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## Advanced Placement Course-Taking and ACT Test Outcomes in Arkansas

Sarah McKenzie

Josh B. McGee

Charlene A. Reid

Jessica S. Goldstein

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Summary Points

- ~34% of students enroll in at least one AP course between 9<sup>th</sup> and 11<sup>th</sup> grade.
- AP students earn higher ACT composite scores relative to their peers, even when controlling for student characteristics.
- AP participation rates and ACT composite scores vary significantly across regions of Arkansas.
- AP students are less likely to be Black, Hispanic, ELL, or FRL .
- On average, AP-Takers score just above the 19 point college remediation threshold while Non-Takers score just below.
- Students from racially diverse or economically disadvantaged backgrounds score lower on the ACT and experience smaller gains even when taking AP courses.

**Advanced Placement Course-Taking and ACT Test Outcomes in Arkansas**

*Since 2008, Arkansas has sought to dramatically increase the number of students participating in Advanced Placement (AP) classes. This program, which allows students to access college-level content while still enrolled in high school, has been linked to higher student achievement and attainment. This brief shares recent research from the Office for Education Policy investigating whether students who take AP courses demonstrate better college readiness and examines how these trends vary for different demographic and socioeconomic groups in the state.*

**Introduction**

The Advanced Placement (AP) program is a nationwide curriculum offering that provides high school students the opportunity to access rigorous, college-level content while still enrolled in secondary school. Students enrolled in AP may ultimately earn college credits for their performance on standardized end-of-course exams (Warne, 2017). The Advanced Placement program was first conceived by the College Board in the 1950s to provide high-value learning opportunities to an elite subset of students.

In recent years, AP has grown to target traditionally underserved students as a way to close achievement gaps in both access to higher education and student outcomes (Finn & Scanlon, 2019). As a result of this targeting, the scale of

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AP coursework in American schools has grown exponentially in recent decades to serve nearly three million students nationwide.

The push to increase the number of traditionally underserved students enrolled in AP has led states to enact policies to ensure increased access to AP courses. One such policy – Arkansas Act 102 – which passed in 2003, mandates universal statewide access to AP coursework in the four core disciplines: math, English, science and social studies (“four core”). To do this, each district was required to offer one AP class in the four core, and each public high school was to provide a minimum of four AP classes, by 2008.

The legislation also required regular approved training for AP and pre-AP teachers, and appropriated funds to cover the testing fee for any Arkansas students taking an AP exam, regardless of socioeconomic status (Office for Education Policy, 2016). In 2003, approximately 43% of schools offered four or more AP classes (Arce-Trigatti, 2018). By 2008, when the mandate went into full effect, the number of schools offering four or more AP courses had risen to around 97% and student participation had increased proportionally.



## Demographic Trends in AP Enrollment

Students who enroll in Advanced Placement courses are noticeably different on observable characteristics relative to their Non-AP peers (Table 1).

On average, AP-Takers in Arkansas are more likely to be White, female, or qualify for gifted and talented services. Advanced Placement students also tend to have higher prior achievement scores compared to those who don't participate in the courses. Those who don't enroll in AP are more likely to be Black or Hispanic, be English Language Learners, or qualify for free- or reduced-price lunch (FRL).

Table 2 describes the trends in ACT composite scores, overall and by AP designation, for the state and each of the five geographic regions of the state: Northwest, Northeast, Central, Southwest, and Southeast. On average, the ACT composite score for the pooled sample of 11<sup>th</sup> graders in 2016-2018 in Arkansas is an 18.9, which is lower than the national average of 20.9 during those same years ([The ACT, 2018](#)). Statistical analysis shows no significant difference between the mean ACT score in each year separately, when compared to the mean ACT score for all years combined.

**Table 1: Characteristics of AP-Takers Compared to Non-AP Takers, 2016-2018**

	AP-Takers	Non-AP Takers
% White	70.0	63.9
% Black	16.9	21.6
% Hispanic	8.7	11.4
% Other Race	4.7	4.0
% Gifted & Talented	20.7	4.7
% English Language Learners	2.3	6.7
% Free/Reduced Lunch	40.7	58.5
7th Grade Math Z-Score	0.676	-0.148
7th Grade ELA Z-Score	0.640	-0.146
N	24,901	51,656

*Note.* Data is for 11th grade students in 2016-2018 only.

