

# **Doubling Graduation Rates in a New State**

## **Two-Year Findings from the ASAP Ohio Demonstration**

### **Supplementary Appendixes**

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**Appendix A**

**Baseline Characteristics of Sample Members**



**Appendix Table A.1**

**Baseline Characteristics of Sample Members, by Research Group**

Characteristic	Full Sample	Program Group	Control Group
Nontraditional student <sup>a</sup> (%)	46.9	46.1	47.9
Has developmental education requirements (%)	74.3	74.1	75.1
Intention to enroll (%)			
Full time	90.7	91.1	90.4
Part time	9.3	8.9	9.6
Gender (%)			
Male	36.1	37.7	34.0
Female	63.9	62.3	66.0
Age (%)			
19 or younger	47.3	46.9	47.8
20 to 23	21.7	22.4	21.4
24 or older	30.9	30.7	30.8
Average age (years)	23.2	23.0	23.3
Marital status (%)			
Married and living with spouse	6.8	7.1	6.6
Married and living apart from spouse	1.8	2.4	1.1 *
Unmarried and living with partner	15.2	14.1	16.3
Unmarried and not living with partner	76.3	76.5	76.0
Living with parents (%)	57.8	58.7	56.8
Parents pay more than half of expenses (%)	27.2	29.0	25.0 *
Missing	7.5	7.6	7.2
Race/ethnicity <sup>b</sup> (%)			
Hispanic	9.6	8.8	10.6
White	45.8	46.9	44.9
Black	34.8	35.5	34.0
Other <sup>c</sup>	9.8	8.8	10.5

(continued)

**Appendix Table A.1 (continued)**

Characteristic	Full Sample	Program Group	Control Group
<b>Number of children (%)</b>			
0	73.0	73.6	72.1
1	11.7	10.9	12.5
2	7.6	8.1	7.5
3 or more	7.8	7.5	7.9
<b>Mode of transportation to campus (%)</b>			
Driving	70.7	72.3	68.5
Carpool	1.9	1.9	1.8
Public transportation	15.0	14.5	16.0
Drop-off from family or friend	10.7	9.5	11.9
Biking or walking	1.8	1.8	1.7
Currently employed (%)	59.9	57.6	61.7
<i>Among those currently employed, hours worked per week (%)</i>			
1 - 34	74.0	74.2	74.0
35 or more	26.0	25.8	26.0
<b>Highest grade completed (%)</b>			
10th or lower	4.6	4.2	5.0
11th	4.9	5.5	4.0
12th <sup>d</sup>	90.6	90.3	90.9
<b>Diplomas/degrees earned<sup>e</sup> (%)</b>			
High school diploma	87.2	87.4	86.9
High school equivalency	12.1	12.3	11.9
Occupational/technical certificate	11.3	9.7	13.0 *
Other	1.9	2.3	1.4
<i>Date of high school graduation/equivalency receipt (%)</i>			
Within the past two years	57.9	57.4	58.6
More than two years ago	42.1	42.6	41.4
<b>Highest degree student plans to attain (%)</b>			
Associate's	19.4	19.4	19.5
Bachelor's	41.0	42.3	39.9
Master's	26.4	25.7	27.2
Professional or doctorate	13.2	12.6	13.4

(continued)



**Appendix Table A.1 (continued)**

Characteristic	Full Sample	Program Group	Control Group
First person in the family to attend college (%)	33.9	34.8	33.0
Highest degree/diploma earned by the student's mother (%)			
Not a high school graduate	11.9	12.8	11.1
High school diploma or equivalency	34.1	33.2	35.3
Some college, did not complete a degree	19.8	20.7	18.7
College degree (AA, BA, MA, PhD)	25.6	24.5	26.5
Missing	8.6	8.8	8.4
Highest degree/diploma earned by the student's father (%)			
Not a high school graduate	15.8	15.8	15.9
High school diploma or equivalency	38.7	39.2	38.0
Some college, did not complete a degree	12.7	12.4	13.0
College degree (AA, BA, MA, PhD)	13.5	14.1	12.8
Missing	19.3	18.5	20.3
Language other than English spoken regularly in the home (%)	8.6	8.5	8.9
Sample size	1,501	806	695

SOURCE: MDRC calculations using baseline information form data and placement test data from the demonstration colleges.

NOTES: Italics indicate statistics calculated only for a subset of respondents.

Distributions may not add to 100 percent because of rounding.

The percentage of the sample missing data for a characteristic is shown only when more than 6 percent of the sample is missing data.

A two-tailed t-test was applied to differences between research groups. Statistical significance levels are indicated as: \*\*\* = 1 percent; \*\* = 5 percent; \* = 10 percent.

To analyze whether program and control group survey respondents differed from each other on average, an omnibus F-test was performed, which yielded a p-value of 0.533. This finding suggests that relative to the baseline characteristics shown above, program and control group survey respondents do not differ from one another.

<sup>a</sup>Nontraditional students are defined as those who were 24 or older, worked 35 or more hours per week, had children, or did not receive a high school diploma and were not enrolled in high school at the time of random assignment. Students are listed as nontraditional if they fit any of these characteristics. Students are considered to be missing data in the nontraditional category if they were missing data on two or more of these variables and have no other nontraditional characteristic; however, since less than 6 percent of the study sample is missing data, this percentage is not listed in the table.

<sup>b</sup>Respondents who said they were Hispanic and chose a race are included only in the "Hispanic" category.

<sup>c</sup>The "Other" category includes Asian/Pacific Islander, Native American/Alaska Native, multiracial, and other races and ethnicities.

<sup>d</sup>This category includes students who were enrolled in high school at the time of random assignment.

<sup>e</sup>Distributions may not add to 100 percent because categories are not mutually exclusive.

