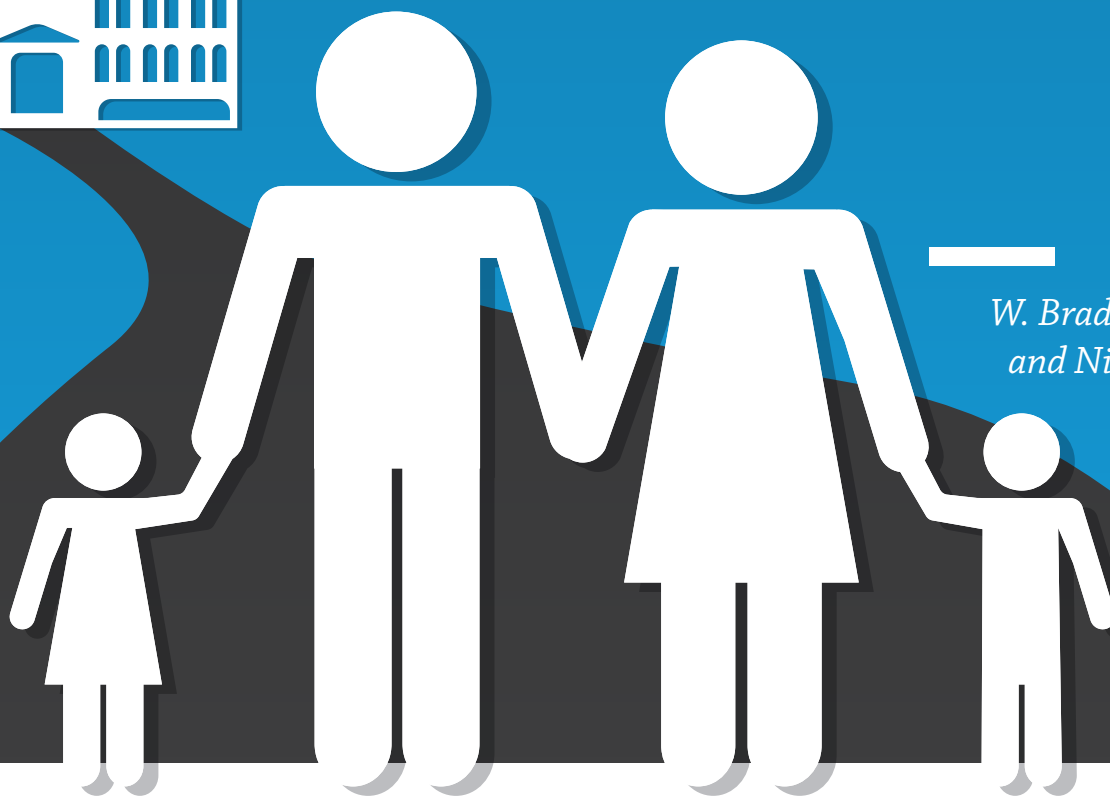
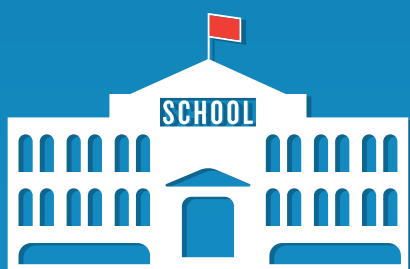


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MST, OCTOBER 3

STRONGER FAMILIES, BETTER SCHOOLS

Families and High School Graduation Across Arizona



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Executive Summary

A growing body of research indicates that what happens in families—not just in schools—shapes children’s educational performance. *Stronger Families, Better Schools* builds on such research to explore how student performance is linked to family structure, child poverty, and parental education at the school district level in Arizona. This report finds that the share of married-parent families in a school district is one of the strongest predictors of high school graduation rates in the Grand Canyon State. Indeed, the share of families headed by married couples is a more powerful predictor of high school graduation rates there than are child poverty rates, race, and ethnicity. *Stronger Families, Better Schools* also reveals that family structure is the best predictor of gender parity in high school graduation rates in Arizona school districts, according to our models. In other words, boys are significantly more likely to graduate at levels that parallel girls’ rates in Arizona districts with more married families. In sum, Arizona school districts that are home to strong and stable families also tend to enjoy more successful and gender-equitable schools. Accordingly, to improve children’s educational performance across the Grand Canyon State, policymakers, educators, and civic leaders should work to strengthen families as well as schools.

Introduction

Arizona has not been a national leader in high school graduation rates in recent years. While the high school graduation rate has been rising in most states, in Arizona it has been static at a level below the national average. Graduation rates changed hardly at all in Arizona between the 2009-2010 and 2013-2014 school years, going from 75.4 percent in 2010 to 75.8 percent in 2014. This puts the state's graduation rate below the 2013-2014 national average of 82 percent.

There is also a substantial gender gap in graduation rates in Arizona. As in other states, male students there are less likely to finish high school on time than are their female peers. In 2014, the graduation rate for girls was almost 80 percent, whereas for boys, it was less than 72 percent. And this gender gap has not changed much in recent years. In 2010, the same 80 percent of Arizona females graduated on time, compared to 71 percent of Arizona males. The gender gap in Arizona is close to the national average of seven percentage points.¹

However, overall trends in high school graduation rates and the graduation gender gap are not necessarily indictments of Arizona schools. A recent Urban Institute report, for instance, finds that the state's rate of educational improvement from 2003 to 2013 is above the national average.² Arizona's 2014 high school graduation rate is also comparable to or better than those of its Southwestern neighbors Colorado (77 percent), Nevada (70 percent), and New Mexico (69 percent). It is possible, then, that the Grand Canyon State's educational outcomes are driven not just by what is happening in schools, but also by what goes on outside of the classroom in children's homes and communities.

This report explores the role of family structure in public school districts across Arizona as it relates to high school graduation rates and gender equity in graduation rates. By looking at patterns in high school graduation rates, family structure, and a range of socio-demographic factors—including parental education and poverty—in different districts, we hope to discover how the condition of Arizona families may be linked to children's educational performance.

There is substantial variation in educational outcomes in school districts across Arizona, which allows us to explore the relative contributions of family structure, parental education, poverty, race, and ethnicity to local high school graduation rates. On-time graduation rates, for example, vary substantially across Arizona's nearly 100 Local Education Agencies (LEAs), or school districts, that include high schools. So does the graduation gap between female and male students. In 2014, when we ranked school districts by their graduation rates, the top fifth of districts boasted graduation rates around 90 percent or better. The bottom fifth had on-time graduation rates below 70 percent. When we ranked school districts by the ratio of male to female graduates, the top tenth had male graduation rates that equaled or exceeded female rates. In the bottom tenth, however, only 80 (or even fewer) males received diplomas for every

¹ Marie C. Stetser and Robert Stillwell, *Public High School Four-Year On-Time Graduation Rates and Event Dropout Rates: School Years 2010–11 and 2011–12* (Washington, DC: National Center for Education Statistics, 2014).

² Matthew M. Chingos, *Breaking the Curve: Promises and Pitfalls of Using NAEP Data to Assess the State Role in Student Achievement* (Washington, DC: Urban Institute, 2015).

100 females who earned them. Graduation rates and male/female graduation ratios for the 99 Arizona school districts in our study are shown in Table A1 in the Appendix.

