



Comparing achievement trends in reading and math across Arizona public school student subgroups

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October 2011





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This REL West Technical Brief responds to an Arizona Department of Education request that statewide data on reading and math proficiency be disaggregated by student subgroups. The brief looks at subgroup differences across school levels and school types.

October 2011

This REL Technical Brief was prepared for IES under Contract ED-06-CO-0014 by Regional Educational Laboratory West administered by WestEd. The content of the publication does not necessarily reflect the views or policies of IES or the U.S. Department of Education, nor does mention of trade names, commercial products, or organizations imply endorsement by the U.S. Government.

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Crane, E.W., Huang, M., and Barrat, V.X. (2011). *Comparing achievement trends in reading and math across Arizona public school student subgroups* (REL Technical Brief, REL 2012–019). Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, Regional Educational Laboratory West. Retrieved from <http://ies.ed.gov/ncee/edlabs>.

This REL Technical Brief is available on the regional educational laboratory website at <http://ies.ed.gov/ncee/edlabs>.

Summary

This technical brief examines the 2008/09 reading and math proficiency levels among subgroups of Arizona public school students defined by students' race/ethnicity (American Indian, Asian, Black, Hispanic, and White), English language learner status (English language learner students and non-English language learner students), disability status (students with and students without disabilities), and economic status (students receiving and those not receiving free or reduced-price meals). Responding to an Arizona Department of Education request, the brief describes how student subgroup performance differs by school level (elementary, middle, and high) and school type (Title I Schools in Improvement [schools serving economically disadvantaged students and participating in the federal school improvement program intended to improve academic performance in schools not making adequate yearly progress for at least two consecutive years], Title I Schools Not in Improvement, and non-Title I schools). The same analyses were conducted for charter schools.

To determine proficiency in reading and math, this brief uses Arizona's Instrument to Measure Standards (AIMS), the state's criterion-referenced content assessment for grades 3–8 and 10. AIMS is used to monitor the adequate yearly progress of schools and districts on state-defined targets for academic performance each year to 2013/14 (when all students must achieve proficiency), as required by the No Child Left Behind Act of 2001.

Three sets of research questions guide this study:

- What percentage of Arizona public school students is proficient in reading, and how do the percentages differ by student subgroup and school level? What are the results when only charter schools are examined?
- What percentage of Arizona public school students is proficient in math, and how do the percentages differ by student subgroup and school level? What are the results when only charter schools are examined?
- How do the percentages of Arizona public school students proficient in reading and math differ when the student subgroups are compared across three school types (Title I Schools in Improvement, Title I Schools Not in Improvement, and non-Title I schools)? What are the results when only charter schools are examined?

The Arizona Department of Education's Office of Data Management provided 2008/09 statewide school-level data files from AZ LEARNS, Arizona's school and district accountability system. The office also provided grade-level AIMS data.

(continued)

Key findings include:

- Across all school levels and school types, reading proficiency ranged from 26 percent for English language learner students to 84 percent for Asian students, White students, and students not receiving free or reduced-price meals. Overall and in 10 of 11 student subgroups, elementary, middle, and high school proficiency rates were within 6 percentage points of one another. However, the margin was wider (13 percentage points) for English language learner students, ranging from 16 percent in high schools and 17 percent in middle schools to 29 percent in elementary schools.
- Across all levels of charter schools, reading proficiency ranged from 31 percent for English language learner students to 89 percent for Asian students. Reading proficiency rates declined overall and in 7 of 11 student subgroups from elementary to middle to high school.
- Across all school levels and school types, math proficiency ranged from 34 percent for English language learner students to 86 percent for Asian students. Overall and in 10 of 11 student subgroups, elementary, middle, and high school proficiency rates were within 10 percentage points of one another. However, the margin was wider (16 percentage points) for English language learner students, ranging from 22 percent in high schools and 25 percent in middle schools to 38 percent in elementary schools.
- Across all levels of charter schools, math proficiency ranged from 35 percent for English language learner students to 86 percent for Asian students. Math proficiency rates declined from elementary to middle to high school overall and in all but one student subgroup (English language learner students).
- In both reading and math, Asian students (84 percent in reading and 86 percent in math) and White students (84 percent in reading and 82 percent in math) scored proficient at higher rates than did the overall student body (72 percent in reading and 71 percent in math). Among the three racial/ethnic subgroups with proficiency rates below the overall rate, American Indian students scored consistently lower (53 percent in reading and 51 percent in math) than Black students (65 percent in reading and 60 percent in math) and Hispanic students (62 percent in reading and 62 percent in math).
- In both reading and math, in all but one subgroup, students in non–Title I schools had higher proficiency rates than did students in both Title I Schools Not in Improvement and Title I Schools in Improvement. However, English language learner students in Title I Schools Not in Improvement had proficiency rates (30 percent in reading and 38 percent in math) 4 percentage points higher than English language learner students in non–Title I schools (26 percent in reading and 34 percent in math).

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Technical brief

Why this brief?

School achievement trends are critical gauges of the effectiveness of school support efforts, particularly efforts to improve low academic performance. To help monitor these efforts and thus raise academic performance, the Arizona Department of Education requested this study of reading and math proficiency across student subgroups. The Southwest Comprehensive Center, the federally funded technical assistance mechanism helping the department implement the Elementary and Secondary Education Act,¹ also wanted this analysis in order to inform its advice to Arizona on developing state systems of school support. Regional Educational Laboratory West has supported these efforts by examining achievement trends for low-performing districts (Crane et al. 2008) and schools (Crane et al. 2011). Crane et al. (2011) found that the proficiency rates of students in non–Title I schools exceeded those of students in Title I Schools Not in Improvement and that those rates, in turn, exceeded those of students in Title I Schools in Improvement. Disaggregating the data by student subgroup could help the Arizona Department of Education and the Southwest Comprehensive Center raise the proficiency of low-performing student subgroups.

