

Evaluation of the Rhode Island GEAR UP Program: Propensity Score Matching, Initial Impact, and Integration of Findings into Program Management

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OUTLINE

- Evaluation Plan
- Selection of Matched Comparison Groups
- Characteristics of RI GEAR UP Participants and their Classmates, Before and After Propensity Score Matching
- On-Time Grade Promotion and Attrition
- On-Time High School Graduation
- College Enrollment Among High School Graduates
- Summary Outcome: Share of all 6th Graders in 2007-08 Enrolled in College in 2014

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Plan for Quasi-Experimental Evaluation

- Select a matched comparison group of students from the 6th grade (non-participating) classmates of each entering 6th grade cohort RI GEAR UP participants.
- In each successive school year from 6th grade to high school graduation, track each cohort of RI GEAR UP participants and matched comparison group students.
- After high school graduation track RI GEAR UP participants and comparison group students into colleges and universities across the nation.
- Measure differences in key secondary and postsecondary schooling outcomes of RI GU participants and the comparison group.

Evaluation Time-Table for Each Cohort

Cohorts	On-Time Grade Level in Middle and High School							On-time High School Graduation	Immediate College Enrollment	Freshman Year Retention
	6th grade	7th Grade	8th grade	9th grade	10th grade	11th grade	12th grade			
Cohort 1 (249)	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	Spring 2014	Fall 2014	Fall 2015
Cohort 2 (205)	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	Spring 2015	Fall 2015	Fall 2016
Cohort 3 (291)	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	Spring 2016	Fall 2016	Fall 2017
Cohort 4 (405)	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	Spring 2017	Fall 2017	Fall 2018
Cohort 5 (560)	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	Spring 2018	Fall 2018	Fall 2019
Cohort 6 (449)	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	Spring 2019	Fall 2019	Fall 2020



Evaluation Outcomes

Progress through Middle and High School

- On-time grade promotion
- Attrition

High School Graduation

- On-time high school graduation
- Delayed high school graduation

College Enrollment and Persistence

- Immediate college enrollment
- Delayed college enrollment
- College freshman year retention

Data for Evaluation

- **Rhode Island GEAR UP Program:** Administrative data on treatment, dosage, etc.
- **Rhode Island Department of Education:** Annual data for each school year for each cohort from 6th grade to high school graduation across all school districts in Rhode Island.
- **National Student Clearinghouse:** College enrollment and persistence data for each cohort for each semester after graduating high school
- **Other publicly available data sources:** as needed

Merge these data to build longitudinal data files for each cohort of RI GEAR UP participants and comparison group students to track them through middle school, high school, and college.

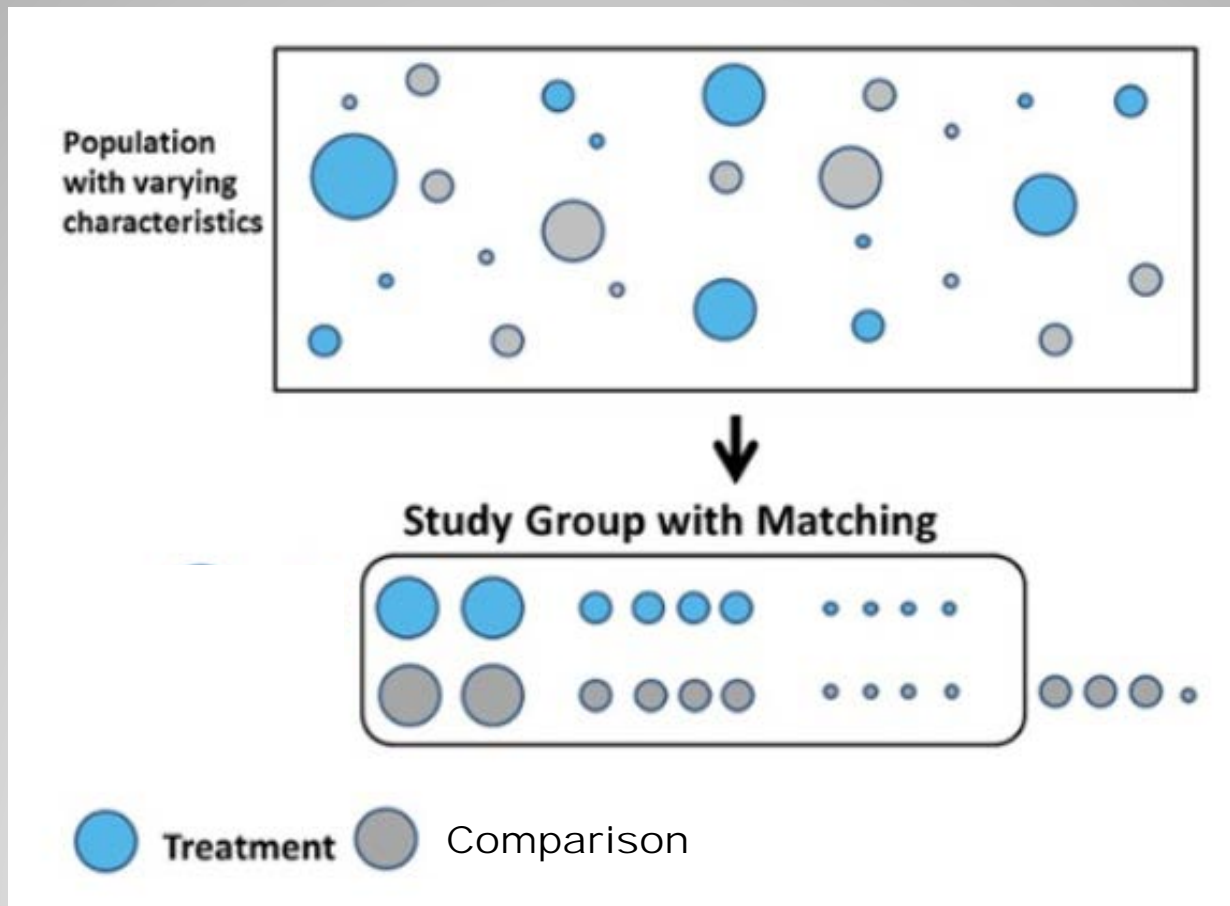
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The Need for Propensity Score Matching

