



**Karen B. Salmon, Ph.D.**  
State Superintendent of Schools

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**TO:** Members of the State Board of Education  
**FROM:** Karen B. Salmon, Ph.D.  
**DATE:** August 25, 2020  
**SUBJECT:** Equal Opportunity Schools: Program Overview and Impact

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**PURPOSE:**

To inform the State Board of Education on the partnership between Maryland public schools and Equal Opportunity Schools (EOS), a national nonprofit organization established in 2010 to increase the participation of low-income students and students of color in advanced placement courses.

**BACKGROUND/HISTORICAL PERSPECTIVE:**

Equal Opportunity Schools (EOS) is a national nonprofit organization established in 2010 to increase the participation of low-income students and students of color in advanced placement courses. Starting in 2016-17, EOS partnered with schools in Maryland to identify low income students and students of color that are missed in typical identification methods for Advanced Placement courses. Over the past four years, 53 schools have participated in the program for at least one year. Nationally, EOS has worked with over 600 schools in 30 states to provide onsite technical assistance to analyze data, create a strategy to recruit underrepresented students, and provide ongoing support, data tools, and enrollment tracking. In addition to test scores, EOS uses survey data on students' learning mindsets to identify underrepresented students who have potential to be successful in AP courses.

**EXECUTIVE SUMMARY:**

The presentation will take place in two parts. First, Eddie Lincoln, Chief Partnership Development Officer at Equal Opportunity Schools, will explain EOS's work in Maryland. Second, MSDE will present the results of a study on the impact of EOS on the participation rate and exam performance of underrepresented students on Advanced Placement exams.

**ACTION:**

None required.

**ATTACHMENTS:**

Equal Opportunity Schools Overview (presentation)  
Equal Opportunity Schools Impact Study (presentation and research brief)

# Equal Opportunity Schools (EOS) Impact Study



Maryland State Board of Education  
August 25, 2020

# Research Questions and Findings

- 1) How has Equal Opportunity Schools (EOS) impacted the participation of underrepresented students in Advanced Placement (AP) courses?

The Advanced Placement (AP) course participation rate of underrepresented students in schools that partnered with Equal Opportunity Schools (EOS) were on average 7 percentage points higher than the rate in similar schools that did not partner with EOS (controlling student and school characteristics).

- 2) How do underrepresented students in EOS partner schools perform on AP exams compared to similar non-partner schools?

Even with greater participation, the AP exam pass rate and average exam score for underrepresented students in schools that partnered with EOS was similar to that in a sample of similar schools.

“Underrepresented students” are students who either qualify for free and reduced meals (FARMS) or are non-White.

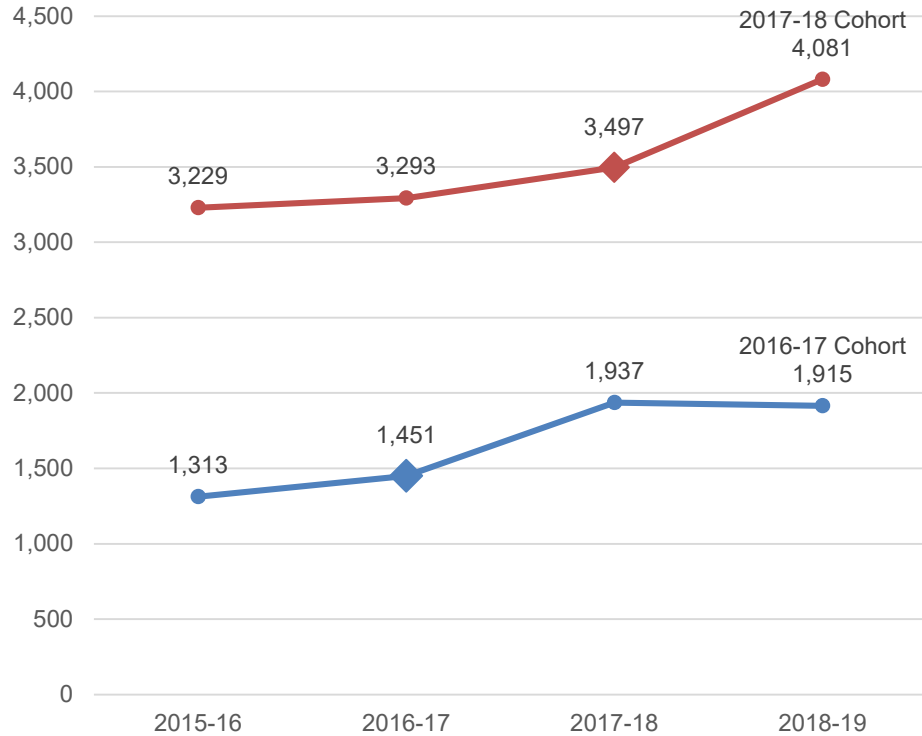
# Cohorts and Available Data

Cohort Number	EOS Start Year	Number of New Schools	Participating Systems	First Year of Outcomes
1	2016-2017	4	1	2017-2018
2	2017-2018	17	4	2018-2019
3	2018-2019	11	3	2019-2020
4	2019-2020	21	4	2020-2021