This technical brief examines the 2008/09 reading and math proficiency levels among 11 subgroups of Arizona public school students defined by students' race/ethnicity (American Indian, Asian, Black, Hispanic, and White), English language learner status (English language learner students and non–English language learner students), disability status (students with disabilities and students without disabilities), and economic status (receiving free or reduced-price meals and not receiving free or reduced-price meals). The brief describes how student subgroup performance differs by school level (elementary, middle, and high)

and across three school types: Title I Schools in Improvement (participating in the school improvement program, a public program under the No Child Left Behind Act of 2001² to improve the academic performance of students in schools not making adequate yearly progress for at least two consecutive years), Title I Schools Not in Improvement, and non–Title I schools. The same analyses were conducted for charter schools.

To determine proficiency in reading and math, this brief uses Arizona's Instrument to Measure Standards (AIMS), the state's criterion-referenced content assessment for grades 3–8 and 10. AIMS is used to monitor the adequate yearly progress of schools and districts, as required by the No Child Left Behind Act. Since participation in the Title I school improvement program and accountability for adequate yearly progress are at the school level, this study uses school-level AIMS results; grade-by-grade results were not computed as part of the study. See box 1 for definitions of key terms.

The Arizona Department of Education's Office of Data Management provided 2008/09 statewide school-level data files from AZ LEARNS, Arizona's school and district accountability system (see appendix A for a summary of this system). The office also provided grade-level AIMS data. See box 2 for a description of the data sources and methodology and appendix B for more detail.

Research questions

Three sets of research questions guide this study:

- What percentage of Arizona public school students is proficient in reading, and how do the percentages differ by student subgroup and school level? What are the results when only charter schools are examined?

BOX 1

Key terms

Adequate yearly progress. Under Title I, state-defined targets for the minimum level of improvement in academic performance (proficiency) schools and districts must achieve. Baseline targets (annual measurable achievement objectives) were established in 2001/02–2004/05, depending on the grade level. These targets rise from the baseline and reach 100 percent proficiency in 2013/14.

Arizona’s Instrument to Measure Standards. Arizona’s criterion-referenced content assessment that tracks student proficiency for adequate yearly progress determinations.

AZ LEARNS. Arizona’s school and district accountability mechanism

that collects the data used in this study.

School improvement program. The state program under the No Child Left Behind Act of 2001 designed to improve the academic performance of students in schools not making adequate yearly progress for at least two consecutive years. Each of five levels of school improvement is defined by an intervention. Interventions intensify with each consecutive year a school fails to make adequate yearly progress.

School level. Elementary, high, alternative, K–2, or K–12, as classified by AZ LEARNS. The schools within each school level have a wide variety of grade configurations. Some grades, such as grade 6, appear in multiple school levels, depending on

the grade configuration at individual schools. This study adds middle schools and “other” schools (schools with no reported school level or no tested grades). (Table B1 in appendix B shows how schools with different grade configurations were classified in the study.)

School type. A school’s Title I accountability condition. Title I schools in the school improvement program are “Schools in Improvement”; and Title I schools not in the program are “Schools Not in Improvement.” Non–Title I schools are ineligible for the program.

Title I. The section of the No Child Left Behind Act of 2001 governing resources for schools and districts serving economically disadvantaged populations.

- What percentage of Arizona public school students is proficient in math, and how do the percentages differ by student subgroup and school level? What are the results when only charter schools are examined?
- How do the percentages of Arizona public school students proficient in reading and math differ when the student subgroups are compared across three school types (Title I Schools in Improvement, Title I Schools Not in Improvement, and non–Title I schools)? What are the results when only charter schools are examined?

Findings

In both reading and math, proficiency rates differed by student subgroup. These findings show the extent of these differences and whether such differences remain constant when the data are disaggregated by school level or school type.

Consistent with the findings of Crane et al. (2011), the subgroup proficiency rates exhibited a consistent order: students in non–Title I schools had higher proficiency rates than did students in Title I Schools Not in Improvement, and still higher than did students in Title I Schools in Improvement. The lone exception to this pattern was English language learner students, whose proficiency rates in both reading and math were 4 percentage points higher in Title I Schools Not in Improvement than in non–Title I schools.

Reading proficiency by student subgroup

In 2008/09, 72 percent of Arizona public school students scored proficient in reading on the AIMS. Proficiency ranged from 26 percent for English language learner students to 84 percent for Asian students, White students, and students not receiving free or reduced-price meals (table

BOX 2

Data and methodology

Obtaining the data. The Arizona Department of Education’s Office of Data Management provided 2008/09 statewide school-level data files from AZ LEARNS, Arizona’s school and district accountability system, on school level and type, and performance by student subgroup and grade at each school. The performance data were derived from Arizona’s Instrument to Measure Standards (AIMS), the statewide criterion-referenced content assessment that tracks student proficiency in grades 3–8 and 10 for adequate yearly progress determinations (see box 1).

Classifying school levels. AZ LEARNS classifies schools as elementary, high, alternative, K–2, or K–12. Some grades overlap several school levels because of the grade configuration at individual schools. This study adds two categories to the list. First, in collaboration with the Arizona Department of Education,

study staff identified middle schools as a school level, based on grade configuration. (Schools were counted in only one school level.) Second, the 40 schools (of 1,913 statewide) not reporting a school level were classified as “other.”¹ Results for elementary, middle, and high schools are in the main report; those for alternative, K–12, and other schools are in appendix C.

Identifying student subgroups. The 11 student subgroups were derived from AIMS. Data on students of the five races/ethnicities, English language learner students, students with disabilities, and students receiving free or reduced-price meals were reported directly. Non–English language learner students, students without disabilities, and students not receiving free or reduced-price meals were each identified (and their results summarized) by subtracting the number of students identified as English language learner students, students with disabilities, or students receiving free or reduced-price meals from the total number of students.

Calculating student proficiency. Students’ AIMS scores were reported as one of four proficiency levels set by the Arizona State Board of Education: falls far below the standard, approaches the standard, meets the standard, and exceeds the standard. In this report, students are deemed proficient if they meet or exceed the standard. The percentages of students proficient were computed as the number of students in a subgroup across all schools who met or exceeded the standard divided by the number of students in the same subgroup who took the test (see appendix B for more detail). The study uses school-level AIMS results, in keeping with program participation rules in Arizona: participation in the Title I school improvement program is at the school level. As a result, grade-by-grade results were not computed as part of the study.

