



ARKANSAS EDUCATION REPORT
Volume 17, Issue 02

**ARKANSAS HIGH SCHOOL GRADUATION RATES:
2013-14 – 2017-18**

By:

**Martha Bradley-Dorsey
Sarah C. McKenzie**

January 22, 2020

**Office for Education Policy
University of Arkansas
211 Graduate Education Building
Fayetteville, AR 72701
Phone: (479) 575-3773
Fax: (479) 575-3196
E-mail: oe@uark.edu**

TABLE OF CONTENTS

Executive Summary	3
I. Introduction	4
II. Literature Review	6
III. Data	8
IV. Research Questions and Methodology	12
V. Trends in Graduation Rates.....	13
VI. Univariate Analyses	15
VII. Multivariate Analyses.....	22
VIII. Conclusion.....	27
Appendix.....	A1

EXECUTIVE SUMMARY

This report examines trends in high school graduation rates for the state of Arkansas. Graduation rates are evaluated at the school level for students overall and for students who face economic disadvantages. Earlier research by the Office for Education Policy (2014) found that larger high schools and schools serving more economically-disadvantaged students have lower graduation rates. We update the report by examining graduation rate trends across the five-year period of 2013-14 through 2017-18. We consider the relationship between graduation rate and variables of interest including school-level indicators of geographic region, achievement in literacy and math, proportion of racial minority and economically disadvantaged students, graduating class size, and the configuration of the school's grade levels.

Multivariate analyses reveal graduating class size as the only consistently significant predictor of high school graduation rate across all five years examined. Larger graduating class size is highly significantly associated with lower graduation rates for students overall as well as for students who face economic disadvantages. School grade configuration is a significant predictor of graduation rate in 70% of our analyses. High schools that begin in 10th or 11th grade are associated with higher overall graduation rates, relative to being in a school with only grades 9-12. Although not consistently statistically significant like class size, positive coefficients across all years for both overall and economically disadvantaged students indicate that high schools that begin in 10th or 11th grade are either positively or neutrally related to graduation rates.

Demographic characteristics of students enrolled in the school are not consistently significantly related to graduation rates when controlling for all variables in our model. The percentage of students participating in the free/reduced lunch program are significantly negatively related to overall graduation rates in the most recent three years studied. The percentage of students of minority status is not significantly related to student graduation rate in any of the years examined.

Student achievement indicators are not consistently significantly related to graduation rates when controlling for all variables in our model. The relationship between 8th grade (pre-high school) literacy achievement and graduation rates is significant in the first three years studied, but 8th grade math achievement is significantly related to graduation rates only in 2014-15.

This research can help school leaders, policy makers and education stakeholders to examine ways to further increase school graduation rates. The only variable that is consistently associated with graduation rate changes is the number of students in the graduating class, although indications of a positive relationship between high schools serving *only* grades 10-12 or 11-12 and higher graduation rates appear worthy of further study.

Although school leaders cannot easily reduce the size of the graduating class or the number of grades enrolled in a high school building, reflection on how they could re-create the benefit of smaller class size experiences through policies like creating smaller pseudo-cohorts of graduates (through 'houses', 'tribes', 'teams', or 'families', for example) might lead to increased graduation rates for their students.

I. INTRODUCTION

Despite numerous recent societal and educational changes, high school graduation remains an important milestone in the United States. Graduating from high school opens a door to increased career opportunities and greater lifetime earnings, and students who leave high school without graduating stand to gain less in life than those who graduate. The challenge for educators is to keep students in high school and prepare them adequately along the way for further education or immediate employment. Based on this understanding, graduation rates could be viewed as an artifact of not dropping out of high school.

Keeping students in school long enough to graduate is a multifaceted challenge. It involves many actors, only some of whom are school-affiliated. According to a 2011 National Academies Press publication¹, “Dropping out is not something that occurs at a single point in time. A growing body of research suggests that dropping out is but the final stage in a dynamic and cumulative process of disengagement from school...”(p. 61). That said, students who have managed to remain in school until their fourth high school year might be different as a group than those who have dropped out. The continuing students have chosen to stay, which means they might possess an underlying characteristic that sets them apart from their peers who left school early.

High school graduation signals a noteworthy achievement. Although some question the value of graduation rates because schools can change or “fudge” the local graduation rules to increase the number of students who graduate², graduation rates are used as an accountability measure for high schools under the No Child Left Behind Act (NCLB) (NAP, 2011, p. 22), as well as under its replacement, the Every Student Succeeds Act (ESSA).³ These most recent reauthorizations of the Elementary and Secondary Act of 1965 (ESEA) both began to emphasize accountability, notably focusing on subgroups of students having been overlooked in the past.

Nationwide high school graduation rates have been increasing at least since 2011, when the U.S. Department of Education (USDOE) began requiring schools to report graduation rates using a standardized method.⁴ This change to a consistent methodology for calculating graduation rates across all states occurred under NCLB and continues under ESSA. In 2010-11, the reported rate was 79 percent (Stetser & Stillwell, 2014, p. 7)⁵. The USDOE’s National Center for Education Statistics (NCES) recently released data from the 2016-17 school year, indicating that the nationwide on-time graduation rate was at a record high of 84.6 percent (NCES)⁶. Overall, then,

¹ High School Dropout, Graduation, and Completion Rates: Better Data, Better Measures, Better Decisions (2011). Chapter 5: Early Warning Indicators. The National Academies of Sciences, Engineering, and Medicine. National Academies Press. Retrieved from <https://www.nap.edu/read/13035/chapter/7>.

² Only last year, District of Columbia schools were reported to have engaged in “bogus graduation rate practices” (Gewertz C, 2018. D.C.’s Scandal and the Nationwide Problem of Fudging Graduation Numbers. Education Week, March 31, 2019. Retrieved from <https://www.edweek.org/ew/articles/2018/02/09/dcs-scandal-and-the-nationwide-problem-of.html>)

³ Every Student Succeeds Act. US Department of Education. Retrieved from <https://www.ed.gov/essa>.

⁴ Fast Facts: High School Graduation Rates (n.d.) Retrieved from <https://nces.ed.gov/fastfacts/display.asp?id=805>.

⁵ Stetser MC and Stillwell R (2014). Public High School Four-Year On-Time Graduation Rates and Event Dropout Rates: School Years 2010-11 and 2011-12 (First Look). U.S. Department of Education National Center for Education Statistics. Retrieved from <https://nces.ed.gov/pubs2014/2014391.pdf>.

⁶ Fast Facts: High School Graduation Rates (n.d.). NCES. Retrieved from <https://nces.ed.gov/fastfacts/display.asp?id=805>.

the nationwide graduation rate has risen by more than five percentage points since the new calculation method was implemented.

This report finds that Arkansas graduation rates also have increased, though not as steadily as the nationwide rates. That said, Arkansas' graduation rates have been consistently higher than the U.S. rates over the same period of time. In this report we discuss and analyze the Arkansas graduation rate trends in order to reveal school-level factors that are associated with graduation rate increases or decreases and examine areas of possible further research.

We first present statewide and regional school-level graduation rates, for all public schools students in Arkansas, and separately for economically disadvantaged students. Second, we determine graduation rates by 8th-grade achievement levels of entering 9th-graders, school-level poverty rate and racial composition, and graduating class size. In our initial analyses, we examine how each of these variables is individually related with school graduation rates. We consider both the graduation rate of the overall student body and the graduation rate for the students known as economically disadvantaged (those who qualify for free or reduced-price lunches under the National School Lunch Program administered by the U.S. Department of Agriculture). Finally, we conduct a multivariate analysis examining how geographic region, cohort group achievement in eighth grade, school poverty and racial composition, graduating class size, and school grade configuration simultaneously relate to graduation rates overall and for economically-disadvantaged students.

This report continues the OEP's research regarding Arkansas graduation rates and covering rates for school years 2013-14 through 2017-18. OEP's first report was published in 2014 and included an analysis of the first two years of graduation rates using the USDOE's standardized calculation method.⁷ The 2014 report was followed by a descriptive report, issued in 2016. The research found that larger high schools and schools serving more economically-disadvantaged students have lower graduation rates.

⁷ Called the four-year adjusted cohort graduation rate method (ACGR) and used by other states across the nation, this method is more accurate than methods used previously to calculate graduation rate.

II. LITERATURE REVIEW

High school graduation rates have been studied extensively for decades. Marshall (2017)⁸ covers much of the research in detail. He notes there have been two broad categories of variables analyzed as predictors of high school graduation status: academic and nonacademic predictors, the latter group of which are further divided into student engagement-related and demographic variables. Academic predictors include student grades, failed courses, retention, course enrollment patterns, and standardized test scores. Marshall (2017, p. 6) explains that, of these five groups, standardized test scores are “among the most often used academic predictors, and the least reliable” because the results were mixed in terms of significance.⁹

Marshall (2017) summarizes the research using student engagement-related nonacademic predictors (student attendance, student behavior, and participation in extracurricular sports and activities) and nonacademic variables (race, gender, and socioeconomic status [SES]). Marshall notes that regardless of how SES is measured, it is a consistently significant predictor of graduation status. Race was a less reliable predictor.¹⁰

Leithwood and Jantzi (2009)¹¹ address school size effects. The researchers examine 57 post-1990 studies, as well as earlier research. Among their six conclusions about the effects of school size on student performance, they state:

“Small secondary schools manage to graduate a significantly larger proportion of their students than do large secondary schools. *The higher drop-out rates of large secondary schools* is also one of the most plausible explanations for the results of studies associating higher achievement levels among senior students with larger school size.” (Leithwood & Jantzi, 2009, p. 484) (Emphasis added).