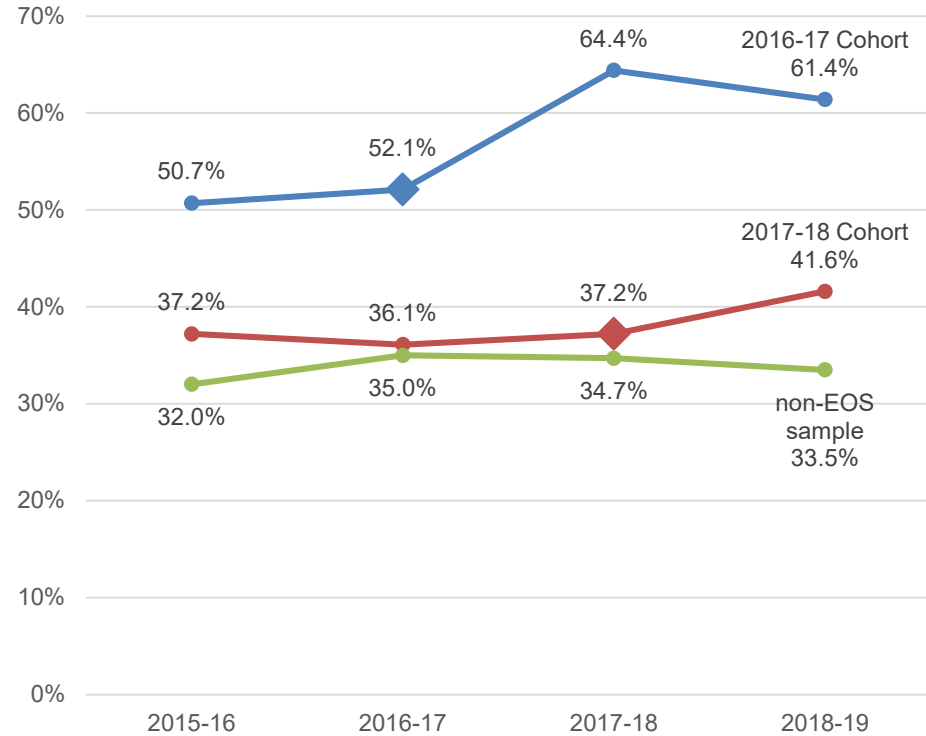
- The first year of EOS participation is used for school-wide planning and identification of potential underrepresented AP students, who will enroll in AP courses the following school year.
- Analyses were conducted with schools in Cohorts 1 and 2.
- The impact of EOS was estimated using grades 11 and 12 student level data from a **matched sample of schools** in a generalized difference in differences framework. Regression models account for differences between schools, school years, and grades.

# Participation in AP Courses

Number of Underrepresented Students Enrolled in AP Courses



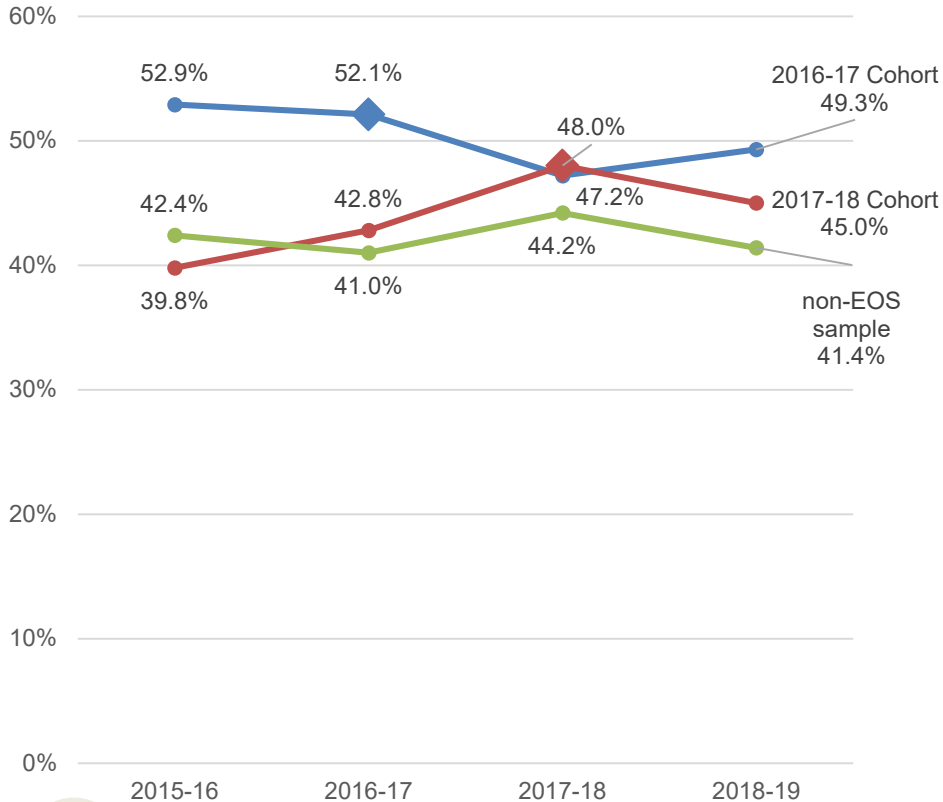
Participation Rate of Underrepresented Students in AP Courses