- Pre-program traits of GEAR UP participants were very different from their classmates.
- Propensity score matching is used to establish baseline (pre-program) equivalence.
- Matching propensity scores of individuals in the treatment group with the non-treatment group will yield a comparison group that is similar to the treatment group on all covariates leaving the treatment as the only difference between them.
- A balanced match based on propensity scores provides pre-program equivalence and unbiased estimates of impact.

Propensity Score Matching



List of Covariates Included in Propensity Score Models Used to Create the Comparison Group

	Covariates
Demographic traits	Gender, race-ethnicity, IEP status
Economic status	Free or reduced price school lunch status
Academic traits	Performance on the NECAP standardized reading test
Behavioral traits	Attendance rate
School Climate/Quality	Composite index of school climate/quality
Propensity Score	Probability of being in the RI GEAR UP program based on above characteristics

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Gender

	BEFORE MATCHING			AFTER MATCHING		
	RI GEAR UP Participants	All Non-Participating Classmates	Difference (Percentage Points)	RI GEAR UP Participants	Matched Comparison Group of Non-Participating Classmates	Difference (Percentage Points)
Total Number	249	3,136	---	249	249	---
Percent of Total:						
Male	44.6	53.4	-8.8	44.6	45.0	-0.4
Female	55.4	46.6	+8.8	55.4	55.0	+0.4

Race-Ethnicity

	BEFORE MATCHING			AFTER MATCHING		
	RI GEAR UP Participants	All Non-Participating Classmates	Difference (Percentage Points)	RI GEAR UP Participants	Matched Comparison Group of Non-Participating Classmates	Difference (Percentage Points)
Total Number	249	3,136	---	249	249	---
Percent of Total:						
Asian, Pacific Islander or Native American	7.2	5.8	1.4	7.2	7.2	0.0
Black, non-Hispanic	23.3	18.4	4.9	23.3	23.3	0.0
Hispanic	54.2	48.4	5.8	54.2	54.2	0.0
White, non-Hispanic	15.3	27.4	-12.1	15.3	15.3	0.0

Academic Proficiency: 6th Grade NECAP (Standardized) Reading Test

	BEFORE MATCHING			AFTER MATCHING		
	RI GEAR UP Participants	All Non- Participating Classmates	Difference (Percentage Points)	RI GEAR UP Participants	Matched Comparison Group of Non- Participating Classmates	Difference (Percentage Points)
Total Number	249	3,136	---	249	249	---
% Dist. by level of 6th grade NECAP reading test						
Proficient with Distinction	8.4	3.8	4.6	8.4	8.4	0.0
Proficient	51.4	32.8	18.6	51.4	51.4	0.0
Partly Proficient	27.3	32.0	-4.7	27.3	27.3	0.0
Substantially below proficient	12.9	31.4	-18.5	12.9	12.9	0.0
Did not take the test/waiver/missing	1.2	5.8	-4.6	1.2	1.2	0.0