It is important to consider Leithwood and Jantzi’s (2009, Abstract) definitions relating to school size when analyzing Arkansas school data. The authors define “smaller” secondary schools to be (a) about 500 students if a school serves economically and socially heterogeneous students or mostly advantaged students or (b) about 600 students if a school serves mostly or exclusively diverse or disadvantaged students. The authors further elaborate on the topic of size by saying that “[s]maller is a relative term. In ... secondary school sizes exceeding 2,500 students, for example, smaller can mean as many as 1,500 students, a size that would be considered very large in other districts” (Leithwood & Jantzi, 2009, p. 484). During the 2017-18 school year in Arkansas, 78% of high schools would be “smaller” as they enrolled fewer than 600 students.

⁸ Marshall DT (2017). Testing the Ability of Two Series of Models to Predict High School Graduation Status. Virginia Commonwealth University, dissertation from VCU Scholars Compass. Downloaded from <https://scholarscompass.vcu.edu/etd/4756>.

⁹ Marshall (2017, 6) cites numerous publications that used one or more of these five predictor variable types. Those indicating mixed results regarding standardized test scores included Barrington & Hendricks, 1989; Cratty, 2012; Hernandez, 2011; and Mac Iver & Messel, 2013.

¹⁰ Marshall (2017, 7) specifies the research finding SES to be a consistently significant predictor: Cratty, 2012; Rumberger, 2006; and Swanson, 2006. Those finding less consistent results regarding race were Cratty, 2012; Jordan, Lara, & McPartland, 1996; Lee et al., 2012; and others.

¹¹ Leithwood K & Jantzi D (2009). A Review of Empirical Evidence about School Size Effects: A Policy Perspective. Review of Educational Research, Spring 2009, Vol. 79, No. 1, 464-490.

Further, half of these “smaller” high schools could be termed “very small” as they have enrolled fewer than 300 students. To illustrate the Arkansas data using the authors’ example of school sizes exceeding 2,500 students, in 2017-18 Arkansas had only three high schools with enrollments greater than 2,500 students.

Finally, research has varied regarding the effects of school grade configuration on student outcomes including high school graduation. A number of localized studies have found mixed results regarding which grade configurations work better than others, if any differences are found. More broadly, Jacob and Rockoff (2011)¹² conducted a review of the literature to examine how several factors, including grade configuration, affected student achievement. The authors conclude that middle schools have a negative impact on high school achievement relative to K-8 schools. To the extent that achievement affects dropout and graduation rates, this research might be worth taking into account. The authors state:

The clearest and most worrisome evidence on middle and junior high schools comes from two recent studies, one in New York City (Rockoff and Lockwood 2010) and the other in Florida (Schwerdt and West 2011). Both are statistical analyses of large administrative databases that track student achievement over the majority of the primary grades and, in the Florida case, into high school. *The clear result of both of these studies is that students who move to a middle or junior high school in Grades 6 or 7 experience a sharp decrease in their learning trajectories and continue to struggle, relative to their peers who attended K–8 schools, through Grade 8 and into high school* (Jacob & Rockoff, 2011, p. 13) (Emphasis added).

In this study we use the 8th-grade achievement test scores of each graduate cohort. We employ demographic variables for race and socio-economic status, and we analyze a measure of student experience relative to school size by examining the size of the graduating class. Finally, we examine grade configuration by dividing schools containing the high school grades into three categories based on the placement of the 9th grade. We consider the placement of 9th grade, as it is the first year that a student’s academic performance counts toward graduation requirements. We suspect that placement of the 9th grade might make a difference in a student’s likelihood of graduating as attending 9th grade in a familiar school might reduce the stress load on students. In addition, transitioning to a new school for 9th grade might cause a disruption in the learning experience. Transitioning to a new school after 9th grade might result in organizational issues with credit tracking that could lead to students failing to meet graduation requirements.

¹² Jacob BA & Rockoff JE (2011). Organizing Schools to Improve Student Achievement: Start Times, Grade Configurations, and Teacher Assignments. Brookings Institution: The Hamilton Project, Discussion Paper 2011-08.

III. DATA

All data were provided from the Arkansas Department of Education (ADE). We obtained school-level graduation rate and demographic data for 294 high schools. We excluded 19 of these high schools from our analysis based on the criteria of participating in the state accountability system, including nine alternative learning schools, the two state schools for the deaf and the blind, and the six Division of Youth Services schools. We also excluded two virtual schools because the school-level characteristics such as demographics of the students and number of students in a class are not relevant to students' learning experiences in these unique, online settings. (See Appendices A and B for the lists of included and omitted schools.) We have used student-level assessment data to generate school-level values representing the relative 8th-grade academic achievement of the students entering the high school. We have then standardized the values at the school level.

Before focusing on each of the research questions regarding four-year adjusted cohort graduation rates in Arkansas, we provide some definitions to clarify the presentation and discussion of the data.

- Overall Graduation Rate – The school's overall (total student body) 4-Year Adjusted Cohort Graduation Rate (ACGR, continuous). Generally, obtained by dividing the number of students successfully completing high school in four years by the number of 9th-grade students eligible to graduate. However, for schools serving only grades 10-12 or 11-12, the district-level 4-year ACGR was used. Note that the ACGR calculation method is discussed in greater detail following the definitions.
- Economically Disadvantaged Student Graduation Rate – The school's 4-Year ACGR for those students eligible for free and reduced-price lunches (continuous).
- Region – A group of discrete variables indicating the region in Arkansas in which the school is located. We have omitted the Southeast region in our analyses, thus making all region coefficients relative to that region.
- Achievement Literacy; Achievement Math – 8th-grade standardized achievement test scores in Literacy and Mathematics. All cohorts examined were assessed using the Arkansas Benchmark Exams (2009-10 through 2013-14). These assessments were the most consistent annual measure of student achievement prior to 9th grade for the cohorts. Student-level scores were standardized within content area and year. Scores were assigned to the high school attended by the student and re-standardized at the school level.
- Percent FRL – The certified percent of a school's students qualifying for free- or reduced-price lunch (FRL, continuous), used as our proxy for the percent of economically disadvantaged students in a school. Calculated by dividing the number of students receiving a free or reduced-price lunch by overall school enrollment. *Note that this figure may differ from the value posted on the Arkansas Department of Education website due to Community Eligibility Provision participation.*

- Percent Minority – Percent of a school’s enrolled students who belong to one or more minority groups (continuous). Calculated by dividing the total school minority (non-white and/or Hispanic) enrollment by the overall school enrollment.
- Log of Graduating Class Size – The expected number of graduates for the cohort, used as a measure of student experience relative to class size. To account for the non-normal distribution, we used the natural log of this variable.
- Grade Configuration Variables – A group of discrete variables grouping all schools into three categories for the purpose of examining grade configuration effects on prediction of graduation rates. The Grade Configuration Variables are as follows:
 - Initial School Grade Prior to 9th – The grade configuration discrete variable for those schools whose initial grade is before the 9th grade. A value of “1” is assigned to each K-12, 5-12, 6-12, 7-12, and 8-12 school, and a “0” is assigned to all other schools.
 - Initial School Grade After 9th – The grade configuration discrete variable for those schools that contain only grades 10-12 or 11-12. A value of “1” is assigned to each 10-12 and 11-12 school, and a “0” is assigned to all other schools.
 - Only Grades 9-12– This category contains only the traditional four grade high schools. We use this as the omitted category in our analyses, thus making the other two grade configuration coefficients relative to the stand-alone four-grade high schools.

The 4-Year Adjusted Cohort Graduation Rate (ACGR)

Given that high school graduation rate is our outcome variable of interest, it is important to detail the ACGR calculations, particularly with respect to Arkansas’ high schools serving only grades 10-12 or 11-12. The ACGR tracks student cohort groups from the beginning of 9th grade and follows their progress through 12th grade. The initial cohort size is calculated at the beginning of 9th grade and is adjusted for students who transfer in, transfer out, or pass away that year and the following three years. Dropouts must be accounted for by the high schools. The graduation rate is, therefore, the number of students who graduate in four years with a regular high school diploma divided by the total number of students who are in the adjusted cohort for that graduating class (including dropouts).¹³

Schools whose initial grade is after 9th grade, however, cannot begin ACGR calculations in 9th grade. The U.S. Department of Education, therefore, allows these schools to use the number of students in the first grade served by the school as the initial cohort. For a high school serving only grades 10-12, the initial cohort is 10th grade, and for a high school that serves only 11th and 12th grade students, the graduation rate would be based on the number of 11th graders that graduate the following year. The varied baseline cohort makes it difficult to compare graduation rates equitably across schools.

¹³ Smith CF (2011). Every Student Counts: Arkansas Graduation Rate Calculations, Policies, and Reporting. Arkansas Department of Education. Retrieved from <http://www.slideshare.net/CharitySmith/arkansas-graduation-rate-calculations>.

To create a consistent comparison between the different grade configuration groups, we apply district-level 4-year ACGR graduation rates for the high schools serving only grades 10-12 and 11-12. This substitution makes the graduation rates comparable between all grade configuration groups, because it is based on the 9th grade initial cohort in the district, but can only be utilized if there is only one high school in the district. This is the case for the majority of high schools whose initial grade is after 9th grade, however, there are two districts that contain two high schools that begin after 9th grade. Using district-level graduation rates for these high schools means that the graduation rates of the two high schools in the same district would be identical and thus would cloud the graduation rate analysis. We therefore eliminate these four high schools from the analysis.

Ultimately, we analyze overall student body and economically disadvantaged student graduation rates for 271 schools (based on the 2017-18 school count). Note that the number of schools used in each regression can vary if data are missing for one or more variables analyzed in the specific regression. For example, seven schools with graduates in 2017-18 were not in existence during 2014-15 (the students' 9th grade year), so we do not associate 8th grade scores with these schools. The 2017-18 analyses including achievement, therefore, exclude these schools.

