
**STATE NAEP TEST SCORES AND STATE FAMILY AND
EDUCATIONAL SYSTEM CHARACTERISTICS**

STATE NAEP SCORES

Figures A.1 through A.7 show the ranked results of the seven state NAEP tests given from 1990 to 1996 for public school students. The results for each test are normalized to a mean of zero, and score differences are divided by the standard deviation of the nationally representative NAEP test. The scores incorporate the latest corrections to the test results that are published in the 1994 and 1998 documentation (Shaughnessy et al., 1998; Miller et al., 1995) and subsequent corrections from the NCES Web site. Table A.1 provides the correlation coefficients among the tests for states taking all tests. The test results are highly correlated at 0.77 or above. The correlation is higher when types of tests are similar (reading or math) or grade levels are similar. Table A.2 ranks each state for each test. The overall ranking is computed by normalizing the mean score for each test to zero and computing the average score across the tests in which each state participated.

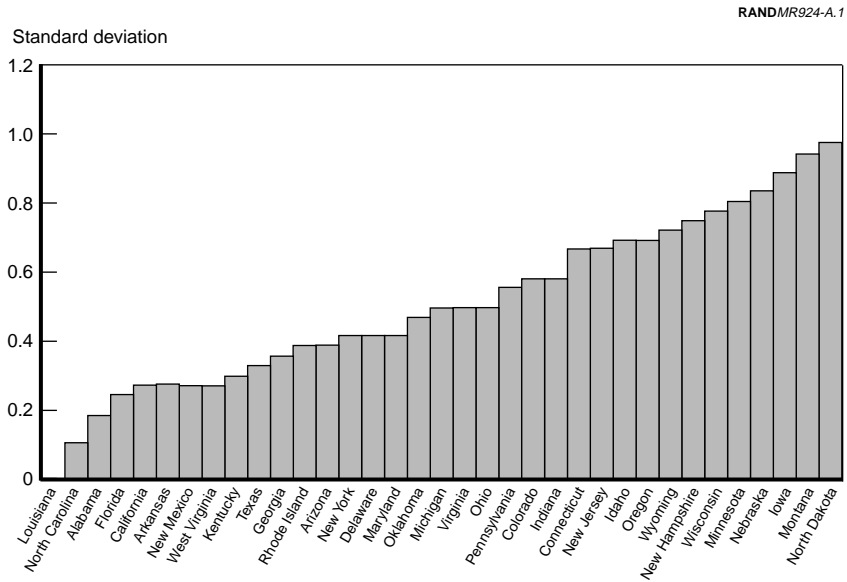


Figure A.1—Results of the 1990 8th-Grade Math Test

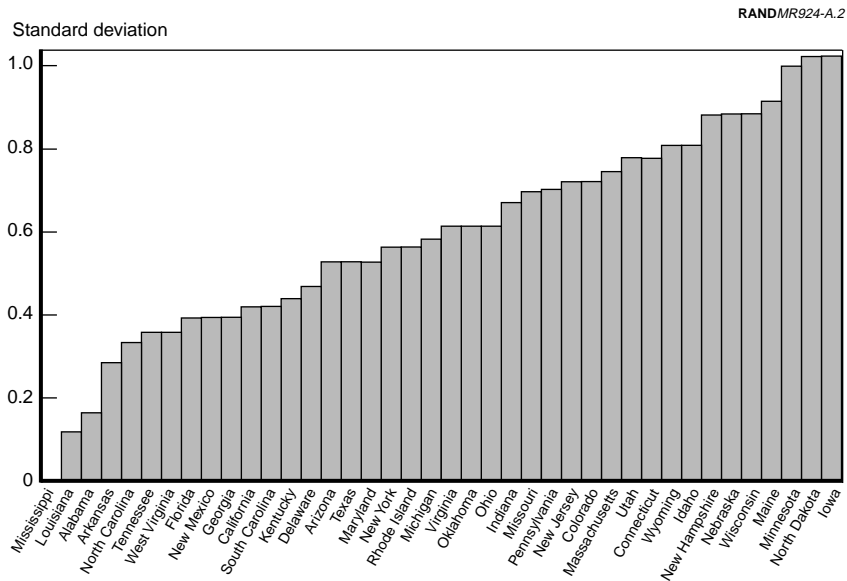


Figure A.2—Results of the 1992 8th-Grade Math Test