**Appendix Table A.2**  
**Baseline Characteristics of Sample Members, by College**

Characteristic	Full Sample	Cincinnati State	Lorain	Tri-C
Program status (%)				
Program group	53.7	54.6	56.9	49.7
Control group	46.3	45.4	43.1	50.3
Nontraditional student <sup>a</sup> (%)	46.9	58.7	39.4	43.8
Has developmental education requirements (%)	74.3	61.0	81.2	79.6
Intention to enroll (%)				
Full time	90.7	87.9	91.6	92.3
Part time	9.3	12.1	8.4	7.7
Gender (%)				
Male	36.1	37.4	34.1	37.0
Female	63.9	62.6	65.9	63.0
Age (%)				
19 or younger	47.3	29.3	57.5	53.4
20 to 23	21.7	26.5	17.3	21.8
24 or older	30.9	44.2	25.1	24.8
Average age (years)	23.2	24.8	22.2	22.6
Marital status (%)				
Married and living with spouse	6.8	7.2	7.3	5.9
Married and living apart from spouse	1.8	2.8	1.2	1.4
Unmarried and living with partner	15.2	18.7	14.2	13.1
Unmarried and not living with partner	76.3	71.4	77.3	79.6
Living with parents (%)	57.8	42.3	63.1	66.4
Parents pay more than half of expenses (%)	27.2	16.1	31.2	33.4
Missing	7.5	7.3	5.5	9.6
Race/ethnicity <sup>b</sup> (%)				
Hispanic	9.6	3.1	16.7	8.0
White	45.8	34.4	55.5	46.3
Black	34.8	51.3	19.0	36.2
Other <sup>c</sup>	9.8	11.2	8.8	9.5

(continued)

**Appendix Table A.2 (continued)**

Characteristic	Full Sample	Cincinnati State	Lorain	Tri-C
<b>Number of children (%)</b>				
0	73.0	64.8	73.8	79.6
1	11.7	16.0	11.6	7.8
2	7.6	9.0	7.5	6.4
3 or more	7.8	10.3	7.1	6.2
<b>Mode of transportation to campus (%)</b>				
Driving	70.7	64.6	80.2	66.6
Carpool	1.9	1.5	2.5	1.6
Public transportation	15.0	24.0	1.2	20.8
Drop-off from family or friend	10.7	8.2	14.5	9.1
Biking or walking	1.8	1.7	1.6	2.0
<b>Currently employed (%)</b>				
<i>Among those currently employed, hours worked per week (%)</i>				
1 - 34	74.0	72.1	81.8	67.8
35 or more	26.0	27.9	18.2	32.2
<b>Highest grade completed (%)</b>				
10th or lower	4.6	5.1	4.3	4.4
11th	4.9	5.5	4.2	5.0
12th <sup>d</sup>	90.6	89.4	91.5	90.6
<b>Diplomas/degrees earned<sup>e</sup> (%)</b>				
High school diploma	87.2	84.9	89.2	87.3
High school equivalency	12.1	14.4	10.6	11.5
Occupational/technical certificate	11.3	10.7	10.8	12.3
Other	1.9	2.2	1.4	2.2
<i>Date of high school graduation/equivalency receipt (%)</i>				
Within the past two years	57.9	39.6	67.4	64.7
More than two years ago	42.1	60.4	32.6	35.3
<b>Highest degree student plans to attain (%)</b>				
Associate's	19.4	14.4	23.3	20.0
Bachelor's	41.0	41.8	42.2	39.1
Master's	26.4	27.9	25.7	25.9
Professional or doctorate	13.2	16.0	8.8	15.0

(continued)

**Appendix Table A.2 (continued)**

Characteristic	Full Sample	Cincinnati State	Lorain	Tri-C
First person in the family to attend college (%)	33.9	36.5	30.8	34.7
Highest degree/diploma earned by the student's mother (%)				
Not a high school graduate	11.9	14.6	9.7	11.7
High school diploma or equivalency	34.1	32.3	37.4	32.4
Some college, did not complete a degree	19.8	16.9	21.1	21.1
College degree (AA, BA, MA, PhD)	25.6	27.8	25.5	23.6
Missing	8.6	8.4	6.2	11.1
Highest degree/diploma earned by student's father (%)				
Not a high school graduate	15.8	16.7	15.2	15.5
High school diploma or equivalency	38.7	33.6	44.8	37.2
Some college, did not complete a degree	12.7	13.9	13.5	10.7
College degree (AA, BA, MA, PhD)	13.5	16.7	11.1	13.1
Missing	19.3	19.1	15.4	23.4
Language other than English spoken regularly in the home (%)	8.6	10.2	6.5	9.3
<b>Sample size</b>	<b>1,501</b>	<b>467</b>	<b>513</b>	<b>521</b>

SOURCES: MDRC calculations using baseline information form data and placement test data from the demonstration colleges.

NOTES: Cincinnati State = Cincinnati State Technical and Community College; Lorain = Lorain County Community College; Tri-C = Cuyahoga Community College.

Italics indicate statistics calculated only for a subset of respondents.

Distributions may not add to 100 percent because of rounding.

The percentage of the sample missing data for a characteristic is shown only when more than 6 percent of the sample is missing data.

<sup>a</sup>Nontraditional students are defined as those who were 24 or older, worked 35 or more hours per week, had children, or did not receive a high school diploma and were not enrolled in high school at the time of random assignment. Students are listed as nontraditional if they fit any of these characteristics. Students are considered to be missing data in the nontraditional category if they are missing data on two or more of these variables and have no other nontraditional characteristic; however, since less than 6 percent of the study sample is missing data, this percentage is not listed in the table.

<sup>b</sup>Respondents who said they were Hispanic and chose a race are included only in the "Hispanic" category.

<sup>c</sup>The "Other" category includes Asian/Pacific Islander, Native American/Alaska Native, multiracial, and other races and ethnicities.

<sup>d</sup>This category includes students who were enrolled in high school at the time of random assignment.

<sup>e</sup>Distributions may not add to 100 percent because categories are not mutually exclusive.

