 2004; Perna, Laura W., and Marvin A. Titus "The Relationship between Parental Involvement as Social Capital and College Enrollment: An Examination of Racial/Ethnic Group Differences," *Journal of Higher Education*, 76(5) (2005): 485-518; Roderick, Melissa, Jenny Nagaoka, Vanessa Coca, Eliza Moeller; with Karen Roddie, Jamilliyah Gilliam, and Desmond Patton, *From High School to the Future: Potholes on the Road to College*, Chicago, IL: Chicago Consortium on Chicago Schools Research at the University of Chicago, 2008; Ross, Terris, Grace Kena, Amy Rathbun, Angelina Kewal Ramani, Jijun Zhang, Paul Kristapovich and Eileen Manning, *Higher Education: Gaps in Access and Persistence Study*, Washington, DC: National Center for Education Statistics, August 2012.

¹¹ National Center for Educational Statistics, Institute of Educational Sciences, *Digest of Education Statistics:2022*, Table 302.60. Retrieved from: https://nces.ed.gov/programs/digest/d22/tables/dt22_302.60.asp?current=yes.

completed two-year or four-year college within six years.¹² While there are numerous reasons that could underlie these differences in college outcomes, perhaps the most important are that African-American and Hispanic students are more likely than their white peers to: come from low-income backgrounds, be immigrants, come from single parent or blended families, and have parents who have low levels of educational attainment and did not attend college. All of these traits are found to have a negative impact on the likelihood of earning a college degree.¹³ Indeed these traits as a group have been coined “status risk factors” in the education literature: personal demographic and socioeconomic characteristics that are associated with an increased likelihood of adverse education outcomes, including lower rates of college enrollment, persistence, and graduation.¹⁴

An examination of the race-ethnicity of Onward participants and their classmates (Table 5) shows a sizable difference between the two groups with Onward participants more likely to be non-white than their non-participant classmates. Although the largest race-ethnicity group among Onward participants as well as their classmates consisted of Hispanic students, the share of

¹² Causey, J., Huie, F., Lang, R., Ryu, M., & Shapiro, D., *Completing College 2020: A National View of Student Completion Rates for 2014 Entering Cohort (Signature Report 19)*, Herndon, VA: National Student Clearinghouse Research Center, Herndon, VA: National Student Clearinghouse Research Center, December 2020.

¹³ Allensworth, 2006, *Ibid.*; Erisman, Wendy, and Shannon Looney, *Opening the Door to the American Dream: Increasing Higher Education Access and Success for Immigrants*, Washington, DC: A Report by the Institute for Higher Education Policy supported by the Lumina Foundation for Education, April 2007; Horn, Laura. *Stopouts or Stayouts? Undergraduates Who Leave College in Their First Year*, Washington, DC: National Center for Education Statistics, United States Department of Education, 1998; Kuh, George. D., Jillian Kinzie, Jennifer A. Buckley, Brian K. Bridges, and John C. Hayek, *What Matters to Student Success: A Review of the Literature*, Commissioned Report for the National Symposium on Postsecondary Student Success: Spearheading a Dialog on Student Success, Bloomington, IN: Indiana University Center for Postsecondary Research, 2006; Nunez, Anne-Marie, and Stephanie Cuccaro-Alamin. *First-Generation Students: Undergraduates Whose Parents Never Enrolled in Postsecondary Education*. Washington, DC: National Center for Education Statistics, June 1998; Pathways to College Network. *A Shared Agenda: A Leadership Challenge to Improve College Access and Success*, Washington, DC: Institute for Higher Education Policy, 2004. Retrieved from <http://files.eric.ed.gov/fulltext/ED514440.pdf>; Ross, et al., 2012, *Ibid*; Terenzini, Patrick T., Alberto F. Cabrera, and Elena M. Bernal, *Swimming Against the Tide: The Poor in American Higher Education (Research Report 2001-1)*, New York, NY: The College Board, 2001; Tornatzky, Louis, Richard Cutler, and Jongho Lee, *College Knowledge: What Latino Parents Need to Know and Why They Don't Know It*, Los Angeles, CA: Tomas Rivera Policy Institute, 2002.

¹⁴ Braswell, James S., Anthony D. Lutkus, Wendy S. Grigg, Shari L. Santapau, Brenda S.H. Tay-Lim, and Matthew S. Johnson, *The Nation's Report Card: Mathematics 2000* (NCES No. 2001–517), Washington, DC: National Center for Education Statistics, United States Department of Education, 2001; Grigg, Wendy S., Mary C. Daane, Ying Jin, and Jay R. Campbell, *The Nation's Report Card: Reading 2002* (NCES No. 2003–521), Washington, DC: National Center for Education Statistics, United States Department of Education, 2003; Kaufman, Philip, Martha Naomi Alt, and Christopher D. Chapman, *Dropout Rates in the United States: 2000* (NCES No. 2002–114), Washington, DC: National Center for Education Statistics, United States Department of Education, 2001; Persky, Hilary R., Mary C. Daane, and Ying Jin, *The Nation's Report Card: Writing 2002* (NCES No. 2003–529), Washington, DC: National Center for Education Statistics, United States Department of Education, 2003; Ross, et al., 2012, *Ibid*.

Hispanic students was higher among Onward participants (70.4%) than among their non-participating classmates (47.2%). In contrast, Onward participants had only a slightly higher share of Black students relative to their classmates (20.0% versus 18.9%). The share of White students was much lower among Onward participants compared to their SY 2014-15 sixth/seventh grade classmates (7.1% versus 26.3%).

Table 5:
Percentage Distribution of the SY 2014-15 Cohort of Onward We Learn GEAR UP Participants and their Non-Participating Classmates, by Race-Ethnicity (All and Matched Comparison Group)

	BEFORE MATCHING			AFTER MATCHING		
	GEAR UP Participants	All Non-Participating Classmates	Difference (Percentage Points)	GEAR UP Participants	Matched Comparison Group of Non-Participating Classmates	Difference (Percentage Points)
Total Number	591	7,478	---	591	591	---
Percent of Total:						
Non-Hispanic Black	20.0	18.9	1.0	20.0	20.1	-0.2
Hispanic	70.4	47.2	23.2	70.4	70.2	0.2
Non-Hispanic White	7.1	26.3	-19.2	7.1	7.1	0.0

Given the sharp differences between the race-ethnicity traits of Onward participants and their classmates, a part of any difference in their educational outcomes could be due to the difference in their race-ethnicity characteristics that may result in biased estimates of the impact of the Onward GU program. The selection of a comparison group of classmates with similar race-ethnicity traits is necessary to produce unbiased estimates of the impact of the Onward GU program. The PSM-based selection of 591 classmates of Onward participants as the comparison group brought about balanced race-ethnicity traits of the two groups. The share of each of the four race-ethnicity groups was the same among the 591 students in the matched comparison group as it was among the 591 Onward participants (Table 5, After Matching).

Special Education Status (Individualized Education Plan)

Research evidence shows that for a wide variety of reasons, students with disabilities are less likely to remain in school, graduate high school, and enroll in college than students without disabilities. Among college-bound students, research has found a lower rate of college completion among students with disabilities than among students without disabilities.

Although students with disabilities are now more likely to enroll in college than in the past, research demonstrates that they continue to suffer a disadvantage compared to their peers without disabilities.¹⁵ Analysis of the National Longitudinal Transition Survey found that 45 percent of youth with disabilities had enrolled in a postsecondary program at the time of the survey, compared with 53 percent of youth in the general population.¹⁶ After adjusting for a variety of other background traits, earlier research that we conducted found that vocational public high school graduates in Massachusetts who had disabilities were about 10 to 12 percentage points less likely to enroll in college compared to graduates without disabilities.¹⁷ In addition, students with disabilities who enroll in college are less likely to complete and earn a credential. Only 34 percent of students with disabilities who were working towards a bachelor's degree were able to graduate in eight years compared to 52 percent among students without disabilities.¹⁸

Although a successful transition into college can be difficult for many students, this transition can be particularly challenging for students with disabilities who may encounter additional obstacles, both attitudinal and physical, that they must negotiate in order to successfully move forward in their education, especially if their disability is of a particularly severe nature.¹⁹ Unlike in high school where (under the Individuals with Disabilities Education

¹⁵ United States Government Accountability Office, *Higher Education and Disability: Education Needs a Coordinated Approach to Improve its Assistance to Schools in Supporting Students*, Washington, DC: Report to the Chairman, Committee on Education and Labor, House of Representatives, October 2009.

¹⁶ Newman, Lynn, Mary Wagne, Renee Cameto, and Anne-Narie Knokey, *The Post-High School Outcomes of Youth with Disabilities up to 4 Years After High School*, A Report from the National Longitudinal Transition Study-2 (NLTS2). Washington, DC: National Center for Special Education Research, April 2009.

¹⁷ Harrington, Paul E., Neeta P. Fogg, and Christine Shaw, *White Paper: College Access and Retention of Career and Technical Education Graduates*, Cambridge, MA: Rennie Center for Education Research and Policy, 2009.

¹⁸ Brand, Betsy, Andrew Valent, and Louis Danielson, *Improving College and Career Readiness for Students with Disabilities*, College & Career Readiness & Success Center at American Institutes for Research, Washington DC, March 2013. Retrieved from <http://www.ccrscenter.org/sites/default/files/Improving%20College%20and%20Career%20Readiness%20for%20Students%20with%20Disabilities.pdf>.

¹⁹ Pathways to College Network, 2004. *Ibid*.

Act (IDEA)) the burden falls upon the school to find and serve students who have a disability, in higher education the burden is on the student to find appropriate services and navigate their way through the postsecondary education system.²⁰

The special education status of Onward participants in the sixth and seventh grade (during school year 2014-15) was different from that of their classmates. Special education students (those with an IEP-Individualized Education Program) made up a smaller share of sixth/seventh grade Onward participants compared to their classmates; 12.5 percent among Onward participants versus 15.2 percent among their classmates (Table 6).

We expected a greater interest in the GEAR UP program among parents of special education students who are more likely to seek out services that would assist their children in school particularly in academic areas and in furthering their education. So, this finding is somewhat surprising. One explanation may be the case that parents of special education students are more focused and engaged in the immediate education and accommodation needs of their child, particularly in the sixth/seventh grade when college is a more distant goal.

