

This Brief

Introduction **P.1**

SBHC Demographics **P.2**

Data Trends **P.3**

Data Trends & Education Outcomes **P.4**

SBHCs & Education Outcomes **P.5**

Policy Implications **P.6**

Summary Points

- **Arkansas has 40 School-Based Health Centers (SBHCs) across the state.**
- **School-level achievement does not consistently improve after an SBHC is opened on the campus.**
- **Attendance data do not consistently improve after an SBHC is opened on the campus.**
- **SBHCs continue to face capacity issues.**
- **Students in schools with SBHCs are reportedly growing in health knowledge and know health is a priority.**

School-Based Health Centers (SBHC):

Their Relationship to School-Level Attendance and Achievement Outcomes

In 2009, the Arkansas Department of Elementary and Secondary Education, in collaboration with the Department of Health, began offering \$150,000 grants to public schools for the purpose of opening a School-Based Health Center (SBHC). This brief shares recent research from the Office for Education Policy examining the association between having an SBHC on a school’s campus and the school’s standardized achievement scores. Moreover, we examine if the magnitude of an association differs based on school demographics. Finally, this report notes the preliminary findings of the relationship between SBHCs and attendance rates.

Introduction

School-Based Health Centers (SBHCs) are multi-faceted healthcare facilities serving school-age children, adolescents, their family members, and the broader community (Knof et al., 2016). SBHCs provide an array of health services including, medical, mental, dental, and even vision (Knof et al., 2016; Love et al., 2019). Today, there are over 2,500 SBHCs across the United States primarily in the eastern half and southern portion of the country with a spattering across the west coast (Thomas et al., 2020).

Arkansas launched a state SBHC grant program in 2009 open to all Arkansas public schools, (School-Based Health Centers, n.d.). The program is funded by the Arkansas Tobacco Excise Tax in collaboration with four separate state education and health departments. Grant applicants can apply for a maximum of \$150,000 for the first year. Over a subsequent five-year period, a decreasing amount of funding is provided to grantees dependent upon the availability of tax revenue. Arkansas SBHCs provide basic medical, mental, dental or other services as needed.

As of 2020-21, Arkansas has 40 SBHCs serving diverse populations and addressing varying levels of need. Over half of Arkansas’s SBHC are in the western part of the state. They are located on Arkansas public school campuses. Demographic information about these schools is presented in Table 1. On average these schools serve 70% of students from economically disadvantaged backgrounds, and 38% of students that are from racial or ethnic minorities.



Table 1: *Demographic characteristics of schools with SBHCs, by year the SBHC opens*

Year SBHC Opens	School Name	District Name	Grades served	Enrollment	% FRL	% Minority
2010-11	Robert F. Morehead Middle	Dollarway	6-8	369	92	93
	Owl Creek Elementary	Fayetteville	K-7	618	71	46
	Gurdon High	Gurdon	9-12	243	67	44
	Lavaca Middle	Lavaca	5-8	252	56	5
	Lincoln Elementary	Lincoln	PK-5	510	75	17
	Paris High	Paris	9-12	319	54	15
	Jones Elementary	Springdale	K-5	486	96	89
2011-12	Cross County Elementary	Cross County	K-6	320	73	10
	Magazine Elementary	Magazine	PK-6	254	79	8
	Acorn Elementary	Ouachita River	K-6	270	77	7
2012-13	Jasper High	Jasper	7-12	232	69	1
	Lamar High	Lamar	9-12	318	62	8
	Prairie Grove Elementary	Prairie Grove	K-2	407	50	8
2013-14	Cedarville Elementary	Cedar Ridge	K-4	301	75	7
	El Dorado High	El Dorado	9-12	1,328	56	58
	Stephens Elementary	Little Rock	PK-5	357	94	97
	Siloam Springs Intermediate**	Siloam Springs	5-6	626	60	38
	George Elementary	Springdale	K-5	640	85	83
	Yellville-Summit Elementary	Yellville-Summit	K-4	270	70	6
2014-15	Southside Elementary	Southside	PK-3	521	62	9
	Malvern Elementary	Malvern	K-4	895	83	42
2015-16	Bradford Elementary	Bradford	K-6	245	76	4
	Bryant Elementary	Bryant	K-5	769	55	33
	Charleston Elementary	Charleston	K-6	477	53	12
	Smackover Elementary	Smackover-Norphlet	K-4	323	56	22
2017-18	Camden Fairview Middle*	Camden Fairview	6-8	548	78	68
	Elkins High*	Elkins	9-12	433	41	10
	Marvell-Elaine High*	Marvell-Elaine	6-12	174	96	96
2018-19	Highland High*	Highland	9-12	522	69	6
	Hope High*	Hope	9-12	598	73	83
	Parson Hills Elementary*	Springdale	K-5	567	95	91
2019-20	Booneville Elementary*	Booneville	PK-6	642	77	13
	Chicot Elementary*	Little Rock	PK-5	544	74	96
	Ida Burns Elementary*	Conway	K-4	370	75	49
	Fouke Elementary*	Fouke	PK-5	530	64	4
	Rose Bud Elementary*	Rose Bud	K-6	411	70	6
2020-21	Jessieville Elementary*	Jessieville	PK-5	351	77	10
	Darby Junior High*	Fort Smith	7-9	695	92	76
	Fountain Lake Elementary*	Fountain Lake	K-4	469	57	18
	Sheridan High*	Sheridan	9-12	1,222	40	10
Sample Wide Averages			-	486	70	38