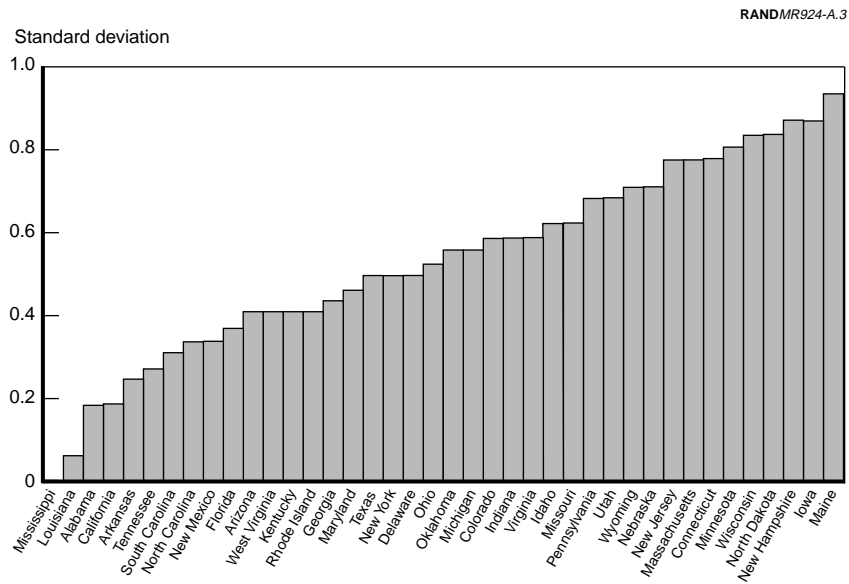


Figure A.3—Results of the 1992 4th-Grade Math Test

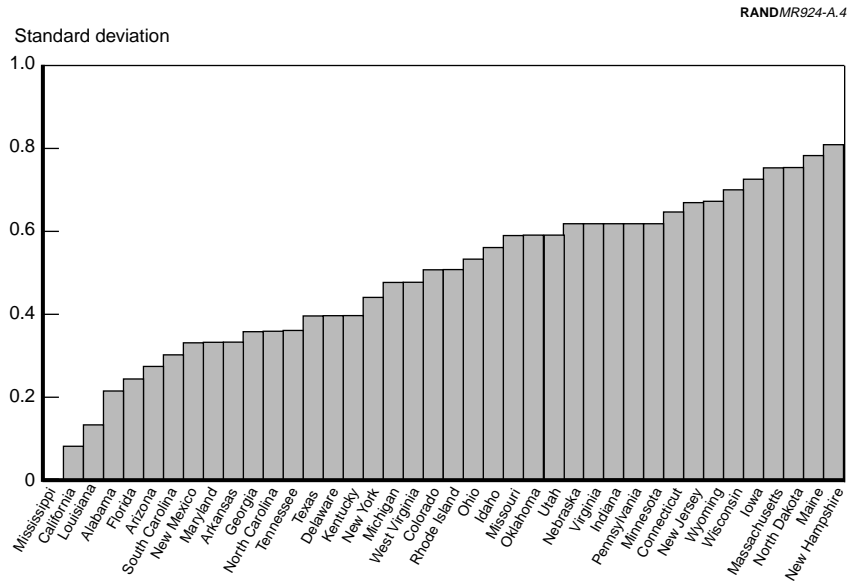


Figure A.4—Results of the 1992 4th-Grade Reading Test

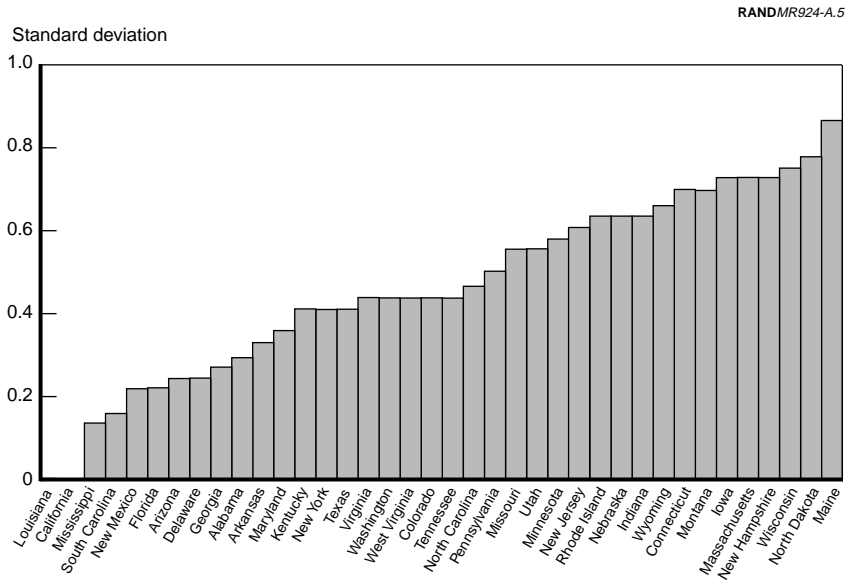


Figure A.5—Results of the 1994 4th-Grade Reading Test

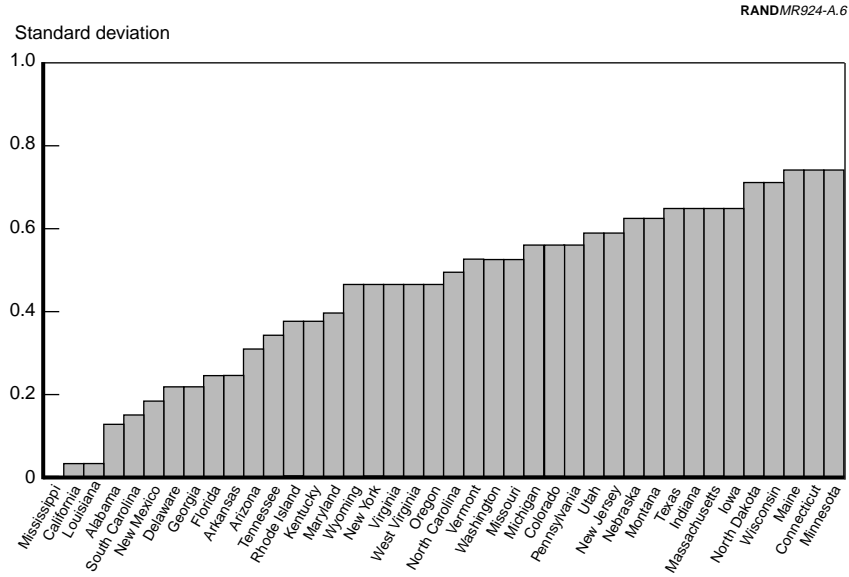


Figure A.6—Results of the 1996 4th-Grade Math Test

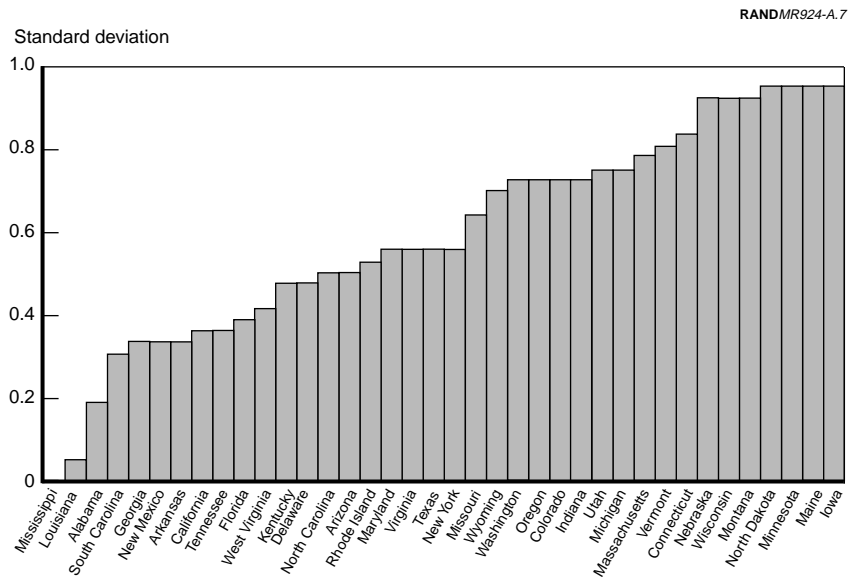


Figure A.7—Results of the 1996 8th-Grade Math Test

Table A.1

Correlation Among States' Reading and Math Tests Given Between 1990 and 1996 for States Taking All Tests