Note

1. “Other” schools include K–2 schools, as they have no students in the tested grades.

1; see table C1 in appendix C for the results for alternative, K–12, and other schools).

Overall and in 10 of 11 student subgroups, elementary, middle, and high school proficiency rates were within 6 percentage points of one another. For the lone exception, English language learner students, the range was 13 percentage points: from 16 percent in high schools and 17 percent in middle schools to 29 percent in elementary schools.

Elementary schools. In elementary schools, the overall rate of reading proficiency was 72

percent. Asian students (85 percent), White students (84 percent), and students not receiving free or reduced-price meals (84 percent) had the highest proficiency rates. The rate was 55 percent for American Indian students, 62 percent for Hispanic students, and 64 percent for Black students. English language learner students (29 percent) and students with disabilities (35 percent) had the lowest rates of proficiency.

Middle schools. In middle schools, the overall rate of reading proficiency was 70 percent.

TABLE 1
Reading proficiency rates among Arizona public school students in grades 3–8 and 10, by student subgroup and school level, 2008/09

Student subgroup	Elementary (n = 1,128)		Middle (n = 247)		High (n = 275)		Total (n = 1,650)	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Race/ethnicity								
American Indian	16,461	55	8,645	51	3,815	53	28,921	53
Asian	9,987	85	4,291	83	2,034	84	16,312	84
Black	20,551	64	7,342	64	3,970	68	31,863	65
Hispanic	140,208	62	59,867	60	25,514	65	225,589	62
White	147,068	84	60,737	83	30,524	87	238,329	84
English language learner status								
English language learner student	40,314	29	13,009	17	3,557	16	56,880	26
Non-English language learner student	293,961	78	127,873	76	62,300	79	484,134	78
Disability status								
With disabilities	44,089	35	17,010	29	6,688	32	67,787	33
Without disabilities	290,186	78	123,872	76	59,169	80	473,227	78
Economic status								
Receiving free or reduced-price meals	179,251	62	72,894	59	26,459	63	278,604	61
Not receiving free or reduced-price meals	155,024	84	67,988	82	39,398	84	262,410	84
Total	334,275	72	140,882	70	65,857	75	541,014	72

Note: Data include charter schools and omit alternative schools, K–12 schools, and schools with no reported school level.

Source: Authors' analysis based on AIMS and AZ LEARNS data from Arizona Department of Education (2010).

Asian students and White students (both 83 percent) had the highest proficiency rates. The rate was 51 percent for American Indian students, 60 percent for Hispanic students, and 64 percent for Black students. English language learner students (17 percent) and students with disabilities (29 percent) had the lowest rates of proficiency.

High schools. In high schools, the overall rate of reading proficiency was 75 percent. White students (87 percent), Asian students (84 percent), and students not receiving free or reduced-price meals (84 percent) had the highest proficiency rates. The rate was 53 percent for American Indian students, 65 percent for Hispanic students, and 68 percent for Black students. Once again, English language learner

students (16 percent) and students with disabilities (32 percent) had the lowest rates of proficiency.

Charter schools. In 2008/09, 76 percent of Arizona charter school students scored proficient in reading (table 2). Asian students (89 percent) and White students (84 percent) had the highest proficiency rates, and English language learner students (31 percent) and students with disabilities (41 percent) had the lowest. Most students in Arizona charter schools are in elementary school, so the figures for charter elementary schools align closely with the total charter school figures. Proficiency rates declined from elementary to middle to high school overall and in 7 of 11 student subgroups. (See table C2 in appendix C for the

TABLE 2

Reading proficiency rates among Arizona charter school students in grades 3–8 and 10, by student subgroup and school level, 2008/09

Student subgroup	Elementary (n = 189)		Middle (n = 35)		High (n = 81)		Total (n = 305)	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Race/ethnicity								
American Indian	694	64	344	47	152	51	1,190	57
Asian	923	90	95	85	38	74	1,056	89
Black	1,921	68	160	61	174	55	2,255	66
Hispanic	7,407	65	1,042	53	1,014	56	9,463	63
White	15,178	85	1,714	80	1,108	78	18,000	84
English language learner status								
English language learner student	1,401	32	218	24	139	26	1,758	31
Non-English language learner student	24,722	80	3,137	71	2,347	68	30,206	78
Disability status								
With disabilities	2,823	43	328	31	265	29	3,416	41
Without disabilities	23,300	82	3,027	72	2,221	70	28,548	80
Economic status								
Receiving free or reduced-price meals	9,813	66	1,345	53	1,074	57	12,232	64
Not receiving free or reduced-price meals	16,310	85	2,010	77	1,412	72	19,732	83
Total	26,123	78	3,355	68	2,486	66	31,964	76

Note: Data do not include alternative schools, K–12 schools, and schools with no reported school level.

Source: Authors' analysis based on AIMS and AZ LEARNS data from Arizona Department of Education (2010).

results for charter alternative, K–12, and other schools.)

Math proficiency by student subgroup

In 2008/09, 71 percent of Arizona public school students scored proficient in math on the AIMS. Proficiency ranged from 34 percent for English language learner students to 86 percent for Asian students (table 3; see table C3 in appendix C for the results for alternative, K–12, and other schools).

Overall and in 10 of 11 student subgroups, elementary, middle, and high school proficiency rates were within 10 percentage points of one another. For the lone exception, English language learner students, the range was 16 percentage points: from 22 percent in high

schools and 25 percent in middle schools to 38 percent in elementary schools.

Elementary schools. In elementary schools, the overall rate of math proficiency was 72 percent. Asian students (86 percent), White students (83 percent), students not receiving free or reduced-price meals (83 percent), non-English language learner students (77 percent), and students without disabilities (77 percent) had the highest proficiency rates. The rate was 64 percent for Hispanic students, 63 percent for students receiving free or reduced-price meals, 60 percent for Black students, and 54 percent for American Indian students. English language learner students (38 percent) and students with disabilities (40 percent) had the lowest rates of proficiency.