What distinguishes school districts with high overall graduation rates and equal numbers of male and female graduates from those with low overall graduation rates and a preponderance of female graduates? In *Stronger Families, Better Schools*, we explore the possibility that parental education, poverty, and especially family structure are related to high school graduation patterns in Arizona. We do so because a long line of studies, starting with the 1966 Coleman Report, have revealed that educational outcomes have a great deal to do with the characteristics of students' families.³ We know that better-educated parents are more likely to read to their children, to spend a lot of time with them, and to participate in youth-related organizations, including PTOs. Poor families have less money to devote to their sons' and daughters' education and face more stresses, which can affect children's schooling.⁴ And two-parent families are typically able to devote more time, attention, financial support, and consistent discipline to their children, all of which redound to the educational benefit of their children.⁵

Finally, recent research from MIT economist David Autor and his colleagues suggests that married-parent families may especially boost the educational performance of boys. The work of Autor's team demonstrates that the gender gap in high school graduation, school suspensions, and school absences is smaller in families with married parents than in unmarried families.⁶ As Autor said to *The New York Times*, "Boys particularly seem to benefit more from being in a married household or committed household—with the time, attention and income that brings."⁷ Another new study finds that this dynamic extends into college: "Males were disproportionately less likely than females to attend college if they came from a family in which the father had been absent from birth."⁸

In this report, we explore the relationships at the district level between family structure, parental education, and child poverty and two important outcomes in Arizona: the share of children who graduate high school and the gender ratio for high school graduation. Our work controls for race and ethnicity in the nearly 100 Local Education Agencies that make up Arizona's school system. We find that public school districts with better-educated parents and more married families enjoy higher high school graduation rates and more gender parity in graduation rates.

³James Coleman et al., *Equality of Educational Opportunity* (Washington, DC: National Center for Educational Statistics, 1966). See also Anna J. Egalite, "How Family Background Influences Student Achievement," *Education Next* 16, no. 2 (2016): 71-78.

⁴For discussions of parental education and poverty, see Egalite, "How Family Background Influences Student Achievement," 72; Nicole Garcia Hernandez, "The Parental Readiness and Empowerment Program (PREP) and its Effects on Parent Advocacy for Their Children" (master's thesis, San Diego State University, 2013); Ariel Kalil, Rebecca Ryan, and Michael Corey, "Diverging Destinies: Maternal Education and the Developmental Gradient in Time With Children," *Demography* 49, no. 4 (2012): 1361-1383; Barbara Schneider and James Coleman (eds.), *Parents, Their Children, and Schools* (Boulder, CO: Westview, 1996).

⁵Paul Amato, "The Impact of Family Formation Change on the Cognitive, Social, and Emotional Well-Being of the Next Generation," *Future of Children* 15, no. 2 (2005): 75-96; Sara McLanahan and Gary Sandefur, *Growing Up With a Single Parent: What Hurts, What Helps* (Cambridge, MA: Harvard, 1994); Nicholas Zill, "Family Change and Student Achievement: What We Have Learned, What It Means for Schools," in *Family-School Links: How Do They Affect Educational Outcomes?*, ed. Alan Booth and Judith F. Dunn (Mahwah, NJ: Erlbaum, 1996).

⁶David Autor et al., "Family Disadvantage and the Gender Gap in Behavioral and Educational Outcomes," working paper (Northwestern University Institute for Policy Research, Evanston, IL, 2015).

⁷Claire Cain Miller, "A Disadvantaged Start Hurts Boys More Than Girls," *New York Times*, October 22, 2015, A3.

⁸William J. Doherty, Brian J. Willoughby, and Jason L. Wilde, "Is the Gender Gap in College Enrollment Influenced by Nonmarital Birth Rates and Father Absence?" *Family Relations* 65, no. 2 (2016): 263-274.

Diploma Demographics

Our analyses of the 2014 graduation rates of Arizona school districts indicate that they varied according to several demographic characteristics of local families, namely, the proportion of married-couple families, the average educational attainment of adults, the child poverty rate, and the racial and ethnic composition of school-aged children. In the average Arizona school district, 63 percent of families with children enrolled in public schools were married-couple families, and 27 percent of adults over 25 had graduated from college. In the average district, 20.6 percent of children in public schools lived below the official poverty line, and 51 percent of students were from disadvantaged minority groups (41.5 percent Hispanic, 4.7 percent American Indian, 4.5 percent African-American)."

These averages mask a great deal of variation. The proportion of married-couple families in a district ranged from 88 percent to 25 percent. The proportion of adults with college degrees ranged from 66 percent down to 4 percent, and child poverty rates ranged from 52.4 percent to 0 percent of the children in public schools. The proportion of students who are disadvantaged minorities ranged all the way from 100 percent to zero. Demographic profiles of the 99 Arizona school districts in our study may be found in Appendix Table A2.

Married-couple families. High school graduation rates were higher in Arizona districts with more children growing up in married-couple families. Of the ten districts with the highest graduation rates, all were above average with respect to their proportion of married-couple families. Five were in the top tenth of the distribution of married-couple families, four were in the top quarter, and one was in the top half of the distribution. (See Table 1A.) Of the ten districts with the lowest graduation rates, eight fell below average in their proportion of married-couple families. One was in the bottom tenth of the distribution, while two were in the bottom quarter. (See Table 1B.) The value of the cross-district correlation coefficient between high school graduation rates and proportion of married-couple families was $r = .54^*$.

Adult education level. High school graduation rates were higher in Arizona districts with more adults who had completed or at least attended college. Of the ten districts with the highest graduation rates, eight were above the mean with respect to adult educational attainment, as shown in Table 1A. Five were in the top tenth of the distribution of adult education level, while three more were in the top half. Of the ten districts with the lowest graduation rates, all were below the mean in average educational attainment. As shown in Table 1B, three were in the bottom tenth of the distribution, five in the bottom quarter, and two in the bottom half. The value of the cross-district correlation coefficient between high school graduation rates and average adult educational attainment was $r = .55^*$.

TOP TEN HIGH SCHOOL GRADUATION RATES	MARRIED COUPLES	ADULT ED LEVEL	% CHILD POVERTY	% DISADVANTAGE MINORITY
Joseph City	TOP 10 TH	BOTTOM HALF	TOP 10 TH	TOP HALF
Tanque Verde	TOP 10 TH	TOP 10 TH	BOTTOM 10 TH	BOTTOM 10 TH
Thatcher	TOP 10 TH	TOP HALF	BOTTOM QRTR	BOTTOM HALF
Snowflake	TOP QRTR	BOTTOM HALF	BOTTOM HALF	BOTTOM 10 TH
Catalina Foothills	TOP QRTR	TOP 10 TH	BOTTOM 10 TH	BOTTOM 10 TH
Peoria	TOP HALF	TOP HALF	BOTTOM HALF	BOTTOM HALF
Cave Creek	TOP QRTR	TOP 10 TH	BOTTOM 10 TH	BOTTOM 10 TH
Higley	TOP 10 TH	TOP 10 TH	BOTTOM 10 TH	BOTTOM QRTR
Deer Valley	TOP QRTR	TOP HALF	BOTTOM 10 TH	BOTTOM 10 TH
Chandler	TOP 10 TH	TOP 10 TH	BOTTOM QRTR	BOTTOM HALF

TABLE 1A. Demographic characteristics of Arizona Local Education Agencies with ten highest four-year high school graduation rates in 2013-2014 school year. (Percentile range in which district placed on each, 2009-2013.) Source: Arizona Department of Education for graduation rates; U.S. Census Bureau American Community Survey and National Center for Education Statistics for school district demographic characteristics. Ranking of Local Education Agencies by graduation rate excludes districts on American Indian reservations and those with fewer than 35 students in 2013-2014 senior class.