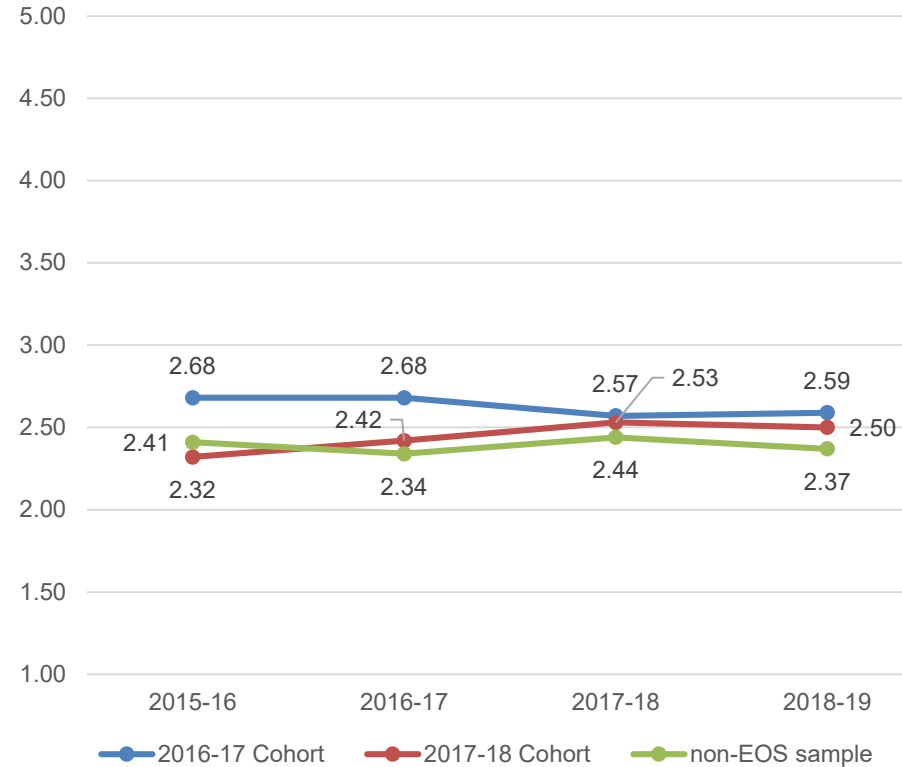
Diamond symbol represents the first (planning) year of EOS participation.

# Performance on AP Exams

## AP Exam Pass Rate of Underrepresented Students



## Average AP Exam Score for Underrepresented Students



Diamond symbol represents the first (planning) year of EOS participation.

## Analysis: EOS Impact on AP Participation and Performance

- We created a matched sample of schools with similar pre-EOS percentages of students enrolled in AP courses. The matched sample also had similar AP exam pass rates and scores, number of AP courses offered, student demographics, and enrollment.
- Compared to the non-EOS sample, and controlling for student and school characteristics:
  - The Advanced Placement (AP) course participation rate of underrepresented students in schools that partnered with Equal Opportunity Schools (EOS) were on average 7 percentage points higher than the rate in similar schools that did not partner with EOS.
  - Even with greater participation, the AP exam pass rate and average exam score for underrepresented students in schools that partnered with EOS was similar to that in a sample of similar schools.



**Purpose:** To evaluate the impact of Equal Opportunity Schools’ work in Maryland public schools.

### Findings

(1) The Advanced Placement (AP) course participation rate of underrepresented students in schools that partnered with Equal Opportunity Schools (EOS) were on average 7 percentage points higher than the rate in similar schools that did not partner with EOS.