Table 6:
Percentage of the SY 2014-15 Cohort of Onward We Learn GEAR UP Participants and their Non-Participating Classmates with an Individualized Education Plan (IEP) in SY 2014-15 (All and Matched Comparison Group)

	BEFORE MATCHING			AFTER MATCHING		
	GEAR UP Participants	All Non-Participating Classmates	Difference (Percentage Points)	GEAR UP Participants	Matched Comparison Group of Non-Participating Classmates	Difference (Percentage Points)
Total Number	591	7,478	---	591	591	---
Percent of Total:						
With IEP in SY 2014-15	12.5	15.2	-2.7	12.5	12.4	0.1

Different shares of students with disabilities among Onward participants compared to their classmates requires the selection of a matched comparison group to produce unbiased

²⁰ Wolanin, Thomas R., and Patricia E. Steele, *Higher Education Opportunities for Students with Disabilities: A Primer for Policymakers*, Washington, DC: The Institute for Higher Education Policy, 2004.

estimates of the impact of the GEAR UP program because of the systematic differences between the educational outcomes of students with and without disabilities. To produce unbiased estimates of the impact of the Onward GU program on student outcomes, the comparison group should have a similar share of students with disabilities. The matched comparison group of sixth/seventh grade classmates of Onward participants that we have selected using the PSM method has nearly the same share of special education students as Onward participants (12.4% among the comparison group versus 12.5% among Onward participants) (Table 6).

Free or Reduced-Price School Lunch

Another trait of students that is found to be closely related to their postsecondary educational outcomes is their economic status. Students from low-income backgrounds have consistently been found to be less likely to enroll in college than their financially better-off peers.²¹ In 2016, about 65 percent of high school graduates from the lowest and middle income families were enrolled in college compared to 82.5 percent of those from families with the highest income.²² Research of vocational and comprehensive high school graduates in Massachusetts found that graduates from low-income families (those who were eligible to participate in the free or reduced-price school lunch (FRL) program) were between 7 and 11 percentage points less likely to enroll in college than their counterparts who were not eligible to participate in the FRL program (after statistically controlling for other background variables).²³

Research studies have also consistently found a significant negative association between the likelihood of persisting in college and a student's family income: that is, high-income students are more likely to persist and graduate from college than their low-income peers.²⁴

²¹ Hossler, Don, and Sue Maple, "Being Undecided about Postsecondary Education," *Review of Higher Education*, 16(3) (1993): 285-307; Pathways to College Network, 2004, *Ibid*; Stage, Francis K., and Don Hossler, "Where is the Student? Linking Student Behaviors, College Choice, and College Persistence," In *Reworking the Student Departure Puzzle*, edited by John M. Braxton, 170-195. Nashville, TN: Vanderbilt University Press, 2000; St. John, Edward P., and Jay Noell, "The Effects of Student Financial Aid on Access to Higher Education: An Analysis of Progress with Special Consideration of Minority Enrollment," *Research in Higher Education*, 30(6) (1989): 563-582; Terenzini et al., 2001 *Ibid*.

²² Thomas D. Snyder, Cristonal de Brey, and Sally A. Dillow, *Digest of Education Statistics 2017 (NCES 2018-070)*, National Center for Education Statistics, Institute of Education Sciences, U.S. Department of Education, 2019, Table available in NCES Web site, https://nces.ed.gov/programs/digest/d17/tables/dt17_302.30.asp

²³ Harrington, Fogg, and Shaw, 2009 *Ibid*

²⁴ Adelman, Clifford. *The Toolbox Revisited: Paths to Degree Completion from High School Through College*. Washington, DC: United States Department of Education, 2006; Astin, Alexander W., and Leticia Oseguera, "Pre-College and Institutional Influences on Degree Attainment," In *College Student Retention: Formula for Student Success*, edited by Allen Seidman, 245-276. Westport, CT: Praeger Press, 2005; Harrington, Fogg, and Shaw, 2009 *Ibid*; Kinnick, Mary K., and Ken Kempner, "Beyond "Front Door" Access: Attaining the Bachelor's Degree,"

Baum, Ma, and Payea found that not only is the percentage of six-year bachelor's degree completion among college-enrolled students from the highest family income quintile twice as high as the percentage of their counterparts from the lowest family income quintile, but that the likelihood of students from the highest income quintile of exiting college without a credential is less than half that of their counterparts from the lowest family income quintile.²⁵ Our study of vocational high school graduates in Massachusetts found that students who had been eligible for free or reduced-price school lunch in high school were likely to persist through the college freshman year at a rate that was 10 to 11 percentage points below that of students who were not eligible for free or reduced-price school lunch (after statistically controlling for other student traits known to affect college freshman year retention).²⁶

Large shares of sixth/seventh graders in the GEAR UP school districts were receiving free or reduced-price school lunch, which is not surprising since the GEAR UP program is targeted to serve students from low-income school districts. However, Onward participants were 13 percentage points more likely than their classmates to receive free or reduced-price school lunch (FRL) in SY 2014-15, 93.7 percent among Onward participants²⁷ versus 80.4 percent among their sixth/seventh grade classmates. Among the matched comparison group of 591 classmates, 93.7 percent of students with free or reduced-price school lunch in SY 2014-15, identical to the FRL share in SY 2014-15 among Onward participants. The matched comparison group is perfectly balanced on this measure (Table 7).

Research in Higher Education, 29(4) (1988): 299-318; Lotkowski, Veronica A., Steven B. Robbins, and Richard J. Noeth, *The Role of Academic and Non-Academic Factors in Improving College Retention*. Iowa, IA: ACT Policy Report, 2004; Peltier, Gary L., Rita Laden, and Myrna Matranga, "Student Persistence in College: A Review of Research". *Journal of College Student Retention*, 1 (1999): 357-376; Robbins, Steven B., Kristy Lauver, Huy Le, Daniel Davis, and Ronelle Langley, "Do Psychosocial and Study Skill Factors Predict College Outcomes? A Meta-Analysis." *Psychological Bulletin*, 130(2) (2004): 261-288; Terenzini, Cabrera, and Bernal, 2001 *Ibid*.

²⁵ Baum, Ma, and Payea, 2013 *Ibid*.

²⁶ Harrington, Fogg, and Shaw, 2009 *Ibid*.

²⁷ The less than 100% share of Onward participants who received free or reduced-price school lunch in the sixth grade (Table 7) is partly attributable to the use of administrative data that are constructed from data submitted by individual schools and subject to errors in submission and in compilation and rule-based changes of problems identified by data quality checks. Furthermore, application for enrollment in the GEAR UP program requires that the student be eligible for FRL at the time of the application. It is likely that a student who was eligible at the time of application (summer before the sixth grade) might not be eligible during the school year of their sixth grade. It is also likely that some of these sixth/seventh grade students did not participate in the FRL program even though their family income was below the threshold level for eligibility.

Table 7:
Percentage of the SY 2014-15 Cohort of Onward We Learn GEAR UP Participants and their
Non-Participating Classmates with Free or Reduced-Price School Lunch (FRL) in SY 2014-
15 (All and Matched Comparison Group)

	BEFORE MATCHING			AFTER MATCHING		
	GEAR UP Participants	All Non-Participating Classmates	Difference (Percentage Points)	GEAR UP Participants	Matched Comparison Group of Non-Participating Classmates	Difference (Percentage Points)
Total Number	591	7,478	---	591	591	---
Percent of Total:						
With FRL in SY 2014-15	93.7	80.4	13.3	93.7	93.7	0.0

Attendance

While academic proficiency is closely connected with success in secondary and postsecondary education, non-cognitive traits and behaviors that students develop during high school have also been found to be important determinants of their likelihood of enrolling in college and persisting in college; especially those behaviors that relate closely to a student’s academic engagement and their commitment to schoolwork.²⁸

Regular participation in the form of attendance greatly improves learning outcomes. Students who attend class regularly are expected to perform well in school; learn more and retain more information, get better grades, and stay in school and complete the program of study. Better attendance reveals positive traits of students such as discipline, motivation to learn, better study habits, and persistence. Attendance is found to be one of the strongest indicators of a student’s commitment and academic engagement.²⁹

²⁸ Finn, Jeremy D., *The Adult Lives of At-Risk Students: The Roles of Attainment and Engagement in High School*, Washington, DC: United States Department of Education, National Center for Education Statistics, March 2006; ACT, 2007, *Ibid*.

²⁹ Sparks, Sarah, Districts Begin Looking Harder at Absenteeism, *Education Week*, October 6, 2010. Retrieved from: http://www.edweek.org/ew/articles/2010/10/01/06absenteeism_ep.h30.html; Fredricks, Jennifer A., Phyllis C. Blumenfield, and Alison H. Paris, School Engagement: Potential of the Concept: State of the Evidence, *Review of Educational Research*, 74, 2004, pp.59-119; Horn, Laura, Xianglei Chen, and Clifford Adelman, *Toward Resiliency: At-Risk Student Who Make it to College*, Washington, DC: Office of Educational Research and Improvement, United States Department of Education, 1998; Roderick et al. 2009, *Ibid*.

Conversely, students who frequently miss attending school or classes not only miss important class work but also lose access to teachers and peers who can improve their learning approaches and attitudes such as developing strong study skills, taking better class notes, utilizing information resources, increasing attention, and improving communication skills, getting more involved in school activities, and developing better educational aspirations.³⁰

Attendance is frequently used as a key early warning indicator of academic as well as non-academic trouble placing the student at a higher risk of dropping out. Excessive absenteeism is found to be a strong predictor of dropping out of school.³¹ Many secondary schools and even some postsecondary schools use attendance to identify students who might be having problems that interfere with their education and put in place interventions to guide and assist students to deal with the problem.

Since attendance in school correlates to better engagement in school and higher academic achievement, higher attendance rates in secondary school is found to better-prepare students for college and increase their likelihood of not just enrolling in college but also of persisting in college once they are there.³² Among students who do enroll in college, the more demanding academic environment of college that is built upon different expectations compared to high school pose a challenge to persistence.