**Table 2: Trends in 11<sup>th</sup> Grade ACT Composite Scores & AP Course-Taking Overall and by Region, 2016-2018**

	Statewide	Northwest Arkansas	Northeast Arkansas	Central Arkansas	Southwest Arkansas	Southeast Arkansas
Mean ACT (Overall)	18.90	18.90	19.60	18.60	18.90	17.90
Mean ACT (AP)	22.00	22.00	22.74	22.17	22.21	20.64
Mean ACT (Non-AP)	17.40	17.40	18.45	17.09	16.93	16.24
Difference (AP vs. Non-AP)	4.60***	4.60***	4.29***	5.08***	5.28***	4.40***
Proportion AP-Takers	0.34	0.34	0.33	0.28	0.35	0.36
N	76,557	76,557	27,464	15,294	22,073	7,459

Table 2 also depicts variance in mean ACT score across different regions of Arkansas. Northwest Arkansas 11<sup>th</sup> graders have the highest mean ACT composite score, while students in the Southeast region score lowest overall. The table also shows the mean ACT score for Advanced Placement students in each region, compared to those who did not take AP courses. Large, statistically significant gaps in ACT performance exist for AP-Takers versus Non-AP Takers in all five regions, with the largest gap of over 5 points appearing in the Central region of the state.

AP course-taking as a proportion of total 11<sup>th</sup> grade population between 2016-2018 is also displayed in Table 2. On average, about 34% of students statewide enroll in an AP course in the four core disciplines between 9<sup>th</sup> -11<sup>th</sup> grade. There is also variation in AP participation across regions. Interestingly, Southeast Arkansas, where ACT achievement is lowest, has the highest proportion of students taking Advanced Placement courses in the four core disciplines. Northeast Arkansas has the lowest participation in AP courses with only 28% of students electing to enroll.

Subgroup participation for AP-Takers varies substantially by region as well. Northeast Arkansas has the highest percentage of White (82.7%) and Hispanic (16.2%) students taking AP courses, but the lowest participation by Black students (1.7%). Southeast Arkansas has the highest percentage of Black students (38.8%), female students (62.2%) and students in poverty (61.6%) taking Advanced Placement. Comparisons between state and regional demographic distributions show that AP students do not appear to be representative of the overall population within each region. This evidence suggests access to AP coursework is less universal and more subjective.

### Association Between AP Course-Taking & ACT Test Scores

Findings indicate that taking at least one core content Advanced Placement course between 9<sup>th</sup> and 11<sup>th</sup> grade is associated with a statistically significant increase of 1.8 points in ACT composite score, after controlling for student demographic characteristics and prior achievement. Based on these results, the mean ACT score for a student who took a core content AP course is approximately 20.1 points, compared to 18.3 points for a non-AP taker. Interestingly, this result is clustered around the 19-point cut score required for students to opt out of remedial math and English courses during their freshman year of college in Arkansas.

**Table 3: Mean ACT Score for AP-Takers versus Non-Takers for Demographic Subgroups, 2016-2018.**

	AP-Takers	Non-Takers	Difference
Reference	20.55	18.03	2.52***
Female	20.03	17.93	2.10***
Hispanic	19.64	17.46	2.18***
Black	18.47	17.22	1.25***
Other Race	20.61	17.93	2.68***
Gifted & Talented	22.36	20.16	2.20***
FRL	19.87	17.73	2.14***
N	24,901	51,656	—