TABLE 3
Math proficiency rates among Arizona public school students in grades 3–8 and 10, by student subgroup and school level, 2008/09

Student subgroup	Elementary (n = 1,128)		Middle (n = 247)		High (n = 275)		Total (n = 1,650)	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Race/ethnicity								
American Indian	16,656	54	8,766	47	3,841	50	29,263	51
Asian	10,064	86	4,318	85	2,049	87	16,431	86
Black	20,763	60	7,445	58	4,025	60	32,233	60
Hispanic	141,440	64	60,501	59	25,499	62	227,440	62
White	148,219	83	61,269	80	30,595	83	240,083	82
English language learner status								
English language learner student	40,556	38	13,154	25	3,542	22	57,252	34
Non-English language learner student	296,586	77	129,145	73	62,467	75	488,198	75
Disability status								
With disabilities	47,016	40	18,430	31	7,283	30	72,729	37
Without disabilities	290,126	77	123,869	74	58,726	77	472,721	76
Economic status								
Receiving free or reduced-price meals	181,155	63	73,812	58	26,467	60	281,434	61
Not receiving free or reduced-price meals	155,987	83	68,487	80	39,542	80	264,016	82
Total	337,142	72	142,299	68	66,009	72	545,450	71

Note: Data include charter schools and omit alternative schools, K–12 schools, and schools with no reported school level.

Source: Authors' analysis based on AIMS and AZ LEARNS data from Arizona Department of Education (2010).

Middle schools. In middle schools, the overall rate of math proficiency was 68 percent. Asian students (85 percent), White students (80 percent), students not receiving free or reduced-price meals (80 percent), students without disabilities (74 percent), and non-English language learner students (73 percent) had the highest proficiency rates. The rate was 59 percent for Hispanic students, 58 percent for Black students, 58 percent for students receiving free or reduced-price meals, and 47 percent for American Indian students. English language learner students (25 percent) and students with disabilities (31 percent) had the lowest rates of proficiency.

High schools. In high schools, the overall rate of math proficiency was 72 percent. Asian

students (87 percent), White students (83 percent), students not receiving free or reduced-price meals (80 percent), students without disabilities (77 percent), and non-English language learner students (75 percent) had the highest proficiency rates. The rate was 62 percent for Hispanic students, 60 percent for Black students, 60 percent for students receiving free or reduced-price meals, and 50 percent for American Indian students. English language learner students (22 percent) and students with disabilities (30 percent) had the lowest rates of proficiency.

Charter schools. In 2008/09, 72 percent of Arizona charter school students scored proficient in math (table 4). Asian students (86 percent), White students (80 percent), students not

TABLE 4

Math proficiency rates among Arizona charter school students in grades 3–8 and 10, by student subgroup and school level, 2008/09

Student subgroup	Elementary (n = 189)		Middle (n = 35)		High (n = 81)		Total (n = 305)	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Race/ethnicity								
American Indian	697	58	344	43	181	29	1,222	49
Asian	923	88	95	82	40	68	1,058	86
Black	1,925	60	162	51	174	43	2,261	58
Hispanic	7,412	64	1,045	51	1,033	45	9,490	60
White	15,188	82	1,718	75	1,108	66	18,014	80
English language learner status								
English language learner student	1,404	37	218	25	138	26	1,760	35
Non-English language learner student	24,741	77	3,146	66	2,398	55	30,285	74
Disability status								
With disabilities	2,863	42	334	26	278	15	3,475	38
Without disabilities	23,282	79	3,030	68	2,258	58	28,570	76
Economic status								
Receiving free or reduced-price meals	9,832	63	1,349	50	1,130	46	12,311	60
Not receiving free or reduced-price meals	16,313	82	2,015	72	1,406	58	19,734	79
Total	26,145	75	3,364	63	2,536	53	32,045	72

Note: Data do not include alternative schools, K–12 schools, and schools with no reported school level.

Source: Authors' analysis based on AIMS and AZ LEARNS data from Arizona Department of Education (2010).

receiving free or reduced-price meals (79 percent), students without disabilities (76 percent), and non-English language learner students (74 percent) had the highest proficiency rates, and American Indian students (49 percent), students with disabilities (38 percent), and English language learner students (35 percent) had the lowest. Most students in Arizona charter schools are in elementary school, so the figures for charter elementary schools align closely with the total charter school figures. Math proficiency rates declined overall and in all but one student subgroup (English language learner students) from elementary to middle to high school. (See table C4 in appendix C for the results for charter alternative, K–12, and other schools.)

Student subgroup proficiency by school type

Reading proficiency in all schools. In 2008/09, 72 percent of Arizona public school students scored proficient in reading (table 5). Disaggregating the data by school type, 83 percent of students in non-Title I schools, 69 percent of students in Title I Schools Not in Improvement, and 56 percent of students in Title I Schools in Improvement were proficient.

For all school types, Asian students, White students, and students not receiving free or reduced-price meals had the highest proficiency rates. At non-Title I schools, 90 percent of Asian students, 88 percent of White students, and 87 percent of students not receiving free or reduced-price meals were proficient. At Title I

TABLE 5
Reading proficiency rates among Arizona public school students in grades 3–8 and 10, by student subgroup and school type, 2008/09

Student subgroup	Non-Title I (n = 709)		Title I Not in Improvement (n = 861)		Title I in Improvement (n = 304)		Total (n = 1,874)	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Race/ethnicity								
American Indian	4,201	66	11,542	57	14,232	47	29,975	53
Asian	10,605	90	5,010	78	1,584	71	17,199	84
Black	12,317	72	14,783	62	6,243	53	33,343	64
Hispanic	52,243	71	108,196	63	72,122	54	232,561	62
White	148,808	88	85,852	80	16,975	74	251,635	84
English language learner status								
English language learner student	6,363	26	27,545	30	24,155	21	58,063	26
Non-English language learner student	221,811	84	197,838	75	87,001	66	506,650	77
Disability status								
With disabilities	26,244	43	29,718	31	14,580	20	70,542	33
Without disabilities	201,930	88	195,665	75	96,576	62	494,171	78
Economic status								
Receiving free or reduced-price meals	59,489	69	141,474	63	87,128	53	288,091	61
Not receiving free or reduced-price meals	168,685	87	83,909	80	24,028	69	276,622	84
Total	228,174	83	225,383	69	111,156	56	564,713	72

Note: Data include charter schools and omit schools with no reported school level.