Developing the habit of regular attendance and positive traits such as discipline, motivation to learn, better study habits, and persistence can ensure that students are prepared to successfully negotiate the challenging transition to college and persist in college. Indeed analysis of comprehensive and vocational public high school graduates in Massachusetts, found that after statistically controlling for other background traits and academic proficiency, a one percentage point deficit in a student's annual rate of attendance is estimated to reduce the probability of college attendance by about a percentage point, while it reduces their likelihood of persisting in college for their freshman year by 0.5 to 1.3 percentage points.³³

³⁰ Hossler, Don, and Frances K. Stage, Family and High School Experience Influences on the Postsecondary Educational Plans of Ninth-Grade Students, *American Educational Research Journal*, 29(2), 1992, pp. 425-451.

³¹ Kennelly, Louis and Maggie Monrad, *Approaches to Dropout Prevention: Heeding Early Warning Signs with Appropriate Interventions*, National High School Center at the American Institutes for Research, October 2007.

³² Finn, 2006, *Ibid*; ACT, 2007, *Ibid*.

³³ Dickson, 2011 *Ibid*.

The sixth/seventh grade mean attendance rate of Onward participants from the SY 2014-15 cohort was 3.7 percentage points higher than the attendance rate of their classmates (95.2% versus 91.5%). The sixth/seventh grade attendance rate of the 591 students selected to serve as the matched comparison group of 95.2 was identical to the 95.2 percent attendance rate of Onward participants. Students in the PSM-based matched comparison group on average attended school about 173 out of 180 days potential days of attendance in SY 2014-15, the same number of days of attendance as Onward participants (Table 8).

Table 8:
Attendance Rate of the SY 2014-15 Cohort of Onward We Learn GEAR UP Participants and their Non-Participating Classmates in SY 2014-15
(All and Matched Comparison Group)

	BEFORE MATCHING			AFTER MATCHING		
	GEAR UP Participants	All Non-Participating Classmates	Difference (Percentage Points)	GEAR UP Participants	Matched Comparison Group of Non-Participating Classmates	Difference (Percentage Points)
Total Number	591	7,478	---	591	591	---
Attendance rate in SY 2014-15	95.2	91.5	3.7	95.2	95.2	0.0

Academic Proficiency

Empirical literature and research on the strong connection between student academic preparation and college enrollment abounds.³⁴ Academic achievement is considered to be one of the most important predictors of whether a student will enroll in college and later persist and graduate with a college credential. From an enrollment standpoint, academic performance is one of the more important criteria upon which colleges make admission decisions, at least at four-year public and non-profit degree granting institutions.³⁵ In addition, high school performance may also trigger an entire range of other responses to the student that, in turn, influence their decision of whether to enroll in college. For example, a student with a good academic record may be more likely to receive more encouragement to continue their education from teachers,

³⁴ To list a few: ACT, 2007, *Ibid*; Adelman, 1999, Alexander et al. 1982; Allensworth 2006; Cabrera and La Nasa, 2002; Daugherty and Lane, 1999; Horn, 1998; Perna, 2004; Thomas et al., 1979

³⁵ Hossler et al., 1999; Perna, 2000; Stage and Hossler, 2000, Chapman, 1981.

family, and friends. They may also be more likely to receive college advising from their guidance counselor, as well as be offered more generous financial aid and college scholarship packages.³⁶

From a retention standpoint, numerous scholars in the education field have argued that academic performance in high school is the best predictor of success in college. It has been argued that it is unrealistic to expect that students who have consistent patterns of poor academic performance in high school will be able to perform well in their college classes and persist within the postsecondary system; since it is unlikely that these students will have developed the kinds of study skills, effort and mastery of material necessary to handle the academic demands of college.³⁷

Recent data suggests that this is a pressing issue as increasing numbers of students are completing high school, but are unprepared for the academic demands of college, placing them at an elevated risk of dropping out. In her study of the higher education opportunity gap, Sawhill states that even though the 2009 National Assessment of Educational Progress data found only a small fraction of high school seniors are at or above proficiency in math and reading (26% and 38%, respectively), roughly two-thirds of high school graduates enroll in college.³⁸ Consequently, it is not surprising that in 2015-16, thirty-nine percent of undergraduates reported taking a remedial course after high school graduation.³⁹ Furthermore, as the number of remedial courses increases, so do the odds that a student will drop out. Kuh, et al. found that of those students in four-year colleges who have to take three or more remedial classes, more than one-fourth drop out after their first year.⁴⁰ Recent research has found no connection between completing remedial courses and college persistence and graduation. Remediation at the post-

³⁶ Chapman, David W., "A Model of Student College Choice." *The Journal of Higher Education*, 52(5) (1981): 490-505.

³⁷ Nagaoka, Jessica, Melissa Roderick, and Vanessa Coca, *Barriers to College Attainment: Lessons from Chicago*. Chicago, IL: The Consortium on Chicago School Research at the University of Chicago, January 2009; Allensworth, 2006, *Ibid*.

³⁸ Sawhill, Isabel V., *Higher Education and the Opportunity Gap*, Washington, DC: Brookings Institute, October 2013.

³⁹ National Center for Educational Statistics, U.S. Department of Education, *Profile of Undergraduate Students: Attendance, Distance and Remedial Education, Degree Program and Field of Study, Demographics, Financial Aid, Financial Literacy, Employment, and Military Status: 2015-16*, Table 1.7, January 2019. Retrieved from <https://nces.ed.gov/pubs2019/2019467.pdf>.

⁴⁰ Kuh et al. 2006, *Ibid*.

secondary level does not seem to improve students' chances of remaining in or completing college.⁴¹

Education researchers use different measures to gauge academic preparation and proficiency. Many of these studies are focused on the connection between the academic preparation of high school graduates and their college outcomes. Some of the commonly used measures of academic preparation include high school grade point average, class rank, participation in a vigorous and challenging academic curriculum while in high school, class rank, college admission test scores (SAT, ACT, etc.) and high school exit standardized test scores. While each of these measures of academic preparation and proficiency are strongly connected with postsecondary success, research studies have not yet reached a consensus as to which particular measure of a student's high school academic preparation and proficiency is the strongest predictor of their chances of postsecondary success.

This research study and the PSM-based selection of a comparison group required the measurement of the academic proficiency of sixth graders. While sixth grade is considered to be far removed from high school and college, academic preparation is path dependent, meaning that students with stronger academic proficiencies in the sixth grade are more likely (than their peers with weaker academic skills) to also do well in higher grades, building a strong academic foundation that in turn increases their likelihood of success in college.

The decision regarding a measure of academic proficiency was restricted by data availability. While we did not have access to many of the measures of academic proficiency listed above in our unit record files, we did have unit record information on one important measure of academic preparation and proficiency of the SY 2014-15 cohort of Onward participants and their classmates: their performance on the sixth/seventh grade PARCC (standardized test) English Language Arts (ELA) test.

⁴¹ DeNitto, James, Paul Harrington, and Neeta Fogg, "Factors of One-Year College Retention in a Public State College System," *Research in Higher Education Journal*, Vol. 27, January 2015; Roska, Josipa, Davis Jenkins, Shanna Smith Jaggars, Matthew Zeidenberg, and Sung-Woo Cho, *Strategies for Promoting Gatekeeper Course Success Among Students Needing Remediation: Research Report for the Virginia Community College System*, Community College Research Center, Teachers College, Columbia University, New York, November 2009. Retrieved from: <http://ccrc.tc.columbia.edu/media/k2/attachments/strategies-promoting-gatekeeper-course.pdf>; Scott-Clayton, Judith and Olga Rodriguez, *Detour, Diversion, or Discouragement? New Evidence on the Effects of College Remediation*, NBER Working Paper No. 18328, Cambridge, Massachusetts. Retrieved from <http://www.nber.org/papers/w18328>.

The performance of Onward participants on the sixth/seventh grade NECAP reading test was considerably better than that of their sixth/seventh grade classmates. Performance on the sixth/seventh grade PARCC ELA test placed nearly 23 percent of Onward participants in the two highest levels (met or exceeded expectations), compared to 17.5 percent of their classmates (Table 9). Onward participants also had a higher share who scored in the third highest level (approached expectations) relative to their classmates (27.6% of Onward participants versus 22.8% of their classmates).

The lowest two levels of performance on the PARCC ELA test (partially met expectations or did not meet expectations) accounted for about the same share of Onward participants as their sixth/seventh grade classmates (47% of Onward participants versus 46.1% of their sixth/seventh grade classmates). The classmates of Onward participants were considerably more likely than Onward participants to not take the PARCC ELA test, obtain a waiver, or have a missing test score (2.9% of Onward participants versus 13.4% of their classmates).

Table 9:
Percentage Distribution of the SY 2014-15 Cohort of Onward We Learn GEAR UP Participants and their Non-Participating Classmates, by Performance on the Sixth/Seventh Grade PARCC ELA Test (All and Matched Comparison Group)

	BEFORE MATCHING			AFTER MATCHING		
	GEAR UP Participants	All Non-Participating Classmates	Difference (Percentage Points)	GEAR UP Participants	Matched Comparison Group of Non-Participating Classmates	Difference (Percentage Points)
Total Number	591	7,478	---	591	591	---
Percent of Total by Level of Sixth/Seventh Grade PARCC ELA Test Score						
Did not meet expectations	22.0	23.3	-1.3	22.0	23.5	-1.5
Partially met expectations	25.0	22.9	2.1	25.0	25.0	0.0
Approached expectations	27.6	22.8	4.8	27.6	27.6	0.0
Met expectations	20.3	15.1	5.2	20.3	20.3	0.0
Exceeded expectations	2.2	2.4	-0.2	2.2	0.7	1.5
Did not take the test, waiver, or missing	2.9	13.4	-10.5	2.9	2.9	0.0

The need to select a matched comparison group for balance in pre-program academic proficiency is clear. The pre-program academic proficiency advantage of Onward participants would produce biased estimates and likely substantially overestimate the impact of the Onward GU program if the educational outcomes of Onward participants would be compared with those of all 7,478 of their sixth/seventh-grade classmates. With the PSM-based selection of 591 students out of 7,478 classmates to serve as a comparison group we were able to balance the academic proficiency of Onward participants with the comparison group. The distribution of the 591 students in the matched comparison group across the five levels and missing category of the sixth/seventh grade PARCC ELA test was almost identical to the distribution of Onward participants across these levels (Table 9).