	1990 Math 8th	1992 Math 8th	1992 Math 4th	1992 Read 4th	1996 Math 8th	1994 Read 4th	1996 Math 4th
1990 Math 8th	1.00						
1992 Math 8th	0.97	1.00					
1992 Math 4th	0.95	0.96	1.00				
1992 Reading 4th	0.88	0.87	0.93	1.00			
1996 Math 8th	0.94	0.97	0.96	0.88	1.00		
1994 Reading 4th	0.81	0.81	0.86	0.94	0.861	1.00	
1996 Math 4th	0.77	0.83	0.88	0.87	0.910	0.88	1.00

Table A.2
Summary of State Rankings Across Seven NAEP Tests

	1990 8th Math	1992 8th Math	1992 4th Math	1992 4th Read	1996 8th Math	1994 4th Read	1996 4th Math	Overall Rank
Maine	NA	4	1	2	1-4	1	1-3	1-2
North Dakota	1	1-2	4-5	3-4	1-4	2	4-5	1-2
Iowa	3	1-2	2-3	5	1-4	4-6	6-9	3
New Hampshire	7	5-7	2-3	1	NA	4-6	NA	4
Montana	2	NA	NA	NA	5-7	7-8	10-11	5
Wisconsin	6	5-7	4-5	6	5-7	3	4-5	6
Minnesota	5	3	6	10-14	1-4	14	1-3	7
Nebraska	4	5-7	10-11	10-14	5-7	10-12	10-11	8
Massachusetts	NA	12	7-9	3-4	10	4-6	6-9	9
Connecticut	11-12	10-11	7-9	9	8	7-8	1-3	10
New Jersey	11-12	13-14	7-9	7-8	NA	13	12-13	11
Wyoming	8	8-9	10-11	7-8	17	9	21-25	12
Vermont	NA	NA	NA	NA	9	NA	17-19	13
Idaho	9-10	8-9	14-15	18	NA	NA	NA	14
Utah	NA	10-11	12-13	15-17	11-12	15-16	12-13	15
Indiana	13-14	17	16-18	10-14	13-16	10-12	6-9	16
Oregon	9-10	NA	NA	NA	13-16	NA	21-25	17
Pennsylvania	15	15-16	12-13	10-14	NA	17	14-16	18
Missouri	NA	15-16	14-15	15-17	18	15-16	17-19	19

Table A.2—Continued

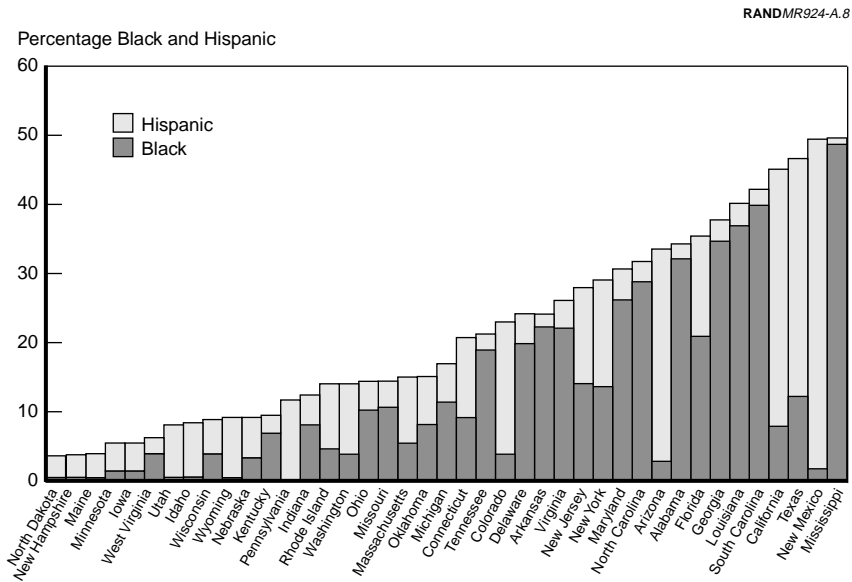
	1990 8th Math	1992 8th Math	1992 4th Math	1992 4th Read	1996 8th Math	1994 4th Read	1996 4th Math	Overall Rank
Colorado	13–14	13–14	16–18	20–21	13–16	19–23	14–16	20
Washington	NA	NA	NA	NA	13–16	19–23	17–19	21
Michigan	16–18	21	19–20	22–23	11–12	NA	14–16	22
Oklahoma	19	18–20	19–20	15–17	NA	NA	NA	23
Virginia	16–18	18–20	16–18	10–14	19–22	19–23	21–25	24
Ohio	16–18	18–20	21	19	NA	NA	NA	25
Rhode Island	23–24	22–23	27–30	20–21	23	10–12	27–28	26
Texas	26	24–26	22–24	25–27	19–22	24–26	6–9	27
New York	20–22	22–23	22–24	24	19–22	24–26	21–25	28
Maryland	20–22	24–26	25	31–33	19–22	27	26	29
West Virginia	28–31	34–35	27–30	22–23	28	19–23	21–25	30
Kentucky	27	28	27–30	25–27	26–27	24–26	27–28	31
Delaware	20–22	27	22–24	25–27	26–27	31–32	33–34	32
Arizona	23–24	24–26	27–30	35	24–25	31–32	30	33
North Carolina	34	36	32–33	28–30	24–25	18	20	34
Tennessee	NA	34–35	35	28–30	30–31	19–23	29	35
Georgia	25	31	26	28–30	32–34	30	33–34	36
Florida	32	32–33	31	36	29	33–34	31–32	37
New Mexico	28–31	32–33	32–33	31–33	32–34	33–34	35	38
Arkansas	28–31	37	36	31–33	32–34	28	31–32	39