Notes:

-Schools with single asterisk (*) are excluded from study sample due to limited data availability

-Siloam Springs Intermediate (**) is excluded from the study sample, despite opening an SBHC in 2013-14 due to a lack of available achievement data.

- Enrollment, school %FRL, school %Min are the figures reported in the state school demographics on the Office of Education Policy (OEP) website for the year the school opens their SBHC. Since these demographic figures do not vary over the years the same totals and rates are used for each year of this study period (academic years 2008-09 to 2018-19).

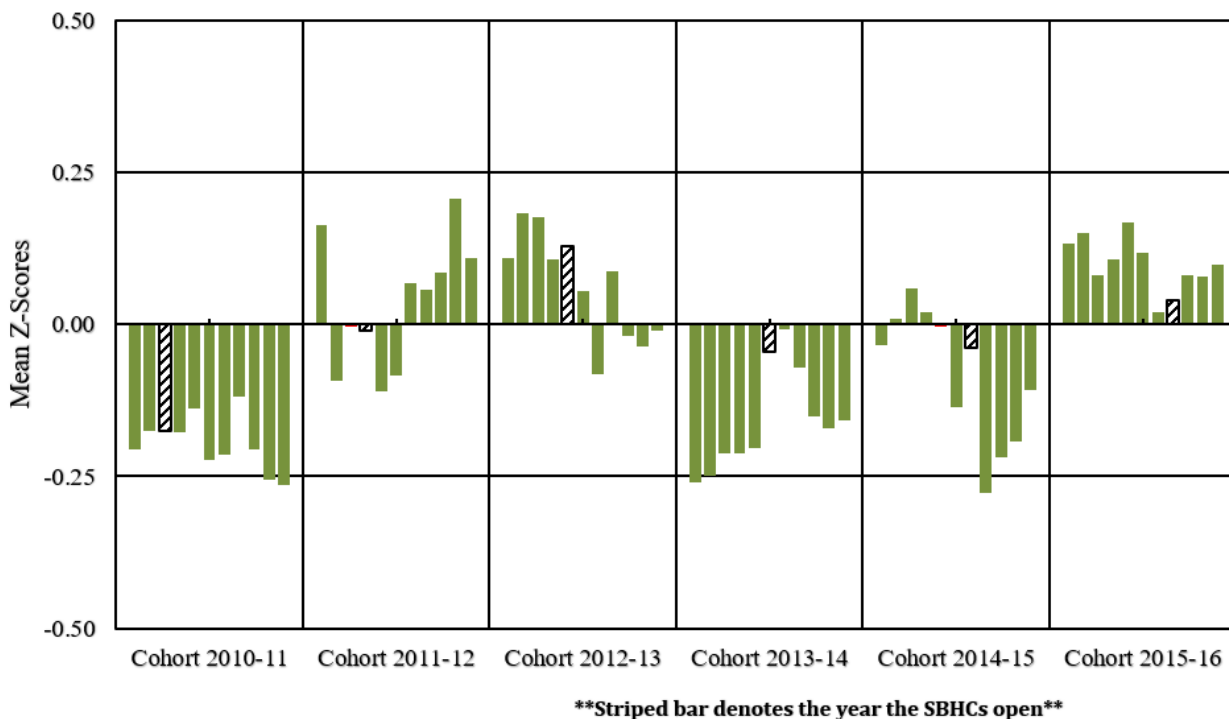
SBHCs and Achievement Trends

The Division of Elementary and Secondary Education intends for SBHCs to increase standardized state test scores, reduce student absenteeism, and contribute to the overall improvement of schools' academic success (School-Based Health Centers, n.d.). There is limited research examining the school-level benefits of SBHCs on school-level achievement scores. Therefore, to help inform Arkansas state policy makers about the relationship between SBHCs in Arkansas and education outcomes, and contribute to the existing, but limited, knowledge on SBHCs school-level impact on education outcomes we conduct a quasi-experimental study with school-level fixed effects. We ask two research questions: 1) Is the presence of an SBHC associated with a change in school-level achievement scores for Arkansas public schools? and 2) Is the presence of an SBHC associated with a change in school-level achievement scores for specific schools levels (elementary, middle, or high) or specific school populations (i.e. low-income, or majority minority schools)? Limited data are available to empirically study the relationship between Arkansas SBHCs and attendance rates. Therefore, we only make note of existing trends in the data.

Although there are 40 schools with SBHCs, conducting an effective before-after analysis of the relationship between SBHCs and school-level achievement scores requires schools have a minimum of two years of baseline achievement data available. This two year minimum is consistent with prior research (Johnson et al., 2020). This baseline minimum and the minimum of three years of treatment data reduces our analytic sample to 24 schools with SBHCs. See Table 1 for a list of schools excluded from this study. To assess achievement trends, schools that open an SBHC in the same academic year are grouped into cohorts and the average achievement score is calculated for each academic year from schools within a given cohort starting in 2008-09 to 2018-19. For example, cohort 2010-11 consists of seven schools (see Table 1 for list of schools by name). The average cohort achievement score (on state assessments of English Language Arts and Mathematics) is calculated for school year 2008-09 by adding all the schools' achievement scores that year and dividing by seven.

The trends of these cohort averages are visually depicted in Figure 1 with a striped black bar indicating the school year the SBHC opened. School achievement score trends across the six cohorts do not reflect consistent improvement after an SBHC opens on their campus. We find similar trends for individual schools across the study sample (n=24).