FRL, Attendance, and IEP status in the 6th grade

	BEFORE MATCHING			AFTER MATCHING		
	RI GEAR UP Participants	All Non-Participating Classmates	Difference (Percentage Points)	RI GEAR UP Participants	Matched Comparison Group of Non-Participating Classmates	Difference (Percentage Points)
Total Number	249	3,136	---	249	249	---
Percent of Total:						
With free or subsidized school lunch in 6 th grade	91.6	82.1	9.5	91.6	92.0	-0.4
Attendance rate in 6 th grade	94.7	91.8	2.9	94.7	94.8	-0.1
With IEP in 6 th grade	11.7	23.2	-11.5	11.7	11.2	0.5

Distribution of 6th Graders by Middle School Climate/Quality

	BEFORE MATCHING			AFTER MATCHING		
	RI GEAR UP Participants	All Non-Participating Classmates	Difference (Percentage Points)	RI GEAR UP Participants	Matched Comparison Group of Non-Participating Classmates	Difference (Percentage Points)
Total Number	249	3,136	---	249	249	---
Percent of Total by Quartile of School Climate/Quality Index:*						
Schools in the lowest quartile	40.9	36.1	4.8	40.9	40.9	0.0
Second quartile	41.8	41.0	0.8	41.8	41.0	0.8
Third quartile	15.3	18.8	-3.5	15.3	16.1	-0.8
Highest quartile	2.0	4.1	-2.1	2.0	2.0	0.0

School Quality Index was constructed from five indicators for 49 middle schools in the GEAR UP districts: school stability rate (low turnover of students), school attendance rate, 6th grade NECAP reading test score, share of students with free or reduced price school lunch, and share of race-ethnic minority students.

OUTLINE

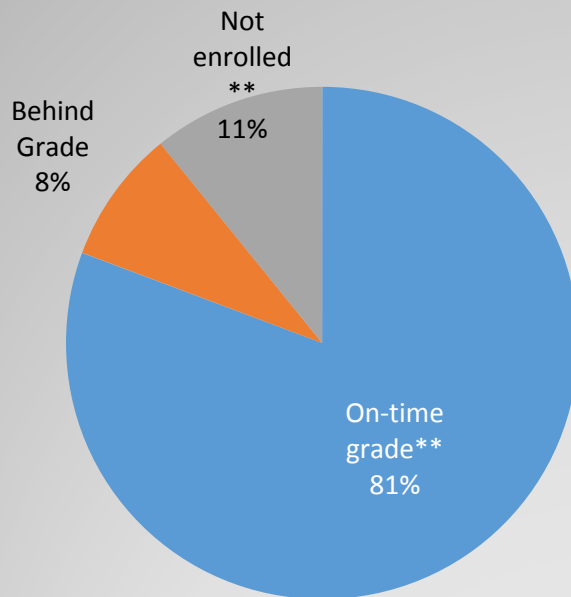
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On-Time Grade Promotion and Attrition

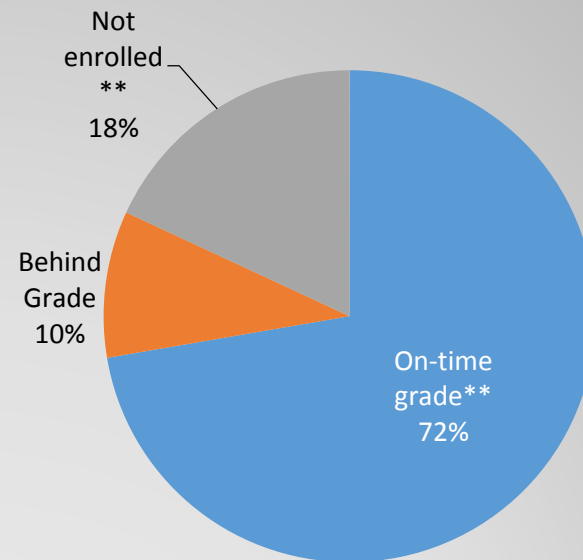
- On-time promotion to successive grade levels keeps students on track to graduate high school on-time.
- Students who fall behind below modal grade are at a higher risk of dropping out and less likely to graduate high school