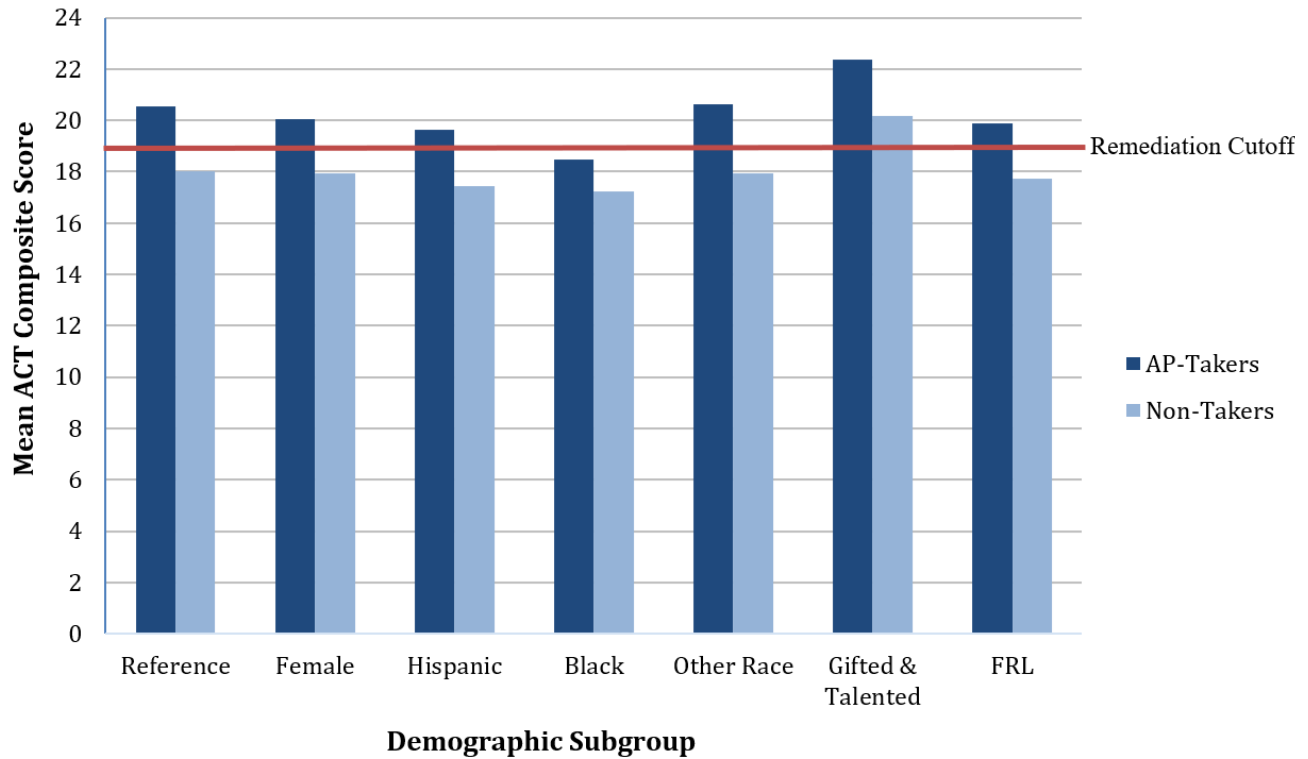
Note. \*\*\* Indicates differences are statistically significant at the 1% significance level.

### Outcomes for Race & Socioeconomic Subgroups

There are significant differences in ACT scores for different subgroups regardless of their AP status (Table 3 & Figure 1). For Non-AP Takers, all racial subgroups and students in poverty score below the average White, male, non-FRL student in the dataset. The exception is students who qualify for gifted and talented services, who score almost two points higher than the reference group even without participating in AP.

ACT composite scores also differ by gender, race, GT, and socioeconomic status for students who take Advanced Placement courses. Table 3, below, depicts estimated ACT scores for an AP-Taker compared to a Non-AP Taker in each demographic subgroup.

Although effect sizes for subgroups vary, mean ACT scores for AP-Takers and Non-AP Takers are all clustered around the remediation cut score of 19. Controlling for all other values, on average, students who select into AP score above the remediation threshold while those who do not take AP courses score below the 19 point cutoff.

**Figure 1. Mean ACT Composite Score for AP-Takers versus Non-Takers in Arkansas, 2016-2018.**

Note: Red line represents 19 point college remediation cut score value.

The exception is Black students, where even AP-Takers fail to cross the remediation threshold with an average composite score of approximately 18.5, despite the fact that Black AP-Takers score 1.25 points higher than their Black Non-AP peers. Figure 1 demonstrates the difference in mean ACT score for AP-Takers and Non-Takers in each subgroup relative to the 19 point college remediation cut score.