Figure 1: Average annual achievement Z-scores, by SBHC opening year cohort

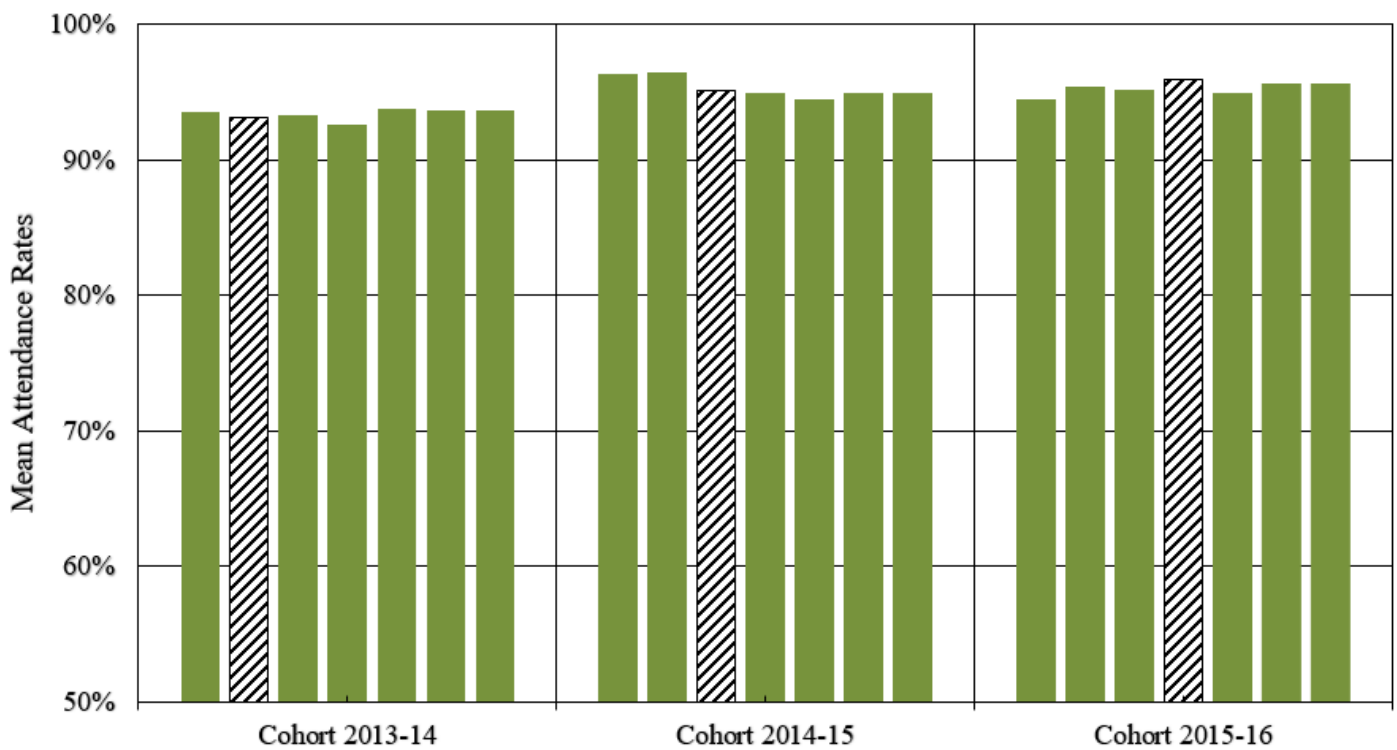


SBHCs and Attendance Trends

SBHCs are associated with a reduction in school absenteeism rates (Knopf et al., 2016; Thomas et al., 2020). Data limitations prohibit us from conducting an empirical analysis of the relationship between SBHCs and absenteeism rates for Arkansas schools. That said, a preliminary inspection of the available attendance data suggests that the presence of an SBHC is not associated with a change in school level attendance rates. Attendance data is available beginning in academic year 2012-13 to present day. Study years for this analysis are 2008-09 to 2018-19. The first SBHCs open in school year 2010-11. Therefore, the analytic sample of 24 schools used to estimate the relationship between SBHCs and achievement scores is reduced to 11 schools with available attendance data. Again, schools are grouped into cohorts based on when their SBHC opened. For example, cohort 2013-14 consists of five schools (see Table 1 for list of schools by name). The average cohort attendance rate is calculated for school year 2012-13 by adding all the schools' attendance rates that year and dividing by five.

The trends of these cohort averages are visually depicted in Figure 2 with a striped black bar indicating the school year the SBHC opened. Although limited data precludes us from empirically investigating the relationship between SBHCs and attendance rates for Arkansas public schools, we do not see a positive trend. We find similar trends for individual schools across the limited study sample (n=11).

Figure 2: Average annual attendance rates, by SBHC opening year cohort



****Striped bar denotes the year the SBHCs open****

SBHCs and Education Outcomes

We turn now to the main findings of our study. Using ordinary least squares regression models, with robust standard errors and school-level fixed effects, we estimate the association between the presence of Arkansas SBHCs and standardized school achievement scores. A fixed effects linear regression analysis² allows us to answer the first research question, “Is the presence of an SBHC associated with a change in school-level standardized achievement scores for Arkansas Public Schools?” Our hypothesis is that the presence of an SBHC results in a positive and statistically significant change in school-level standardized achievement scores. The fixed effects regression analysis shows that on average there is no statistically significant relationship between the presence of an SBHC and changes in academic achievement scores. The presence of an SBHC is associated with a 0.014 standard deviation decrease in school-level achievement scores. This finding is not statistically significant at any confidence level.