Table A.2—Continued

	1990 8th Math	1992 8th Math	1992 4th Math	1992 4th Read	1996 8th Math	1994 4th Read	1996 4th Math	Overall Rank
South Carolina	NA	29–30	34	34	35	35	36	40
Alabama	33	38	37–38	37	36	29	37	41
California	28–31	29–30	37–38	39	30–31	37–38	38–39	42
Louisiana	35	39	39	38	37	37–38	38–39	43
Mississippi	NA	40	40	40	38	36	40	44

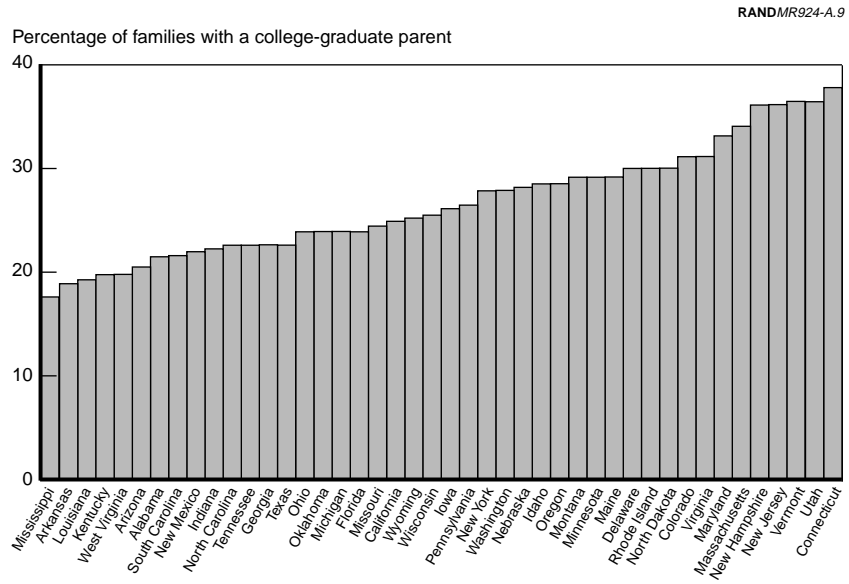
STATE FAMILY CHARACTERISTICS

The states have much variability in the average characteristics of their families, and since family characteristics explain most of the variance in cross-sectional models of achievement at the individual level, it would be expected that differing family characteristics would account for an important part of state test-score variance. Figures A.8 through A.15 show measures of selected family characteristics by state: percentages of minorities, family income levels, parental education, teen births, single parents, mothers working, and residential stability of home environment.