Grade Configuration of Arkansas High Schools

Table 1 summarizes the 2017-18 grade configurations for Arkansas high schools, as well as relevant characteristics of the schools in each group. As shown, nearly half (129) of the state's high schools begin at a grade lower than 9th grade, with a 7th -12th grade configuration accounting for 85% of this group. The second largest grade configuration group contains the 109 high schools that enroll a traditional 9-12th grade population. High schools that begin after 9th grade create the smallest grade configuration group, with only 37 schools. We exclude 4 of these 37 high schools due to two school districts (Springdale and Fort Smith) that each contain two grade 10-12 high schools, making the use of district-level AGCR inappropriate. Refer to page 9 for further details.

Table 1. Arkansas High School Grade Configuration and Related Information: 2017-18

Grade Group	Number of Schools	Weighted Average % FRL	Weighted Average Graduating Class Size
Initial School Grade Prior to 9th	129	63%	47
8-12	7		
7-12	110		
6-12	4		
5-12	1		
P-12, K-12	7		
Only Grades 9th-12th	109	52%	163
Initial School Grade After 9th	37	50%	283
(excluded schools)	4		
Total Initial Grade After 9th	33	44%	238
Total Schools	271	53%	129

There are differences between the grade configuration groups that may impact graduation rates. High schools that begin prior to 9th grade enroll a student population where, on average, 63% of students qualify for the Federal Free/Reduced Lunch program (FRL). This is a greater percentage than the schools that enroll only grades 9-12, where 52% of the student population participates in the program, and the included high schools that serve only 10th- 12th or 11th -12th grades, where only 44% of the students participate. High schools that begin prior to 9th grade have fewer students enrolled in the graduating class when compared to the other grade configurations. On average, there were 47 students in the graduating classes of the schools that begin prior to 9th grade, compared to 163 in the 9-12 schools and 238 in the included schools that begin after 9th grade.

Table 2 summarizes the 2017-18 high school grade configuration by region. As depicted in the table, all regions have a mix of various types of schools, although the 10th -12th and 11th -12th schools are concentrated in the Northwest, Northeast, and Central regions.

Table 2. Arkansas High School Grade Configuration by Region: 2017-18

Region	Schools with Initial School Grade Prior to 9th	Schools with Only Grades 9th -12th	Schools with Initial School Grade After 9th	Total
Northwest	36	41	9	86
Northeast	39	19	10	68
Central	12	27	10	49
Southwest	29	11	3	43
Southeast	13	11	1	25
Total	129	109	33	271

IV. RESEARCH QUESTIONS AND METHODOLOGY

Our study attempted to answer the following two research questions:

Q1. What are the trends in high school graduation rates between the 2013 and 2018 school years for all students in the state of Arkansas and for students from economically disadvantaged backgrounds?

Q2. How does high school graduation rate relate to geographic region, student achievement, proportion of students in poverty, proportion of students that are not white, graduating class size, and school grade configuration for students in Arkansas? Do the relationships differ for students from economically disadvantaged backgrounds?

To answer these questions, we first summarize graduation rates over the five-year period beginning with school year 2013-14 and ending with 2017-18. We then conduct single-variable regression analyses on our six predictor variables enumerated above. Finally, we conduct multivariate regression analyses combining all six predictor variables into a single model. Our equation for this model is as follows:

$$ACGR = \beta_0 + \beta_1 Region_i + \beta_2 Ach_i + \beta_3 FRL + \beta_4 Min + \beta_5 LogClsSize + \beta_6 Grades + \varepsilon$$

Where

-*Region* is a group of binary variables for the five geographic regions. We omit the Southeast region from our regression analyses, thereby making region coefficients relative to the Southeast region;

-*Ach* is 8th-Grade standardized achievement test scores, Literacy and Mathematics (Standardized first at student level, then at school level);

-*FRL* is school-level percent of free and reduced-price lunch recipients (proxy for economically disadvantaged students);

-*Min* is school-level percent of minority students;

-*LogClsSize* is the natural log of the expected number of graduates in the school for that year; and

-*Grades* indicates the grade configuration of the high school. Coefficients for a school whose grades begin either *before* or *after* 9th grade are relative to the schools containing *only* grades 9-12.

V. TRENDS IN GRADUATION RATES

This section of the report examines trends in high school graduation rates over the five-year period studied. Table 3 presents statewide overall and specific population graduation rates for Arkansas between 2013 and 2018. The 2017-18 statewide overall graduation rate is at an all-time high of 90 percent. For three of those five years, the statewide overall graduation rate was 88 percent. The only drop was in 2014-15, when the rate was 85 percent. The statewide graduation rate for African American students increased to 86 percent in the 2017-18 school year from a five-year low of 77 percent in 2014-15. The graduation rate for Hispanic students was relatively constant, with rates between 84 and 87 percent. The overall graduation rate for students with disabilities reached its high point of 85 percent in 2017-18.

Table 3. Statewide Four-year Adjusted Cohort Graduation Rate (2013-14 through 2017-18): Overall and for Specific Populations

	2013-14	2014-15	2015-16	2016-17	2017-18
Arkansas Students Overall	88%	85%	88%	88%	90%
Economically Disadvantaged Students	84%	82%	85%	85%	87%
Limited English Proficient Students	86%	87%	87%	82%	84%
Students with Disabilities	83%	81%	83%	83%	85%
African American Students	82%	77%	83%	84%	86%
Hispanic Students	85%	84%	87%	86%	86%
White Students	90%	88%	90%	90%	91%

Our analyses focus on the overall student graduation rate and the graduation rate of economically disadvantaged students. We elected to analyze economically disadvantaged students because, unlike some of the other populations identified in Table 3, economically disadvantaged students are enrolled in substantial numbers in all districts throughout the state, allowing for a robust statewide comparison of the graduation rates. Tables 4 and 5 show statewide and region-specific graduation rates for Arkansas over the past five years. Table 4 contains graduation rates for the overall student body, while Table 5 relates specifically to economically disadvantaged student graduation rates. Four of the regions experienced overall graduation rate increases (Table 4) in 2017-18 over the previous year, while the Northeast region decreased by one point and the Southwest region remained at 89%. Region-specific rates for economically disadvantaged students (Table 5) also increased with two exceptions: the rate for the Northeast region decreased by two percentage points between 2016-17 and 2017-18, and the rate for the Southwest region remained at 87%.

Table 4. Statewide and Region-specific Graduation Rates for the Overall Student Body: 2013-14 through 2017-18

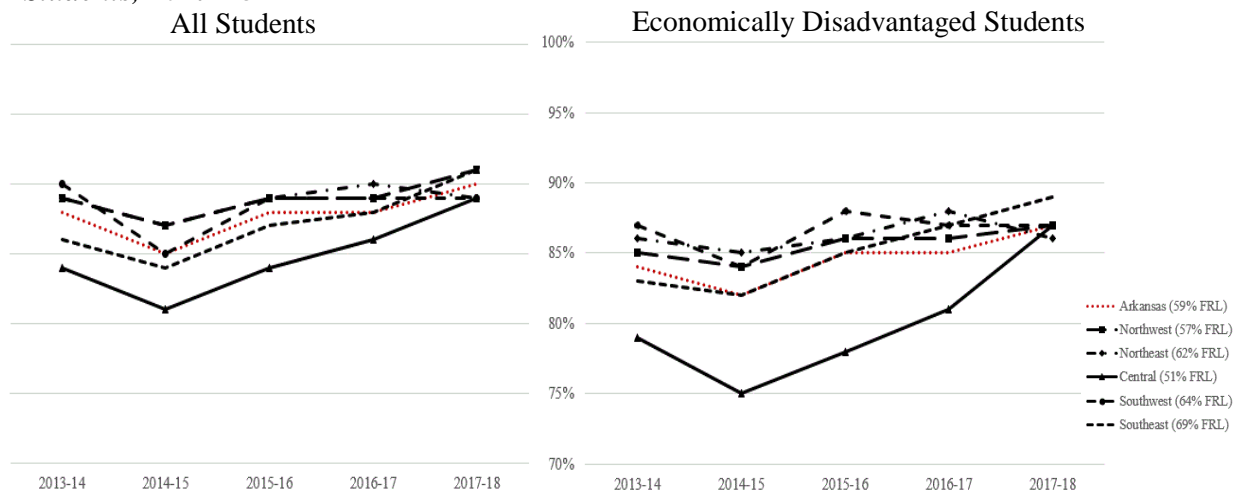
	# Schools (current)	2013-14	2014-15	2015-16	2016-17	2017-18
Arkansas Statewide	271	88%	85%	88%	88%	90%
Northwest	86	89%	87%	89%	89%	91%
Northeast	68	89%	87%	89%	90%	89%
Central	49	84%	81%	84%	86%	89%
Southwest	43	90%	85%	89%	89%	89%
Southeast	25	86%	84%	87%	88%	91%

Table 5. Statewide and Region-specific Graduation Rates for Economically Disadvantaged Students: 2013-14 through 2017-18

	# Schools (current)	2013-14	2014-15	2015-16	2016-17	2017-18
Arkansas	271	84%	82%	85%	85%	87%
Northwest	86	85%	84%	86%	86%	87%
Northeast	68	86%	85%	86%	88%	86%
Central	49	79%	75%	78%	81%	87%
Southwest	43	87%	84%	88%	87%	87%
Southeast	25	83%	82%	85%	87%	89%

Figure 1 displays the regional trends graphically. The figure on the left represents overall graduation rates, and the graph on the right depicts the trends for economically disadvantaged student graduation rates. The figure illustrates increased graduation rates have been seen in every region, and that by 2017-18 all regions graduate students at similar rates.