A multi-variable linear regression model with demographic controls and interaction terms allows us to answer the research question, “Is the presence of an SBHC associated with a change in school-level achievement scores for specific types of schools or specific school populations (i.e. low-income, or majority minority schools)?” The hypothesis is that the presence of an SBHC results in a positive and statistically significant change in standardized achievement scores for elementary and high schools and among low-income and minority school populations. The multivariable linear regression model, with demographic controls and interaction terms, reveals no statistically significant relationship between the presence of an SBHC and changes in academic achievement scores. This association does not change for subgroups of schools based on percentage of students receiving free and reduced lunch or percentage of minority students (see Table 2). Moreover, there is no significant or unique association for schools of a certain population size or level (elementary or high school compared to middle schools).

Table 2: Multivariate regression estimates predicting school-level standardized achievement scores (n=24)

	Multivariate Coefficient
School Based Health Center	-0.124
% School Free/Reduced Lunch	-0.088***
% School Minority	-0.005***
School Enrollment	0.000
Elementary School Level	0.201***
High School Level	0.217***
SBHC*% FRL	0.001
SBHC*% Minority	0.002
SBHC* Enrollment	0.000
SBHC* Elementary School Level	0.031
SBHC* High School Level	-0.172

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

Visit Our Blog:
www.officeforedpolicy.com

EXECUTIVE DIRECTOR:

Sarah McKenzie, Ph.D.

ASSOCIATE DIRECTOR:

Josh McGee, Ph.D.

RESEARCH STAFF:

Charlene A. Reid

Amylynn Smith



UNIVERSITY OF
ARKANSAS

Implications for Public Health & Policy

Results from this study suggest SBHCs in Arkansas are not statistically significantly associated with improving school-level achievement scores. However, there may be other benefits of SBHCs to students. State department personnel report observing improvements in student's health knowledge and student's initiation prioritizing personal health care.

That said, a lack of benefit for school-level achievement scores does not imply benefits exist for other education or health outcomes. Perhaps a lack of findings in our current study is evident of our primary study limitation, a small sample size ($n=24$) which results in low study power. Another limitation in this study is not including SBHCs services as covariates. Future research should explore the perhaps heterogeneous benefits of Arkansas SBHCs to provide policy makers with a complete understanding of whether SBHCs support education outcomes. For now, we hope policy makers and school district administrators are enlightened by these findings, and will prudently consider best practices to help improve standardized test scores through SBHCs interventions.

It is possible that we find no significant academic benefits of SBHCs because associations are not evident within the first ten years of SBHCs operating. If this is true, then policy makers, schools and districts, as well as community stakeholders, should consider conducting a cost-benefit-analysis to examine an appropriate timeline for beginning to see a return on investment. In conclusion, findings from this study show that Arkansas SBHCs are not yet meeting the state goal of improving standardized achievement scores at the school-level. However, further rigorous research is needed to explore whether a truly causal relationship exists between SBHCs and school-level achievement scores.

Sources:

- Knopf, J. A., Finnie, R. K. C., Peng, Y., Hahn, R. A., Truman, B. I., Vernon-Smiley, M., . . . Community Preventive Services Task Force. (2016). School-based health centers to advance health equity: A community guide systematic review. *American Journal of Preventive Medicine*, 51(1), 114-126. doi:10.1016/j.amepre.2016.01.009
- Love, H. E., Schlitt, J., Soleimanpour, S., Panchal, N., & Behr, C. (2019). Twenty years of school-based health care growth and expansion. *Health Affairs (Project Hope)*, 38(5), 755-764. doi:10.1377/hlthaff.2018.05472
- School-Based Health Centers. (n.d.). Retrieved from <http://dese.ade.arkansas.gov/divisions/learning-services/school-health-services/school-based-health-center>
- Thomas, C. L., Price, O. A., Phillippi, S., & Wennerstrom, A. (2020). School-based health centers, academic achievement, and school discipline: A systematic review of the literature. *Children and Youth Services Review*, 118, 105467. doi:10.1016/j.childyouth.2020.105467