Status During School Year 2013-14

RI GEAR UP Participants

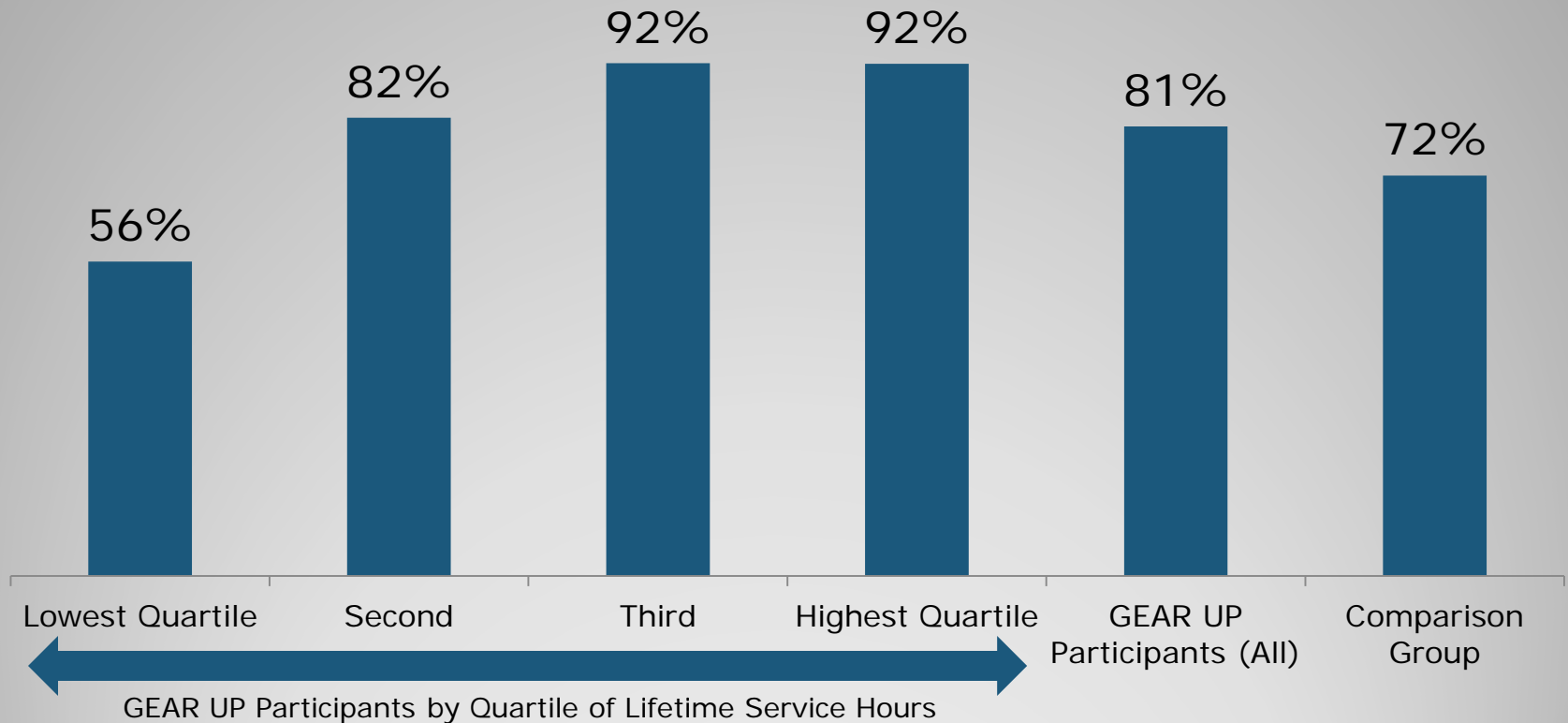


Matched Comparison Group



Significance level of differences between participants and comparison group students: *** p < .01 ** p < .05 * p < .10

Percent who Entered 12th Grade On Time (in SY 2013-14) by Total (Lifetime) Hours of GEAR UP Program Participation



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On-Time High School Graduation

On-time high school graduation rate measures the share of 6th graders in 2007-08 who had graduated high school during or before school year 2013-14

Percent of 6th Graders Who Graduated High School On Time (SY 2013-14): Gender

	RI GEAR UP Participants	Matched Comparison Group of Non-Participating Classmates	Difference (Percentage Points)
Total Number	249	249	---
Percent who Graduated High School On Time			
All	74.7	66.7	+8.0**
Male	71.2	63.4	+7.8
Female	77.5	69.3	+8.2*

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

Percent of 6th Graders Who Graduated High School On Time (2013-14 SY):

6th Grade Free and Reduced Price Lunch (FRL) Status

	RI GEAR UP Participants	Matched Comparison Group of Non-Participating Classmates	Difference (Percentage Points)
Total Number	249	249	---
Percent who Graduated High School On Time			
All	74.7	66.7	+8.0**
FRL in 6 th Grade	73.7	65.5	+8.2**
No FRL in 6 th Grade	85.7	80.0	+5.7

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

Percent of 6th Graders Who Graduated High School On Time (2013-14 SY):
Race-Ethnicity

	RI GEAR UP Participants	Matched Comparison Group of Non- Participating Classmates	Difference (Percentage Points)	All Non- Participating Classmates
Total Number	249	249	---	3,136
Percent who Graduated High School On Time				
All	74.7	66.7	+8.0**	55.8
Black	77.6	66.7	+10.9*	50.5
Hispanic	75.6	70.4	+5.2	55.3
White	60.5	53.8	+6.7	57.8