Figure 1. Arkansas Regional Graduation Rates: Overall and for Economically Disadvantaged Students, 2017-18



VI. UNIVARIATE ANALYSES

We have examined how variables such as student demographics, student poverty and geographic region relate to high school graduation rate. To further our understanding of how each variable may be associated with high school graduation rates, we conduct school-level univariate analyses. Tables 6 through 10 include the results for overall high school graduation rate, while Tables 11 through 15 show the results of these analyses for economically disadvantaged graduation rate. As noted previously, we assign district-wide 9-12 graduation rates to high schools that did not serve grade 9 to ensure calculations were consistent with the 9-12 schools.

Tables 6 through 8 display the estimated associations of each explanatory variable with overall high school graduation rates for school year 2017-18. Table 6 presents the results for geographic region. As we would expect based on Figure 1, geographic region was not associated with statistically significant differences in graduation rates. As shown in Table 6, only the Northeast region had graduation rates that were statistically significantly higher than the reference group: the Southeast region. At only 3.6 percent, geographic region explains almost none of the variance in graduation rates.

Table 6. Analysis of Overall Graduation Rates by Geographic Region: 2017-18

	(1)
Northwest Region	1.441 (1.438)
Northeast Region	2.376* (1.412)
Central Region	-1.291 (1.771)
Southwest Region	1.542 (1.525)
Constant	90.04*** (1.244)
Observations	271
R-squared	0.036

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

We might expect that student achievement prior to starting high school might be associated with graduation rates, because students demonstrating lower achievement might have more difficulty meeting the requirements for graduation. We examined the relationship between 8th grade literacy and math achievement and graduation rates. As shown in Table 7, when analyzed individually, each of the 8th-grade achievement variables had a strong, positive, and statistically significant predictive effect on the overall graduation rate of that cohort. A one standard deviation increase in the school-level achievement score for literacy (model 1) or math (model 2) was associated with a 2.4 or 2.5 percentage point increase in the school's graduation rate, significant at the 99 percent confidence level. When analyzed together, however, the strength and statistical significance of both achievement variables diminish, and, for literacy, the significance

disappears altogether. This leaves a 1.4 percentage point predicted increase in graduation rate, significant at the 95 percent confidence level, when a school's incoming students' average 8th grade math score increases by one standard deviation. The 8th grade achievement of a schools' student body accounts for about 15 percent of the variation in graduation rates.

Table 7. Analysis of Overall Graduation Rates by 8th- Grade Achievement: 2017-18

	(1)	(2)	(3)
Achievement-Literacy Z	2.447*** (0.503)		1.268* (0.763)
Achievement-Math Z		2.466*** (0.486)	1.392** (0.695)
Constant	91.20*** (0.374)	91.20*** (0.374)	91.20*** (0.372)
Observations	264	264	264
R-squared	0.140	0.142	0.153

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

The demographic characteristics of the school could also be associated with graduation rates, because, as shown in Table 3, graduation rates vary by student demographic characteristics. We examined the relationship between graduation rates and the percentage of students at a school enrolled in the free/reduced lunch program as well as with the percentage of students whose racial identification is other than white. Table 8 shows that a one point increase in the percentage of economically disadvantaged or minority students at a school results in a 0.08 and 0.09 percentage point decrease, respectively, in a school's graduation rate, significant 99 percent confidence level. This indicates the percentage of economically disadvantaged students (as measured by FRL) and the percentage of minority students are each significantly and inversely related to overall graduation rates. Because there is a correlation between the two variables, when they are analyzed together the statistical significance of the association between overall graduation rates and the percent of economically disadvantaged students is reduced, while the significance of the percentage of minority students remains strong. The characteristics of the student population enrolled at the school account for about 14 percent of the variation in graduation rates.

Table 8. Analysis of Overall Graduation Rates by Demographic Characteristics: 2017-18

	(1)	(2)	(3)
Percent FRL	-0.082*** (0.024)		-0.0380* (0.023)
Percent Minority		-0.090*** (0.020)	-0.081*** (0.020)
Constant	95.99*** (1.309)	93.68*** (0.535)	95.68*** (1.289)
Observations	271	271	271
R-squared	0.045	0.128	0.136

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

School size has been shown to be related to higher graduation rates, but we use the size of the graduating class as a more sensitive measure of student experience than school size. This is because a high school serving grades 7-12 with an enrollment of 300 students (50 per grade level) may provide a very different learning context than a 10-12 school with an enrollment of 300 students and 100 per grade level. We examined the relationship between graduation rate and the log of graduating class. Regressing graduation rates on the log of graduating class size results in an inverse association between the two variables. A one log unit increase in a school's graduating class size is associated with a 1.6 percentage point decrease in the school's graduation rate, significant at the 99 percent confidence level (Table 9). The size of the graduating class accounts for only about 5 percent of the variation in graduation rates.

Table 9. Analysis of Overall Graduation Rates by Class Size: 2017-18

	(1)
Log Grad Class Size	-1.593*** (0.525)
Constant	98.01*** (2.353)
Observations	271
R-squared	0.046

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Finally, we examine how high school grade configuration is related to graduation rate. School grade configuration might be related to high school graduation in a number of ways. Students attending high schools where the initial grade is prior to 9th might benefit from not having to experience a disruptive switch to a new school building for high school. Students who attend a traditional grades 9-12 high school may benefit from a new learning environment focused solely on the high school experience. Table 10 provides a summary of the results of the grade configuration analysis.

Table 10. Analysis of Overall Graduation Rates by School Grade Configuration: 2017-18

	(1)	(2)	(3)
Initial School Grade Prior to 9 th	2.023** (0.814)		2.654*** (0.901)
Initial School Grade After 9 th		1.277 (0.927)	2.716** (1.058)
Constant	90.14*** (0.563)	90.95*** (0.454)	89.51*** (0.682)
Observations	271	271	271
R-squared	0.022	0.004	0.038

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 10 shows that when compare to traditional 9-12 schools, schools with an initial school grade prior to 9th are associated with a two percentage point increase in graduation rates that is statistically significant (model 1). Analyzed individually, schools with an initial grade after 9th grade also have higher graduation rates than 9-12 schools, but the results are not significant (model 2). When the graduation rates of both grade configuration groups, however, are compared simultaneously to the 9-12 rates, both groups have statistically significantly higher graduation rates of about 3 percentage points. However, grade configuration explains less than 4 percent of the variation in graduation rates.

We analyze the graduation rates for economically disadvantaged students separately, as we are interested to see if the variables of interest have different associations with the graduation rates of this student group. Tables 11 through 15 contain the univariate analysis results for economically disadvantaged student graduation rates. As shown, the associative pattern is similar, though not identical, to that of overall graduation rates.

Table 11 presents the geographic region association with economically disadvantaged graduation rates. Similar to the analysis of the association with overall graduation rates, a schools' regional location is not associated with any statistically significant change in graduation rates for 2017-18. At an R-squared value of only 3.4 percent, geographic region explains almost none of the variance in graduation rates.

Table 11. Regional Analysis of Economically Disadvantaged Student Graduation Rates: 2017-18

	(1)
Northwest Region	0.841 (1.701)
Northeast Region	2.247 (1.568)
Central Region	-1.801 (1.841)
Southwest Region	2.135 (1.660)
Constant	88.96*** (1.375)
Observations	271
R-squared	0.034

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Eighth grade achievement in both literacy and math, when analyzed individually, are associated with strong and highly significant graduation rate increases for economically disadvantaged students; however, when analyzed together, the associations diminish in strength and statistical significance (Table 12). Literacy achievement is still significantly related to a slight increase in graduation rate, but interestingly, math achievement is not significantly related to graduation rates for economically disadvantaged students. The 8th grade achievement of a schools' student body accounts for about 8 percent of the variation in economically disadvantaged student graduation rates, which is about half of the variance that achievement explained for the overall graduation rate.

Table 12. Analysis of Economically Disadvantaged Student Graduation Rates by Achievement: 2017-18

	(1)	(2)	(3)
Achievement-Literacy Z	2.019*** (0.549)		1.463* (0.854)
Achievement-Math Z		1.881*** (0.526)	0.652 (0.786)
Constant	89.94*** (0.424)	89.94*** (0.426)	89.94*** (0.424)
Observations	264	264	264
R-squared	0.075	0.067	0.078

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 13 shows that the association between economically disadvantaged student graduation rates and school percent minority enrollment is negative and highly statistically significant. For each 1 percentage point increase in the percentage of minority students enrolled at a school, there is an associated .075 percentage point decrease in the graduation rate for economically disadvantaged students. Interestingly, though, school percent FRL enrollment is not significantly related to graduation rates for these economically disadvantaged students. The characteristics of the student population enrolled at the school account for about 6 percent of the variation in graduation rates, which is about half of the variance that these characteristics explained for the overall graduation rate.

Table 13. Analysis of Economically Disadvantaged Student Graduation Rates by Demographic Characteristics: 2017-18

	(1)	(2)	(3)
Percent FRL	-0.018 (0.028)		0.023 (0.030)
Percent Minority		-0.069*** (0.021)	-0.075*** (0.022)
Constant	90.89*** (1.678)	91.80*** (0.617)	90.61*** (1.713)
Observations	271	271	271
R-squared	0.002	0.056	0.059

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Similar to the class size relationship with overall graduation rates, the association between economically disadvantaged student graduation rates and the log of graduating class size (Table 14) is negative and highly statistically significant, although to a greater magnitude. A one log unit increase in a school's graduating class size is associated with a 2.2 percent decrease in the school's graduation rate, significant at the 99 percent confidence level. The size of the graduating class accounts for only about 6 percent of the variation in economically disadvantaged student graduation rates, similar to the amount explained for overall graduation rates.