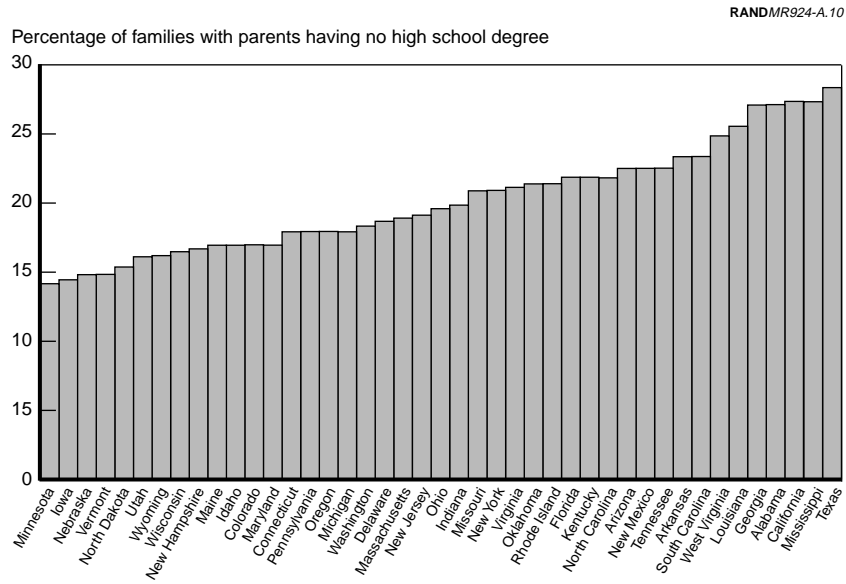
SOURCE: 1990 Census for families with children 8–10.

Figure A.8—Estimated Percentage of 4th-Grade Student Population That Is Black or Hispanic—1990



SOURCE: 1990 Census for families with children 8–10.

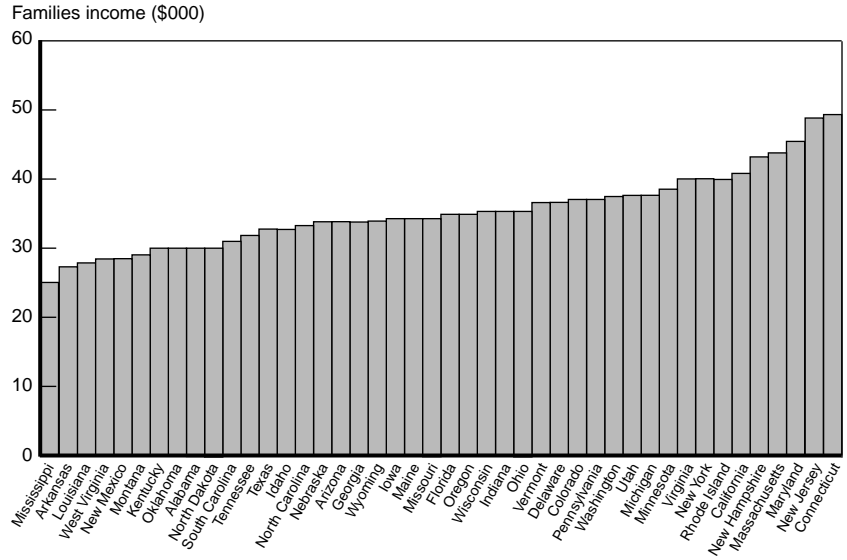
Figure A.9—Estimated Percentage of Families of 4th-Grade Students Having at Least One Parent with a College Degree—1990



SOURCE: 1990 Census for families with children 8–10.

Figure A.10—Estimated Percentage of Families of 4th-Grade Students Having the Highest Parental Education as Non-High School Graduate—1990