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

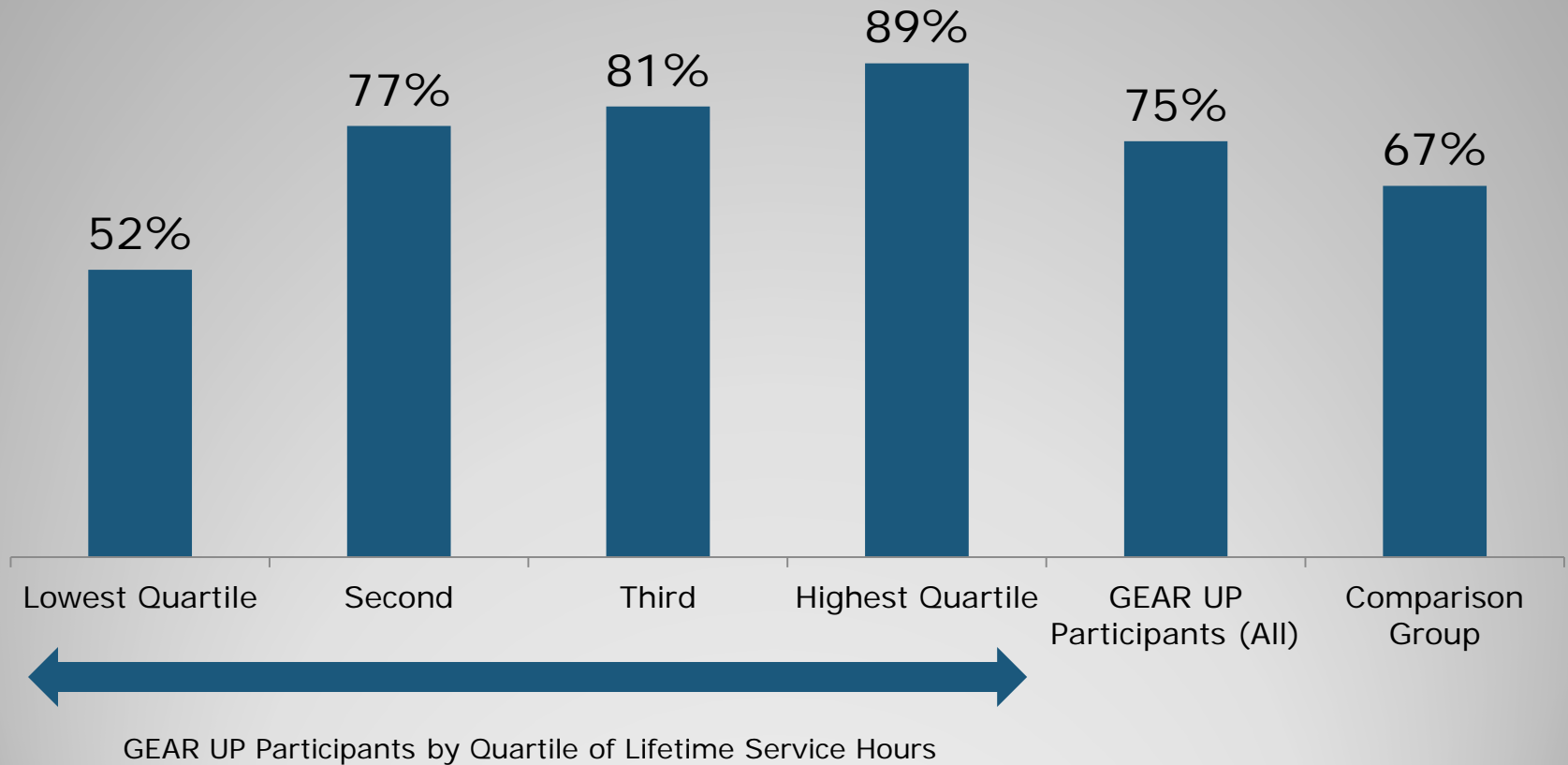
Percent of 6th Graders Who Graduated High School On Time (2013-14 SY):

6th Grade Attendance Rate Quartile

	RI GEAR UP Participants	Matched Comparison Group of Non- Participating Classmates	Difference (Percentage Points)
Total Number	249	249	---
<u>Percent who Graduated High School On Time</u>			
All	74.7	66.7	+8.0**
<u>6th Grade Attendance Rate Quartile</u>			
Lowest Quartile	50.0	34.6	+15.4
Second	70.7	60.9	+9.8
Third	72.3	70.1	+2.2
Highest Quartile	87.2	77.2	+10.1**

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

Percent of 6th Graders who Graduated High School On Time by Total (Lifetime) Hours of GEAR UP Program Participation



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SUMMARY OUTCOME: COLLEGE ENROLLMENT AMONG THE ENTIRE COHORT OF 2007-08 SIXTH GRADERS IN FALL 2014

This outcome is a summary measure of all outcomes. It measures the percent of the entire 2007-08 6th grade cohort of RI GEAR UP participants (and their classmates) who had enrolled in college in Fall 2014.