School Quality/Climate

Our original evaluation research program was designed to select the matched comparison group students from the sixth/seventh grade classmates of Onward participants enrolled at the same school. We had selected this approach to control for variations in school quality and school climate that exists across schools - even within districts in Rhode Island. However, the small number of students in several of the middle schools in which Onward participants from the SY 2014-15 cohort were enrolled, prevented us from restricting the selection of the comparison group students from the same school. Instead, we combined the 21 middle schools in which the SY 2014-15 cohort of Onward participants were enrolled into four ‘climate’ groups. These four climate groups were established based on a composite index for each school that we constructed from the following five measures:

- school stability rate (low turnover of students),
- school attendance rate,
- the share of students in the school that met or exceeded expectations on the PARCC ELA test,
- the share of students in the school with free or reduced-price school lunch, and
- the share of race-ethnic minority students in the school.

Each student was assigned to a school quality/climate quartile based on the composite index measure developed for their school. Table 10 presents the distribution of the SY 2014-15 cohort of 591 Onward participants, their 7,478 classmates, and a subset of these classmates (591)

selected to serve as the matched comparison group, by the school quality/climate index quartile in which their school was placed. A sizable share of both Onward participants and their classmates were concentrated in the lowest quality/climate schools. About 38 percent of Onward participants and 46.3 percent of their classmates were attending one of the middle schools that were in the lowest quartile of the index of school quality and climate. Another 32 percent of Onward participants and 28.5 percent of their classmates were enrolled in schools that were in the second lowest quartile of school quality and climate. Only 2.7 percent of Onward participants were enrolled in schools that were in the highest quartile of school quality and climate compared to 6.4 percent of their classmates.

There were wide ranging differences (from -8.5 to +9.3 percentage points) in the distribution of Onward participants and their 7,478 classmates across the four quartiles of school quality and climate. After PSM-based selection of a matched comparison group of 591 students from the 7,478 classmates, the distribution among Onward participants and the matched comparison group across quartiles of school quality and climate index were identical (Table 10).

Table 10:
Percentage Distribution of the SY 2014-15 Cohort of Onward We Learn GEAR UP Participants and their Non-Participating Classmates, by School Quality/Climate Quartile (All and Matched Comparison Group)

	BEFORE MATCHING			AFTER MATCHING		
	GEAR UP Participants	All Non-Participating Classmates	Difference (Percentage Points)	GEAR UP Participants	Matched Comparison Group of Non-Participating Classmates	Difference (Percentage Points)
Total Number	591	7,478	---	591	591	---
Percent of Total Students by Quartile of School Quality/Climate Index:						
Students attending a sixth/seventh grade school in the lowest quartile	37.7	46.3	-8.5	37.7	37.7	0.0
Second quartile	31.5	28.5	3.0	31.5	31.5	0.0
Third quartile	28.1	18.8	9.3	28.1	28.1	0.0
Highest quartile	2.7	6.4	-3.7	2.7	2.7	0.0

Estimates of Impact

In this section we present estimates of impact of the Onward GEAR UP program on four key educational outcomes of participants. These outcomes include:

- on-time grade attainment and attrition,
- on-time high school graduation,
- immediate college enrollment among high school graduates, and
- a cumulative outcome measure of immediate college enrollment as a percent of all 591 Onward participants and all 591 matched comparison students.

We present these outcomes for 591 Onward participants from the SY 2014-15 cohort and the 591 matched comparison group students that were selected from their sixth and seventh grade classmates. We also present the difference in each outcome measure between the two groups along with the statistical significance of the difference. A statistically significant difference between the outcome of Onward participants and the PSM-based matched comparison group is attributable to the Onward GEAR UP program and represents the impact of the GEAR UP program on that outcome. Estimates of impact are presented for all participants and for selected subgroups of participants.

On-Time Grade Attainment

Academic performance is generally considered to be the single most important predictor of whether a student drops out or graduates from high school. Promotion from one grade to the next requires that students demonstrate academic proficiency and pass a certain number of classes to earn sufficient credits needed to complete a grade. Students with a poor academic performance fail to earn sufficient credits and are retained in the same grade and continue to be retained until they earn sufficient credits. The research literature consistently finds grade retention to be a predictor of whether students graduate high school. While grade retention by itself cannot be considered a cause of dropping out, the grade retention measure is closely connected to factors such as poor academic performance, lack of motivation, poor engagement in school, and negative behavioral traits that ultimately contribute to dropping out.⁴²

⁴² Rumberger, Russel W., *Dropping Out: Why Students Drop Out of High School and What Can be Done About It*, Boston, MA: Harvard University Press, October 2011; Burrus, Jeremy and Richard D. Roberts, *Dropping Out of High School: Prevalence, Risk Factors, and Remediation Strategies*, Educational Testing Service, R & D

The expected high school graduation date of the cohort of GEAR UP participants and their classmates was spring 2021 for those who were in the sixth grade in school year 2014-15 and spring 2020 for those in the seventh grade during SY 2014-15. This means that sixth grade students in school year 2014-15 who were enrolled in the twelfth grade during school year 2020-21 must have completed each grade on time from the sixth grade onwards. Similarly, seventh graders in school year 2014-15 who were enrolled in the twelfth grade in school year 2019-20 must have completed each grade on time from the seventh grade onwards. Conversely, students who were not enrolled in the twelfth grade during the year in which they were expected to do so must have fallen behind and were enrolled in a lower grade or were no longer enrolled in the Rhode Island public school system—dropped out of school entirely or otherwise exited the Rhode Island public school system to enroll elsewhere.

We have examined the distribution of Onward GEAR UP participants and their classmates in the matched comparison group by their school enrollment status and grade level during SY 2019-20 (for seventh graders in SY 2014-15) and in SY 2020-21 (for sixth graders in SY 2014-15), into the following three groups: i) on-time grade attainment students (those enrolled in the twelfth grade during the school year in which they were expected to be in the twelfth grade (SY 2020-21 among sixth graders in SY 2014-15 and SY 2019-20 among seventh graders in SY 2014-15, ii) behind grade students (those enrolled below the twelfth grade during the school year in which they were expected to be in the twelfth grade), and iii) not enrolled students (those who were not enrolled in a RI public school during the school year in which they were expected to be in the twelfth grade).

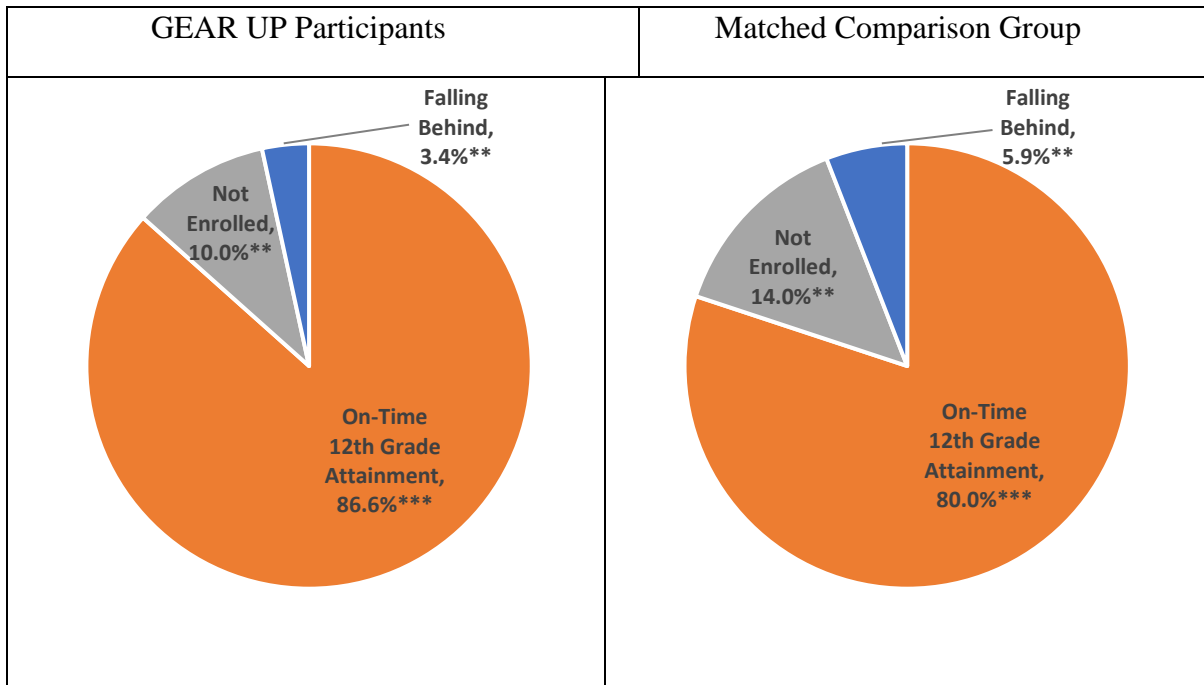
Findings presented in Chart 1 reveal that the share of on-time 12th grade students was much higher among Onward participants than among students in the matched comparison group (86.6% versus 80%). The difference of 6.6 percentage points was statistically significant at .01 level.⁴³ Slightly more than 3 percent (3.4%) of Onward participants fell behind by grade 12 relative to 5.9 percent of their matched comparison group classmates; the difference of 2.5 percentage points was statistically significant at .05 level. Ten percent of Onward participants

Connections, No. 18, February 2012. Retrieved from https://www.ets.org/Media/Research/pdf/RD_Connections18.pdf; Neild, Ruth Curran and Robert Balfanz, *Unfulfilled Promise: The Dimensions and Characteristics of Philadelphia's Dropout Crisis, 2000-2005*, Philadelphia Youth Network, The Johns Hopkins University, and University of Pennsylvania, 2006.

⁴³ Statistical significance in this paper is based on the Mann-Whitney U test.

were not enrolled in RI public schools during their expected twelfth grade school year compared to 14 percent of students in the matched comparison group. The difference of 4 percentage points was statistically significant at .05 level.

Chart 1:
Percentage Distribution of the SY 2014-15 Cohort of Onward We Learn GEAR UP Participants and the Matched Comparison Group, by their Enrollment Status and Grade Level During the School Year (SY 2019-20/SY 2020-21) in which they were Expected to Reach Twelfth Grade



*** p <.01, ** p<.05, * p<.10

On-Time High School Graduation

The 591 Onward participants and their 591 classmates in the matched comparison group from seventh and the sixth grades in SY 2014-15 were expected to graduate high school at the end of the school year in spring of 2020 and 2021, respectively. Seventh graders in school year 2014-15 who graduated by spring 2020 and sixth graders in school year 2014-15 who graduated by spring 2021 would have had on-time grade attainment from the sixth grade to the twelfth grade ending with graduation at the end of the twelfth grade. Students who followed that path are considered on-time high school graduates in the on-time graduation measure.