Source: Authors' analysis based on AIMS and AZ LEARNS data from Arizona Department of Education (2010).

Schools Not in Improvement, 78 percent of Asian students, 80 percent of White students, and 80 percent of students not receiving free or reduced-price meals were proficient. And at Title I Schools in Improvement, 71 percent of Asian students, 74 percent of White students, and 69 percent of students not receiving free or reduced-price meals were proficient.

English language learner students (26 percent) and students with disabilities (33 percent) had the lowest proficiency rates. At non-Title I schools, 26 percent of English language learner students and 43 percent of students with disabilities were proficient. At Title I Schools Not in Improvement, 30 percent of English language learner students and 31 percent of students with disabilities were proficient. And at Title I

Schools in Improvement, 21 percent of English language learner students and 20 percent of students with disabilities were proficient.

For all student subgroups, the reading proficiency rates for non-Title I schools were higher than those for Title I Schools in Improvement. With one exception, the proficiency rates for Title I Schools Not in Improvement fell in between. English language learner students in Title I Schools Not in Improvement had a proficiency rate 4 percentage points higher (30 percent) than those in non-Title I schools.

Reading proficiency in charter schools. When only charter schools are examined, 74 percent of students were proficient in reading in 2008/09—83 percent in non-Title I schools,

TABLE 6

Reading proficiency rates among Arizona charter school students in grades 3–8 and 10, by student subgroup and school type, 2008/09

Student subgroup	Non-Title I (n = 197)		Title I Not in Improvement (n = 199)		Title I in Improvement (n = 61)		Total (n = 457)	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Race/ethnicity								
American Indian	464	61	1,022	55	244	45	1,730	55
Asian	1,113	93	596	82	27	63	1,736	89
Black	1,154	72	1,984	60	249	44	3,387	63
Hispanic	3,649	71	8,418	60	2,504	44	14,571	60
White	14,128	87	12,286	78	849	63	27,263	82
English language learner status								
English language learner student	266	37	1,750	28	691	19	2,707	27
Non-English language learner student	20,242	84	22,556	73	3,182	55	45,980	76
Disability status								
With disabilities	1,820	46	2,853	35	414	18	5,087	37
Without disabilities	18,688	87	21,453	74	3,459	52	43,600	78
Economic status								
Receiving free or reduced-price meals	2,741	66	13,374	62	3,175	46	19,290	60
Not receiving free or reduced-price meals	17,767	86	10,932	79	698	60	29,397	82
Total	20,508	83	24,306	69	3,873	48	48,687	74

Note: Data do not include schools with no reported school level.

Source: Authors' analysis based on AIMS and AZ LEARNS data from Arizona Department of Education (2010).

69 percent in Title I Schools Not in Improvement, and 48 percent in Title I Schools in Improvement (table 6).

Math proficiency in all schools. In 2008/09, 71 percent of Arizona public school students scored proficient in math (table 7). Disaggregating the data by school type, 81 percent of students in non-Title I schools, 68 percent of students in Title I Schools Not in Improvement, and 56 percent of students in Title I Schools in Improvement were proficient.

For all school types, Asian students, White students, and students not receiving free or reduced-price meals had the highest proficiency rates. At non-Title I schools, 91 percent of Asian students, 86 percent of White students,

and 86 percent of students not receiving free or reduced-price meals were proficient. At Title I Schools Not in Improvement, 79 percent of Asian students, 77 percent of White students, and 77 percent of students not receiving free or reduced-price meals were proficient. And at Title I Schools in Improvement, 74 percent of Asian students, 71 percent of White students, and 65 percent of students not receiving free or reduced-price meals were proficient.

English language learner students (33 percent) and students with disabilities (36 percent) had the lowest proficiency rates. At non-Title I schools, 34 percent of English language learner students and 44 percent of students with disabilities were proficient. At Title I Schools Not in Improvement, 38 percent of English language

TABLE 7
Math proficiency rates among Arizona public school students in grades 3–8 and 10, by student subgroup and school type, 2008/09

Student subgroup	Non-Title I (n = 709)		Title I Not in Improvement (n = 861)		Title I in Improvement (n = 304)		Total (n = 1,874)	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Race/ethnicity								
American Indian	4,268	62	11,669	56	14,408	44	30,345	51
Asian	10,686	91	5,043	79	1,595	74	17,324	86
Black	12,470	67	14,929	57	6,337	48	33,736	59
Hispanic	52,744	68	109,047	63	72,753	55	234,544	62
White	149,778	86	86,496	77	17,214	71	253,488	82
English language learner status								
English language learner student	6,398	34	27,715	38	24,334	28	58,447	33
Non-English language learner student	223,548	82	199,469	72	87,973	63	510,990	75
Disability status								
With disabilities	28,212	44	31,615	35	15,809	25	75,636	36
Without disabilities	201,734	86	195,569	73	96,498	61	493,801	76
Economic status								
Receiving free or reduced-price meals	60,274	66	142,774	63	88,019	53	291,067	61
Not receiving free or reduced-price meals	169,672	86	84,410	77	24,288	65	278,370	81
Total	229,946	81	227,184	68	112,307	56	569,437	71

Note: Data include charter schools and omit schools with no reported school level.

Source: Authors' analysis based on AIMS and AZ LEARNS data from Arizona Department of Education (2010).

learner students and 35 percent of students with disabilities were proficient. And at Title I Schools in Improvement, 28 percent of English language learner students and 25 percent of students with disabilities were proficient.

For all student subgroups, the proficiency rates for non-Title I schools were higher than those for Title I Schools in Improvement. With one exception, the proficiency rates for Title I Schools Not in Improvement fell in between. English language learner students in Title I Schools Not in Improvement had a proficiency rate 4 percentage points higher (38 percent) than those in non-Title I schools.