Table 14. Analysis of Economically Disadvantaged Student Graduation Rates by Class Size: 2017-18

	(1)
Log Grad Class Size	-2.179*** (0.707)
Constant	99.25*** (3.275)
Observations	271
R-squared	0.063

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Finally, for economically disadvantaged student graduation rates, attendance at a school beginning at a grade lower than 9th grade is associated with a strong, positive, and highly statistically significant or highly statistically significant increase in graduation rates compared to 10-12 schools (Table 15). Unlike the overall rates, however, economically disadvantaged graduation rates at school with an initial grade prior to 9th are not significantly different than the rates at traditional 9-12 high schools. Grade configuration explains less than 4 percent of the variation in economically disadvantaged student graduation rates.

Table 15. Analysis of Economically Disadvantaged Student Graduation Rates by School Grade Configuration: 2017-18

	(1)	(2)	(3)
Initial School Grade Prior to 9 th	2.824*** (0.951)		3.267*** (1.032)
Initial School Grade After 9 th		0.138 (1.064)	1.909 (1.168)
Constant	88.46*** (0.592)	89.78*** (0.530)	88.01*** (0.714)
Observations	271	271	271
R-squared	0.032	0.000	0.038

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Our univariate analyses for 2017-18 examined the relationship between individual variables of interest and graduation rates for students overall and for economically disadvantaged students. Achievement in both literacy and math, the percentage of students in the school identified as economically disadvantaged or part of a racial group other than white, the size of the graduating class, and high schools with a non-traditional 9-12 grade configuration were all found to be related to overall student graduation rates. For student facing economic disadvantage, achievement in literacy and math, the percentage of students in the school identified as part of a racial group other than white, the size of the graduating class, and high schools beginning before 9th grade were found to be related to graduation rates. In general, these univariate analyses were explaining less than 10% of the variance in high school graduation rates.

Many of these variable are related to each other, however, so we need to conduct a multivariate analysis that allows us to determine the unique relationship of each variable after controlling for the other variables in the model. This will provide a more nuanced examination of the relationship between the variables of interest and high school graduation rates

VII. MULTIVARIATE ANALYSES

We come now to our preferred model, which we demonstrate initially by building it in a stepwise fashion for school year 2017-18 and then presenting final model results for all five school years in our study. To repeat, our equation is as follows:

$$ACGR = \beta_0 + \beta_1 Region_i + \beta_2 Ach_i + \beta_3 FRL + \beta_4 Min + \beta_5 LogClsSize + \beta_6 Grades + \varepsilon$$

Tables 16 and 17 show the multivariate results for the 2017-18 school year for overall and economically disadvantaged students, respectively. In these tables we build the final model by adding a variable (or variable group) with each iteration until all variables are analyzed together.

Table 16. Predictors of Overall Graduation Rate: School Year 2017-18

	(1)	(2)	(3)	(4)	(5)
Northwest Region	1.441 (1.438)	-0.929 (1.381)	-2.643* (1.508)	-1.771 (1.472)	-1.647 (1.461)
Northeast Region	2.376* (1.412)	0.927 (1.331)	-0.906 (1.494)	0.117 (1.455)	0.046 (1.485)
Central Region	-1.291 (1.771)	-2.490 (1.565)	-3.356** (1.677)	-2.249 (1.634)	-2.324 (1.649)
Southwest Region	1.542 (1.525)	0.276 (1.442)	-0.542 (1.521)	-0.531 (1.492)	-0.606 (1.519)
Achievement-Literacy Z		1.050 (0.760)	0.943 (0.746)	0.998 (0.704)	0.886 (0.699)
Achievement-Math Z		1.627** (0.709)	0.911 (0.699)	0.738 (0.689)	0.731 (0.688)
Percent FRL			-0.020 (0.026)	-0.083** (0.032)	-0.080** (0.034)
Percent Minority			-0.057*** (0.020)	-0.021 (0.021)	-0.020 (0.021)
Log Grad Class Size				-2.185*** (0.519)	-2.329*** (0.602)
Initial School Grade Prior to 9 th					0.444 (0.991)
Initial School Grade After 9 th					2.637** (1.040)
Constant	90.04*** (1.244)	91.66*** (1.138)	95.74*** (2.160)	107.2*** (3.648)	107.2*** (3.734)
Observations	271	264	264	264	264
R-squared	0.036	0.185	0.222	0.276	0.286

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 16 reveals that, for school year 2017-18, when controlling for all variables in our model, three variables have statistically significant (95 percent or 99 percent confidence level) associations with overall graduation rates. Attending a school whose initial grade is after 9th grade is significantly positively associated with graduation rates, as schools containing *only* grades 10-12 or 11-12 have a 2.7 percentage point higher graduation rate, compared to traditional 9-12 schools.

A school's log of graduating class size and a school's percent of students that participate in the free/reduced lunch program are both significantly negatively associated with graduation rates. A one log unit increase in graduating class size is associated with a 2.2 percentage point decrease in graduation rate, while a one percentage point increase in school percentage FRL is associated with a 0.08 percentage point decrease in graduation rates.

Interestingly, although highly significantly negative in the univariate analyses, once all variables of interest are added to the model, the percentage of minority students enrolled in a school is no longer significantly related to graduation rate. Note that 8th-grade achievement also becomes a nonsignificant predictor of graduation status when additional variables are included in the model. In total, the variables included in the multivariate analysis explain 28.6% of the variation in 2017-18 graduation rates.

Table 17 shows that only two variables are significant predictors of 2017-18 economically disadvantaged student graduation status, after controlling for all variables in our model. Similar to the overall graduation rate results, attending a school whose initial grade is after 9th grade is positively associated with graduation rates, as schools containing *only* grades 10-12 or 11-12 have a 2.4 percentage point higher graduation rate, compared to traditional 9-12 schools although for economically disadvantaged students the statistical significance is reduced to a marginal rate.

A school's log of graduating class size is significantly negatively associated with economically disadvantaged graduation rates, as it was for the overall graduation rate. A one log unit increase in graduating class size is associated with a 3.2 percentage point decrease in graduation rate. An interesting contrast with the results for the overall graduation rate is that a school's percent of students that participate in the free/reduced lunch program is not associated with difference in graduation rate for economically disadvantaged students.

As in the overall model, although highly significantly negative in the univariate analyses, once all variables of interest are added to the model the percentage of minority students enrolled in a school is no longer significantly related to graduation rate. Note that 8th-grade achievement also becomes a nonsignificant predictor of graduation status when additional variables are included in the model. In total, the variables included in the multivariate analysis explain 22.9% of the variation in 2017-18 graduation rates.

Table 17. Predictors of Economically Disadvantaged Student Graduation Rate: School Year 2017-18

	(1)	(2)	(3)	(4)	(5)
Northwest Region	0.841 (1.701)	-0.550 (1.642)	-1.700 (1.840)	-0.534 (1.849)	-0.451 (1.835)
Northeast Region	2.247 (1.568)	1.139 (1.585)	-0.119 (1.800)	1.250 (1.815)	1.182 (1.839)
Central Region	-1.801 (1.841)	-2.708 (1.780)	-2.481 (1.956)	-1.001 (1.941)	-1.071 (1.954)
Southwest Region	2.135 (1.660)	1.211 (1.649)	0.617 (1.746)	0.632 (1.775)	0.574 (1.807)
Achievement-Literacy Z		1.138 (0.829)	1.143 (0.835)	1.216 (0.767)	1.107 (0.764)
Achievement-Math Z		0.891 (0.775)	0.828 (0.814)	0.596 (0.755)	0.588 (0.758)
Percent FRL			0.048 (0.030)	-0.037 (0.037)	-0.032 (0.039)
Percent Minority			-0.046** (0.022)	0.002 (0.022)	0.003 (0.022)
Log Grad Class Size				-2.921*** (0.594)	-3.161*** (0.673)
Initial School Grade Prior to 9 th					0.157 (1.095)
Initial School Grade After 9 th					2.435* (1.274)
Constant	88.96*** (1.375)	90.16*** (1.381)	89.34*** (2.712)	104.7*** (4.580)	105.1*** (4.555)
Observations	271	264	264	264	264
R-squared	0.034	0.116	0.138	0.219	0.229

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

We utilize the same multivariate model examine the patterns that emerge over the five-year period studied. Tables 18 and 19 provide these results for overall and economically disadvantaged students, respectively. As shown in Table 18, the log of graduating class size maintains highly statistically significantly negative predictive value in all five years considered. Being a school whose initial grade is after 9th grade is positively statistically significant for four of the five years. Other variables that do not maintain statistical significance over all five years are 8th-grade literacy achievement and the proportion of low-income students in the school. In some of the years studied these variables contributed significantly to the observe graduation rate outcomes, while in other years they did not make a significant difference. Although there is

variation across the studied years, the variables in our model consistently account for about 30 percent of the variance in graduation rate.