About 82 percent of Onward participants (484 out of 591) had graduated high school on time. Students in the matched comparison group had a much lower rate of on-time high school graduation. A total of 434 out of 591 or 73.4 percent of comparison group students graduated

high school on time. The difference of 8.5 percentage points in favor of Onward participants was statistically significant at .01 level.

The on-time high school graduation advantage of Onward participants over their comparison group classmates varied by gender, race-ethnicity, and SY 2014-15 FRL status.⁴⁴ Female students among Onward participants as well as the matched comparison group were more likely than their male counterparts to complete high school on time (86.2% of females and 77.5% of males among Onward participants; 78.6% of females and 68.4% of males among the matched comparison group students). The on-time high school graduation advantage of male Onward participants over male students in the matched comparison group was 9.1 percentage points (77.5% versus 68.4%); the difference was statistically significant at .01 level. Among female students, Onward participants had a 7.7 percentage point advantage over their comparison group counterparts (86.2% versus 78.6%) in on-time high school graduation; the difference of 7.7 percentage points was statistically significant at .01 level (Table 11).

Hispanic Onward participants had the highest share of on-time high school graduates (83.2%) and exceeded the on-time graduate share of their matched comparison group counterparts (73%) by 10.2 percentage points. The difference was statistically significant at .01 level. The on-time graduate share among Black Onward participants exceeded that of their counterparts in the matched comparison group by 6.6 percentage points (79.7% versus 73.1%); however, the difference was not statistically significant. The share of on-time high school graduates among White Onward participants was the same as that of their matched comparison group peers (76.2%).

Over 82 percent of low-income Onward participants (those with free or reduced-price school lunch (FRL) in the sixth/seventh grade) had graduated high school on time compared to about 73.3 percent of their matched comparison group counterparts. The difference of 9 percentage points in favor of Onward participants was statistically significant at .01 level (Table 11).

⁴⁴ Estimates of impact for subgroups of students is presented in this paper to demonstrate difference in outcomes across separate groups of participants even though in some cases the N-size was too small to measure the difference with the degree of precision necessary for statistical significance.

Table 11:
Percentage of the SY 2014-15 Cohort of Onward We Learn GEAR UP Participants and the
Matched Comparison Group Who Graduated High School on Time, by Gender, Race-
Ethnicity, and Free or Reduced-Price School Lunch (FRL) Status in SY 2014-15

	GEAR UP Participants	Matched Comparison Group	Difference (Percentage Points)
Total Number	591	591	---
Percent who Graduated High School on Time			
All	81.9	73.4	8.5***
Gender			
Male	77.5	68.4	9.1***
Female	86.2	78.6	7.7***
Race-Ethnicity			
Non-Hispanic Black	79.7	73.1	6.6
Hispanic	83.2	73.0	10.2***
Non-Hispanic White	76.2	76.2	0.0
FRL Status in SY 2014-15			
With FRL	82.3	73.3	9.0***
Without FRL	75.7	75.7	0.0

*** p <.01, ** p<.05, * p<.10

Notes: ¹There were only 42 Onward We Learn GEAR UP participants and 42 matched comparison group students, resulting in statistically unreliable findings for this group; ²There were only 37 Onward We Learn GEAR UP participants and 37 matched comparison group students without FRL in SY 2014-15, resulting in statistically unreliable findings for this group.

An examination of shares of on-time high school graduates across sixth/seventh grade attendance rate quartiles reveals that the share of on-time high school graduates among Onward participants exceeded the share among the matched comparison group students by nearly 14 percentage points in the highest attendance quartile and 15 percentage points in the lowest attendance quartile; both differences were statistically significant at .01 level. The on-time high school graduation advantage for Onward participants over their matched comparison group peers in the third attendance rate quartile was 6.7 percentage points in favor of Onward participants; the difference was not statistically significant. In the second attendance rate quartile, the share of on-time high school graduates was 0.7 percentage points lower among Onward participants than among their matched group classmates, but the difference was not statistically significant (Table 12).

Table 12:
Percentage of the SY 2014-15 Cohort of Onward We Learn GEAR UP Participants and the
Matched Comparison Group Who Graduated High School on Time, by Quartiles of
Attendance Rates in SY 2014-15

	GEAR UP Participants	Matched Comparison Group	Difference (Percentage Points)
Total Number	591	591	---
Percent who Graduated High School on Time:			
All	81.9	73.4	8.5***
SY 2014-15 Attendance Rate Quartile			
Lowest Quartile	75.2	61.3	13.8***
Second	78.6	79.4	-0.7
Third	84.9	78.2	6.7
Highest Quartile	89.5	74.8	14.7***

*** p <.01, ** p<.05, * p<.10

Table 13 presents the share of on-time high school graduates among Onward participants and their comparison group counterparts by performance on the PARCC ELA test in SY 2014-15. According to these findings, the likelihood of on-time high school graduation increases with better performance on the PARCC ELA test in SY 2014-15. Nearly 90 percent of Onward participants with highest level scores on the sixth/seventh grade PARCC ELA test (met or exceeded expectations) graduated high school on time. In contrast, only 73.8 percent of Onward participants who scored in the lowest level of the sixth/seventh grade PARCC ELA test (did not meet expectations) graduated high school on time. Among students in the comparison group, the share of on-time high school graduates among those with the best performance (met or exceeded expectations) and the worst performance (did not meet expectations) on the sixth/seventh grade PARCC ELA test was 79 percent and 63.3 percent, respectively.

In each of the four performance levels on the SY 2014-15 PARCC ELA test, the share of on-time high school graduates among Onward participants exceeded that of their comparison group counterparts. The difference in the share of on-time high school graduates in favor of Onward participants was 10.4 percentage points (significant at .05 level) among the highest scorers on the sixth/seventh grade PARCC ELA test (exceeded or met expectations), 3.1 percentage points among the second highest scorers, although the difference was not statistically significant. Onward participants were also considerably more likely to graduate high school on time than their comparison group counterparts in the two lowest levels of performance on the SY

sixth/seventh grade PARCC ELA test. The difference was 10.1 percentage points (in favor of Onward participants) among those who partially met expectations, and 10.5 percentage points (in favor of Onward participants) among those who did not meet expectations. Both differences were statistically significant at .01 level.

Table 13:
Percentage of the SY 2014-15 Cohort of Onward We Learn GEAR UP Participants and the Matched Comparison Group Who Graduated High School on Time, by Their Performance on the PARCC ELA Test in SY 2014-15

	GEAR UP Participants	Matched Comparison Group	Difference (Percentage Points)
Total Number	591	591	---
Percent who Graduated High School on Time:			
All	81.9	73.4	8.5***
Performance on the PARCC ELA Test in SY 2014-15			
Exceeded or met expectations	89.5	79.0	10.4**
Approached expectations	82.2	79.1	3.1
Partially met expectations	84.5	74.3	10.1**
Did not yet meet expectations	73.8	63.3	10.5*

*** p <.01, ** p<.05, * p<.10

Immediate College Enrollment

Immediate college enrollment is defined as enrollment in college immediately after graduating high school. On-time high school graduation for this SY 2014-15 cohort of Onward participants and comparison group students was in the spring of 2021 (for sixth graders) and spring of 2020 (for seventh graders). Therefore, immediate college enrollment would have occurred in fall 2021 and in fall 2020 for sixth and seventh graders, respectively. Using enrollment status in the summer and fall of 2021 (for sixth graders in SY 2014-15) and in the summer and fall of 2020 (for seventh graders in SY 2014-15), we have presented two measures of college enrollment. The first measure represents what is commonly known as the *college enrollment rate*, that is, the percent of high school graduates who are enrolled in college at a point in time. In this case we will measure the *immediate college enrollment rate* as: the number of on-time high school graduates from the SY 2014-15 cohort who were immediately enrolled in college ÷ total number on-time high school graduates from the SY 2014-15 cohort.

The second measure of college enrollment is a *summary outcome measure of immediate college enrollment* among the entire SY 2014-15 cohort. It is measured as: the number of the 2014-15 cohort students who were enrolled in college immediately after their expected high school graduation ÷ total number of students in the SY 2014-15 cohort. This is a comprehensive measure of the outcomes of students along the entire pathway from sixth/seventh grade to college including persistence in middle and high school and on-time twelfth grade attainment, on-time high school graduation, and immediate college enrollment.

Immediate College Enrollment Rate

Nationally, the college enrollment rate of recent high school graduates has dropped due to the impact of COVID-19 pandemic. In October 2020, the college enrollment rate of nation's high school graduates between the ages of 16 and 24 was 62.7 percent, down from 66.2 percent in 2019.⁴⁵ College enrollment rates among the nation's high school graduates continued to decline: to 61.8 percent in October 2021 and 62 percent in October 2022.⁴⁶ Research from the National Student Clearinghouse (NSC) found that undergraduate admissions in the U.S. between fall 2019 and fall 2021 declined by 7 percentage points. The decline in undergraduate enrollment rate over this period was higher among men than among women (-8.8 percentage points versus -5.3 percentage points).⁴⁷ The undergraduate enrollment decline has continued through the fall of 2022. Between 2021 and 2022, undergraduate enrollment declined by 0.6 percent.⁴⁸

Immediate college enrollment also declined among Onward participants and their matched comparison group classmates between 2019 and 2021. The immediate college enrollment rate of sixth graders from SY 2014-15 who graduated from high school by spring 2021 and enrolled in the summer/fall semesters of 2020 was 66.8 percent, which is 6.4 percentage points lower than 73.2 percent immediate college enrollment rate of sixth graders from the SY 2013-14 cohort, and 9.8 percentage points lower than the 76.6 percent immediate

⁴⁵ Bureau of Labor Statistics, U.S. Department of Labor. "College Enrollment and Work Activity of High School Graduates," Economic News Release, April 27, 2021. (<https://www.bls.gov/news.release/hsgsec.nr0.htm>).