(2) Even with greater participation, there was no significant difference in the AP exam pass rate or average AP exam score for underrepresented students between schools that partnered with EOS and a sample of similar schools.

### Overview

Equal Opportunity Schools (EOS) is a national nonprofit organization established in 2010 to increase the participation of low-income students and students of color in advanced placement courses. Nationally, EOS has worked with over 600 schools in 30 states to provide onsite technical assistance to analyze data, create a strategy to recruit underrepresented students, and provide ongoing support, data tools, and enrollment tracking. In addition to test scores, EOS uses survey data on students’ learning mindsets to identify underrepresented students who have potential to be successful in AP courses.

Starting in 2016-17, EOS partnered with schools in Maryland to identify low income students and students of color that are missed in typical identification methods for Advanced Placement courses. Over the past four years, 53 schools have participated in the program for at least one year. The first partnership year is devoted to planning and identification of students; therefore, outcomes are not available until the following school year. (See Table 1 for cohort information.) This study asks research questions about, and uses data available for, the schools that started with EOS in Cohorts 1 and 2.

**Table 1: *Number of EOS partner schools, systems by cohort***

Cohort Number	Start Year (Planning and Student ID)	Number of New Schools	Participating Systems	First Year of Outcomes
1	2016-2017	4	1	2017-2018
2	2017-2018	17	4	2018-2019
3	2018-2019	11	3	2019-2020
4	2019-2020	21	4	2020-2021





## Research Questions

For Cohorts 1 and 2 of EOS schools:

1. What are the trends in underrepresented student enrollment in Advanced Placement (AP) course enrollment and AP exam performance by EOS cohort?<sup>1</sup>
2. How does EOS impact the participation of underrepresented students in AP courses?
3. How do underrepresented students in EOS partner schools perform on AP exams compared to similar non-partner schools?

## Methodology

Using MSDE data on student demographics, course enrollment, and AP exam performance, the percentage of underrepresented students enrolled in at least one AP course, the AP exam pass rate of underrepresented students, and the average AP exam score of underrepresented students are examined by EOS cohort from 2015-16 to 2018-19 and compared to the trend of non-EOS schools. Due to data limitations, course grades are not an outcome included in the current study. Also due to data limitations, two schools in Cohort 2 are excluded from the analyses.

A comparison between EOS partner schools and all other schools is not an apt comparison as EOS partner schools are significantly different from schools that did not partner with EOS along a number of baseline characteristics (see Appendix Table A2 for a comparison). For example, EOS partner schools are on average significantly larger, offer more AP courses, and enroll more English Learner students. To create a more appropriate comparison group for EOS partner schools, non-partner schools were therefore matched with partner schools based on pre-partnership characteristics and outcomes.

The impact of EOS was estimated using grades 11 and 12 student level data from a matched sample of schools in a generalized difference in differences framework. Regression models account for differences between schools, school years, and grades.

## Results

Table 2 shows the number of schools, systems, and underrepresented students in the EOS schools included in this analysis. While the first cohort of schools only included 4 schools in one school system, the following cohort included more schools across multiple systems.

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<sup>1</sup> For the purposes of this study, underrepresented students include students who either qualify for free and reduced meals (FARMS) or are non-White.