Math proficiency in charter schools. When only charter schools are examined, 68 percent of

students were proficient in math in 2008/09—78 percent in non-Title I schools, 63 percent in Title I Schools Not in Improvement, and 41 percent in Title I Schools in Improvement (table 8).

Conclusions and study limitations

The study findings reveal potentially useful patterns of subgroup performance by school level and type. The Arizona Department of Education now has data on how student performance differs by subgroup. The Southwest Comprehensive Center, which promotes school improvement through training, professional development, and technical assistance, can use the findings to inform its collaborations with the Arizona Department of Education and with Arizona schools and districts. Perhaps most important,

TABLE 8

Math proficiency rates among Arizona charter school students in grades 3–8 and 10, by student subgroup and school type, 2008/09

Student subgroup	Non-Title I (n = 197)		Title I Not in Improvement (n = 199)		Title I in Improvement (n = 61)		Total (n = 457)	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Race/ethnicity								
American Indian	466	50	1,026	46	280	35	1,772	46
Asian	1,110	92	599	77	27	48	1,736	86
Black	1,161	64	1,990	50	259	33	3,410	53
Hispanic	3,666	64	8,453	56	2,542	38	14,661	55
White	14,110	83	12,303	71	867	52	27,280	77
English language learner status								
English language learner student	265	38	1,752	32	703	23	2,720	30
Non-English language learner student	20,248	79	22,619	66	3,272	45	46,139	70
Disability status								
With disabilities	1,837	42	2,912	31	428	17	5,177	34
Without disabilities	18,676	82	21,459	67	3,547	44	43,682	72
Economic status								
Receiving free or reduced-price meals	2,723	61	13,439	56	3,269	40	19,431	54
Not receiving free or reduced-price meals	17,790	81	10,932	72	706	45	29,428	77
Total	20,513	78	24,371	63	3,975	41	48,859	68

Note: Data do not include schools with no reported school level.

Source: Authors' analysis based on AIMS and AZ LEARNS data from Arizona Department of Education (2010).

the findings establish a baseline against which future data can be compared, to help determine whether Arizona is closing gaps in reading and math proficiency across student subgroups.

The study has several limitations, however. First, it uses student-level race/ethnicity data, as reported by students or their families. These self-reports may be less accurate than data collected directly by the school. Second, racial/ethnic categories might not represent the full range among Arizona students. Students with multiple races/ethnicities might be misrepresented, because data collection forms allowed respondents to select just one race/ethnicity. Third, the study is descriptive, so no inferences can be drawn about the relationships described. Many factors, including how students in charter schools differ

from those not in charter schools, could account for variations in results. Fourth, the aggregation of proficiency data across schools for each school level means that the assessment results of, say, grade 6 students will be part of the elementary school results for students in that grade who are enrolled in elementary schools, but part of the middle school results for students in that grade who are enrolled in middle schools. (Table B1 in appendix B shows how schools with different grade configurations were classified in the study.) And finally, the study is not longitudinal. The data reflect only performance in 2008/09 of students in grades 3–8 and 10 and should not be interpreted as the results for a group of students progressing together through elementary, middle, and high school.

Appendix A

Summary of Arizona’s accountability system (excerpted from Crane et al. 2008)

Arizona legislated its statewide accountability system, AZ LEARNS, in 2002 in response to state accountability issues and to meet the requirements of the No Child Left Behind (NCLB) Act of 2001. The state uses Arizona’s Instrument to Measure Standards (AIMS) for adequate yearly progress purposes in grades 3–8 and 10. To make adequate yearly progress in Arizona, all Title I–funded districts, schools, and numerically significant student subgroups (at least 40 students) must meet or exceed state annual measurable objectives in reading/English language arts and mathematics, demonstrate a participation rate of 95 percent or higher on statewide exams, and demonstrate a 90 percent attendance rate (for elementary and middle schools) or a 71 percent high school graduation rate (or a 1 percentage point improvement over the previous year’s attendance or graduation rate).

Arizona’s Title I–funded schools are identified for improvement when they fail to make adequate yearly progress for two consecutive years, either in the same content area (performance or participation rate) for any numerically significant subgroup or on attendance or graduation rate targets. Schools enter Year 1 of improvement if they have failed to make adequate yearly progress in the previous two years. If Year 1 schools in improvement make adequate yearly progress, they remain in Year 1 status the following year, but can exit improvement if they make adequate yearly progress that next year. If Year 1 schools in improvement fail to make adequate yearly progress, they move into Year 2 status. Schools exit improvement status after two consecutive years of making adequate yearly progress in the area or areas that put them in improvement in the first place, a rule that applies at any point in the improvement continuum.

For districts and schools, the minimum number of students required for publicly reporting test data is 10 students, and the minimum group size for accountability purposes is 40 students.

Students with disabilities participate in AZ LEARNS either by receiving accommodations on the presentation format of the regular AIMS test or by taking the state’s alternative assessment, AIMS Form A. The scores for students who take the standard AIMS test with accommodations are included with the results of students who take the test without accommodations. AIMS Form A, which assesses an alternative set of standards, is administered only to students with significant cognitive disabilities.

All English language learner students are required to participate in AIMS, but if they have attended schools in the United States for less than 12 months, their scores on English language arts tests are not included in adequate yearly progress determinations. English language learner students who have become proficient are included in the English language learner subgroup for two additional years, but they are not included in any evaluation of subgroup size.

Arizona’s additional adequate yearly progress indicators are attendance rate at the elementary and middle school levels and graduation rate at the high school level. The attendance rate is calculated by dividing average daily attendance by average daily membership in the school or district; the statewide attendance target for adequate yearly progress is 90 percent. Arizona’s four-year graduation rate is derived by dividing the sum of four-year graduates (as defined by the Arizona Department of Education) by the original cohort membership at the start of grade 9, plus net transfers in, minus deceased students who were in the cohort. Students who receive a diploma in the summer after their fourth year of high school are included in the graduating cohort. The

statewide graduation rate target for adequate yearly progress is 71 percent. Schools and districts that fall short of these targets can still

meet these additional adequate yearly progress indicators if they demonstrate a 1 percentage point improvement over the previous year.