Table 18. Multivariate Analysis of Overall Graduation Rate: All Years

	2013-14	2014-15	2015-16	2016-17	2017-18
Northwest Region	-0.119 (1.811)	0.232 (1.562)	-0.977 (1.572)	-1.653 (1.443)	-1.647 (1.461)
Northeast Region	0.168 (1.807)	0.837 (1.475)	0.929 (1.428)	0.166 (1.439)	0.046 (1.485)
Central Region	-1.888 (1.894)	0.178 (1.785)	-3.092* (1.652)	-2.840* (1.606)	-2.324 (1.649)
Southwest Region	1.691 (1.684)	0.282 (1.771)	0.477 (1.608)	-0.184 (1.481)	-0.606 (1.519)
Achievement-Literacy Z	2.865** (1.262)	5.374*** (1.552)	2.638** (1.181)	0.854 (0.700)	0.886 (0.699)
Achievement-Math Z	0.799 (0.848)	-2.027* (1.164)	0.613 (0.791)	0.818 (0.712)	0.731 (0.688)
Percent FRL	-0.009 (0.058)	-0.002 (0.052)	-0.086** (0.043)	-0.098** (0.042)	-0.080** (0.034)
Percent Minority	-0.031 (0.027)	-0.035 (0.033)	0.003 (0.025)	-0.004 (0.024)	-0.020 (0.021)
Log Grad Class Size	-1.682** (0.710)	-3.251*** (0.830)	-2.859*** (0.733)	-2.682*** (0.697)	-2.329*** (0.602)
Initial School Grade Prior to 9 th	0.938 (1.165)	-0.511 (1.180)	-0.150 (1.129)	0.447 (1.001)	0.444 (0.991)
Initial School Grade After 9 th	2.677** (1.120)	3.814*** (1.106)	1.706 (1.083)	2.063** (0.913)	2.367** (1.040)
Constant	97.03*** (5.211)	102.5*** (5.521)	107.3*** (4.657)	109.3*** (4.609)	107.2*** (3.734)
Observations	267	262	262	259	264
R-squared	0.327	0.354	0.355	0.293	0.286

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 19 shows that, as was found for the overall graduation rate, the log of graduating class size is highly statistically significantly and negatively associated with economically disadvantaged student graduation rate in each of the five years studied. Attendance in schools containing only grades 10-12 or 11-12 is strongly or marginally significantly and positively associated with economically disadvantaged graduation rates for four of the five years, relative to being in a grades 9-12 school. Eighth-grade achievement contributed significantly to the observed graduation rate outcomes in some years, but in other years they did not make a significant

difference. Although there is variation across the studied years, the variables in our model consistently account for about 24 percent of the variance in the economically disadvantaged student graduation rate.

Table 19. Multivariate Analysis of Economically Disadvantaged Student Graduation Rate: All Years

	2013-14	2014-15	2015-16	2016-17	2017-18
Northwest Region	2.191 (2.228)	1.304 (2.134)	0.785 (1.808)	-0.861 (1.807)	-0.451 (1.835)
Northeast Region	1.830 (2.167)	2.315 (1.990)	2.427 (1.675)	1.074 (1.784)	1.182 (1.839)
Central Region	-0.328 (2.316)	0.986 (2.348)	-1.604 (1.941)	-1.703 (1.949)	-1.071 (1.954)
Southwest Region	3.562* (1.974)	1.456 (2.199)	2.506 (1.975)	1.121 (1.751)	0.574 (1.807)
Achievement-Literacy Z	3.613** (1.746)	6.424*** (2.061)	2.965** (1.400)	1.219 (0.770)	1.107 (0.764)
Achievement-Math Z	0.805 (0.989)	-2.695* (1.444)	0.849 (1.036)	0.241 (0.795)	0.588 (0.758)
Percent FRL	0.135 (0.086)	0.131 (0.081)	0.004 (0.056)	-0.034 (0.049)	-0.032 (0.039)
Percent Minority	0.001 (0.034)	-0.001 (0.041)	0.038 (0.034)	0.007 (0.027)	0.003 (0.022)
Log Grad Class Size	-3.153*** (0.995)	-3.837*** (1.251)	-4.833*** (1.064)	-3.339*** (0.833)	-3.161*** (0.673)
Initial School Grade Prior to 9 th	-0.012 (1.616)	0.413 (1.583)	-0.839 (1.447)	-0.034 (1.084)	0.157 (1.095)
Initial School Grade After 9 th	4.023*** (1.405)	4.652*** (1.696)	2.317 (1.541)	1.852 (1.124)	2.435* (1.274)
Constant	89.82*** (7.499)	92.50*** (8.836)	106.8*** (6.556)	106.1*** (5.641)	105.1*** (4.555)
Observations	267	251	255	254	264
R-squared	0.233	0.261	0.272	0.226	0.229

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

VIII. CONCLUSION

Our multivariate analyses reveal graduating class size is the lone consistently significant predictor of high school graduation rate across all years examined. Larger graduating class size is associated with lower graduation rates, significant at the 99th or 95th percent confidence level across all years for both overall and economically disadvantaged graduation rates. School grade configuration is a significant predictor in 7 out of 10 analyses. Being a school that begins in 10th or 11th grade is associated with higher overall graduation rates, relative to being in a school with only grades 9-12. Although the statistical significance drops somewhat when considering graduation rates for economically disadvantaged students, the positive coefficients across all years for both overall and economically disadvantaged students indicate that being in a school that begins in 10th or 11th grade is either a positive condition (years with statistically significant coefficients), or it is a neutral condition (years with non-significant coefficients) with respect to graduation rates.

Demographic characteristics of students enrolled in the school were not consistently significantly related to graduation rates when controlling for all variables in our model. The percentage of students participating the free/ reduced lunch program were significantly negatively related to overall graduation rates in the most recent three years studies, but were not related to economically disadvantaged student graduation rate. The percentage of students of minority races was not significantly related to student graduation rate in any of the years examined.

Interestingly, 8th-grade student achievement was not consistently significantly related to graduation rates when controlling for all variables in our model. The association between literacy achievement and graduation rates is significant at the 99 percent or 95 percent confidence level for the first three study years for both the overall student population and for economically disadvantaged students. Math achievement was marginally significant in only one year (2014-15) for both overall and economically disadvantaged student graduation rates.

This research can help school leaders, policy makers and education stakeholders to examine ways to further increase school graduation rates. The only variable that is consistently associated with graduation rate changes is the number of students in the graduating class, although indications of a positive relationship between high schools serving *only* grades 10-12 or 11-12 and higher graduation rates appears worthy of further study.

In our 2014 graduation rate report, we found that being in a rural school was associated with higher graduation rates. We refine that analysis in the current report by examining instead the size of the graduating class. It is likely that rural schools are generally smaller schools; additionally, some urban districts might have smaller schools as well.

Graduating class size presents an interesting puzzle when considered with the grade configuration variables. As noted in Table 1, the average graduating class size (and, presumably, the school's enrollment) increases as the number of grades in the school decreases. Leithwood and Jantzi (2009) noted "smaller" schools generally showed more positive associations with achievement-related variables, including graduation, but they add that "smaller" is a relative

term. In our analyses of Arkansas data, the two associations showing statistical significance might appear to contradict this fact. Like prior research, we do find that a *decrease* in the log of graduating class size is associated with an *increase* in graduation rates. We also find, however, that the 33 Arkansas high schools¹⁴ that contain the fewest number of grades – grades 10-12 or 11-12 – but with considerably more students in their graduation cohorts are associated with strong and, for some years, statistically significant graduation rate *increases*.

The statistically significant association (in most years) between high schools with initial grades after 9th grade and graduation rate increases relative to traditional high schools serving grades 9-12 is interesting given the conclusions reached by Leithwood and Jantzi (2009, p. 484) who conclude that “[s]mall secondary schools manage to graduate a significantly larger proportion of their students than do large secondary schools.”

Why might our study findings appear to differ from those of prior research? Leithwood and Jantzi’s (2009) findings favor (relatively) smaller secondary schools, while our findings contain an apparent contradiction: generally graduation rates improve as schools get smaller, but the high schools containing only grades 10-12 or 11-12 – which are relatively larger high schools – have significantly higher graduation rates when holding other variables constant. It is important, however, to review again the authors’ definitions of “smaller” schools and compare it with Arkansas’ “smaller” schools. As stated previously, the authors define “smaller” to mean schools that, on the average, are considerably larger than most Arkansas schools; Arkansas’ “larger” schools likely would be considered “smaller” by the authors.¹⁵ About half of the schools in which the initial grade is after 9th are “smaller” by the Leithwood and Jantzi definition as they enroll fewer than 600 students. Only two of the 10-12 schools included in our study are housed in districts serving over 10,000 students.

With the exception of building a new high school, districts are not directly able to reduce the number of students in each graduating class. The implication might be that creating smaller pseudo-cohorts of graduates in larger high schools (through ‘houses’, ‘tribes’, ‘teams’, or ‘families’, for example) may create an opportunity for these 33 schools to capitalize on *further* increased graduation rates evidenced by schools with smaller graduating classes.

Jacob and Rockoff (2011) conclude that middle schools resulted in graduation rate reductions, but our Arkansas findings show that the small group of schools containing only grades 10-12 – which are fed by schools that include junior high or middle schools – graduate proportionately more students (among other school configurations). For this small group of high schools, perhaps the seemingly contradictory associations have to do with factors other than, or in addition to, simply receiving students from middle or junior high schools. Note again that the grades 9-12

¹⁴ Out of a total 37 such high schools. Four high schools were eliminated for reasons related to calculation of the ACGR. See Table 1 and the narrative about the table for detail.

¹⁵ The authors define “smaller” secondary schools to contain about 600 or fewer students, depending on the student demographics. The authors further elaborate on the topic of size by saying that “[s]maller is a relative term. In ... secondary school sizes exceeding 2,500 students, for example, smaller can mean as many as 1,500 students, a size that would be considered very large in other districts” (Leithwood & Jantzi, 2009, p. 484). During the 2017-18 school year in Arkansas, 172 high schools enrolled 300 or more students while 64 high schools enrolled more than 600 students, and only three Arkansas had enrollments higher than 2,500 students. For additional detail, see Table 1 of this report.

schools also might be served by middle or junior high schools. Also, Jacob and Rockoff (2011) focus (partially) on high school results in the state of Florida. There might be conditions in Florida that make the middle school transition particularly troublesome.

Conversely, there might be factors in Arkansas that lend strength to the decision to isolate the higher grades without including 9th grade. It is important to note that there are only 37 high schools with fewer than four grades¹⁶. Although these schools represent less than 14% of all Arkansas high schools, the strength and statistical significance of the association between this group and graduation rate increases cannot be ignored. We suggest that further study might highlight the reason or reasons why this association is so strong, significant, and positive.

¹⁶ We excluded four of these high schools from our analysis for reasons related to the calculation of the ACGR. See Table 1 and the narrative about the table for detail.