**Appendix B**

**Program Components and Participation Rates**



## Appendix Table B.1

### City University of New York (CUNY) Accelerated Study in Associate Programs (ASAP) and Ohio Program Models

CUNY ASAP	Ohio Programs
<b><u>Requirements and messages</u></b>	
<ul style="list-style-type: none"> <li>• <b>Full-time enrollment:</b> Required in fall and spring. Summer and winter attendance encouraged and financially covered.</li> <li>• <b>Taking developmental courses early:</b> Encouraged consistently and strongly.</li> <li>• <b>Graduating within three years:</b> Encouraged consistently and strongly.</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Full-time enrollment:</b> Required in fall and spring. Summer attendance encouraged and financially covered.</li> <li>• <b>Taking developmental courses early:</b> Encouraged consistently and strongly.</li> <li>• <b>Graduating within three years:</b> Encouraged consistently and strongly.</li> </ul>
<b><u>Student services</u></b>	
<ul style="list-style-type: none"> <li>• <b>Advising:</b> Students required to visit adviser twice per month in the first semester and as directed based on need after that. Caseloads of no more than 150.</li> <li>• <b>Career services:</b> Students required to participate in an activity with an ASAP career specialist or an approved event through career services once per semester.</li> <li>• <b>Tutoring:</b> Students required to attend tutoring if taking developmental courses, if identified as struggling by a faculty member/adviser, or if on academic probation.</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Advising:</b> Students required to visit adviser twice per month in the first semester and as directed based on need after that. Caseloads of no more than 125.</li> <li>• <b>Career services:</b> Students required to meet with campus career services staff or participate in an approved career services event once per semester.</li> <li>• <b>Tutoring:</b> Students required to attend tutoring if taking developmental courses, if identified as struggling by a faculty member/adviser, or if on academic probation.</li> </ul>
<b><u>Financial support</u></b>	
<ul style="list-style-type: none"> <li>• <b>Tuition waiver:</b> Any difference between financial aid and tuition and fees is waived.</li> <li>• <b>Monthly incentives:</b> Monthly unlimited-ride Metro-Card, contingent on participation.</li> <li>• <b>Textbook assistance:</b> Voucher to cover textbook costs through the campus bookstore.</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Tuition waiver:</b> Any difference between financial aid and tuition and fees is waived.</li> <li>• <b>Monthly incentives:</b> Monthly \$50 gas/grocery gift card, contingent on participation.</li> <li>• <b>Textbook assistance:</b> Voucher to cover textbook costs through the campus bookstore.</li> </ul>
<b><u>Course enrollment</u></b>	
<ul style="list-style-type: none"> <li>• <b>Blocked courses and consolidated schedules:</b> Course sections reserved and seats held in specific sections of general or developmental education courses for ASAP students during the first year. Early registration for ASAP students.</li> <li>• <b>ASAP seminar:</b> Students attend an ASAP-only student success seminar during their first year.</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Blocked courses and consolidated schedules:</b> Seats held in specific sections of general education or developmental education courses for program students during the first year. Early registration for program students.</li> <li>• <b>First-year seminar:</b> New students required to take a student success course in the first semester, ideally in a section with other program students.</li> </ul>
<b><u>Program management</u></b>	
<ul style="list-style-type: none"> <li>• <b>Program management:</b> CUNY Academic Affairs provides overall administration and evaluation and supports college programs, which deliver direct student services.</li> <li>• <b>Dedicated staffing:</b> Fully ASAP-dedicated staff led by a director who reports to the college's chief academic officer.</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Program management:</b> Managed locally within each college, with periodic meetings and data sharing among members of the Ohio ASAP Network.</li> <li>• <b>Dedicated staffing:</b> Fully dedicated program staff led by a director who reports to the provost or another senior leader at the college.</li> </ul>

SOURCE: Program model information from CUNY and the Ohio ASAP Demonstration colleges.

**Appendix Table B.2**  
**Participation in Program Activities**

Outcome	Percentage of the Program Group
Enrolled in classes in the first semester	94.4
Among those enrolled:	
Met with an adviser	95.2
Academic advising appointments attended	
0	4.8
1 to 5	33.9
6 or more	61.3
Met with a career adviser	45.1
Received a financial incentive	81.2
Financial incentives received	
0	18.8
1	13.8
2	18.9
3 or more	48.5
Enrolled in classes in the second semester	76.5
Among those enrolled:	
Met with an adviser	93.7
Academic advising appointments attended	
0	6.3
1 to 5	48.0
6 or more	45.7
Met with a career adviser	61.8
Received a financial incentive	76.3
Financial incentives received	
0	23.7
1	9.9
2	20.2
3 or more	46.1

(continued)



**Appendix Table B.2 (continued)**

Outcome	Percentage of the Program Group
Enrolled in classes in the third semester	63.1
Among those enrolled:	
Met with an adviser	93.7
Academic advising appointments attended	
0	6.3
1 to 5	57.4
6 or more	36.3
Met with a career adviser	68.7
Received a financial incentive	77.8
Financial incentives received	
0	22.2
1	16.1
2	16.6
3 or more	45.2
Enrolled in classes in the fourth semester	50.8
Among those enrolled:	
Met with an adviser	89.4
Academic advising appointments attended	
0	10.6
1 to 5	56.0
6 or more	33.4
Met with a career adviser	65.8
Received a financial incentive	75.2
Financial incentives received	
0	24.8
1	9.5
2	12.5
3 or more	53.2
Sample size	806

SOURCE: MDRC calculations using data from the MDRC management information system.

**Appendix Table B.3**  
**Participation in Tutoring**

Outcome	Percentage of the Program Group
Enrolled in developmental education in the first semester	52.6
Among those enrolled in developmental education:	
Attended a tutoring session (at least once)	58.3
Hours of tutoring attended	
0	41.9
Less than 3	9.1
3 - 8.9	17.8
9 or more	31.2
Enrolled in development education in the second semester	24.2
Among those enrolled in developmental education:	
Attended a tutoring session (at least once)	71.8
Hours of tutoring attended	
0	28.2
Less than 3	13.7
3 - 8.9	22.0
9 or more	36.0
Enrolled in developmental education in the third semester	8.0
Among those enrolled in developmental education:	
Attended a tutoring session (at least once)	56.2
Hours of tutoring attended	
0	43.8
Less than 3	11.5
3 - 8.9	25.4
9 or more	19.3
Enrolled in development education in the fourth semester	4.1
Among those enrolled in developmental education:	
Attended a tutoring session (at least once)	37.8
Hours of tutoring attended	
0	62.2
Less than 3	6.5
3 - 8.9	21.6
9 or more	9.8
Sample size	806

SOURCE: MDRC calculations using data from the MDRC management information system.