⁴⁶ Bureau of Labor Statistics, U.S. Department of Labor, "College Enrollment and Work Activity of High School and College Graduates -- 2021," Economic News Release, April 26, 2022. Retrieved from: https://www.bls.gov/news.release/archives/hsgsec_04262022.pdf; Bureau of Labor Statistics, U.S. Department of Labor, "College Enrollment and Work Activity of Recent High School and College Graduates -- 2022," Economic News Release, April 26, 2023. Retrieved from: <https://www.bls.gov/news.release/pdf/hsgsec.pdf>.

⁴⁷ National Student Clearinghouse Research Center, Current Term Enrollment Estimates – Fall 2022 Appendix (XLXS), February 1, 2023. Retrieved from: https://nscresearchcenter.org/wp-content/uploads/CTEE_DataAppendixFall2022-1.xlsx.

⁴⁸ *Ibid*

college enrollment rate of sixth graders from the SY 2012-13 cohort who graduated from high school by spring 2019 and were enrolled in colleges by summer/fall of 2019. Among high school graduates in the matched comparison groups of the three cohorts of Onward participants, the immediate college enrollment rate dropped from 67.9 percent in 2019 (among 6th graders in SY 2012-13), to 62.6 percent in 2020 (among 6th graders in SY 2013-14), and 55.6 percent in 2021 (among 6th graders in SY 2024015); yielding a decline of 5.1 percentage points between 2019 and 2020, 7.2 percentage points between 2020 and 2021, and 12.3 percentage points between 2019 and 2021.

Analysis by the National Student Clearinghouse (NSC) of immediate college enrollment (first fall after graduation from high school) of low and high income schools found that among 2021 high school graduates, the immediate college enrollment rate was 49 percent for students from low-income schools and 64 percent for students from high income schools.⁴⁹ The NSC analysis also compared college enrollment for high minority and low minority schools and found that among 2021 high school graduates, the immediate college enrollment rate for students from high minority schools was only 51 percent; 13-percentage points lower than the 64 percent immediate college enrollment rate for students from low minority schools.

As noted in several sections of this report, a matched comparison group is a more appropriate group for comparison of all outcomes including immediate college enrollment since these students were matched with key traits of Onward participants in the sixth/seventh grade (at the starting line). Our analysis of the data found that 68.0 percent of high school graduates among Onward participants were enrolled in college immediately after graduating high school; a rate that is 10.6 percentage points higher than the immediate college enrollment rate of their matched comparison group counterparts (57.4 percent). The difference (10.6 percentage points) in favor of Onward participants was statistically significant at .01 level.

On the measure of immediate college enrollment rate, Onward participants out-performed students in the comparison group across gender and race-ethnicity groups, as well as FRL status and attendance rate in the sixth/seventh grade (Tables 14 and 15). While the difference in the immediate college enrollment rate for each of these groups of students (gender, race-ethnicity,

⁴⁹ “High School Benchmarks 2022: National College Progression Rates,” National Student Clearinghouse Center, October 27, 2022. Retrieved from: https://nscresearchcenter.org/wp-content/uploads/2022_HSBenchmarksReport.pdf.

and SY 2014-15 FRL status and attendance rate quartiles) was positive and in favor of Onward participants, the differences were statistically significant for Onward participants who were male, female, Black, Hispanic, those with FRL in the sixth/seventh grade, and those in two highest attendance rate quartiles.

Male Onward participants have a sizable college enrollment advantage over their comparison group counterparts. About 58 percent of male Onward participants, who had graduated high school on-time, were enrolled in college in the summer or fall after high school graduation; a rate that is 12.9 percentage points higher than the immediate college enrollment rate of their comparison group counterparts (44.8%). The difference was statistically significant at .01 level.

Table 14:
Percent of On-Time High School Graduates Enrolled in College Immediately After Graduating High School, among the SY 2014-15 Cohort of Onward We Learn GEAR UP Participants and the Matched Comparison Group, by Gender, Race-Ethnicity, and Free or Reduced-Price School Lunch (FRL) Status in SY 2014-15

	GEAR UP Participants	Matched Comparison Group	Difference (Percentage Points)
Total Number of High School Graduates	484	434	---
Percent of High School Graduates Immediately Enrolled in College			
All	68.0	57.4	10.6***
Gender			
Male	57.7	44.8	12.9***
Female	77.0	68.4	8.6**
Race-Ethnicity			
Non-Hispanic Black	73.4	56.3	17.1**
Hispanic	66.8	58.1	8.7**
Non-Hispanic White ¹	59.4	46.9	12.5
FRL Status in SY 2014-15			
With FRL	68.4	57.1	11.3***
Without FRL ²	60.7	60.7	0.0

*** p <.01, ** p<.05, * p<.10

Notes: ¹There were only 32 Onward We Learn GEAR UP participants and 32 matched comparison group non-Hispanic White students who had graduated high school on time, resulting in statistically unreliable findings for this group; ²There were only 28 Onward We Learn GEAR UP participants and 28 matched comparison group without FRL in SY 2014-15 who had graduated high school on time, resulting in statistically unreliable findings for this group.

Immediate college enrollment rate of female Onward participants was 8.6 percentage points higher than that of their counterparts in the comparison group (77.0% versus 68.4%), and the difference was statistically significant at .05 level. Even though a large gender gap in college enrollment favoring females prevailed for Onward participants and their matched group peers, the female college enrollment advantage was larger among students in the comparison group (23.6 percentage points) than among Onward participants (19.3 percentage points).

The immediate college enrollment rate of Onward participants was considerably higher than the comparison group among Black and Hispanic students. Black Onward participants who had graduated high school on time were 17.1 percentage points more likely to immediately enroll in college than their matched comparison group peers; however, the difference was statistically significant at .05 level. Among Hispanic high school graduates, Onward participants were 8.7-percentage points more likely than their matched group counterparts to enroll in college; the difference was statistically significant at .05 level (Table 14).

Among Onward participants with FRL, 68.4 percent had enrolled in college immediately after graduating high school. In contrast, the college-going rate among comparison group students who received FRL was 57.1 percent; yielding a difference of 11.3 percentage points in favor of Onward participants; statistically significant at .01 level (Table 14).

Findings in Table 15 reveal a close connection between attendance in sixth/seventh grade and the likelihood of enrolling in college among those who graduated high school on time. Among Onward participants as well as students in the matched comparison group, the immediate college enrollment rate rose with sixth/seventh grade attendance rate; ranging (between the lowest and highest attendance rate quartile) from 55.1 percent to 76.6 percent among Onward participants and 46.7 percent to 63.5 percent among students in the matched comparison group (Table 15).

In each of the sixth/seventh grade attendance rate quartiles, Onward participants had higher immediate college enrollment rates than their matched comparison group peers. However, the immediate college enrollment rate advantage of Onward participants over their matched comparison group counterparts was statistically significant only in the two highest attendance rate quartiles where Onward participants had an advantage of 14.3 and 13.1 percentage points over their matched comparison group peers in the third (second highest) and highest attendance rate quartiles, respectively; the differences were statistically significant at .05 level. The

immediate college enrollment rate advantage of Onward participants over their matched comparison group peers in the remaining two attendance rate quartiles (second (second lowest) and lowest) was not statistically significant (Table 15).

Table 15:
Percent of On-Time High School Graduates Enrolled in College Immediately After Graduating High School, SY 2014-15 Cohort of Onward We Learn GEAR UP Participants and the Matched Comparison Group, by SY 2014-15 Attendance Rate Quartiles

	GEAR UP Participants	Matched Comparison Group	Difference (Percentage Points)
Total Number of High School Graduates	484	434	---
Percent of High School Graduates who had Immediately Enrolled in College:			
All	68.0	57.4	10.6***
SY 2014-15 Attendance Rate Quartile			
Lowest Quartile	55.1	46.7	8.3
Second	66.7	59.3	7.3
Third	72.6	58.3	14.3**
Highest Quartile	76.6	63.5	13.1**

*** p <.01, ** p<.05, * p<.10

Examination of the college going rates of Onward participants and students in the comparison group by their sixth/seventh grade performance on the PARCC ELA test, presented in Table 16, found a very close positive association between PARCC test performance and the likelihood of enrolling in college. Among Onward participants as well as students in the matched comparison group, the immediate college enrollment rate rose with performance on the sixth/seventh grade PARCC ELA test; ranging (between the worst performance: did not meet expectations, and the best performance: exceeded or met expectations) from 46.9 percent to 79.8 percent among Onward participants and 39.8 percent to 74.5 percent among students in the matched comparison group (Table 16).

The college-going rate of Onward participants who had graduated high school on time exceeded that of their matched comparison group counterparts in each performance level of the sixth/seventh grade PARCC ELA test. However, the Onward participant advantage was statistically significant for just students who scored in the second highest performance level of the PARCC ELA test (approached expectations), who outperformed their comparison group

counterparts by nearly 15 percentage points (76.1% versus 61.2%), significant at the .01 level. Onward students who scored in the “partially met expectations” level exceeded the college enrollment rate of their comparison group counterparts by 12.1 percentage points, but the difference was only marginally significant (at the .10 level). Differences between Onward participants and their matched comparison group counterparts who had sixth/seventh grade PARCC ELA scores in the lowest (did not meet expectations) and the highest (exceeded or met expectations) levels were not statistically significant (Table 16).