Appendix B

Data and methodology

This appendix details the data and methodology.

Obtaining the data

The Arizona Department of Education's Office of Data Management provided 2008/09 state-wide school-level data files from AZ LEARNS (Arizona's school and district accountability system) on school level and type and by student subgroup and grade at each school. The performance data were derived from Arizona's Instrument to Measure Standards (AIMS), the statewide criterion-referenced content assessment that tracks proficiency in grades 3–8 and 10 for adequate yearly progress determinations (see box 1 in the main report). Regional Educational Laboratory West staff performed basic exploratory analyses of key variables in the data files to confirm the reasonableness of the data.

Classifying school levels

AZ LEARNS classifies schools as elementary, high, alternative, K–2, or K–12. This study adds two categories to the list. First, in collaboration with the Arizona Department of Education, study staff identified middle schools as a school level, based on grade configuration. There are grade-level overlaps across school levels; for example, grade 6 students are part of the elementary school results for students in that grade who are enrolled in elementary schools, but part of the middle school results for students in that grade who are enrolled in middle schools. Second, the 40 schools (of 1,913 state-wide) not reporting a school level were classified as “other.”³ The department and Regional Educational Laboratory West ensured that all schools in the state were assigned to the school level that the department felt was most

accurate. Schools were counted in only one school level (table B1). Results for elementary, middle, and high schools are in the main report; those for alternative, K–12, and other schools are in appendix C.

Identifying student subgroups

The 11 student subgroups were derived from AIMS. Data on the five races/ethnicities, English language learner students, students with disabilities, and students receiving free or reduced-price meals were reported directly. Non-English language learner students, students without disabilities, and students not receiving free or reduced-price meals were each identified (and their results summarized) by subtracting the number of students identified as English language learner students, students with disabilities, or students receiving free or reduced-price meals from the total number of students.

Calculating student proficiency

Students' AIMS scores were reported as one of four proficiency levels set by the Arizona State Board of Education: falls far below the standard, approaches the standard, meets the standard, and exceeds the standard. In this report, students are deemed proficient if they meet or exceed the standard. The percentages of students proficient were computed as the number of students in a subgroup across all schools who meet or exceed the standard divided by the number of students in the same subgroup who took the test.

The study uses school-level AIMS results, in keeping with program participation rules in Arizona: participation in the Title I school improvement program is at the school level. As a result, grade-by-grade results were not computed as part of the study.

TABLE B1
School-level assignments based on grade configuration

Grade configuration	School level	Grade configuration	School level	Grade configuration	School level
Pre-Pre	Elementary	1-3	Elementary	5-9	Middle
Pre-K	Elementary	1-5	Elementary	5-11	Middle
Pre-1	Elementary	1-6	Elementary	5-12	Middle
Pre-2	Elementary	1-7	Elementary	6-6	Middle
Pre-3	Elementary	1-8	Elementary	6-7	Middle
Pre-4	Elementary	1-9	Elementary	6-8	Middle
Pre-5	Elementary	1-10	Elementary	6-9	Middle
Pre-6	Elementary	1-11	Elementary	6-10	Middle
Pre-7	Elementary	1-12	Elementary	6-11	Middle
Pre-8	Elementary	2-6	Elementary	6-12	Middle
Pre-9	Elementary	2-7	Elementary	7-7	Middle
Pre-10	Elementary	2-8	Elementary	7-8	Middle
Pre-11	Elementary	2-11	Elementary	7-9	Middle
Pre-12	Elementary	2-12	Elementary	7-10	High
K-K	Elementary	3-4	Elementary	7-11	High
K-1	Elementary	3-5	Elementary	7-12	High
K-2	Elementary	3-6	Elementary	8-8	Middle
K-3	Elementary	3-7	Elementary	8-11	High
K-4	Elementary	3-8	Elementary	8-12	High
K-5	Elementary	3-9	Elementary	9-9	Middle
K-6	Elementary	3-12	Middle	9-10	High
K-7	Elementary	4-5	Elementary	9-11	High
K-8	Elementary	4-6	Elementary	9-12	High
K-9	Elementary	4-7	Middle	10-10	High
K-10	Elementary	4-8	Middle	10-11	High
K-11	Elementary	4-12	Middle	10-12	High
K-12	Elementary	5-6	Elementary	11-11	High
K-12	K-12	5-7	Middle	11-12	High
1-1	Elementary	5-8	Middle	12-12	High

Note: Schools with a K-12 grade configuration can be classified as either an elementary school or a K-12 school.

Source: AZ LEARNS data from Arizona Department of Education (2010).

Appendix C

Data for alternative, K–12, and other schools

This appendix shows the results for alternative, K–12, and other schools (tables C1–C4).

TABLE C1

Reading proficiency rates among Arizona public school students in grades 3–8 and 10, by student subgroup and school level (alternative, K–12, and other), 2008/09

Student subgroup	Alternative ^a (n = 114)		K–12 (n = 106)		Other ^b (n = 40)		Total (n = 260)	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Race/ethnicity								
American Indian	260	33	789	54	133	51	1,182	49
Asian	51	51	835	91	14	36	900	88
Black	535	35	934	66	145	39	1,614	53
Hispanic	2,218	37	4,738	62	732	41	7,688	53
White	1,164	59	12,132	81	387	41	13,683	78
English language learner status								
English language learner student	477	14	705	22	164	17	1,346	18
Non–English language learner student	3,751	46	18,723	77	1,247	45	23,721	70
Disability status								
With disabilities	614	14	2,140	35	563	20	3,317	29
Without disabilities	3,614	48	17,288	80	848	56	21,750	73
Economic status								
Receiving free or reduced-price meals	2,630	38	6,838	59	805	51	10,273	53
Not receiving free or reduced-price meals	1,598	50	12,590	83	606	29	14,794	78
Total	4,228	43	19,428	75	1,411	42	25,067	67

Note: Data include charter schools.

a. Schools employing nontraditional curricula and methods to educate students who have not succeeded in a traditional school environment or who may be at greater risk of educational failure in such an environment.

b. K–2 schools and schools not otherwise designated as elementary, middle, high, alternative, or K–12.