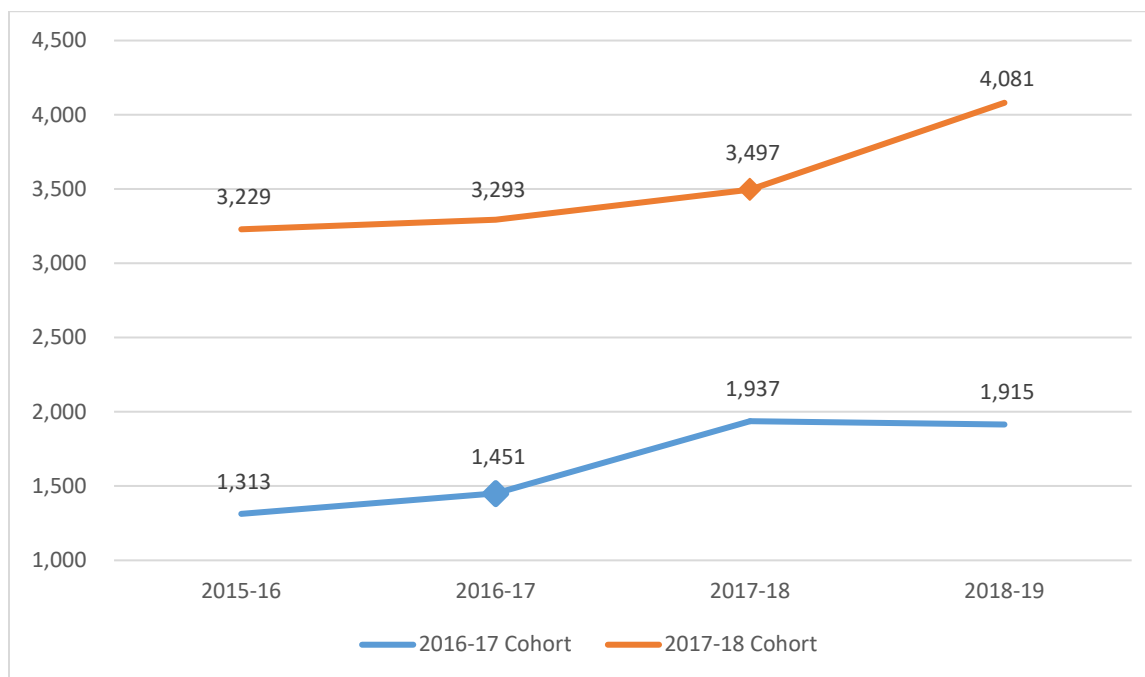
**Table 2: EOS partner schools, systems, and underrepresented (UR) student enrollment by cohort**

Cohort	Schools	Local School Systems	Grades 11 and 12 UR Student Enrollment in 2016-17
2016-17	4	1	2,759
2017-18	15	4	10,874

Note: cohort indicates first year of partnership, not first year of outcomes; future cohorts are not part of this study as outcome data is not yet available. Two schools and one school system in the second cohort are excluded from analyses due to data limitations.

Figure 1 shows the counts of underrepresented students who enrolled in at least one AP course. The 2016-17 cohort increased the number of underrepresented students enrolled in AP courses in the first partnership year from 1,451 to 1,937 and the 2017-18 cohort increased the same count from 3,497 to 4,081.

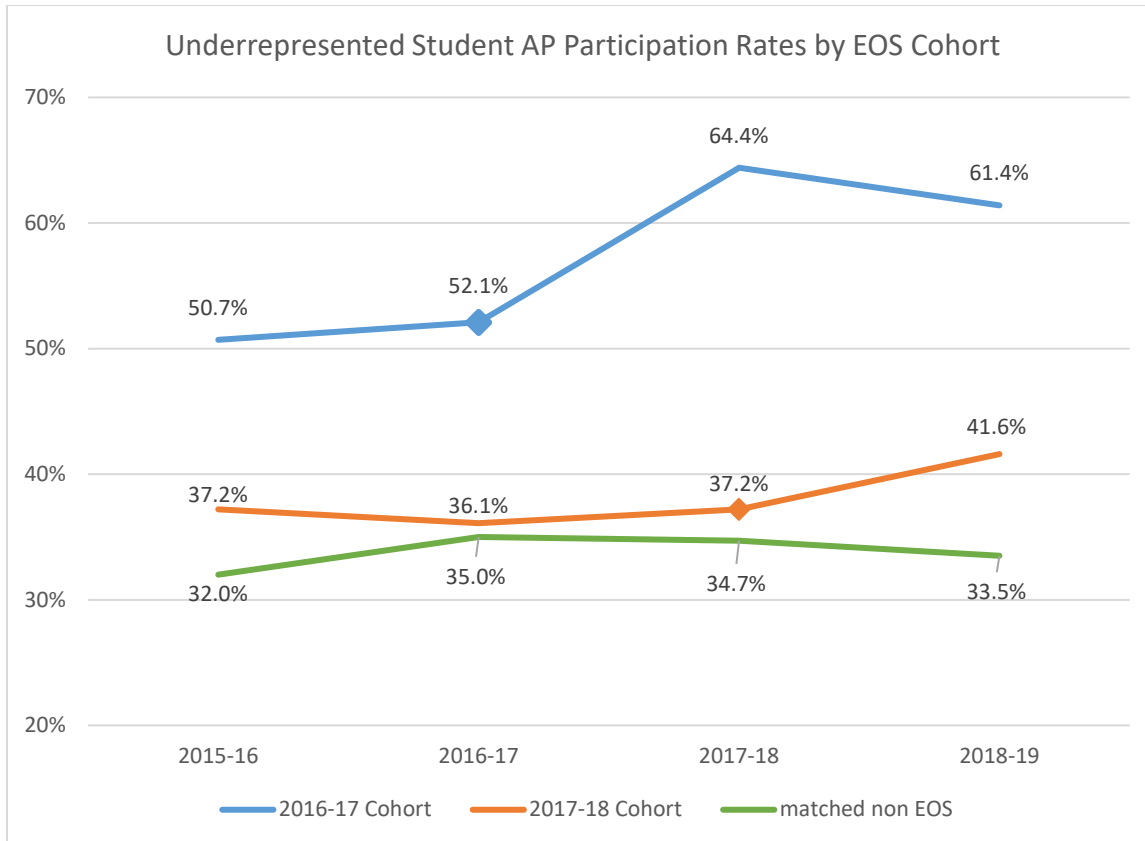
**Figure 1: Underrepresented student AP participation counts by EOS cohort**



Note: The diamond indicates the first year of the EOS partnership.