Child poverty. High school graduation rates were also higher in Arizona districts with lower rates of child poverty. Of the ten school districts with the highest average graduation rates, nine were below average with respect to their proportion of households with children enrolled in public school that were below the official poverty level. As shown in Table 1A, five were in the bottom tenth of the distribution of child poverty households. Two were in the bottom quarter and two were in the bottom half of the distribution. Of the ten districts with the *lowest* graduation rates in the state, eight were above average on the child poverty distribution. One was in the top tenth of the distribution, as Table 1B illustrates. One was in the top quarter and six were in the top half of the distribution. The value of the cross-district correlation coefficient between high school graduation rates and child poverty rates was $r = -.50^*$.

Student race and ethnicity. Graduation rates were lower in districts with larger proportions of children who are American Indian, Hispanic, or African-American. Of the ten districts with the highest average graduation rates, nine had lower-than-average numbers of disadvantaged minority students. Only one was above average with respect to minority enrollment. Of the *bottom* ten districts for graduation rates, all but two had high proportions of minority students, as shown in Table 1B. Note that districts in Native American reservations were excluded from the Top and Bottom Ten rankings, but not from the regression analysis. The value of the cross-district correlation coefficient between high school graduation rates and proportion of disadvantaged minority students was $r = -.50^*$.

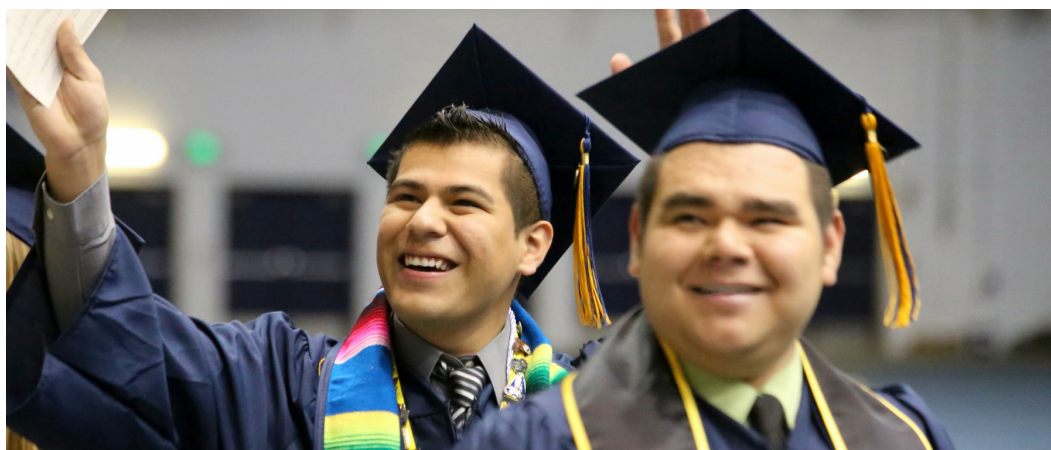
BOTTOM HIGH SCHOOL GRADUATION RATES	MARRIED COUPLES	ADULT ED LEVEL	% CHILD POVERTY	% DISADVANTAGE MINORITY
Chino Valley	BOTTOM HALF	BOTTOM HALF	TOP HALF	BOTTOM QRTR
Coolidge	TOP HALF	BOTTOM QRTR	TOP HALF	TOP HALF
Antelope Union	BOTTOM HALF	BOTTOM 10 TH	BOTTOM HALF	TOP QRTR
Colorado River	BOTTOM HALF	BOTTOM QRTR	TOP HALF	TOP HALF
Sunnyside	BOTTOM QRTR	BOTTOM 10 TH	TOP 10 TH	TOP 10 TH
Kingman	BOTTOM HALF	BOTTOM QRTR	TOP HALF	BOTTOM QRTR
Maricopa	TOP QRTR	BOTTOM HALF	BOTTOM QRTR	TOP HALF
Casa Grande	BOTTOM HALF	BOTTOM QRTR	TOP HALF	TOP QRTR
Safford	BOTTOM QRTR	BOTTOM QRTR	TOP HALF	TOP HALF
Parker Unified	BOTTOM 10 TH	BOTTOM 10 TH	TOP QRTR	TOP QRTR

TABLE 1B. Demographic characteristics of Arizona Local Education Agencies with ten lowest four-year high school graduation rates in 2013-2014 school year. (Percentile range in which district placed on each, 2009-2013.) Source: Arizona Department of Education for graduation rates; U.S. Census Bureau American Community Survey and National Center for Education Statistics for school district demographic characteristics. Ranking of Local Education Agencies by graduation rate excludes districts in American Indian reservations and those with fewer than 35 students in 2013-2014 senior class.

Size of child population. Arizona school districts vary widely in the number of children enrolled in their public school systems. During the 2009-2013 period, the ten largest districts had average enrollments that ranged from 75,000 for the Mesa Unified District to 27,000 for the Scottsdale Unified District. During the same time period, the ten smallest districts had enrollments between 545 for the Gila Bend Unified District and 115 for the Patagonia Union High School District. The median district enrolled 2,530 students, while the mean district enrollment was considerably higher at 8,317.

We excluded students attending charter schools from our study because of the difficulty of establishing the demographic characteristics of the areas from which these students were drawn. The total number of Arizona high school seniors included in our study is 66,240. They represent 84 percent of the statewide senior cohort for the 2013-2014 academic year (79,189).

There was some tendency for larger districts to have higher graduation rates than smaller ones. But the relationship between enrollment size and graduation rates, while weakly positive, was not statistically significant ($r = .12$ ns).



Higher Graduation Rates in Districts with more Married-Parent Families

When we combined five demographic characteristics of Arizona school districts in a multivariate regression analysis, the ones that emerged as most predictive of graduation rates were the district's proportion of married-couple families and the average educational attainment of local adults. The regression model accounted for 41 percent of the variance in graduation rates across districts. The value of the multiple correlation coefficient relating the combined demographic factors to graduation rates was $R = .64^*$. This was significantly larger than the largest bivariate coefficients for the individual demographic characteristics. Table 2 summarizes the bivariate correlation coefficients for each of the demographic factors on its own, as well as the standardized correlation coefficient for each factor in the multivariate analysis.