**Appendix C**

**Subgroup Effects and Other Additional Effect Tables**



## Appendix Table C.1

### Enrollment and Credits Earned During the Summer

Outcome (%)	Program Group		Control Group		Estimated Effect		
	Standard		Standard		Mean	Standard	P-Value
	Mean	Deviation	Mean	Deviation	Difference	Error	
<b><u>Enrolled at any college</u></b>							
First summer	55.4	49.7	31.1	46.3	24.3	2.5	0.0000
Second summer	35.1	47.8	23.3	42.4	11.8	2.3	0.0000
<b><u>Credits earned</u></b>							
First summer	2.8	3.8	1.6	3.3	1.1	0.2	0.0000
Second summer	1.7	3.1	1.1	2.5	0.6	0.1	0.0000
Sample size (total = 1,501)	806		695				

SOURCES: MDRC calculations using data from the National Student Clearinghouse and transcript data from the demonstration colleges.

NOTE: Estimates are adjusted by site, cohort, gender, race/ethnicity, age, parental status, marital status, weekly hours worked, dependence on parents for 50 percent or more of financial support, whether a student is the first family member to attend college, whether a student earned a high school diploma, the number of outstanding developmental education requirements at the time of random assignment, and intended enrollment level.

**Appendix Table C.2**

**Total Credits Earned After Two Years:  
Variation in Effects, by Student Characteristics**

Student Characteristic	Average Credits Earned				P-Value for Difference	P-Value for Differential Estimated Effects
	Sample Size	Program Group	Control Group	Difference		
Study college						0.3720
College 1	521	33.4	24.8	8.6 ***	0.0000	
College 2	467	26.0	20.6	5.4 ***	0.0060	
College 3	513	29.5	20.7	8.8 ***	0.0000	
Sample size	1,501					
Developmental education needs						0.8060
With developmental education needs	1,060	29.1	20.6	8.4 ***	0.0000	
Without developmental education needs	366	34.3	25.3	9.1 ***	0.0000	
Sample size	1,426					
Gender						0.1410
Female	945	31.0	21.7	9.3 ***	0.0000	
Male	534	28.6	22.5	6.1 ***	0.0010	
Sample size	1,479					
Ethnicity/race						0.4400
Black	507	24.1	18.2	5.9 ***	0.0010	
Hispanic	139	30.3	22.6	7.7 **	0.0430	
White	667	35.5	25.8	9.8 ***	0.0000	
Other	142	26.9	18.5	8.4 **	0.0200	
Sample size	1,455					
Age category						0.3530
19 years old or younger	705	31.5	22.3	9.2 ***	0.0000	
20 - 23 years old	324	27.9	21.1	6.8 ***	0.0050	
24 years old or older	461	28.6	22.7	5.9 ***	0.0030	
Sample size	1,490					
High school diploma or equivalency						0.5270
Earned a high school diploma	1,268	30.3	21.9	8.4 ***	0.0000	
Earned a high school equivalency	163	27.5	21.4	6.1 *	0.0860	
Sample size	1,431					
Traditional or nontraditional						0.7780
Traditional	789	30.9	22.6	8.2 ***	0.0000	
Nontraditional	698	29.0	21.3	7.6 ***	0.0000	
Sample size	1,487					

(continued)

**Appendix Table C.2 (continued)**

Student Characteristic	Sample Size	Average Credits Earned		Difference	P-Value for Difference	P-Value for Differential Estimated Effects
		Program Group	Control Group			
Semester of entry into the program						0.0130 ††
Spring	652	29.8	18.9	10.9 ***	0.0000	
Fall	849	29.9	24.3	5.7 ***	0.0000	
Sample size	1,501					

SOURCES: MDRC calculations using baseline information form data, placement test data, and transcript data from the demonstration colleges.

NOTES: Rounding may cause slight discrepancies in sums and differences.

A two-tailed t-test was applied to differences between research groups. Statistical significance levels are indicated as: \*\*\* = 1 percent; \*\* = 5 percent; \* = 10 percent.

A two-tailed t-test was applied to differences in effects between or among subgroups. Statistical significance levels are indicated as: ††† = 1 percent; †† = 5 percent; † = 10 percent.

Estimates are adjusted by site, cohort, gender, race/ethnicity, age, parental status, marital status, weekly hours worked, dependence on parents for 50 percent or more of financial support, whether a student is the first family member to attend college, whether a student earned a high school diploma, the number of outstanding developmental education requirements at the time of random assignment, and intended enrollment level.

### Appendix Table C.3

#### Earned a Degree at Any College After Two Years: Variation in Effects, by Student Characteristics

Student Characteristic	Sample Size	Degrees Earned			P-Value for Difference	P-Value for Differential Estimated Effects
		Program Group	Control Group	Difference		
Study college						0.4100
College 1	521	19.1	6.9	12.2 ***	0.0000	
College 2	467	22.1	15.0	7.1 **	0.0490	
College 3	513	15.8	3.1	12.7 ***	0.0000	
Sample size	1,501					
Developmental education needs						0.1900
With developmental education needs	1,060	15.3	5.6	9.7 ***	0.0000	
Without developmental education needs	366	29.4	13.5	16.0 ***	0.0000	
Sample size	1,426					
Gender						0.6720
Female	945	20.2	8.7	11.5 ***	0.0000	
Male	534	17.4	7.4	10.0 ***	0.0000	
Sample size	1,479					
Ethnicity/race						0.3620
Black	507	17.7	8.6	9.0 ***	0.0020	
Hispanic	139	11.8	6.0	5.8	0.2200	
White	667	23.5	9.1	14.4 ***	0.0000	
Other	142	14.0	4.4	9.6 *	0.0900	
Sample size	1,455					
Age category						0.8180
19 years old or younger	705	15.9	6.5	9.3 ***	0.0000	
20 - 23 years old	324	20.1	8.4	11.8 ***	0.0040	
24 years old or older	461	22.6	11.2	11.4 ***	0.0010	
Sample size	1,490					
High school diploma or equivalency						0.1080
Earned a high school diploma	1,268	18.8	8.2	10.6 ***	0.0000	
Earned a high school equivalency	163	22.9	2.6	20.3 ***	0.0010	
Sample size	1,431					
Traditional or nontraditional						0.4460
Traditional	789	16.0	6.4	9.6 ***	0.0000	
Nontraditional	698	22.5	10.2	12.3 ***	0.0000	
Sample size	1,487					