Table 16:
Percent of On-Time High School Graduates Enrolled in College Immediately
After Graduating High School, SY 2014-15 Cohort of Onward We Learn
GEAR UP Participants and the Matched Comparison Group,
by Their Performance on the PARCC ELA Test in SY 2014-15

	GEAR UP Participants	Matched Comparison Group	Difference (Percentage Points)
Total Number of High School Graduates	484	434	---
Percent of High School Graduates who had Immediately Enrolled in College:			
All	68.0	57.4	10.6***
Performance on the PARCC ELA Test in SY 2014-15			
Exceeded or met expectations	79.8	74.5	5.3
Approached expectations	76.1	61.2	14.9***
Partially met expectations	64.8	52.7	12.1*
Did not yet meet expectations	46.9	39.8	7.1

*** p <.01, ** p<.05, * p<.10

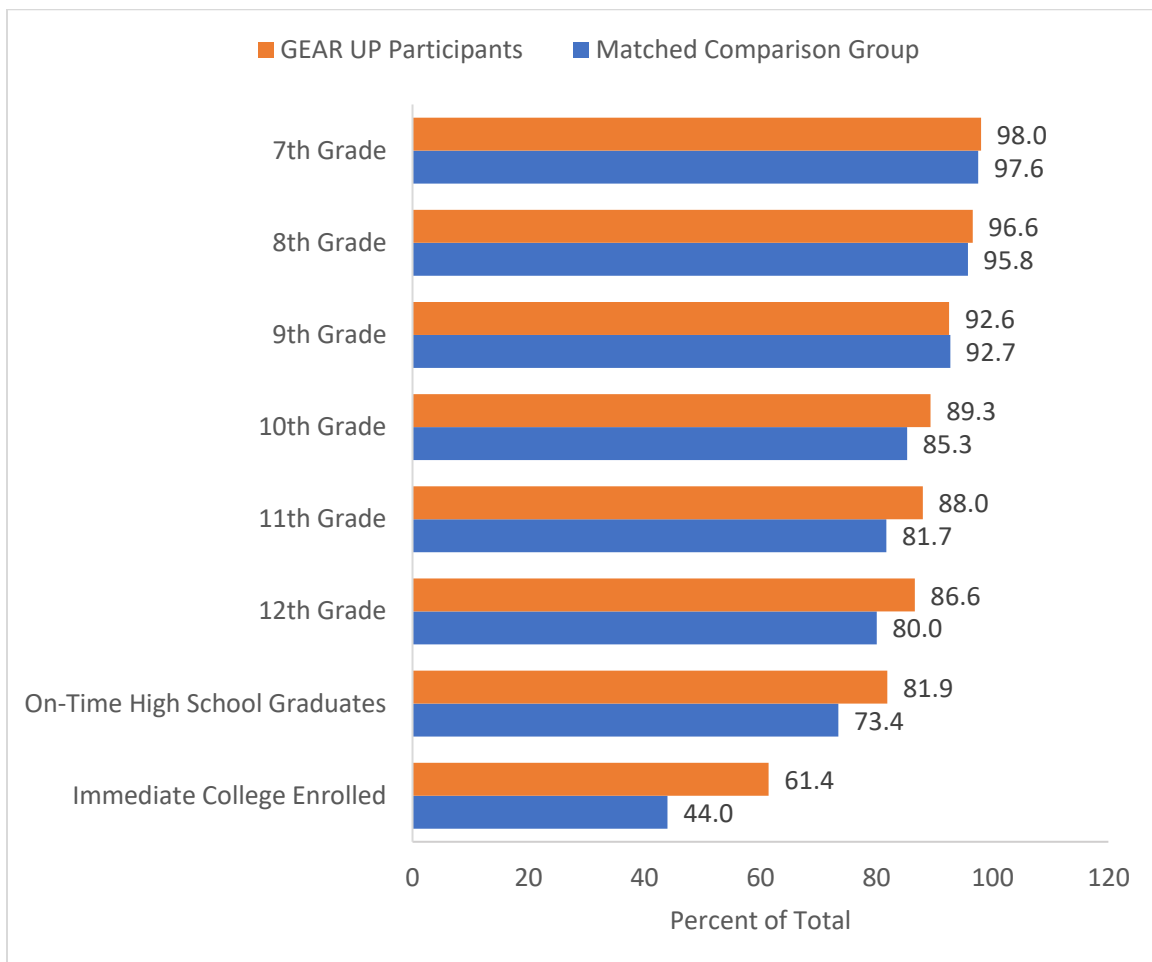
Cumulative Measure of Impact: Immediate College Enrollment Among all SY 2014-15 Sixth/Seventh Graders

Along the path from sixth/seventh grade to college, there are a few ways in which students can falter: they could be held back in one or more grades delaying their progress towards twelfth grade and fail to graduate high school on time; they could exit the Rhode Island public school system to school elsewhere or simply drop out of schooling entirely before graduating; and they could graduate high school on time but fail to enroll in college. The outcome of college enrollment is a culmination of positive outcomes along the path from sixth/seventh grade to college. The summary outcome of college enrollment is a cumulative

measure of outcomes along the pathway from sixth/seventh grade to college. It is measured as the share of all sixth/seventh grade students from the SY 2014-15 cohort who were enrolled in college immediately after their expected on-time high school graduation.

The pathway from sixth grade to college among Onward participants and the comparison group is illustrated in Chart 2. At the time of enrollment in the Onward We Learn GEAR UP program, a total of 463 participants and their 463 matched comparison group counterparts were in the sixth grade and the remaining 156 participants and the same number of their matched comparison group counterparts were in the seventh grade. The first bar in Chart 2 represents the

Chart 2:
Pathway from Sixth Grade to Immediate College Enrollment:
Percent of Onward We Learn GEAR UP Participants from the SY 2014-15 Cohort and the
Matched Comparison Group with On-Time Grade Attainment, On-Time High School
Graduation, and Immediate College Enrollment



Note: Percent of students with on-time 7th grade attainment includes only 6th graders in SY 2014-15. On-time 8th grade and beyond includes 6th and 7th graders in SY 2014-15.

share of sixth graders in SY 2014-15 with on time seventh grade attainment: 98 percent among Onward participants and 97.6 percent among comparison group students. The second bar and each successive (descending) bar represents the share of all 591 Onward participants and 591 comparison group students with on-time grade attainment. So, for example, 89.3 percent of Onward participants entered tenth grade on time, compared to 85.3 percent of their comparison group counterparts. In each successive year, Onward participants continued to gain ground over their comparison group counterparts opening up a 6.6 percentage point gap (in favor of Onward participants) in the share of all 591 students who reached twelfth grade on time and about an 8.5 percentage point gap in the share of students who graduated high school on time.

By the fall following their expected high school graduation, when students from this cohort would begin immediate college enrollment, the gap widened to 17.4 percentage points. The share of 591 Onward participants who had immediately enrolled in college was 61.4 percent while only 44.0 percent of the 591 comparison group students had done so; representing a difference of 17.4 percentage points in this summary outcome measure in favor of Onward participants (Chart 2).

Onward participants in each of the gender, major race-ethnicity, and SY 2014-15 FRL status groups outperformed their comparison group counterparts on this summary outcome measure (Table 17). As noted above, the share of immediately college enrolled students among all 591 Onward participants was 17.4 percentage points higher than their comparison group counterparts and the difference was statistically significant at .01 level. The Onward participant advantage in the share of immediately college enrolled students relative to their comparison group peers was 19.2 percentage points among males (52.2% versus 33.0%) and 15.4 percentage points among females (70.5% versus 55.1%); both differences were statistically significant at .01 level.

The college enrollment advantage among Black Onward participants was sizeable (21.6 percentage points) and statistically significant at .01 level. Over 65 percent of Black Onward participants from the SY 2014-15 cohort were immediately enrolled in college compared to just 43.7 percent of their comparison group counterparts. The gap in immediate college enrollment between Hispanic Onward participants and the matched comparison group was also sizeable, 17.7 percentage points (61.5% versus 43.9%) and statistically significant at .01 level. Among Onward participants with FRL in SY 2014-15, the share of immediate college enrollment was

17.5 percentage points higher than the comparison group (61.2% vs. 43.7%). The difference was statistically significant at .01 level (Table 17).

Table 17:
Percent of All Onward We Learn GEAR UP Participants from the SY 2014-15 Cohort and their Matched Comparison Group Sixth/Seventh Grade Classmates who were Enrolled in College in Fall 2020/Fall 2021, by Gender, Race-Ethnicity, and Free/Reduced Price School Lunch (FRL) Status in SY 2014-15

	GEAR UP Participants	Matched Comparison Group	Difference (Percentage Points)
Total Number	591	591	---
Percent of the Entire Cohort Enrolled in College in Fall 2020/Fall 2021:			
All	61.4	44.0	17.4***
Gender			
Male	52.2	33.0	19.2***
Female	70.5	55.1	15.4***
Race-Ethnicity			
Non-Hispanic Black	65.3	43.7	21.6***
Hispanic	61.5	43.9	17.7***
Non-Hispanic White ¹	47.6	40.5	7.1
FRL Status in SY 2014-15			
With FRL	61.2	43.7	17.5***
Without FRL ²	64.9	48.6	16.2

*** p <.01, ** p<.05, * p<.10

Notes: ¹There were only 42 Onward We Learn GEAR UP participants and 42 matched comparison group students who were non-Hispanic White, resulting in statistically unreliable findings for this group; ²There were only 37 Onward We Learn GEAR UP participants and 37 matched comparison group students without FRL in SY 2014-15, resulting in statistically unreliable findings for this group.

Students from the SY 2014-15 cohort with better attendance during the sixth and seventh grade were more likely to be enrolled in college immediately after their expected (on-time) high school graduation. Among both groups (Onward participants and the comparison group), the share of students who were immediately enrolled was higher among students with better sixth/seventh grade school attendance (in higher attendance quartiles) than those with poorer school attendance rates (in lower quartiles); ranging from 44.6 percent in the lowest quartile to 72.7 percent in the highest quartile for Onward participants and from just 30.7 percent in the lowest quartile to 51.8 percent in the highest quartile among students in the matched comparison group.

Onward participants in each of the four attendance rate quartiles had higher shares of immediately college enrolled students than their matched comparison group peers, ranging 13 to nearly 23 percentage points advantage among Onward participants. The Onward participant advantage in three out of the four quartiles was statistically significant at .01 level, whereas the Onward participant advantage in the remaining (second lowest) quartile was statistically significant at .05 level.

Table 18:

Percent of All Onward We Learn GEAR UP Participants from the SY 2014-15 Cohort and the Matched Comparison Group who were Enrolled in College in Fall 2020/Fall 2021, by SY 2014-15 Attendance Rate Quartile

	GEAR UP Participants	Matched Comparison Group	Difference (Percentage Points)
Total Number	591	591	---
Percent of the Entire Cohort Enrolled in College in Fall 2020/Fall 2021			
All	61.4	44.0	17.4***
SY 2014-15 Attendance Rate Quartile			
Lowest Quartile	44.6	30.7	13.9***
Second	61.4	48.4	13.0**
Third	68.5	45.6	22.9***
Highest Quartile	72.7	51.8	20.9***

*** p <.01, ** p<.05, * p<.10

Students from the SY 2014-15 cohort with better performance on the sixth/seventh grade PARCC ELA test also have higher rates of college enrollment immediately after their expected high school graduation. The summary outcome measure (percent of all sixth/seventh graders who were immediately enrolled in college) of students with highest level of performance on the sixth/seventh grade PARCC ELA test was more than twice as high as that of students with the lowest level performance on that test, among Onward participants (78.2% versus 38.5%) as well as comparison group students (61.3% versus 26.6%).