DEMOGRAPHIC CHARACTERISTICS OF LEAS	BIVARIATE RELATIONSHIP r	RELATIONSHIP ADJUSTED FOR OTHER FACTORS (β)
% Married-Couple Families	.54**	.35**
Avg. Adult Education Level	.55**	.37**
Child Poverty %	-.50**	-.02ns
% Disadvantaged Minority	-.50**	-.02ns
Enrollment Size	.12ns	-.02ns
% VARIANCE MODEL ACCOUNTS FOR		R Squared = .41** R = .64**

TABLE 2. Relationship of demographic characteristics of Arizona Local Education Agencies (LEA) to their four-year high school graduation rate; LEA demographic characteristics as of 2009-2013; graduation rates, 2013-2014. Source: Authors' analysis of data from Arizona Department of Education for graduation rates; U.S. Census Bureau American Community Survey and National Center for Education Statistics for school district demographic characteristics. * $p < .05$, ** $p < .01$

The positive relationship between the proportion of married-couple families in a school district and the district's graduation rate was weaker in the multivariate model ($\beta = .35^*$) than as an uncontrolled bivariate relationship ($r = .54^*$). In other words, the relationship between family structure and graduation rates in districts is partly attributable to local levels of adult education and child poverty, as well as racial and ethnic composition. But even after accounting for these factors, a significant link between more married-couple families and higher graduation rates remained. In fact, family structure was the second strongest predictor of district graduation rates in 2014, after adult educational attainment, and was stronger than child poverty, race, ethnicity, and enrollment size. As shown in Figure 1, before adjustment, there was a 4.6 percentage-point increase in graduation rates for every ten percentage-point increase in married-couple families in a district. After adjusting for education and race/ethnicity, there was a 3 percentage-point increase in graduation rates for every ten percentage-point rise in married-couple families.

The negative relationship between the proportion of disadvantaged minority children in a school district and the graduation rate of the district was weaker and not statistically significant in the multivariate model (beta = -.02ns), whereas it was significant as an uncontrolled bivariate relationship ($r = -.50^*$). This is probably because districts with higher minority populations, including Native American reservations, tend to have lower adult education levels, higher child poverty rates, and fewer married-couple families.

It is notable that the proportion of public school children living below the official poverty level, which exhibited a strong negative relationship to districts' graduation rate on a bivariate basis, became insignificant in the multivariate model. This is likely due to the fact that child poverty was itself strongly related to adult education level ($r = -.68^*$) and the proportion of married-couple families in a district ($r = -.62^*$). When these two characteristics, along with race and ethnicity, were combined in a multiple regression analysis, they accounted for 59 percent of the cross-district variance in child poverty ($R = .77^*$). The multiple regression results indicate that child poverty accounts for no further variance in district graduation rates beyond what is accounted for by the average educational attainment of local adults, family structure, and the racial/ethnic composition of the child population.

FIGURE 1

High School Graduation Rate in 2014 and Percent of Married-Couple Families in Arizona School Districts

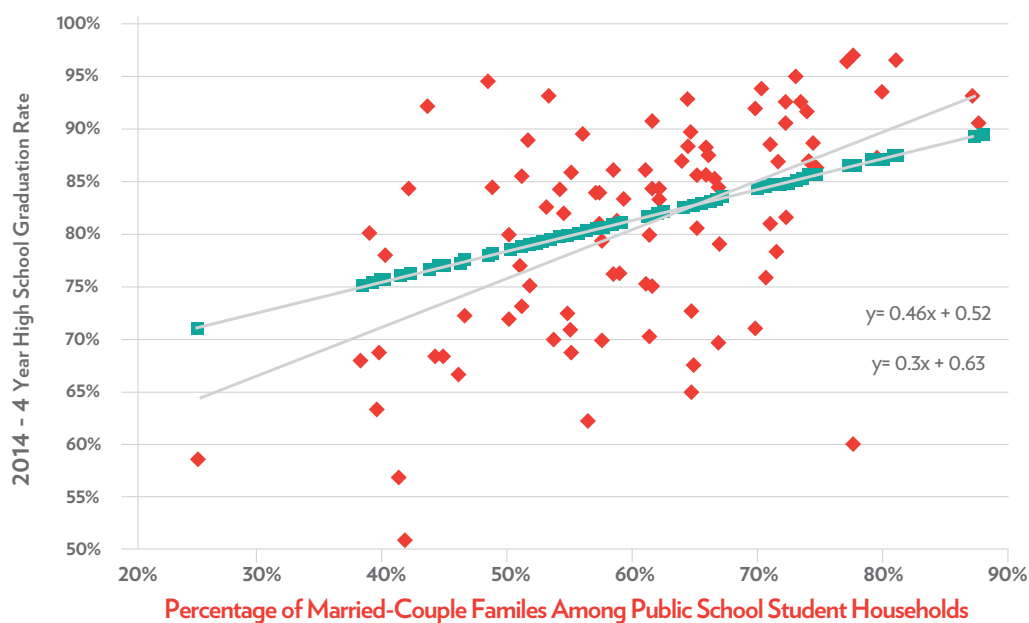


FIGURE 1. Relationship between high school graduation rate and proportion of married-couple families in Arizona school districts in 2014. Trend lines and equations show best-fit linear relationships between family structure and graduation rates as observed and after adjustment for district education and income levels and racial and ethnic composition of district student population.

Source: Authors' analysis of data from Arizona Department of Education and U.S. Census Bureau's American Community Survey for 2009-2013.

Smaller Gender Gap in Districts with More Married Parents

Variation from one Arizona school district to another in the ratio of male to female high school graduates is likewise related to demographic characteristics of families with children enrolled in public schools in the district. In particular, the male/female graduation ratio was generally higher in districts with larger proportions of married-couple families. The ratio tended to be lower in districts with higher proportions of students from disadvantaged minority groups, particularly those with high proportions of American Indian or Hispanic students.

Married-couple families. High school graduation rates for male and female students were more similar in Arizona districts with more children growing up in married-couple families. Of the ten districts with the highest male/female graduation ratios, seven were above average with respect to their proportion of married-couple families. Four were in the top tenth of the distribution of married-couple families, two were in the top quarter, and one was in the top half. (See Table 3A.) Of the ten districts with the lowest male/female ratios, eight were below average in their proportion of married-couple families. As Table 3B shows, one was in the bottom tenth of the distribution, while three were in the bottom quarter and four were in the bottom half of the distribution. The value of the cross-district correlation coefficient between high school graduation rates and proportion of married-couple families was $r = .29^*$.

TOP TEN M / F GRADUATION RATIOS	MARRIED COUPLES	ADULT ED LEVEL	% CHILD POVERTY	% DISADVANTAGE MINORITY
Santa Cruz HS	BOTTOM 10 TH	BOTTOM 10 TH	TOP HALF	TOP QRTR
Valley Union	TOP 10 TH	BOTTOM HALF	TOP 10 TH	BOTTOM HALF
Joseph City	TOP 10 TH	BOTTOM HALF	TOP 10 TH	TOP HALF
Snowflake	TOP QRTR	BOTTOM HALF	BOTTOM HALF	BOTTOM 10 TH
Tanque Verde	TOP 10 TH	TOP 10 TH	BOTTOM 10 TH	BOTTOM 10 TH
Fountain	TOP HALF	TOP 10 TH	BOTTOM 10 TH	BOTTOM 10 TH
Payson	BOTTOM HALF	BOTTOM HALF	TOP HALF	BOTTOM 10 TH
Higley Unified	TOP 10 TH	TOP 10 TH	BOTTOM 10 TH	BOTTOM QRTR
Morenci Unified	BOTTOM HALF	BOTTOM HALF	BOTTOM HALF	TOP QRTR
Catalina Foothills	TOP QRTR	TOP 10 TH	BOTTOM 10 TH	BOTTOM 10 TH

TABLE 3A. Demographic characteristics of Arizona Local Education Agencies with ten highest male/female high school graduation ratios in 2013-2014 school year. Percentile range in which district placed on each, 2009-2013. Source: Arizona Department of Education for graduation rates; U.S. Census Bureau American Community Survey and National Center for Education Statistics for school district demographic characteristics. Ranking of Local Education Agencies by male/female graduation ratio excludes districts in American Indian reservations and those with fewer than 35 students in 2013-2014 senior class.