APPENDIX

APPENDIX A: 2017-18 SCHOOLS IN OVERALL GRADUATION RATE ANALYSIS

(See Appendix B for excluded schools)

School Name	Grades Served	District Name	Overall Graduation Rate*
Acorn High	7-12	Ouachita River	96.9%
Alma High	9-12	Alma	95.3%
Alpena High	7-12	Alpena	89.7%
Arkadelphia High	9-12	Arkadelphia	94.3%
Arkansas Arts Academy High	9-12	Arkansas Arts Academy	89.8%
Arkansas High	9-12	Texarkana	85.5%
Armored High	7-12	Armored	97.5%
Ashdown High	9-12	Ashdown	93.6%
Atkins High	9-12	Atkins	91.2%
Augusta High	7-12	Augusta	86.4%
Bald Knob High	9-12	Bald Knob	93.4%
Barton High	7-12	Barton-Lexa	85.5%
Batesville High	10-12	Batesville	93.7%
Bauxite High	9-12	Bauxite	92.6%
Bay High	7-12	Bay	87.5%
Bearden High	7-12	Bearden	92.9%
Beebe High	9-12	Beebe	87.0%
Benton High	10-12	Benton	94.8%
Bentonville High	9-12	Bentonville	93.0%
Bentonville West High	9-12	Bentonville	94.6%
Bergman High	9-12	Bergman	83.8%
Berryville High	9-12	Berryville	84.6%
Bigelow High	7-12	East End	100.0%
Bismarck High	9-12	Bismarck	92.2%
Blevins High	7-12	Blevins	73.5%
Blytheville High-A New Tech School	9-12	Blytheville	87.7%
Booneville High	10-12	Booneville	97.1%
Bradford High	7-12	Bradford	100.0%
Bradley High	7-12	Emerson-Taylor-Bradley	95.5%
Brinkley High	7-12	Brinkley	90.9%
Brookland High	10-12	Brookland	96.2%
Bruno-Pyatt K-12 School	K-12	Ozark Mountain	91.7%

APPENDIX A:
2017-18 SCHOOLS IN OVERALL GRADUATION RATE ANALYSIS
(See Appendix B for excluded schools)

School Name	Grades Served	District Name	Overall Graduation Rate*
Bryant High	9-12	Bryant	92.3%
Buffalo Island Central High	10-12	Buffalo Island Central	90.7%
Cabot High	10-12	Cabot	90.5%
Caddo Hills High	7-12	Caddo Hills	100.0%
Calico Rock High	7-12	Calico Rock	100.0%
Camden Fairview High	9-12	Camden Fairview	87.4%
Carlisle High	7-12	Carlisle	91.5%
Cave City High Career & Collegiate	9-12	Cave City	97.3%
Cedar Ridge High	6-12	Cedar Ridge	90.2%
Cedarville High	9-12	Cedarville	95.3%
Centerpoint High	6-12	Centerpoint	93.2%
Central High	7-12	Helena/ West Helena	80.5%
Central High	9-12	Little Rock	92.5%
Charleston High	7-12	Charleston	94.3%
Clarendon High	7-12	Clarendon	89.5%
Clarksville High	10-12	Clarksville	95.5%
Clinton High	9-12	Clinton	90.5%
Concord High	7-12	Concord	93.5%
Conway High	10-12	Conway	90.5%
Corning High	7-12	Corning	100.0%
Cossatot River High	7-12	Cossatot River	91.7%
Cotter High	7-12	Cotter	95.7%
County Line High	7-12	County Line	96.6%
Cross Cnty High A New Tech School	7-12	Cross County	83.7%
Crossett High	9-12	Crossett	88.5%
Cutter-Morning Star High	7-12	Cutter-Morning Star	82.4%
Danville High	9-12	Danville	98.1%
Dardanelle High	9-12	Dardanelle	85.1%
Decatur High	9-12	Decatur	82.9%
Deer K-12 School	K-12	Deer/Mt. Judea	94.4%
DeQueen High	10-12	DeQueen	85.3%
Dermott High	7-12	Dermott	100.0%
Des Arc High	7-12	Des Arc	81.0%
Dewitt High	9-12	Dewitt	95.9%

APPENDIX A:
2017-18 SCHOOLS IN OVERALL GRADUATION RATE ANALYSIS
(See Appendix B for excluded schools)

School Name	Grades Served	District Name	Overall Graduation Rate*
Dierks High	7-12	Dierks	90.2%
Dollarway High	9-12	Dollarway	61.5%
Don Tyson School of Innovation	8-12	Springdale	60.0%
Dover High	9-12	Dover	88.9%
Drew Central High	9-12	Drew Central	91.1%
Dumas High	10-12	Dumas	87.3%
Earle High	7-12	Earle	93.5%
East Poinsett Co. High	7-12	East Poinsett Co.	84.5%
El Dorado High	9-12	El Dorado	92.7%
Elkins High	9-12	Elkins	97.2%
Emerson High	7-12	Emerson-Taylor-Bradley	94.4%
England High	7-12	England	87.8%
Estem High	10-12	Estem Public Charter School	100.0%
Eureka Springs High	9-12	Eureka Springs	86.5%
Farmington Career Academies	10-12	Farmington	98.1%
Fayetteville High	9-12	Fayetteville	94.3%
Fayetteville Virtual Academy	K-12	Fayetteville	100.0%
Flippin High	9-12	Flippin	96.7%
Fordyce High	7-12	Fordyce	96.3%
Foreman High	7-12	Foreman	100.0%
Forrest City High	9-12	Forrest City	89.1%
Fouke High	9-12	Fouke	94.8%
Fountain Lake Charter High	9-12	Fountain Lake	90.4%
Genoa Central High	9-12	Genoa Central	96.9%
Gentry High Conversion Charter	9-12	Gentry	90.7%
Glen Rose High	9-12	Glen Rose	95.3%
Gosnell High	7-12	Gosnell	94.5%
Gravette High	9-12	Gravette	83.9%
Green Forest High	9-12	Green Forest	86.2%
Greenbrier High	10-12	Greenbrier	98.8%
Greene Cty Tech High	10-12	Greene County Tech	98.1%
Greenland High	9-12	Greenland	86.1%
Greenwood High	10-12	Greenwood	98.7%
Gurdon High	9-12	Gurdon	86.9%

APPENDIX A:
2017-18 SCHOOLS IN OVERALL GRADUATION RATE ANALYSIS
(See Appendix B for excluded schools)

School Name	Grades Served	District Name	Overall Graduation Rate*
Guy-Perkins High	7-12	Guy-Perkins	100.0%
Haas Hall Academy	7-12	Haas Hall Academy	98.4%
Haas Hall Academy Bentonville	7-12	Haas Hall Bentonville	96.2%
Hackett High	7-12	Hackett	98.1%
Hall High	9-12	Little Rock	65.1%
Hamburg High	9-12	Hamburg	93.4%
Hampton High	7-12	Hampton	97.3%
Har-Ber High ¹	10-12	Springdale	88.9%
Harmony Grove High	7-12	Harmony Grove (Ouachita)	96.1%
Harmony Grove High	10-12	Harmony Grove (Saline)	93.3%
Harrisburg College & Career Prep.	9-12	Harrisburg	83.2%
Harrison High Conversion Charter	9-12	Harrison	89.7%
Hartford High	7-12	Hackett	96.0%
Hazen High	9-12	Hazen	88.1%
Heber Springs High	9-12	Heber Springs	83.1%
Hector High	7-12	Hector	92.4%
Hermitage High	7-12	Hermitage	100.0%
Highland High	9-12	Highland	94.1%
Hillcrest High	7-12	Hillcrest	100.0%
Hope High	9-12	Hope	76.3%
Horatio High	7-12	Horatio	93.8%
Hot Springs World Class High	9-12	Hot Springs	76.0%
Hoxie High	7-12	Hoxie	94.0%
Huntsville High	9-12	Huntsville	81.1%
Izard Co. Cons. High	9-12	Izard County Consolidated	96.8%
J.A. Fair High	9-12	Little Rock	74.9%
Jacksonville High	9-12	Jacksonville North Pulaski	82.6%
Jacksonville Lighthouse College Prep.	7-12	Jacksonville Lighthouse Charter	98.5%
Jasper High	7-12	Jasper	100.0%
Jessieville High	9-12	Jessieville	89.1%
Joe T. Robinson High	9-12	Pulaski County Special	88.5%
Junction City High	7-12	Junction City	94.5%
Kingston High	7-12	Jasper	100.0%
KIPP Blytheville Collegiate High	7-12	KIPP Delta Public Schools	92.3%

APPENDIX A:
2017-18 SCHOOLS IN OVERALL GRADUATION RATE ANALYSIS
(See Appendix B for excluded schools)