Figure 2 shows the percent of underrepresented students enrolled in at least one AP course by year and EOS cohort. Each cohort’s average AP participation rate was higher than all other schools that were not in the first three cohorts. In the first year of outcome after partnering with EOS, the participation rate of the 2016-17 cohort increased from 52.1% to 64.4% and the participation rate of the 2017-18 cohort increased from 37.2% to 41.6% while the rate of the matched group of non-EOS schools decreased slightly over these two years.

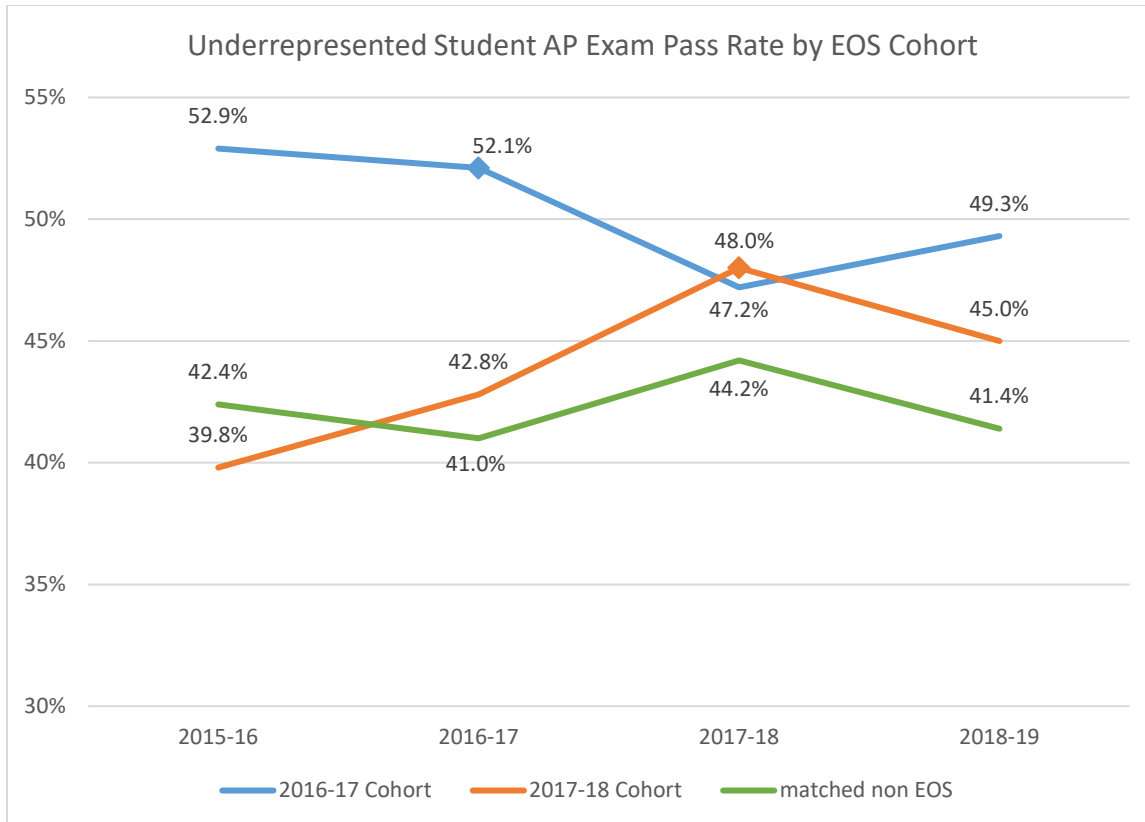
**Figure 2: Underrepresented student AP participation rate by EOS cohort**



Note: The diamond indicates the first year of the EOS partnership.

Figure 3 show the AP exam pass rate of underrepresented students by year and cohort. While the AP exam pass rate of underrepresented students in the 2016-17 cohort decreased from 52.1% to 47.2% in the first year after starting to partner with EOS, the pass rate of a matched group of non-EOS schools increased from 41.0% to 44.2%. The 2017-18 cohort decreased from 48.0% to 45.0% from 2017-18 to 2018-19 while the matched group of non-EOS schools also decreased from 44.2% to 41.4%.