### Policy Implications

There is evidence that students who enroll in AP coursework are more college-ready compared to their peers who do not select into AP. However, race and socioeconomic status moderate the size of the effect of AP course-taking. Subgroups from racially diverse or economically disadvantaged backgrounds both score lower on the ACT, on average, and experience smaller increases in ACT composite score when taking AP courses, compared to their economically advantaged, White peers.

In addition, the descriptive statistics tell a story of gaps in advanced course-taking and college readiness in Arkansas. These findings have implications for policy-makers wishing to leverage Advanced Placement coursework to improve student outcomes for students from historically underserved backgrounds.

It is also important to note the practical significance of the clustering phenomena uncovered in this study. The finding that AP-Takers tend to score above the 19 point remediation cut score and Non-AP Takers generally score below could be a function of two mechanisms.

First, we could assume that the difference in ACT composite score for the two groups is a function of taking an AP course. In this scenario, AP coursework improves student outcomes through some unknown mechanism such as peer effect, teacher quality, or the AP curriculum itself.

An alternative story is that students self-select into, or out of, AP based on their self-perceived college readiness or college-going aspirations. The difference in scores, therefore, may simply be capturing the effect of motivation or parental or teacher influence, none of which are captured in this analysis.

# Office for Education Policy

For more information about this Policy Brief and other education issues in Arkansas contact us:

Office for Education Policy  
211 Grad Ed Building  
Fayetteville, AR 72701  
Phone: (479) 575-3773  
Fax: (479) 575-3196  
oep@uark.edu

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This story is interesting to consider, given that statewide policies such as Arkansas Act 102, are calling for increased participation in Advanced Placement. It is possible that these policies may end up “pushing” students into AP who are not ready, either academically or socio-emotionally.

The question still remains whether students induced to take AP will experience the hypothesized benefits of the coursework. This study, being merely descriptive in nature, is unable to determine whether AP courses cause students to score higher on the ACT, but future research on such topics would be beneficial in understanding how to prepare students for the rigors of college.

Regardless of the mechanism, the clustering phenomenon around the remediation threshold may have later life implications for students in Arkansas. In an evaluation of Arkansas’ Developmental Coursework Policy, Rhinesmith (2017) finds that students required to take remedial courses experience negative impacts on persistence and degree attainment, regardless of institution type.

This finding underlines the importance of understanding the true impact of AP course-taking on student outcomes on the ACT. If, in fact, AP courses can move the needle for students on the standardized test, then increasing participation may have significant positive impacts for students later in life. Alternatively, if students are self-selecting out of AP based on their perceived college-readiness it also indicates that more support is needed for those subgroups in terms of gaining the skills and knowledge needed to achieve better results on the ACT exam. Nevertheless, this finding warrants more investigation.

## EXECUTIVE DIRECTOR:

Sarah McKenzie, Ph.D.

## ASSOCIATE DIRECTOR:

Josh McGee, Ph.D.

## RESEARCH STAFF:

Charlene A. Reid

Jessica S. Goldstein

## Sources:

Finn & Scanlon. (2019). *Learning in the Fast Lane: The Past, Present, and Future of Advanced Placement*. Princeton University Press, Princeton, NJ.

Office for Education Policy, University of Arkansas. (2016). *Advanced Placement (AP) in Arkansas: Increasing Equity*. Volume 13, Issue 2. Retrieved from: <http://www.officeforeducationpolicy.org/downloads/2016/04/ap-in-arkansas-increasing-equity.pdf>

Office for Education Policy, University of Arkansas. (2019). *Arkansas School Data – Benchmark Examinations*. Retrieved from: <http://www.officeforeducationpolicy.org/arkansas-schools-data-benchmark-examinations/>

Rhinesmith, E. T. (2017). An Evaluation of Arkansas’ Developmental Coursework Policy at Postsecondary Institutions.

Warne, R.T. (2017). *Research on the Academic Benefits of the Advanced Placement Program: Taking Stock and Looking Forward*. SAGE Open Journal, 7(1). <https://doi.org/10.1177/2158244016682996>



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