(continued)



**Appendix Table C.3 (continued)**

Student Characteristic	Sample Size	Degrees Earned		Difference	P-Value for Difference	P-Value for Differential Estimated Effects
		Program Group	Control Group			
Semester of entry into the program						0.4730
Spring	652	19.0	6.5	12.5 ***	0.0000	
Fall	849	19.2	9.1	10.0 ***	0.0000	
Sample size	1,501					

SOURCES: MDRC calculations using baseline information form data, placement test data, and transcript data from the demonstration colleges and data from National Student Clearinghouse.

NOTES: Rounding may cause slight discrepancies in sums and differences.

A two-tailed t-test was applied to differences between research groups. Statistical significance levels are indicated as: \*\*\* = 1 percent; \*\* = 5 percent; \* = 10 percent.

A two-tailed t-test was applied to differences in effects between or among subgroups. Statistical significance levels are indicated as: ††† = 1 percent; †† = 5 percent; † = 10 percent. For the measures presented in this table, no statistically significant differences between subgroups were observed.

Estimates are adjusted by site, cohort, gender, race/ethnicity, age, parental status, marital status, weekly hours worked, dependence on parents for 50 percent or more of financial support, whether a student is the first family member to attend college, whether a student earned a high school diploma, the number of outstanding developmental education requirements at the time of random assignment, and intended enrollment level.

## Appendix Table C.4

### Enrollment and Full-Time Enrollment

Outcome (%)	Program Group		Control Group		Estimated Effect		
	Mean	Standard Deviation	Mean	Standard Deviation	Difference	Standard Error	P-Value
<b><u>Enrolled at any college</u></b>							
Semester 1	95.1	21.3	91.4	28.3	3.7	1.3	0.0050
Semester 2	79.9	40.0	68.3	46.6	11.6	2.2	0.0000
Semester 3	68.4	46.4	58.1	49.4	10.3	2.5	0.0000
Semester 4	60.2	48.9	50.5	50.0	9.6	2.6	0.0000
<b><u>Enrolled full time at the college of random assignment</u></b>							
Semester 1	83.9	36.3	65.9	47.6	17.9	2.1	0.0000
Semester 2	65.2	47.6	46.9	49.9	18.3	2.4	0.0000
Semester 3	47.9	50.0	28.7	45.1	19.2	2.4	0.0000
Semester 4	34.3	47.6	23.4	42.2	10.8	2.3	0.0000
Sample size (total = 1,501)	806		695				

SOURCES: MDRC calculations using data from the National Student Clearinghouse and transcript data from the demonstration colleges.

NOTES: Enrollment is based on all available data and combines spring and summer enrollment.

Estimates are adjusted by site, cohort, gender, race/ethnicity, age, parental status, marital status, weekly hours worked, dependence on parents for 50 percent or more of financial support, whether a student is the first family member to attend college, whether a student earned a high school diploma, the number of outstanding developmental education requirements at the time of random assignment, and intended enrollment level.

Full-time enrollment is defined as enrollment in 12 or more credits and is based on the study college only.

**Appendix Table C.5**  
**Credits Attempted and Earned**

Outcome	Program Group		Control Group		Estimated Effect		
	Mean	Standard Deviation	Mean	Standard Deviation	Difference	Standard Error	P-Value
<b><u>Total credits attempted</u></b>							
Semester 1	13.78	5.39	11.69	5.42	2.08	0.27	0.0000
Semester 2	11.52	7.62	8.47	7.36	3.05	0.37	0.0000
Semester 3	8.57	7.55	5.81	6.46	2.76	0.36	0.0000
Semester 4	6.48	7.23	4.88	6.75	1.60	0.36	0.0000
<b><u>Total credits earned</u></b>							
Semester 1	10.14	6.42	8.05	6.02	2.09	0.31	0.0000
Semester 2	8.48	7.45	6.11	6.84	2.37	0.35	0.0000
Semester 3	6.66	7.07	4.32	5.85	2.34	0.33	0.0000
Semester 4	5.21	6.68	3.76	5.83	1.45	0.32	0.0000
<b><u>Cumulative credits earned</u></b>							
Semester 1	10.07	6.41	8.04	6.02	2.03	0.31	0.0000
Semester 2	18.34	11.87	14.05	11.11	4.29	0.58	0.0000
Semester 3	24.85	17.25	18.23	15.40	6.62	0.82	0.0000
Semester 4	29.92	21.71	21.87	19.40	8.05	1.04	0.0000
Sample size (total = 1,501)	806		695				

SOURCE: MDRC calculations using transcript data from the demonstration colleges.

NOTES: Credits attempted and earned in the spring and summer semesters are combined. Calculations are based on all available data.

Estimates are adjusted by site, cohort, gender, race/ethnicity, age, parental status, marital status, weekly hours worked, dependence on parents for 50 percent or more of financial support, whether a student is the first family member to attend college, whether a student earned a high school diploma, the number of outstanding developmental education requirements at the time of random assignment, and intended enrollment level.