This measure includes their grade promotion, persistence (attrition), high school graduation, and college enrollment outcomes.

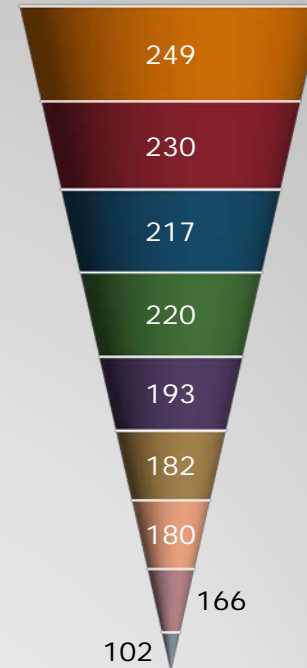


Pathway from Sixth Grade (2007-08) to College Enrollment (Fall 2014)

RI GEAR UP Participants



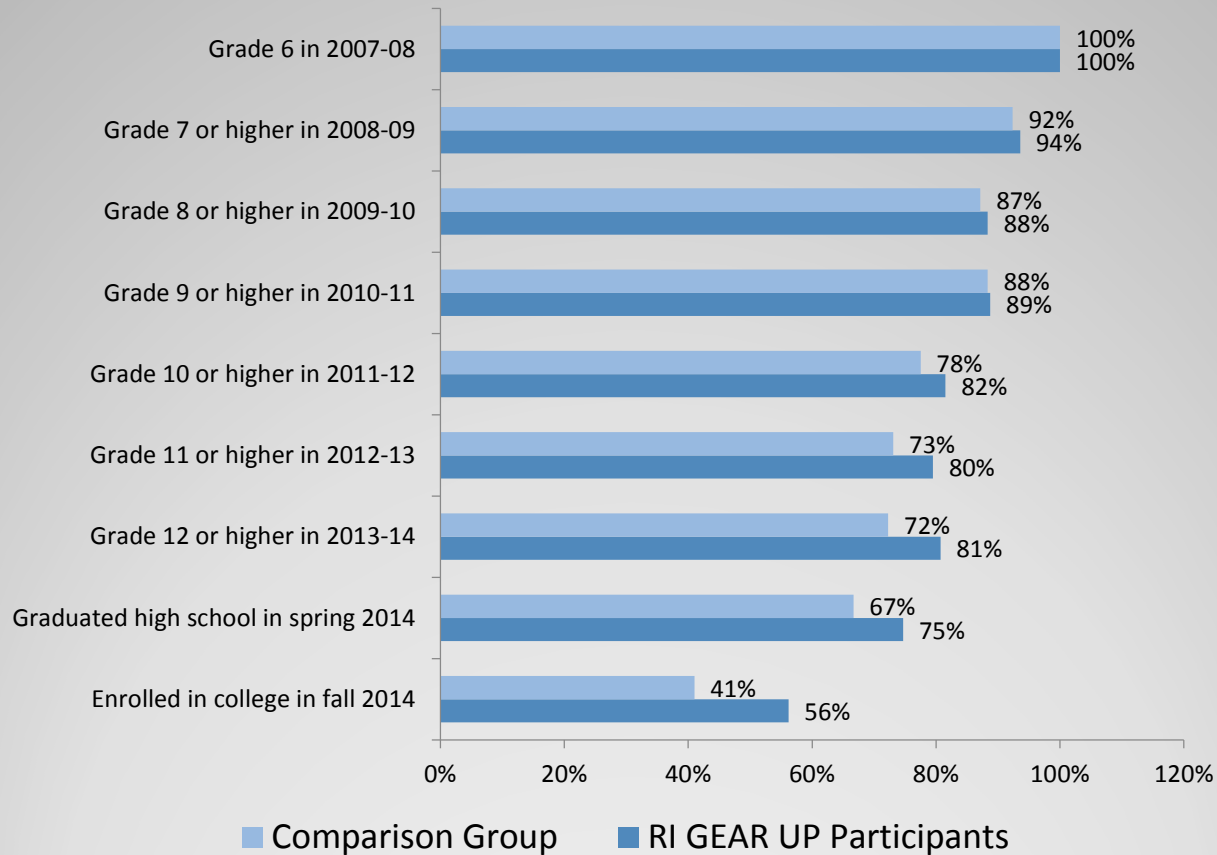
Comparison Group



- Sixth Grade in 2007-08
- 7th Grade or higher in 2008-09
- 8th grade or higher in 2009-10
- 9th grade or higher in 2010-11
- 10th grade or higher in 2011-12
- 11th grade or higher in 2012-13
- 12th grade in 2013-14
- High school graduate in 2013-14
- Enrolled in college in fall 2014