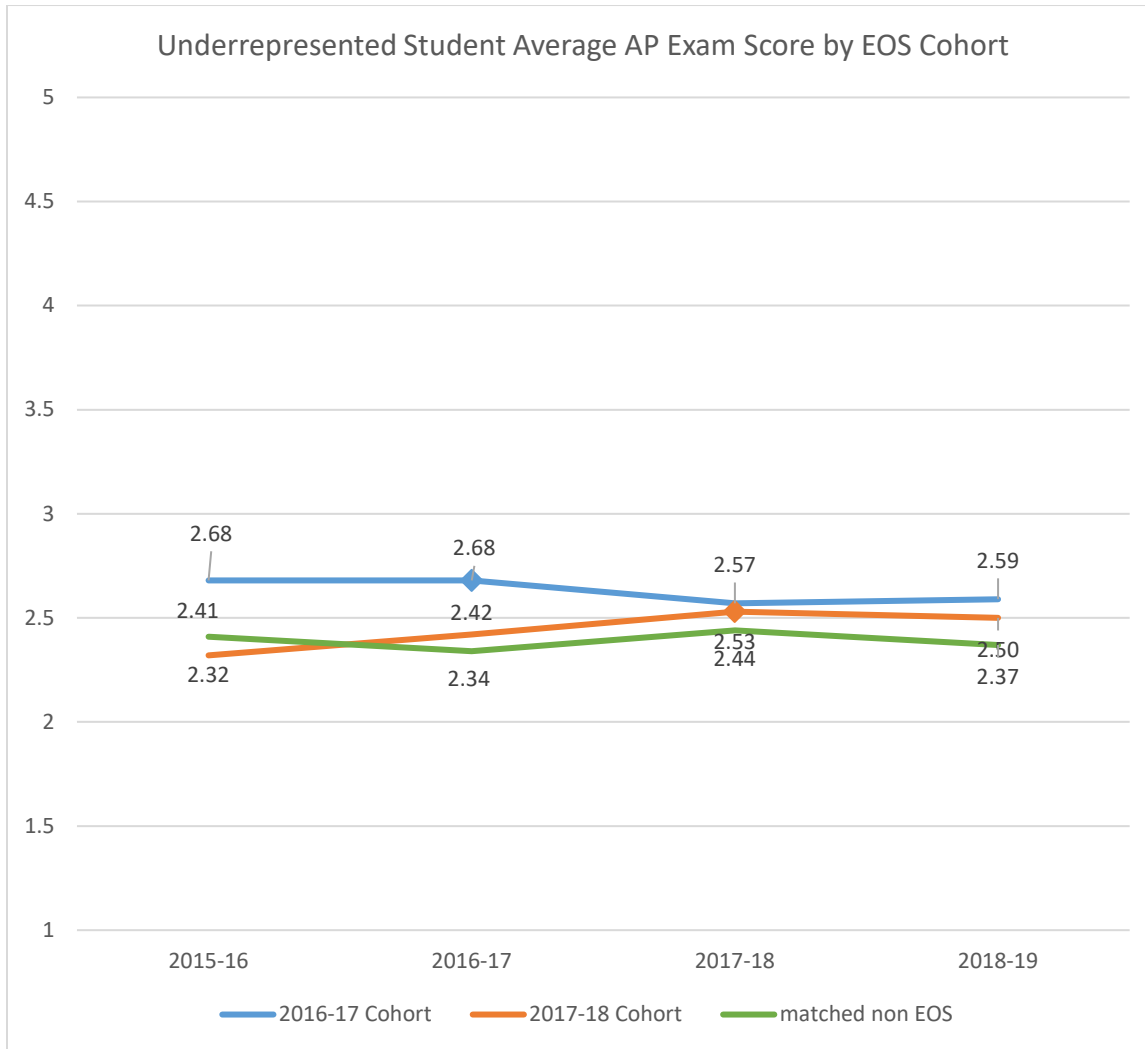
**Figure 3: Underrepresented student AP exam pass rate by EOS cohort**



Note: The diamond indicates the first year of the EOS partnership.

Figure 4 shows the average AP exam score of underrepresented students by cohort and year. Similar to the trends in AP pass rate, the average score of the 2016-17 cohort decreased in the first year from 2.68 to 2.57 and the average score of the matched group of non-EOS schools decreased from 2.34 to 2.44. The average score of the 2017-18 cohort was largely unchanged in the first year after partnership with EOS began, and the average score of the matched group of non-EOS schools decreased slightly from 2.44 to 2.37.