## Appendix Table C.6

### Degrees Earned at Any College

Outcome (%)	Program Group		Control Group		Estimated Effect		
	Mean	Standard Deviation	Mean	Standard Deviation	Difference	Standard Error	P-Value
<b><u>Earned a degree at any college</u></b>							
Semester 1	0.3	5.8	0.0	0.0	0.3	0.2	0.0950
Semester 2	1.6	12.7	0.7	8.6	0.9	0.6	0.1160
Semester 3	7.7	26.6	2.5	15.5	5.1	1.1	0.0000
Semester 4	19.0	39.4	7.9	26.7	11.1	1.7	0.0000
<b><u>Highest degree earned by the end of the fourth semester</u></b>							
Certificate	1.9	13.8	1.1	10.1	0.9	0.7	0.1870
Associate's	17.1	37.8	6.9	25.0	10.2	1.6	0.0000
Sample size (total = 1,501)	806		695				

SOURCES: MDRC calculations using data from the National Student Clearinghouse and transcript data from the demonstration colleges.

NOTES: Degrees earned in spring and summer semesters are combined.

Estimates are adjusted by site, cohort, gender, race/ethnicity, age, parental status, marital status, weekly hours worked, dependence on parents for 50 percent or more of financial support, whether a student is the first family member to attend college, whether a student earned a high school diploma, the number of outstanding developmental education requirements at the time of random assignment, and intended enrollment level.

**Appendix D**

**The Ohio Programs' Costs**



This appendix supplements the information provided in the main body of the brief by providing additional cost calculations, including the direct costs for each program component, the base cost for status quo services, the indirect or induced costs, and the programs' net costs. These terms are defined in the sections that follow. Alternate calculations of direct costs are also provided.

## Computing Direct Costs

The direct costs of the programs' services are those incurred for administration and staffing, student services, and financial support. Appendix Table D.1 shows the total annual direct cost per program group member (\$2,331). This estimate spreads costs across all students who started in the evaluation's program group, including those who enrolled less than full time, dropped out, or graduated. Cost results are described using this approach (rather than a cost-per-full-time-equivalent approach) in order to align these cost estimates with the outcomes and effects described in the impact section of this brief, which also include all members of the program group and control group.

Direct costs per student per year were calculated by taking the total cost of the program to date and dividing it by the number of students assigned to the program group, then dividing it again by the average number of academic years since those students began the program (approximately two years).<sup>1</sup>

Direct cost per student per year = (total program cost) / (number of students assigned to the program group \* average years since entering program)

### Definitions of Direct Cost Categories

**Administration and staffing** costs consist of:

- Administration: the salaries, benefits, and overhead associated with senior leaders, the program director, and staff associates at the individual colleges who manage the program.<sup>2</sup>
- Institutional research: costs associated with colleges' internal data collection and analysis of the programs. These costs do not include costs associated with MDRC researchers' evaluation of the program.
- Other: office supplies, consultants, travel, marketing materials, computers.

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<sup>1</sup>The "number of students assigned to the program group" includes 322 students who were not part of the impact analysis sample but who did have program services made available to them.

<sup>2</sup>Overhead refers to costs that are not direct labor or direct materials costs, for example costs for utilities or furniture.

## Appendix Table D.1

### Direct Cost of the Programs per Sample Member per Year

Program Component	Cost (\$)	Percentage of the Total
Administration and staffing		
Administration	857	36.8
Institutional research	40	1.7
Other	80	3.4
Subtotal	978	41.9
Student services		
Advising	496	21.3
Career services	71	3.0
Tutoring	46	2.0
Subtotal	613	26.3
Financial support		
Monthly incentive	210	9.0
Textbook assistance	278	11.9
Tuition waiver	254	10.9
Subtotal	741	31.8
<b>Total</b>	<b>2,331</b>	<b>100.0</b>

SOURCE: MDRC calculations based on program expenditure data from the demonstration colleges.

NOTES: Rounding may cause slight discrepancies in sums and differences.

Program costs are based on total costs during the first three years of the program, including the pilot phase. The pilot phase involved nonstudy, logistical pilot tests of the Ohio programs at each of the three study colleges to set up the programs' operations and staff and to determine if any adjustments were necessary before the full, large-scale demonstration started.

The discount rate used for program costs is 3 percent. All costs are shown in constant 2018 dollars.

#### Student services costs consist of:

- Advising: salaries, benefits, and overhead for program advisers.
- Career services: salaries, benefits, and overhead for program-specific career-services staff members.
- Tutoring: salaries, benefits, and overhead for program-specific tutors for the proportion of their time they spent working with program students enrolled in developmental courses, on academic probation, or otherwise seeking assistance.



**Financial support** costs consist of:

- Tuition waiver: the dollar amounts of any differences between financial aid and tuition and fees (which are waived as part of the program).
- Textbook assistance: voucher amounts to cover students' textbook costs through the campus bookstore.
- Monthly incentive: monthly \$50 gas/grocery gift cards given to students contingent on their participation.

## Computing Net Costs

Appendix Table D.2 shows the program's net costs, base costs and indirect (or induced) costs.

### Calculating Base Cost

“Base cost” refers to the cost of the “usual” college services provided to students who are not in the program — for example, the cost of instructors, buildings, college administration, etc. The base cost provides context for interpreting the programs' direct cost.

This analysis assumes that resource use corresponds to the number of credits attempted; in other words, a student who attempts more credits is generally associated with greater expenditures than a student who attempts fewer credits. The analysis uses credits attempted because it provides a simple measure of a student's level of engagement with the college. To estimate the dollar value of the credits attempted in a usual college experience, the number of credits attempted per year by students in the control group (about 14.2 from randomization through the end of 2017) is multiplied by an estimated cost per credit.<sup>3</sup> This total comes to about \$7,300 spent by the college per year for each student in the control group.

This base cost is an estimate of how much money is spent to educate the typical student in the absence of the program. One limitation of this approach is the assumption that all credits attempted have the same cost to the college, which is probably not the case. For example, science lab courses may be more expensive than English courses. The analyses also assume that the average cost of serving a student at the college is similar to the average cost of serving a student in the study sample. This seems to be a reasonable assumption for the purposes of these analyses

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<sup>3</sup>This cost per credit (approximately \$514) is estimated by dividing the college's annual total expenses and deductions by total instructional activity (credit and contact hours attempted) at the college during the year of interest. These values are reported in the Integrated Postsecondary Education Database System of the National Center for Education Statistics. The values include the cost of depreciation and the cost of scholarships.