Onward participants in each level of performance on the sixth/seventh grade PARCC ELA test had higher shares of immediately college enrolled students than their matched comparison group peers, ranging from 16.9 percentage points among the best performers (exceeded or met expectations), 19 and 19.6 percentage points among those who scored in the second and third levels (approached expectations and partially met expectations), and 11.8

percentage points among those with the lowest level of performance (did not meet expectations). The Onward participant advantage in three out of four performance levels was statistically significant at .01 level. The advantage of Onward participants in the remaining performance level (did not meet expectations) was also statistically significant, but at .05 level (Table 19).

Table 19:
Percent of All Onward We Learn GEAR UP Participants from the SY 2014-15 Cohort and the Matched Comparison Group who were Enrolled in College in Fall 2020/Fall 2021, by Performance on the PARCC ELA Test in SY 2014-15

	GEAR UP Participants	Matched Comparison Group	Difference (Percentage Points)
Total Number	591	591	---
Percent of the Entire Cohort Enrolled in College in Fall 2020/Fall 2021			
All	61.4	44.0	17.4****
Performance on the PARCC ELA Test in SY 2014-15			
Exceeded or met expectations	78.2	61.3	16.9***
Approached expectations	70.6	51.5	19.0***
Partially met expectations	59.5	39.9	19.6***
Did not meet expectations	38.5	26.6	11.8**

*** p <.01, ** p<.05, * p<.10

Summary

This paper presents net impact estimates of the Onward GEAR UP program on the SY 2014-15 cohort of participants consisting of 591 Onward participants who had entered the program as rising sixth or seventh graders in SY 2014-15. Using SY 2014-15 student level data for all sixth and seventh graders from GEAR UP school districts, a closely matched group of 591 sixth/seventh grade classmates of this cohort of Onward participants was selected to serve as the comparison group. These 591 Onward participants and their 591 matched comparison group classmates were then tracked year-by-year from sixth/seventh grade to high school graduation and into college using de-identified unit record data from the Rhode Island Department of Education and the National Student Clearinghouse (NSC).

The net impact evaluation found large advantages on four key educational outcomes for students who participated in the Onward GEAR UP program.

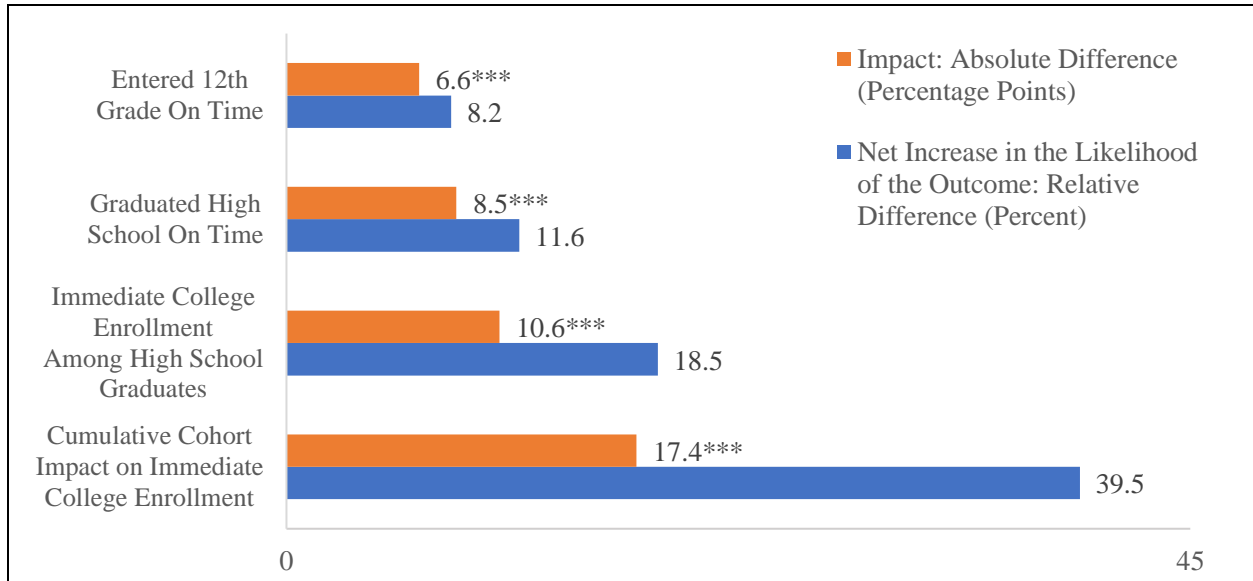
Outcome 1: On-time grade attainment:

This outcome measures the percent of SY 2014-15 sixth and seventh grade Onward GEAR UP participants and their grade classmates in the matched comparison group who reached twelfth grade in SY 2020-21 and SY 2019-20, respectively. With each passing year after their first year in the GEAR UP program in SY 2014-15, the gap in on-time grade attainment grew steadily in favor of Onward participants. By the time that this cohort of students were expected to be in the 12th grade, 86.6 percent of Onward participants had reached the twelfth grade compared to 80.0 percent of their comparison group counterparts; yielding a net impact estimate of 6.6 percentage points. This impact was statistically significant at .01 level. This net impact estimate represents a relative advantage (in favor of Onward participants) of 8.2 percent ($6.6 \div 80.0 = 8.2$). In other words, the Onward GEAR UP program is estimated to raise the likelihood of Onward participants entering twelfth grade on time by 8.2 percent.

Outcome 2: On-time high school graduation:

This outcome measures the percent of all SY 2014-15 cohort participants and comparison group students who graduated high school on time. By the time of the expected date of on-time high school graduation (spring of 2020 for seventh graders in SY 2014-15 and spring of 2021 for sixth graders in SY 2014-15), 81.9 percent of Onward participants had graduated high school compared to 73.4 percent of students in the comparison group; a difference of 8.5 percentage points (statistically significant at .01 level) which represents the net impact of the GEAR UP program on on-time high school graduation among Onward participants in this cohort. The relative difference of 11.6 percent ($8.5 \div 73.4 = 11.6$) represents the net increase in the likelihood of on-time high school graduation of GEAR UP participants attributable to the program. According to these findings, the Onward GEAR UP program is estimated to raise the likelihood of on-time high school graduation among Onward participants by 11.6 percent.

Chart 3:
Estimates of the Impact of the Onward We Learn GEAR UP Program on
Outcomes of Participants from the SY 2014-15 Cohort



Outcome	(A) Onward Participants (Percent)	(B) Matched Comparison Group (Percent)	(C) Impact: Absolute Difference (Percentage Points) (A) – (B)	(D) Net Increase in the Likelihood of the Outcome: Relative Difference (Percent) (C) ÷ (B)
Entered 12 th Grade On Time	86.6	80.0	6.6***	8.2
Graduated High School On Time	81.9	73.4	8.5***	11.6
Immediate College Enrollment Among On-Time High School Graduates	68.0	57.4	10.6***	18.5
Cumulative Cohort Impact on Immediate College Enrollment (Immediate College Enrollment Among All Sixth/Seventh Graders)	61.4	44.0	17.4***	39.5

*** p <.01, ** p<.05, * p<.10

Outcome 3: Immediate college enrollment among high school graduates:

This outcome represents the traditional measure of immediate college enrollment rate, that is, the percent of high school graduates who had enrolled in college immediately upon graduating high school. It is measured in this paper as the percentage of GEAR UP participants and matched comparison group students who had graduated high school on time and had enrolled in college by the fall term following their on-time high school graduation. The net impact of the Onward GEAR UP program on the immediate college enrollment rate of

participants was 10.6 percentage points and statistically significant at .01 level. The immediate college enrollment rate of on-time high school graduates was 68.0 percent among GEAR UP participants compared to 57.4 percent among students in the comparison group. Thus, the Onward GEAR UP program is estimated to raise the likelihood of immediate college enrollment of on-time high school graduated Onward participants by 18.5 percent ($10.6 \div 57.4 = 18.5$).

Outcome 4: Cumulative Measure of Impact: College Enrollment in 2020/2021 as a Share of All 2014-15 Sixth/Seventh Graders:

This outcome measures the cumulative effect of the Onward GEAR UP program on the entire pathway from sixth grade to college enrollment including on-time grade attainment through twelfth grade, on-time high school graduation, and immediate enrollment in college upon graduating high school on time. It is measured as the percent of all sixth/seventh grade GEAR UP participants and all sixth/seventh grade comparison group students in SY 2014-15 that were enrolled in college in the fall 2021/fall 2020 terms.

Our analysis found that 61.4 percent of all 591 sixth/seventh grade GEAR UP participants had enrolled in college in the fall following their expected high school graduation. Among their 591 matched comparison group classmates, the proportion that had enrolled in college in the fall term after their expected high school graduation was only 44.0 percent. The difference in this summary outcome between Onward participants and comparison group students of 17.4 percentage points (statistically significant at .01 level) represents the net impact of the Onward GEAR UP program on this summary outcome of participants.

The advantage of Onward GEAR UP participants over the comparison group in each step along the pathway from sixth grade to college including on-time grade attainment, on-time high school graduation, and college enrollment after high school graduation resulted in a sizable cumulative impact (17.4 percentage points) on the college-going rate of the entire cohort. In relative terms, this difference of 17.4 percentage points means that the Onward GEAR UP program is estimated to raise the likelihood of enrolling in college among Onward participants by 39.5 percent ($17.4 \div 44.0 = 39.5$).

Through interventions that begin in middle school, the GEAR UP program is designed to increase college enrollment of low-income students. The Onward GEAR UP program has created large and statistically significant gains for this cohort of participants from middle school to college. GEAR UP participants progressed through middle and high school with a much lower likelihood of faltering along the way. They were substantially more likely to earn their high school diploma on time and, upon graduating from high school, were considerably more likely to enroll in college. The cumulative impact of the Onward GEAR UP program on Onward participants who entered the program as rising sixth/seventh graders back in SY 2014-15, was to increase their likelihood of enrolling in college by 39.5 percent. The net impact evaluation of the Onward We Learn GEAR UP program demonstrates sizable positive impacts of the program on four key educational outcomes of participants.