Source: Authors' analysis based on AIMS and AZ LEARNS data from Arizona Department of Education (2010).

TABLE C2

Reading proficiency rates among Arizona charter school students in grades 3–8 and 10, by student subgroup and school level (alternative, K–12, and other), 2008/09

Student subgroup	Alternative ^a (n = 78)		K–12 and other ^b (n = 74)		Total (n = 260)	
	Number	Percent	Number	Percent	Number	Percent
Race/ethnicity						
American Indian	138	36	402	54	540	49
Asian	36	56	644	91	680	89
Black	394	40	738	66	1,132	57
Hispanic	1,627	41	3,481	60	5,108	54
White	857	63	8,406	80	9,263	79
English language learner status						
English language learner student	390	15	559	22	949	19
Non–English language learner student	2,662	52	13,112	77	15,774	72
Disability status						
With disabilities	307	15	1,364	35	1,671	31
Without disabilities	2,745	51	12,307	79	15,052	74
Economic status						
Receiving free or reduced-price meals	1,998	42	5,060	58	7,058	53
Not receiving free or reduced-price meals	1,054	58	8,611	84	9,665	81
Total	3,052	47	13,671	74	16,723	69

a. Schools employing nontraditional curricula and methods to educate students who have not succeeded in a traditional school environment or who may be at greater risk of educational failure in such an environment.

b. K–2 schools and schools not otherwise designated as elementary, middle, high, alternative, or K–12. These were combined with K–12 schools because very few students were in “other” cells.

Source: Authors' analysis based on AIMS and AZ LEARNS data from Arizona Department of Education (2010).

TABLE C3

Math proficiency rates among Arizona public school students in grades 3–8 and 10, by student subgroup and school level (alternative, K–12, and other), 2008/09

Student subgroup	Alternative ^a (n = 114)		K–12 (n = 106)		Other ^b (n = 40)		Total (n = 260)	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Race/ethnicity								
American Indian	284	19	790	48	138	41	1,212	41
Asian	53	32	839	90	16	38	908	85
Black	554	24	938	54	146	23	1,638	41
Hispanic	2,326	25	4,764	55	760	34	7,850	44
White	1,201	37	12,196	74	398	35	13,795	69
English language learner status								
English language learner student	492	11	702	29	165	19	1,359	21
Non–English language learner student	3,926	30	18,825	69	1,293	36	24,044	61
Disability status								
With disabilities	653	8	2,253	31	591	13	3,497	24
Without disabilities	3,765	31	17,274	73	867	48	21,906	65
Economic status								
Receiving free or reduced-price meals	2,719	26	6,893	52	824	45	10,436	45
Not receiving free or reduced-price meals	1,699	31	12,634	77	634	19	14,967	69
Total	4,418	28	19,527	68	1,458	34	25,403	59

Note: Data include charter schools.

a. Schools employing nontraditional curricula and methods to educate students who have not succeeded in a traditional school environment or who may be at greater risk of educational failure in such an environment.

b. K–2 schools and schools not otherwise designated as elementary, middle, high, alternative, or K–12.

Source: Authors' analysis based on AIMS and AZ LEARNS data from Arizona Department of Education (2010).

TABLE C4

Math proficiency rates among Arizona charter school students in grades 3–8 and 10, by student subgroup and school level (alternative, K–12, and other), 2008/09

Student subgroup	Alternative ^a (n = 78)		K–12 and other ^b (n = 74)		Total (n = 152)	
	Number	Percent	Number	Percent	Number	Percent
Race/ethnicity						
American Indian	146	18	404	44	550	37
Asian	35	29	643	90	678	86
Black	411	29	738	52	1,149	44
Hispanic	1,701	27	3,470	54	5,171	45
White	868	40	8,398	73	9,266	70
English language learner status						
English language learner student	403	11	557	31	960	23
Non–English language learner student	2,758	34	13,096	68	15,854	62
Disability status						
With disabilities	316	8	1,386	30	1,702	26
Without disabilities	2,845	33	12,267	71	15,112	64
Economic status						
Receiving free or reduced-price meals	2,056	28	5,064	50	7,120	44
Not receiving free or reduced-price meals	1,105	35	8,589	76	9,694	72
Total	3,161	31	13,653	67	16,814	60

a. Schools employing nontraditional curricula and methods to educate students who have not succeeded in a traditional school environment or who may be at greater risk of educational failure in such an environment.

b. K–2 schools and schools not otherwise designated as elementary, middle, high, alternative, or K–12. These were combined with K–12 schools because very few students were in “other” cells.

Source: Authors' analysis based on AIMS and AZ LEARNS data from Arizona Department of Education (2010).

Notes

1. The Elementary and Secondary Education Act is the federal statute governing most federal involvement in primary and secondary education, including funding for programs supporting students from low-income households, professional development, instructional materials, and other resources to support education programs.
2. The No Child Left Behind Act of 2001, signed into law on January 8, 2002, is the reauthorization of the federal Elementary and Secondary Education Act of 1965. It addresses the federal role in elementary and secondary education. In contrast to previous reauthorizations, the act emphasizes standards to improve individual outcomes in education. It requires states receiving federal education funding to develop assessments in basic skills for all students in certain grades.
3. “Other” schools include K–2 schools, as they have no students in the tested grades.

References

- Arizona Department of Education. (2010). School-level AZ LEARNS data and grade-level AIMS data. Retrieved January 6, 2010, from <http://www.ade.state.az.us>.
- Crane, E.W., Huang, C.-W., Derby, K., Makkonen, R., and Goel, A.M. (2008). *Characteristics of Arizona school districts in improvement* (Issues & Answers Report, REL 2008–054). Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, Regional Educational Laboratory West. Retrieved October 15, 2009, from <http://ies.ed.gov/ncee/edlabs>.
- Crane, E.W., Barrat, V.X., and Huang, M. (2011). *Achievement trends of schools and students in Arizona's Title I school improvement program* (REL Technical Brief, REL 2011–017). Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, Regional Educational Laboratory West. Retrieved July 20, 2011, from <http://ies.ed.gov/ncee/edlabs>.