## Appendix Table D.2

### Net Cost of Education per Sample Member per Year

Cost (\$)	Program Group	Control Group	Difference (Net)
Direct cost: cost of primary program components	2,331	0	2,331
Base cost: cost of credits attempted in the absence of the program	7,284	7,284	0
Indirect cost: cost of additional credits attempted due to the program			
Upper bound: marginal cost equal to average cost <sup>a</sup>	2,182	0	2,182
Lower bound: marginal cost equal to zero <sup>b</sup>	0	0	0
Average of upper and lower bound: primary estimate of marginal cost	1,091	0	1,091
<b>Total cost</b>			
Upper bound: marginal cost equal to average cost <sup>a</sup>	11,797	7,284	4,513
Lower bound: marginal cost equal to zero <sup>b</sup>	9,616	7,284	2,331
Average of upper and lower bound: primary estimate of total cost	10,707	7,284	3,422

SOURCES: MDRC calculations based on expenditure and transcript data from the demonstration colleges, and financial and enrollment data from the Integrated Postsecondary Education Data System.

NOTES: Tests of statistical significance were not performed.

Rounding may cause slight discrepancies in sums and differences.

Program costs exclude external research costs.

Credits attempted include all college-level and developmental credits attempted.

<sup>a</sup>"Marginal cost equal to average cost" represents the case in which existing college resources cannot be used to accommodate changes in credits attempted, so the college incurs additional costs. The additional cost to the college, or the marginal cost of the additional credits attempted, is approximated as the average cost per credit attempted at the institution, excluding the cost of academic support and student services that the Ohio programs are already providing.

<sup>b</sup>"Marginal cost equal to zero" represents the case in which the college can absorb the cost of additional credits attempted by the program group using existing resources and without incurring new costs.

because the process of random assignment helps ensure that if it is not true — that is, if there are differences between the average costs associated with students at the college and those associated with students in the study sample — then those differences will affect the program and control groups equally.

### Calculating the Indirect Costs of the Program

There are also additional costs to the college if students take more credits because of the program, as they have done in this study. These are referred to as *indirect costs*. While it is likely that if a small number of program students take additional courses the college would incur no marginal costs, if enough students start taking more courses, at some point the college would need to add more courses and hire more staff members.

Indirect costs are estimated based on the average number of additional credits attempted by the program students compared with the control group students. This analysis uses three approaches. A lower-bound estimate assumes that the indirect costs equal zero — that is, that the college incurs no additional costs when more students enroll or when students attempt additional credits. An upper-bound estimate is based on average costs, excluding the costs of academic services and student services.<sup>4</sup> The upper-bound estimate represents the case where the college is unable to absorb the cost of additional students enrolled or additional credits attempted because its existing resources are already fully used. For example, if students are enrolling in additional courses that are filled to capacity, then the college may have to open new course sections.

It is unlikely that every additional credit attempted by a student costs the college as much as the average credit attempted, and it is also unlikely that there is zero cost to the college for additional credits attempted. An average of these two estimates — the midpoint between the upper and lower bounds — is therefore used as the primary estimate of indirect costs. That midpoint is \$1,091 of indirect costs per student per year. This estimate is intended to approximate the indirect costs should this program continue, and to provide a useful estimate to other colleges. However, for the time period covered in this report, the colleges in this study were facing underenrollment challenges, so the indirect cost may have been closer to the lower bound of \$0. Moreover, it is also worth noting that, from the colleges' perspective, indirect costs are offset by increased revenue in the form of increased tuition associated with the additional credits attempted.

### **Calculating the Total and Net Costs**

The costs of each group are presented in the final lines of Appendix Table D.2. The *total cost* is calculated by adding the direct cost, base cost, and indirect cost. The total cost of the program per program group member per year was \$10,707, compared with the \$7,284 cost to educate the average control group member. The *net cost* is defined as the difference between the total program group cost and the total control group cost. The net cost is \$3,422 per program group member per year, representing a 47 percent increase.

### **Additional Cost Analyses**

Additional cost analyses were performed to explore cost variation across colleges, the costs per enrolled student, and the cost of the space used for the program. Potentially unaccounted-for control group costs are also considered below.

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<sup>4</sup>This cost per credit is different from the cost per credit used in the base cost estimate. The cost per credit for the base cost is estimated using the college's total expenditures and total instructional activity in credit hours. The cost per credit for indirect cost is similar, but the costs of academic and student services are excluded. The reason for this difference is to avoid double-counting the costs associated with academic and student services, since the program already pays for additional student services.

## Direct Costs by College

Direct costs were calculated for each college to see how they differ. Two of the colleges' programs had similar direct costs, while the third (Cincinnati State Technical and Community College, or C-State) had costs that were about \$600 lower per program member per year. C-State had lower advising, career-services, and textbook expenditures than Lorain County Community College, and much lower administration costs than Cuyahoga Community College (Tri-C). Tri-C had even lower advising and career expenditures than C-State, but roughly twice the administration costs of either of the other two colleges. Lorain's student services costs were twice as high as Tri-C's, leaving the total program costs about equal.

Tri-C had higher administration costs because it operated the program at two of its four campuses and therefore needed two program directors, whereas the other colleges had only one each. Since Tri-C served roughly the same number of program group students as the other colleges, this additional program director led to higher per-student administrative costs. If the program were to expand at each campus, the proportion of the total costs represented by administration should fall. It is not as clear why the colleges have different student-services costs, although the colleges with lower costs may have made greater use of existing services.

Almost every category of cost was lower in the Ohio programs than in the 2010 City University of New York (CUNY) Accelerated Study in Associate Programs (ASAP),<sup>5</sup> probably because CUNY had to pay higher New York City salaries, dedicated tutors and career specialists, costs associated with blocked and linked courses, and higher monthly incentives in the form of MetroCards. CUNY ASAP's costs have dropped substantially over time as the model evolved and was expanded to serve many more students. The Ohio model was also based on the newer, less expensive version of CUNY ASAP.