Student race and ethnicity. Male and female graduation rates were more disparate in districts with larger proportions of American Indian or Hispanic children. Of the top ten districts in terms of male/female graduation ratios, seven were below average with respect to their numbers of disadvantaged minority students. Five of these six were in the bottom tenth of the minority student distribution, as depicted in Table 3A. Of the ten districts with the lowest male/female graduation ratios, all but two had high proportions of minority students. As shown in Table 3B, four of these districts were in the top quarter of the distribution of disadvantaged minority students and four were in the top half. The value of the cross-district correlation coefficient between the male/female graduation ratio and the proportion of disadvantaged minority students was $r = -.28^*$. When the correlation was examined separately for American Indian, Hispanic, and African-American students, however, it was only for American Indian students that the correlation approached statistical significance ($r = -.19^+$).

We did not find adult educational attainment, child poverty, or enrollment size in a district to have a statistically significant relationship with the male/female graduation ratio. The correlation coefficients for these relationships were .14ns, -.10ns, and .06ns, respectively.

BOTTOM M / F GRADUATION RATIOS	MARRIED COUPLES	ADULT ED LEVEL	% CHILD POVERTY	% DISADVANTAGE MINORITY
Bisbee	BOTTOM QRTR	TOP HALF	TOP QRTR	TOP QRTR
Williams	BOTTOM HALF	BOTTOM HALF	TOP QRTR	TOP HALF
Antelope	BOTTOM HALF	BOTTOM 10 TH	BOTTOM HALF	TOP QRTR
Mammoth	BOTTOM QRTR	BOTTOM QRTR	BOTTOM HALF	TOP QRTR
Miami Unified	BOTTOM 10 TH	BOTTOM QRTR	TOP 10 TH	BOTTOM HALF
Coolidge	TOP HALF	BOTTOM QRTR	TOP HALF	TOP HALF
Pima Unified	TOP QRTR	BOTTOM HALF	BOTTOM HALF	BOTTOM HALF
Flowing Wells	BOTTOM QRTR	BOTTOM QRTR	TOP QRTR	TOP HALF
Globe Unified	BOTTOM HALF	BOTTOM HALF	TOP HALF	TOP HALF
Casa Grande	BOTTOM HALF	BOTTOM QRTR	TOP HALF	TOP QRTR

TABLE 3B. Demographic characteristics of Arizona Local Education Agencies with ten lowest male/female high school graduation ratios in 2013-2014 school year. Percentile range in which district placed on each, 2009-2013. Source: Arizona Department of Education for graduation rates; U.S. Census Bureau American Community Survey and National Center for Education Statistics for school district demographic characteristics. Ranking of Local Education Agencies by male/female graduation ratio excludes districts in American Indian reservations and those with fewer than 35 students in 2013-2014 senior class.

The proportion of married-couple families in a district continued to be significantly related to more equal graduation rates for males and females when we controlled for local economic circumstances and racial and ethnic composition. (See Table 4.)

DEMOGRAPHIC CHARACTERISTICS OF LEAS	BIVARIATE RELATIONSHIP r	RELATIONSHIP ADJUSTED FOR OTHER FACTORS (β)
% Married-Couple Families	.29**	.29*
Avg. Adult Education Level	.14ns	-.08ns
% Children in Poverty	-.10ns	.22ns
% Disadvantaged Minority	-.28**	-.28+
Enrollment Size	.06ns	.07ns
% VARIANCE MODEL ACCOUNTS FOR		R Squared = .13* R = .36*

TABLE 4. Relationship of demographic characteristics of Arizona Local Education Agencies (LEA) to their male/female high school graduation ratio; LEA demographic characteristics as of 2009-2013; male/female graduation ratios, 2013-2014. Source: Authors' analysis of data from Arizona Department of Education for graduation ratios; U.S. Census Bureau American Community Survey and National Center for Education Statistics for school district demographic characteristics. + $p < .10$, * $p < .05$, ** $p < .01$

The multiple regression analysis accounted for 13 percent of the variance across districts in male/female graduation ratios. The multiple correlation coefficient was equal to $R = .36^*$. As shown in Figure 2, there was a 2.2 point increase in the male/female graduation ratio for every ten percentage-point increase in the proportion of married-couple families in a district, after adjusting for sociodemographic factors.

FIGURE 2

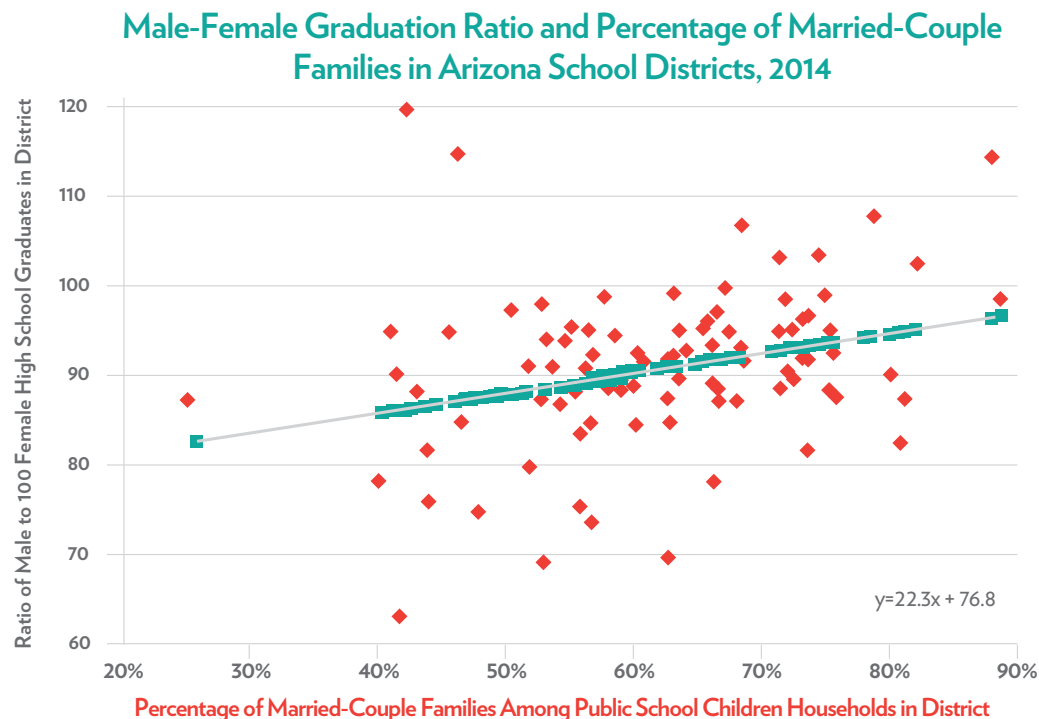


FIGURE 2. Relationship between male/female high school graduation ratio and proportion of married-couple families in Arizona school districts in 2014. Trend line and equation show best-fit linear relationship between family structure and male/female graduation ratio after adjustment for district child poverty rate and racial and ethnic composition of district student population. Source: Authors' analysis of data from Arizona Department of Education and U.S. Census Bureau's American Community Survey for 2009-2013.