Pathway from Sixth Grade (2007-08) to College Enrollment (Fall 2014)



Percent of all 6th Graders in 2007-08 who had Enrolled in College in Fall 2014:

Gender

	RI GEAR UP Participants	Matched Comparison Group of Non-Participating Classmates	Difference (Percentage Points)
Total Number	249	249	---
Percent of the Entire Cohort who had Enrolled in College			
All	56.2	41.0	15.3***
Male	50.5	37.5	13.0**
Female	60.9	43.8	17.1***

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

Percent of all 6th Graders in 2007-08 who had Enrolled in College in Fall 2014:

6th Grade Free or Reduced Price Lunch (FRL) Status

	RI GEAR UP Participants	Matched Comparison Group of Non-Participating Classmates	Difference (Percentage Points)
Total Number	249	249	---
Percent of the Entire Cohort who had Enrolled in College			
All	56.2	41.0	15.3***
FRL in 6 th grade	54.8	39.3	15.5***
No FRL in 6 th grade	71.4	60.0	11.4

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

Percent of all 6th Graders in 2007-08 who had Enrolled in College in Fall 2014:
Race-Ethnicity

	RI GEAR UP Participants	Matched Comparison Group of Non- Participating Classmates	Difference (Percentage Points)
Total Number	249	249	---
Percent of the Entire Cohort who had Enrolled in College			
All	56.2	41.0	15.3***
Black	65.5	42.1	23.4***
Hispanic	53.3	41.5	11.8**
White	47.4	25.6	21.7**

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

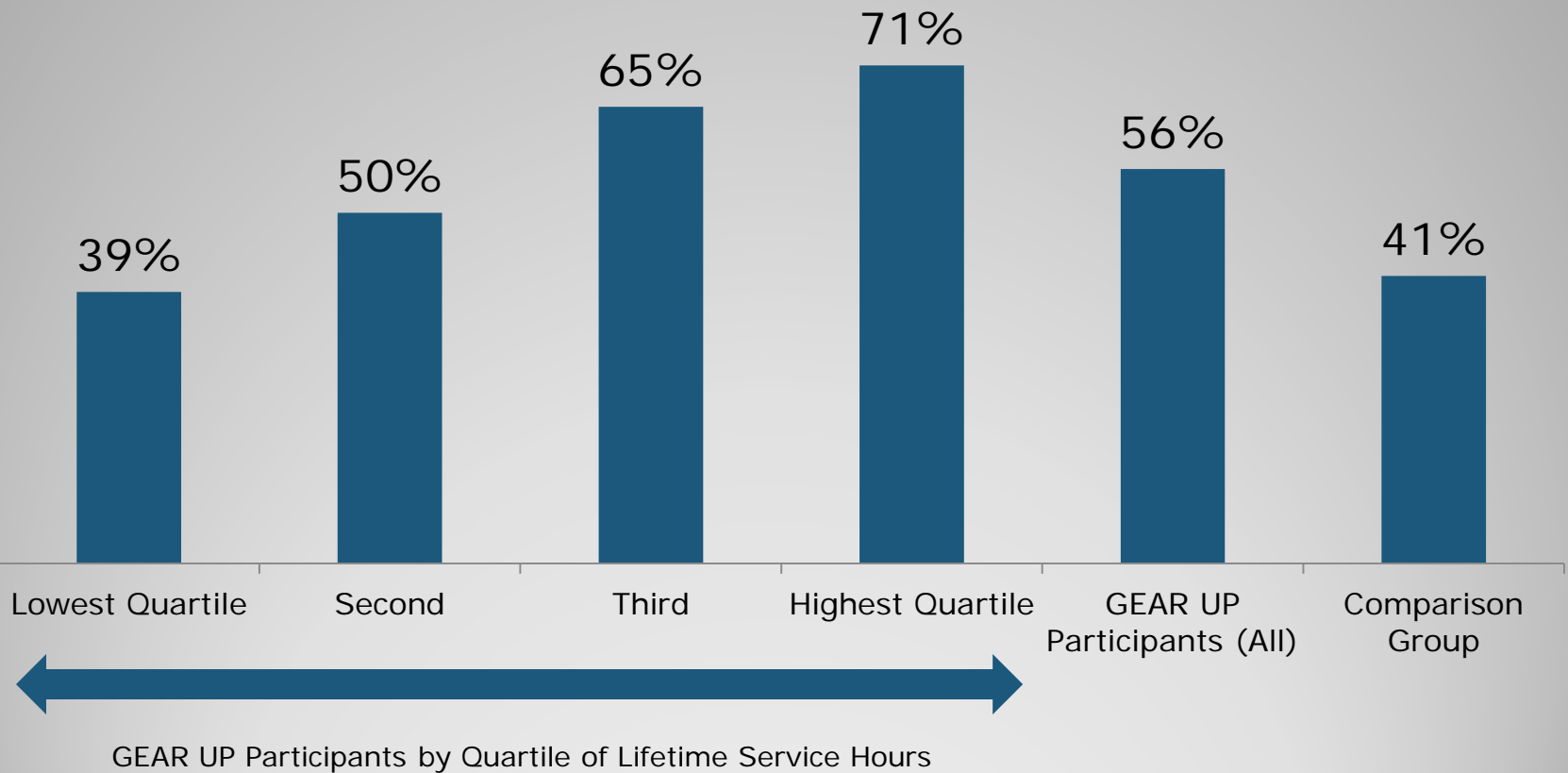
Percent of all 6th Graders in 2007-08 who had Enrolled in College in Fall 2014:

6th Grade Attendance Rate Quartile

	RI GEAR UP Participants	Matched Comparison Group of Non- Participating Classmates	Difference (Percentage Points)
Total Number	249	249	---
Percent of the Entire Cohort who had Enrolled in College			
All	56.2	41.0	15.3***
6th Grade Attendance Rate Quartile			
Lowest Quartile	43.8	23.1	20.7**
Second	46.6	34.4	12.2*
Third	55.4	41.8	13.6*
Highest Quartile	67.0	50.0	17.0***

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

Percent of all 6th Graders in 2007-08 who had Enrolled in College in Fall 2014 by Total (Lifetime) Hours of GEAR UP Program Participation



Summary of Impact Estimates

Estimates of the Impact of the RI GEAR UP Program on Various Outcomes of the 2007-08 Sixth Grade Cohort of Participants

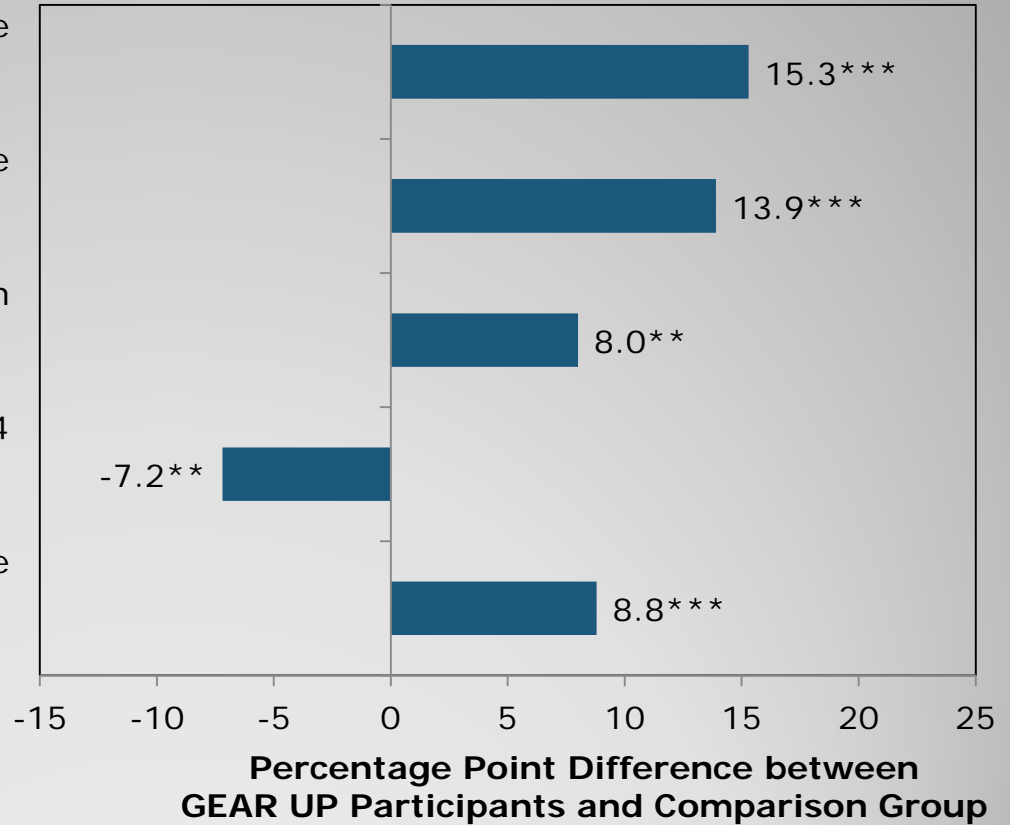
Share of all 6th graders enrolled in college

College enrollment rate

On-time high school graduation

Attrition by 2003-14

Grade 12 on Time



*** $p < .01$ ** $p < .05$ * $p < .10$