## Direct Cost per Enrolled Student Per Year

The cost per program group member per year may be of interest to those seeking to create a budget for the two-year costs of operating this type of program for an incoming group of students. It is also useful for aligning net costs with the effects of the programs. However, the cost per program group member obfuscates the amount spent on *enrolled* students, since it includes all students (enrolled and unenrolled) in the calculation, and many students drop out or graduate within two years. Consequently, some readers may be interested in understanding the cost per enrolled student per year, since at many colleges a large proportion of revenue is associated with enrollment. Moreover, a college seeking to sustain a program of this type may want the cost of serving a particular number of students per year, with the plan of filling program slots as students drop out or graduate.

The cost per program group member is lower than the cost per student participating in the program because many students assigned to the program do not remain enrolled throughout

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<sup>5</sup>Susan Scrivener, Michael J. Weiss, Alyssa Ratledge, Timothy Rudd, Colleen Sommo, and Hannah Fresques, *Doubling Graduation Rates: Three-Year Effects of CUNY's Accelerated Study in Associate Programs (ASAP) for Developmental Education Students* (New York: MDRC, 2015).

the program period. The cost per program member *per semester enrolled* was calculated using enrollment data for program group students. The number of semesters that each student took courses was averaged to attain this number (about three). This amount serves as a proxy of cost per program participant since students who do not enroll are not receiving the program. This figure is multiplied by two to give the average annual direct cost per program participant. Using this method, the direct cost is \$3,303 *per enrolled student per year*, about \$1,000 higher than the direct cost per program group student per year (that is, including students who did not enroll). This amount may be a more accurate reflection of what the colleges actually spent on participating students. Therefore, a college interested in operating a program like these might use this value to estimate the annual cost per student who actually attends.<sup>6</sup>

### **Costs of the Space Used by the Program**

While the direct and indirect costs presented above are easily quantified in dollar terms, there are other real resources without which the program could not be implemented that do not have a clear market price. These costs could be added to the other program costs for a more complete picture of the full program costs, both to the colleges and the students.

The physical space used for the program has an opportunity cost, even if the college already has the space available.<sup>7</sup> An approximate cost of the space used for advising was estimated using prices based on annualized construction costs (from the Center for Benefit-Cost Studies of Education CostOut Tool).<sup>8</sup> At one college (Lorain) the program reportedly used only about 200 square feet. At another college (Tri-C), the program reportedly used approximately 2,410 square feet. Finished office space costs about \$666 per square foot to construct. This amount spread over 30 years at a 3.5 percent interest rate yields a cost of about \$36 per square foot per year for full-time use. Based on the estimates provided, the total cost would range between \$7,200 and \$87,000 total per college per year, or between \$20 and \$230 per student per year, an amount not included in the cost tables. However, it is unlikely that the program would need to use the larger space exclusively, so the lower estimate is probably a much more realistic representation of the opportunity cost of the space used.<sup>9</sup>

### **Substitution of Program Services**

One assumption of the net-cost analysis is that the base cost per credit attempted is the same for program and control group members. This assumption implies that for each credit attempted, program and control group members used the same amount of non-program-related services (for example, regular advising, tutoring, etc.). The assumption may not be accurate if

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<sup>6</sup>Base costs for students who would be enrollees if given the opportunity to be in the program are not estimated, nor are net costs for enrollees. Credits attempted by the equivalent control group students (those who would have enrolled if they had been in the program group) are not directly observable because the intervention affected which students enrolled, even in the first semester.

<sup>7</sup>An “opportunity cost” is a benefit missed when one alternative is chosen over another.

<sup>8</sup>Fiona Hollands, Barbara Hanisch-Cerda, Henry M. Levin, Clive Belfield, A. Menon, Robert D. Shand, Yilin Pan, L. Bakir, and H. Cheng, 2015, “*CostOut* — The CBCSE Cost Tool Kit,” [www.cbccsecosttoolkit.org](http://www.cbccsecosttoolkit.org).

<sup>9</sup>Student time represents another opportunity cost not estimated here, but it is not incurred by the college.

program group students did not use as many regular student services because they replaced them with program services, or if control group students used program services at all.

In the areas of career services and tutoring, some activities that are being counted as program activities are in fact typical college services that the control group also had access to. For example, even though the program provided program-specific tutors, it is likely that program group students fulfilled many of the program's tutoring requirements by visiting the college's multiple tutoring resources that were also available to control group students. If program group students used these tutoring services more than control group members did, the program group's base cost is underestimated.

Similarly, program group students could fulfill their career service requirements by making use of services available to any student: attending job fairs, attending workshops on résumé building or interviewing skills, completing online skills or interests assessments, meeting with career advisers, etc. None of these activities are specific to the program group and are available to any student. At one college (C-State), all students in particular majors are required to complete a semester-long co-op (or two); this co-op can be counted as a career service activity to meet the program's requirement.<sup>10</sup> It is not known how much use the control group made of tutoring and career services, but because of program requirements the program group may have made more use of them than the control group.<sup>11</sup>

If control group students used any of these services more than program group students, the base costs of the programs are probably overstated for the program group (and therefore the net costs are too). If control group students are using these services less than program students, the base costs for the program group may be understated (and therefore the net costs are too). However, because career services and tutoring (where there is the most uncertainty about the services used by the program and control groups) make up a small portion of the total costs, the estimate presented is probably close to the correct amount. As mentioned in the main brief, the final report will include an additional year of cost data, allowing the analyses above to be updated, and will present a cost-effectiveness analysis, comparing the cost per graduate in the program and control groups.

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<sup>10</sup>These co-ops are 15-week job opportunities meant to allow students to extend their classroom learning to the workplace.

<sup>11</sup>There are also a small number of students at each college who may be involved in other specialty programs, such as TRIO (federal outreach and student-services programs designed to identify individuals from disadvantaged backgrounds and provide services for them). These programs are very small but may offer textbook assistance, tuition support, and access to advisers (like the program advisers offered by the Ohio ASAP Demonstration programs). It is possible that a small number of control group students could also enroll in these specialty programs.