Conclusion

In Arizona, public school districts with better-educated and more married parents boast higher high school graduation rates. Gender equity is also greater in districts with more married parents. That is, boys come closer to matching the high school graduation rates of girls in districts with more married-parent families. Moreover, married parenthood is a better predictor of these two high school graduation outcomes than are child poverty, race, and ethnicity in public school districts across the Grand Canyon state.

Our results suggest that one reason that Arizona has not achieved above-average outcomes in the educational arena, and high school graduation in particular, is that it is home to a student population less likely to live in stable families than American children as a whole. The state ranks 33rd in the United States when it comes to the share of its children living with married parents (67 percent).⁹ If the state enjoyed more stable families, it might also see better educational outcomes among its children. It's for that reason that Arizona should consider measures designed to strengthen and stabilize families. The following two proposals are worth considering:

1) Arizona should increase efforts to improve vocational education and apprenticeship programs. By raising the skills, earnings, maturity, and self-confidence of young men and women who are not on the college track, such programs would help more young people forge strong and stable marriages. Research shows that work-based learning programs in high schools, like Career Academies, have promising effects on the earnings and marriageability of young men from disadvantaged backgrounds.¹⁰

2) Private and public initiatives to provide social marketing on behalf of marriage could prove helpful. Campaigns against smoking and teenage pregnancy have taught us that sustained efforts to change behavior can work. We would like to see a civic campaign organized around what Brookings Institution scholars Ron Haskins and Isabel Sawhill have called the “success sequence,” where young adults are encouraged to pursue education, work, marriage, and parenthood in that order. A campaign organized around this sequence—and receiving statewide support from educational, media, pop cultural, business, and civic institutions—might meet with the same success as has the nation's recent campaign to prevent teen pregnancy, a campaign which has helped drive down the teen pregnancy rate by more than 50 percent since the 1990s.¹¹ Needless to say, the success sequence should also be incorporated into family life education in public schools.

These are just two ideas. More should be explored. The bottom line: policymakers, educators, business leaders, and religious leaders in Arizona need to address the fragile foundations of family life if they hope for the state's children to lead the nation in academic achievement.

⁹ W. Bradford Wilcox, “The Best and Worst States in America for Married Parenthood,” AEIdeas, October 27, 2015, <http://www.aei.org/publication/the-best-and-worst-states-in-america-for-married-parenthood/>.

¹⁰ W. Bradford Wilcox, Robert I. Lerman, and Joseph Price, *Strong Families, Prosperous States: Do Healthy Families Affect the Wealth of States?* (Washington, DC: AEI/Institute for Family Studies, 2015). The two recommendations offered here are adapted from *Strong Families, Prosperous States*.

¹¹ Ibid.

Appendix

TABLE A1

2013-2014 HIGH SCHOOL GRADUATION RATES FOR ARIZONA SCHOOL DISTRICTS

LOCAL EDUCATION AGENCY	HS GRAD RATE	M / F GRAD RATIO
Agua Fria Union High School District	84.3%	91.8
Ajo Unified District	80.0%	84.3
Amphitheater Unified District	79.5%	88.1
Antelope Union High School District	69.0%	73.5
Apache Junction Unified District	75.1%	90.7
Bagdad Unified School District	90.6%	98.1
Benson Unified School District	84.5%	97.2
Bicentennial Union High School District	84.6%	102.9
Bisbee Unified District	72.9%	68.8
Blue Ridge Unified District	81.9%	90.6
Buckeye Union High School District	86.7%	96.0
Camp Verde Unified District	93.2%	95.2
Casa Grande Union High School District	71.1%	84.2
Catalina Foothills Unified District	93.8%	98.2
Cave Creek Unified District	92.7%	96.1
Chandler Unified District	91.7%	94.7
Chinle Unified District	56.8%	87.9
Chino Valley Unified District	62.2%	88.3
Clifton Unified District	60.0%	NA
Colorado City Unified District	69.6%	107.0
Colorado River Union High School District	69.7%	88.4
Coolidge Unified District	64.9%	77.9
Deer Valley Unified District	92.0%	94.6
Douglas Unified District	84.1%	88.9
Duncan Unified District	86.2%	91.6
Dysart Unified District	84.3%	92.7
Flagstaff Unified District	81.4%	91.9
Florence Unified School District	81.1%	89.1
Flowing Wells Unified District	84.4%	83.0
Fort Thomas Unified District	63.4%	62.8
Fountain Hills Unified District	88.1%	99.7
Fredonia-Moccasin Unified District	87.5%	81.8
Ganado Unified District	67.8%	78.2

TABLE A1 - CONTINUED

2013-2014 HIGH SCHOOL GRADUATION RATES FOR ARIZONA SCHOOL DISTRICTS

LOCAL EDUCATION AGENCY	HS GRAD RATE	M / F GRAD RATIO
Gila Bend Unified District	67.6%	96.9
Gilbert Unified District	88.5%	94.7
Glendale Union High School District	88.8%	93.9
Globe Unified District	86.4%	84.1
Higley Unified District	92.6%	98.6
Holbrook Unified District	82.6%	93.6
Humboldt Unified District	85.6%	94.6
Indian Oasis-Baboquivari Unified District	58.4%	87.1
J. O. Combs Unified School District	81.6%	91.2
Joseph City Unified District	97.1%	107.6
Kayenta Unified District	68.6%	90.1
Kingman Unified School District	70.0%	87.0
Lake Havasu Unified District	84.3%	89.2
Mammoth-San Manuel Unified District	84.3%	75.3
Marana Unified District	85.3%	86.6
Maricopa Unified School District	71.1%	88.0
Mesa Unified District	76.3%	90.5
Miami Unified District	84.5%	76.0
Mingus Union High School District	79.1%	91.4
Morenci Unified District	89.5%	98.6
Nogales Unified District	85.6%	97.8
Page Unified District	72.8%	93.1
Paradise Valley Unified District	88.3%	95.7
Parker Unified School District	72.4%	87.2
Patagonia Union High School District	94.4%	NA
Payson Unified District	75.0%	99.2
Peoria Unified School District	92.9%	95.6
Phoenix Union High School District	77.1%	87.0
Pima Unified District	90.5%	81.0
Pinon Unified District	79.0%	86.5
Prescott Unified District	85.7%	88.1
Queen Creek Unified District	88.9%	92.1
Ray Unified District	87.5%	92.0
Red Mesa Unified District	50.7%	81.2
Round Valley Unified District	75.9%	90.1
Saddle Mountain Unified School District	93.6%	87.0