**Figure 4: Average AP exam score of underrepresented students by EOS cohort**



Note: The diamond indicates the first year of the EOS partnership.

Table 3 shows the characteristics of schools in the matched sample. Partner schools and non-partner schools in the matched sample do not significantly differ in terms of school size, underrepresented student enrollment, underrepresented student AP course enrollment, underrepresented student AP exam pass rate, underrepresented student average AP exam score, number of AP courses offered, English Learner population, or proportion of Students with Disabilities. The similarity of the partner and non-partner schools in the matched sample indicates the non-partner schools are a more appropriate comparison group than all schools.

**Table 3: Descriptive statistics of matched sample (2016-17 snapshot)**

	Partner Schools (pre-partnership)	Non-partner Schools	Difference
Pct UR student enrollment	75.5	74.1	1.4
Pct UR student AP course enrollment	39.4	35.0	4.4
Pct UR student AP exam pass rate	44.7	41.0	3.7
AP score average of UR students	2.47	2.34	0.13
School size	750.9	637.6	113.3
Number of AP Courses offered	18.7	17.4	1.3
Pct English Learners	5.6	5.6	0.0
Pct Students with Disabilities	11.1	10.3	0.8
Schools	19	16	

\*\*\*p<0.001, \*p<0.01, \*p<0.05

“UR” indicates underrepresented students

While Figures 1-4 indicate increases in AP participation with little difference in AP performance between EOS schools and the matched sample, regression estimates must be run to determine whether EOS participation is *associated* with these changes or whether the changes can be accounted for by other school or student characteristics.

Table 4 shows regression estimates of the impact of EOS on AP course enrollment, AP exam pass rates, and AP exam scores of underrepresented students compared to the sample of similar schools. Results indicate that, on average, EOS partner schools have AP course enrollment rates that are 7 percentage points higher than similar schools that were not actively partnered with EOS. The AP exam pass rates and average exam scores for underrepresented students were not significantly different between EOS and non-EOS schools. Student-level covariates and school fixed effects are included in the model (not shown).<sup>2</sup>

**Table 4: Regression estimates of outcomes on matched sample**

	AP Course Enrollment	AP Exam Pass Rate	Average AP Exam Score
Underrepresented students	0.07***	-0.02	-0.05
N schools	35	35	35

\*\*\*p<0.001, \*p<0.01, \*p<0.05

<sup>2</sup> Results were qualitatively similar when underrepresented students was redefined to exclude non-FARMs Asian students.



**Appendix Table A1: EOS partner schools and systems by cohort**

Cohort	Local School System	School Name
2016-17	Montgomery County	Col. Zadok Magruder High School
	Montgomery County	Northwest High School
	Montgomery County	Springbrook High School
	Montgomery County	Wheaton High School
2017-18	Calvert County	Calvert High School
	Calvert County	Patuxent High School
	Dorchester County	Cambridge-South Dorchester High School*
	Dorchester County	North Dorchester High School*
	Montgomery County	Clarksburg High School
	Montgomery County	Gaithersburg High School
	Montgomery County	James Hubert Blake High School
	Montgomery County	John F. Kennedy High School
	Montgomery County	Northwood High School
	Montgomery County	Watkins Mill High School
	Prince George's County	Bowie High School
	Prince George's County	Central High School
	Prince George's County	Eleanor Roosevelt High School
	Washington County	North Hagerstown High School
	Washington County	Smithfield High School
	Washington County	South Hagerstown High School
Washington County	Williamsport High School	

\*Schools are excluded from analyses due to data limitations

**Appendix Table A2: Descriptive statistics of schools by partnership status**

	Partner Schools (pre-partnership)	Never Partner Schools	Difference
<b>School characteristics</b>			
Enrollment	750.9	596.1	154.8*
AP Courses	18.7	15.1	3.5
<b>Student population</b>			
UR students	75.5	63.7	11.8
EL	5.6	2.4	3.1*
Special Education	11.1	10.8	0.2
<b>AP course enrollment</b>			
All students	44.4	39.9	4.5
UR students	39.4	34.7	4.7
Non UR students	56.8	48.0	8.8
<b>AP pass rate</b>			
All students	49.9	46.6	3.3
UR students	44.7	42.3	2.4
Non UR students	64.5	58.2	6.3
<b>AP test score</b>			
All students	2.60	2.52	0.08
UR students	2.47	2.41	0.06
Non UR students	2.99	2.85	0.14
<b>Schools</b>	<b>19</b>	<b>176</b>	

\*\*\*p<0.001, \*p<0.01, \*p<0.05

“UR” indicates underrepresented students