School Name	Grades Served	District Name	Overall Graduation Rate*
KIPP:Delta Collegiate High	9-12	KIPP Delta Public Schools	90.5%
Kirby High	7-12	Kirby	96.2%
Lafayette County High	7-12	Lafayette County	89.7%
Lake Hamilton High	10-12	Lake Hamilton	86.7%
Lakeside High	9-12	Lakeside (Chicot)	94.0%
Lakeside High	8-12	Lakeside (Garland)	87.1%
Lamar High	8-12	Lamar	85.2%
Lavaca High	9-12	Lavaca	91.3%
Lead Hill High	7-12	Lead Hill	88.0%
Lee High	7-12	Lee County	71.8%
Lincoln High	8-12	Lincoln	88.0%
Lisa Academy High	9-12	Lisa Academy	100.0%
Lisa Academy North High Charter	9-12	Lisa Academy	100.0%
Lonoke High	9-12	Lonoke	93.1%
Magazine High	7-12	Magazine	87.2%
Magnet Cove High	7-12	Magnet Cove	96.0%
Magnolia High	10-12	Magnolia	89.5%
Malvern High	9-12	Malvern	94.0%
Mammoth Spring High	7-12	Mammoth Spring	97.5%
Manila High	9-12	Manila	98.8%
Mansfield High	9-12	Mansfield	90.3%
Marion High	10-12	Marion	91.7%
Marked Tree High	9-12	Marked Tree	97.7%
Marmaduke High	7-12	Marmaduke	93.5%
Marshall High	7-12	Searcy County	96.8%
Marvell-Elaine High	7-12	Marvell-Elaine	91.9%
Maumelle Charter High	6-12	Academics Plus	81.8%
Maumelle High	9-12	Pulaski County Special	86.0%
Mayflower High	9-12	Mayflower	89.3%
Maynard High	7-12	Maynard	97.2%
McClellan Magnet High	9-12	Little Rock	73.0%
McCrary High	7-12	McCrary	95.5%
McGehee High	7-12	McGehee	87.3%
Melbourne High	7-12	Melbourne	98.4%

APPENDIX A:
2017-18 SCHOOLS IN OVERALL GRADUATION RATE ANALYSIS
(See Appendix B for excluded schools)

School Name	Grades Served	District Name	Overall Graduation Rate*
Mena High	9-12	Mena	96.8%
Midland High	7-12	Midland	91.7%
Mineral Springs High	7-12	Mineral Springs	86.7%
Monticello High	9-12	Monticello	94.8%
Morrilton Sr. High	9-12	South Conway County	88.3%
Mount Ida High	7-12	Mount Ida	90.7%
Mountain Home Career Academies	9-12	Mountain Home	87.4%
Mountain Pine High	7-12	Mountain Pine	84.2%
Mountain View High	9-12	Mountain View	97.5%
Mountainburg High	9-12	Mountainburg	73.6%
Mt. Judea K-12 School	K-12	Deer/Mt. Judea	92.9%
Mt. Vernon/Enola High	7-12	Mt. Vernon/Enola	96.4%
Mulberry High	9-12	Mulberry/Pleasant View Bi-Cnty	91.7%
Murfreesboro High	7-12	South Pike County	92.1%
Nashville High	10-12	Nashville	96.4%
Nemo Vista High	9-12	Nemo Vista	100.0%
Nettleton High	9-12	Nettleton	94.8%
Nevada High School	7-12	Nevada	95.0%
Newport High	7-12	Newport	78.0%
Norfolk High	7-12	Norfolk	90.7%
North Little Rock Center of Excellence	9-12	North Little Rock	96.9%
North Little Rock High	9-12	North Little Rock	75.0%
Northside High ¹	10-12	Fort Smith	91.4%
NWA Classical Academy High	9-12	Responsive Ed NWA Classical	100.0%
Oark High	7-12	Jasper	100.0%
Oden Schools	P-12	Ouachita River	85.7%
Omaha High	7-12	Omaha	86.5%
Osceola High	9-12	Osceola	90.0%
Ouachita High	7-12	Ouachita	92.5%
Ozark High	10-12	Ozark	98.1%
Palestine-Wheatley Senior High	7-12	Palestine-Wheatley	86.4%
Pangburn High	7-12	Pangburn	100.0%
Paragould High	9-12	Paragould	92.4%

APPENDIX A:
2017-18 SCHOOLS IN OVERALL GRADUATION RATE ANALYSIS
(See Appendix B for excluded schools)

School Name	Grades Served	District Name	Overall Graduation Rate*
Paris High	9-12	Paris	95.0%
Parkers Chapel High	7-12	Parkers Chapel	93.0%
Parkview Magnet High	9-12	Little Rock	92.6%
Pea Ridge High	9-12	Pea Ridge	81.5%
Pea Ridge Manufacturing & Business Academy	11-12	Pea Ridge	97.0%
Perryville High	7-12	Perryville	92.7%
Piggott High	7-12	Piggott	93.7%
Pine Bluff High	9-12	Pine Bluff	74.7%
Pocahontas High	10-12	Pocahontas	94.0%
Pottsville High	10-12	Pottsville	94.0%
Poyen High	7-12	Poyen	94.7%
Prairie Grove High	9-12	Prairie Grove	91.2%
Prescott High	7-12	Prescott	92.4%
Quitman High	7-12	Quitman	97.8%
Rector High	7-12	Rector	87.0%
Rison High	6-12	Cleveland County	96.4%
Rivercrest High	7-12	Rivercrest 57	81.6%
Riverside High	7-12	Riverside	98.3%
Riverview High	9-12	Riverview	86.1%
Rogers Heritage High	9-12	Rogers	82.6%
Rogers High	9-12	Rogers	88.8%
Rogers New Technology High	9-12	Rogers	100.0%
Rose Bud High	7-12	Rose Bud	91.5%
Rural Special High	7-12	Mountain View	100.0%
Russellville High	10-12	Russellville	92.4%
Salem High	7-12	Salem	100.0%
Scranton High	7-12	Scranton	96.7%
Searcy High	9-12	Searcy	88.6%
Sheridan High	10-12	Sheridan	93.2%
Shirley High	7-12	Shirley	85.2%
Siloam Springs High Conv. Charter	9-12	Siloam Springs	89.7%
Sloan-Hendrix High	8-12	Sloan-Hendrix	88.4%
Smackover High	9-12	Smackover-Norphlet	94.3%

APPENDIX A:
2017-18 SCHOOLS IN OVERALL GRADUATION RATE ANALYSIS
(See Appendix B for excluded schools)

School Name	Grades Served	District Name	Overall Graduation Rate*
South Side High	7-12	South Side (VanBuren)	97.8%
Southside Charter High	10-12	Southside (Independence)	88.8%
Southside High ¹	10-12	Fort Smith	94.2%
Spring Hill High	7-12	Spring Hill	88.7%
Springdale High ¹	10-12	Springdale	88.0%
St. Joe K-12 School	K-12	Ozark Mountain	100.0%
St. Paul High	7-12	Huntsville	91.7%
Star City High	9-12	Star City	96.3%
Strong High	7-12	Strong-Huttig	100.0%
Stuttgart High	9-12	Stuttgart	85.8%
Sylvan Hills High	9-12	Pulaski County Special	85.2%
Taylor High	7-12	Emerson-Taylor-Bradley	85.2%
The Academies At Jonesboro High	10-12	Jonesboro	88.2%
The Academies of West Memphis	10-12	West Memphis	90.2%
Timbo High	7-12	Mountain View	90.0%
Trumann High	9-12	Trumann	82.0%
Tuckerman High	8-12	Jackson Co.	97.0%
Two Rivers High	5-12	Two Rivers	75.5%
Umpire K-12 School	K-12	Cossatot River	85.7%
Valley Springs High	9-12	Valley Springs	93.2%
Valley View High	10-12	Valley View	95.8%
Van Buren High	10-12	Van Buren	87.1%
Vilonia High	10-12	Vilonia	99.1%
Viola High	7-12	Viola	92.9%
Waldron High	9-12	Waldron	92.0%
Walnut Ridge High	7-12	Lawrence County	90.6%
Warren High District Conv. Charter	9-12	Warren	87.5%
Watson Chapel High	10-12	Watson Chapel	91.0%
West Fork High	9-12	West Fork	93.7%
West Side High	7-12	West Side (Cleburne)	100.0%
Western Grove K-12 School	K-12	Ozark Mountain	93.3%
Western Yell County High	7-12	Western Yell County	97.0%
Westside High	8-12	Westside Cons. (Craighead)	90.7%
Westside High	7-12	Westside (Johnson)	85.4%

APPENDIX A:
2017-18 SCHOOLS IN OVERALL GRADUATION RATE ANALYSIS
(See Appendix B for excluded schools)

School Name	Grades Served	District Name	Overall Graduation Rate*
White County Central High	7-12	White County Central	95.7%
White Hall High	9-12	White Hall	87.0%
Wilbur D. Mills High	9-12	Pulaski County Special	85.9%
Wonderview High	7-12	Wonderview	96.6%
Woodlawn High	7-12	Woodlawn	91.4%
Wynne High	9-12	Wynne	90.5%
Yellville-Summit High	7-12	Yellville-Summit	95.2%

*School-level 4-year ACGR is reported unless the school serves only grades 10-12 in which case the district-level 4-year ACGR is reported.

¹These schools were excluded from the analysis due to inappropriateness of using district-level 9-12 graduation rate in place of their school-level graduation rate.

**APPENDIX B:
2017-18 SCHOOLS EXCLUDED FROM GRADUATION RATE ANALYSIS**

School Name	District Name
Academic Center for Excellence	Cabot School District
Agee Lierly Life Preparation Services School	Fayetteville School District
Ark. School for the Blind H.S.	Ark. School For The Blind
Ark. School for the Deaf H.S.	Ark. School For The Deaf
Arkansas Consolidated High School-Alexander	Division Of Youth Services School System
Arkansas Consolidated High School-Colt	Division Of Youth Services School System
Arkansas Consolidated High School-Dermott	Division Of Youth Services School System
Arkansas Consolidated High School-Harrisburg	Division Of Youth Services School System
Arkansas Consolidated High School-Lewisville	Division Of Youth Services School System
Arkansas Consolidated High School-Mansfield	Division Of Youth Services School System
Arkansas Virtual Academy High School	Arkansas Virtual Academy
Badger Academy	Beebe School District
Belle Point Alternative Center	Fort Smith School District
Izard Center for Learning	Van Buren School District
Miner Academy	Bauxite School District
Premier High School of Little Rock	Responsive Ed Solutions Premier High School Of Little Rock
River Valley Virtual Academy	Van Buren School District
SIAtch High Charter	SIAtch Little Rock Charter
Washington Academy	Texarkana School District