TABLE A1 - CONTINUED

2013-2014 HIGH SCHOOL GRADUATION RATES FOR ARIZONA SCHOOL DISTRICTS

LOCAL EDUCATION AGENCY	HS GRAD RATE	M / F GRAD RATIO
Safford Unified District	72.3%	95.1
Sahuarita Unified District	86.3%	87.4
San Carlos Unified District	68.3%	114.9
Sanders Unified District	71.8%	79.9
Santa Cruz Valley Unified District	87.4%	87.8
Santa Cruz Valley Union High School District	77.9%	119.6
Scottsdale Unified District	86.8%	95.2
Sedona-Oak Creek Joint Unified District	83.1%	91.4
Show Low Unified District	84.1%	94.2
Sierra Vista Unified District	85.9%	92.0
Snowflake Unified District	95.0%	103.3
St. Johns Unified District	83.1%	94.8
Sunnyside Unified District	70.0%	87.8
Superior Unified School District	89.7%	88.5
Tanque Verde Unified District	96.7%	102.3
Tempe Union High School District	76.2%	88.7
Thatcher Unified District	96.7%	93.8
Tolleson Union High School District	80.9%	89.4
Tombstone Unified District	90.9%	91.7
Tuba City Unified District	68.3%	84.6
Tucson Unified District	79.6%	90.6
Vail Unified District	86.4%	89.8
Valley Union High School District	92.9%	114.3
Whiteriver Unified District	66.9%	74.8
Wickenburg Unified District	78.4%	91.3
Willcox Unified District	80.4%	86.6
Williams Unified District	75.5%	69.3
Window Rock Unified District	80.3%	94.7
Winslow Unified District	92.2%	95.1
Yuma Union High School District	81.9%	92.6
ARIZONA STATE TOTAL	75.8%	90.0

Note: List of Arizona LEAs excludes those that cover elementary schools only and those too small for reliable demographic estimates from Census Bureau's 2009-2013 American Community Survey.

HS GRAD RATE = 4-year cohort high school graduation rate for academic year 2013-2014.

M/F GRAD RATIO = Number of male high school graduates per 100 female graduates in 2013-2014.

Source: Arizona Department of Education.

TABLE A2

2009-2013 DEMOGRAPHIC PROFILE OF ARIZONA SCHOOL DISTRICTS

LOCAL EDUCATION AGENCY	MARCPFAM	ADLTEDUC	% CHLD POVERTY	% HISPANC	% AMERIND	% AFRAMER	ENROLMNT
Agua Fria Union High School District	62.7%	2.88	12.4%	43.4%	0.8%	14.3%	6,630
Ajo Unified District	62.5%	2.37	36.4%	58.1%	0.0%	0.0%	310
Amphitheater Unified District	58.7%	3.17	21.8%	37.4%	1.9%	2.2%	17,465
Antelope Union High School District	56.5%	2.28	17.3%	66.3%	0.0%	5.6%	445
Apache Junction Unified District	53.5%	2.70	30.4%	26.5%	0.2%	1.2%	6,025
Bagdad Unified School District	88.2%	2.63	0.0%	27.9%	0.0%	2.7%	555
Benson Unified School District	50.4%	2.68	14.0%	28.9%	4.3%	0.4%	935
Bicentennial Union High School District	70.8%	2.28	34.7%	62.5%	0.0%	0.0%	200
Bisbee Unified District	52.8%	2.94	38.5%	69.6%	0.5%	1.9%	805
Blue Ridge Unified District	56.0%	2.97	32.3%	32.7%	4.2%	0.0%	2,490
Buckeye Union High School District	72.6%	2.51	15.8%	50.8%	2.9%	5.3%	4,280
Camp Verde Unified District	54.9%	2.58	34.1%	20.4%	14.1%	0.0%	1,565
Casa Grande Union High School District	56.5%	2.52	21.6%	52.2%	9.9%	5.2%	4,840
Catalina Foothills Unified District	71.4%	3.90	7.9%	7.3%	0.0%	4.8%	3,955
Cave Creek Unified District	73.1%	3.61	6.0%	6.4%	0.1%	0.8%	6,965
Chandler Unified District	74.7%	3.22	11.1%	29.0%	0.8%	4.3%	43,155
Chinle Unified District	43.3%	2.25	46.1%	4.4%	94.8%	0.0%	5,575
Chino Valley Unified District	57.9%	2.71	25.5%	22.6%	0.0%	2.0%	2,745
Clifton Unified District	78.3%	2.33	9.1%	57.8%	3.9%	0.0%	510
Colorado City Unified District	68.0%	2.07	44.4%	0.0%	0.0%	0.0%	995
Colorado River Union High School District	59.0%	2.43	20.1%	42.0%	1.9%	0.0%	2,395
Coolidge Unified District	65.9%	2.53	26.8%	39.1%	7.9%	1.4%	7,040
Deer Valley Unified District	70.8%	3.12	8.1%	17.8%	0.8%	2.1%	45,650
Douglas Unified District	58.8%	2.23	44.0%	95.3%	0.2%	0.0%	4,150
Duncan Unified District	62.3%	2.39	35.8%	37.4%	5.6%	0.0%	535
Dysart Unified District	67.8%	2.89	17.6%	35.9%	0.8%	6.3%	33,000
Flagstaff Unified District	60.1%	3.18	22.0%	24.3%	17.7%	2.1%	12,970
Florence Unified School District	71.9%	2.57	19.2%	35.9%	8.7%	4.2%	13,120
Flowing Wells Unified District	55.8%	2.49	34.5%	55.1%	0.5%	1.0%	4,955
Fort Thomas Unified District	41.7%	2.26	50.0%	2.6%	84.4%	0.0%	1,345
Fountain Hills Unified District	66.7%	3.31	4.9%	5.4%	0.0%	0.6%	2,515
Fredonia-Moccasin Unified District	80.4%	2.73	15.3%	0.7%	18.4%	0.0%	570
Ganado Unified District	40.2%	2.17	44.3%	1.7%	96.8%	0.0%	1,735
Gila Bend Unified District	66.0%	2.02	34.2%	78.9%	8.3%	0.0%	545
Gilbert Unified District	72.0%	3.15	8.7%	19.5%	0.7%	2.2%	41,125
Glendale Union High School District	53.1%	2.58	31.1%	52.0%	2.8%	6.0%	16,965
Globe Unified District	59.9%	2.63	21.0%	40.1%	11.3%	1.9%	1,595
Higley Unified District	74.3%	3.26	6.6%	20.9%	1.1%	3.6%	15,610
Holbrook Unified District	54.5%	2.43	39.1%	17.8%	61.6%	0.2%	2,305
Humboldt Unified District	67.0%	2.71	17.6%	26.3%	0.8%	0.1%	8,150

TABLE A2 - CONTINUED

2009-2013 DEMOGRAPHIC PROFILE OF ARIZONA SCHOOL DISTRICTS

LOCAL EDUCATION AGENCY	MARCPFAM	ADLTEDUC	% CHLD POVERTY	% HISPANC	% AMERIND	% AFRAMER	ENROLMNT
Indian Oasis-Baboquivari Unified District	25.4%	2.14	48.4%	2.7%	95.0%	1.1%	1,305
J. O. Combs Unified School District	73.1%	2.74	18.0%	31.9%	2.1%	7.4%	8,140
Joseph City Unified District	78.1%	2.45	52.4%	9.1%	44.3%	0.0%	440
Kayenta Unified District	41.7%	2.24	49.4%	0.7%	85.9%	0.0%	2,230
Kingman Unified School District	62.5%	2.46	23.9%	22.6%	0.5%	0.6%	8,720
Lake Havasu Unified District	63.2%	2.64	18.9%	25.1%	1.6%	0.5%	7,600
Mammoth-San Manuel Unified District	55.6%	2.50	12.5%	71.6%	0.0%	0.3%	1,320
Marana Unified District	67.5%	3.05	12.1%	34.3%	0.4%	3.2%	14,945
Maricopa Unified School District	70.9%	2.87	8.2%	31.2%	3.5%	14.9%	9,455
Mesa Unified District	60.2%	2.77	22.9%	41.0%	4.1%	3.0%	75,145
Miami Unified District	44.1%	2.52	40.7%	47.6%	0.0%	0.0%	1,565
Mingus Union High School District	68.2%	2.77	7.3%	38.0%	2.7%	0.0%	1,685
Morenci Unified District	57.4%	2.61	13.0%	68.8%	0.0%	1.7%	865
Nogales Unified District	52.8%	2.09	50.6%	96.1%	0.0%	0.0%	5,120
Page Unified District	65.8%	2.49	33.5%	9.6%	60.4%	0.3%	3,115
Paradise Valley Unified District	65.5%	3.19	15.3%	23.2%	0.3%	2.7%	38,600
Parker Unified School District	48.3%	2.31	34.3%	41.4%	33.6%	0.0%	1,740
Patagonia Union High School District	50.0%	3.30	10.5%	34.8%	0.0%	0.0%	115
Payson Unified District	62.8%	2.74	23.2%	17.8%	1.5%	0.0%	2,300
Peoria Unified School District	65.4%	2.88	12.4%	30.9%	0.9%	3.7%	37,605
Phoenix Union High School District	52.7%	2.38	39.1%	74.2%	1.4%	10.2%	38,285
Pima Unified District	73.1%	2.74	15.3%	37.1%	0.0%	0.5%	875
Pinon Unified District	54.2%	2.01	52.2%	1.3%	94.1%	0.0%	1,870
Prescott Unified District	66.2%	3.15	13.0%	19.6%	2.3%	0.4%	6,085
Queen Creek Unified District	75.2%	3.15	9.2%	27.3%	0.1%	3.0%	6,295
Ray Unified District	67.3%	2.43	30.6%	56.0%	0.0%	0.0%	500
Red Mesa Unified District	43.9%	2.03	48.4%	1.1%	98.6%	0.0%	2,185
Round Valley Unified District	71.5%	2.53	13.5%	24.5%	2.9%	0.0%	1,895
Saddle Mountain Unified School District	80.7%	2.59	3.7%	42.2%	0.0%	1.9%	1,850
Safford Unified District	56.3%	2.52	28.1%	50.0%	0.0%	0.6%	3,310
Sahuarita Unified District	75.5%	2.99	10.5%	44.4%	0.0%	3.3%	5,850
San Carlos Unified District	46.2%	2.08	51.5%	6.6%	94.0%	0.0%	915
Sanders Unified District	51.7%	1.95	50.5%	2.8%	91.2%	0.0%	1,585
Santa Cruz Valley Unified District	74.9%	2.59	22.0%	91.8%	0.0%	0.0%	4,535
Santa Cruz Valley Union High School District	42.1%	2.08	33.2%	72.2%	0.0%	4.3%	575
Scottsdale Unified District	65.0%	3.50	12.1%	19.5%	0.8%	3.3%	26,565
Sedona-Oak Creek Joint Unified District	60.4%	3.32	29.0%	27.5%	20.6%	1.4%	1,090
Show Low Unified District	58.4%	2.74	35.1%	12.8%	10.6%	0.0%	2,690
Sierra Vista Unified District	56.6%	3.06	13.5%	37.5%	0.9%	7.0%	7,590
Snowflake Unified District	73.8%	2.75	13.1%	13.4%	5.5%	0.5%	3,250
St. Johns Unified District	63.3%	2.78	18.0%	26.0%	7.3%	0.0%	615

TABLE A2 - CONTINUED

2009-2013 DEMOGRAPHIC PROFILE OF ARIZONA SCHOOL DISTRICTS

LOCAL EDUCATION AGENCY	MARCPFAM	ADLTEDUC	% CHLD POVERTY	% HISPANC	% AMERIND	% AFRAMER	ENRLOMNT
Sunnyside Unified District	55.3%	2.15	41.5%	85.6%	3.1%	2.1%	20,590
Superior Unified School District	65.9%	2.42	6.0%	78.2%	0.9%	2.3%	435
Tanque Verde Unified District	81.5%	3.49	3.3%	19.8%	0.8%	0.6%	1,790
Tempe Union High School District	59.7%	3.25	12.9%	25.9%	3.1%	8.5%	14,155
Thatcher Unified District	77.8%	2.90	11.8%	28.3%	0.0%	0.3%	1,360
Tolleson Union High School District	58.9%	2.40	17.0%	73.9%	0.4%	8.7%	10,725
Tombstone Unified District	62.8%	2.62	21.1%	27.4%	0.0%	2.7%	1,115
Tuba City Unified District	46.7%	2.39	34.7%	3.1%	92.5%	0.0%	3,885
Tucson Unified District	51.7%	2.87	30.3%	58.2%	4.3%	4.7%	69,360
Vail Unified District	79.6%	3.16	4.8%	34.3%	0.0%	2.8%	10,350
Valley Union High School District	87.5%	2.66	43.0%	28.6%	2.3%	11.4%	175
Whiteriver Unified District	47.8%	2.09	47.6%	1.6%	91.3%	0.1%	2,750
Wickenburg Unified District	72.5%	2.92	33.8%	41.1%	0.0%	1.0%	1,495
Willcox Unified District	66.2%	2.45	9.9%	54.4%	0.0%	0.0%	1,260
Williams Unified District	62.4%	2.78	30.7%	45.5%	6.0%	0.0%	835
Window Rock Unified District	41.1%	2.42	43.5%	2.5%	91.3%	0.0%	2,230
Winslow Unified District	45.5%	2.43	28.3%	27.7%	41.3%	0.6%	2,530
Yuma Union High School District	63.7%	2.38	27.0%	80.6%	0.8%	1.3%	11,180
MEAN	63.0%	2.86	20.6%	41.6%	4.67%	4.51%	8,317

Note: List of Arizona LEAs excludes those that cover elementary schools only and those too small for reliable demographic estimates from Census Bureau's 2009-2013 American Community Survey.

MARCPFAM = Percent of households with public-school enrolled children in district that are married-couple families.

ADLTEDUC= Average educational attainment of adults 25 and older in district. 1 = Less than high school. 2 = High school graduate. 3 = Some college. 4 = College graduate. 5 = Postgraduate or professional degree.

CHILD POVERTY = Percentage of public school children aged 5-17 whose family income was below the poverty level, 2009-2013.

%HISPANC = Percentage of children enrolled in public school in district who are Hispanic.

%AMERIND = Percentage of children enrolled in public school in district who are American Indian.

%AFRAMER = Percentage of children enrolled in public school in district who are African-American.

ENRLMENT = Number of 5-17 year old children in district who are enrolled in public school.

MEANS are weighted by district enrollment, except for racial-ethnic percentages, which are weighted by size of senior class cohort in district. Enrollment mean is unweighted.

Source: Authors' calculations from tables prepared by U.S. Bureau of the Census and National Center for Education Statistics based on American Community Survey 2009-2013.

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W. Bradford Wilcox is director of the National Marriage Project at the University of Virginia and a senior fellow of the Institute for Family Studies. His research focuses on marriage, family structure, child well-being, fatherhood, and religion. A sociologist, he is the author and co-author of four books and numerous articles, including *Gender and Parenthood: Biological and Social Scientific Perspectives*. He has held fellowships at the Brookings Institution and Yale University. He received his doctorate from Princeton University.

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