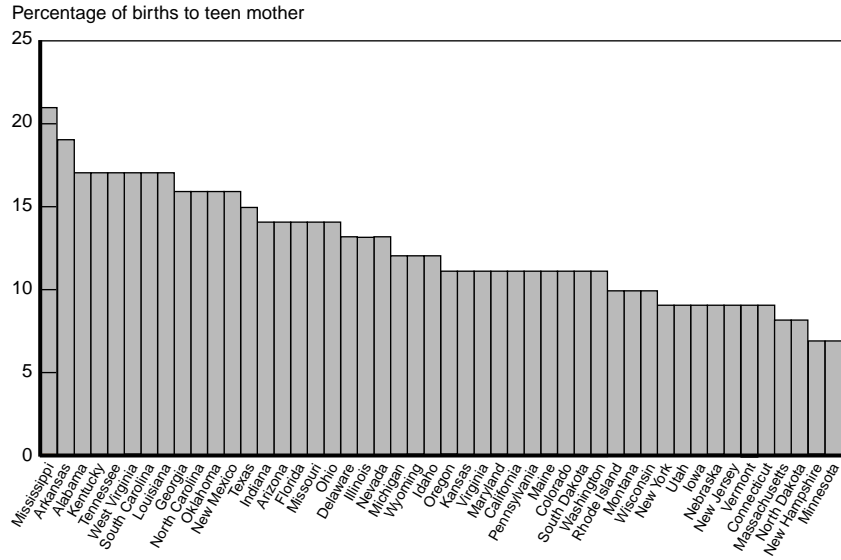
RANDMR924-A.11



SOURCE: 1990 Census for families with children 8–10.

Figure A.11—Estimated Family Income for 4th-Grade Students

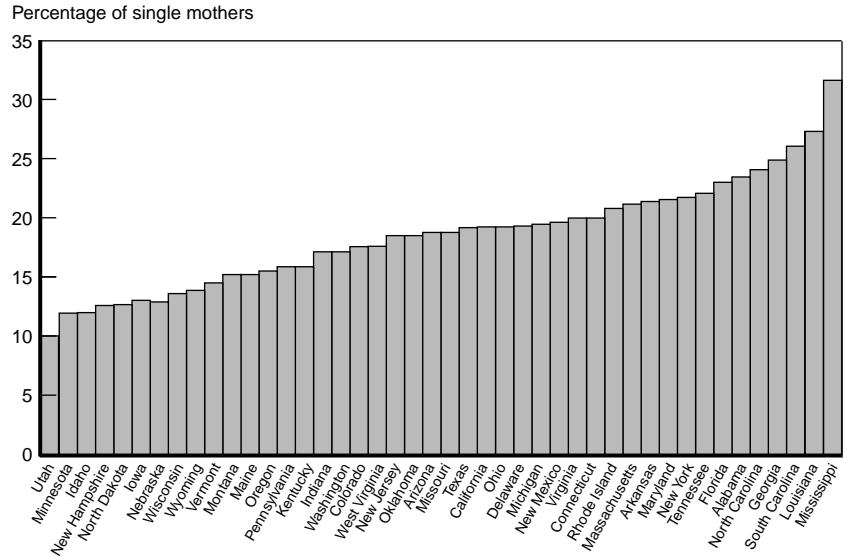
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SOURCE: Statistical Abstract of the United States, 1993, Table 102.

Figure A.12—Estimated Percentage of Births to Teen Mothers in 1990

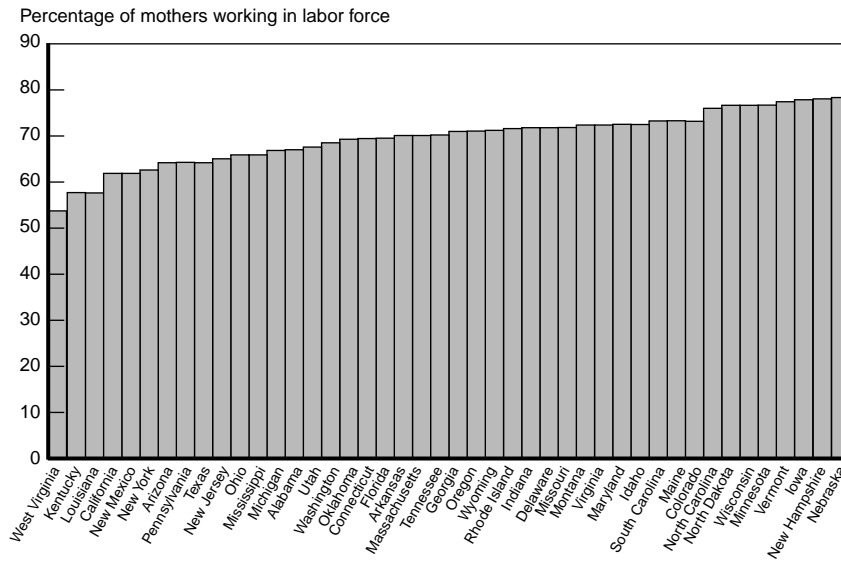
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SOURCE: 1990 Census for families with children 8–10.

Figure A.13—Estimated Percentage of Single-Parent Families of 4th-Grade Students

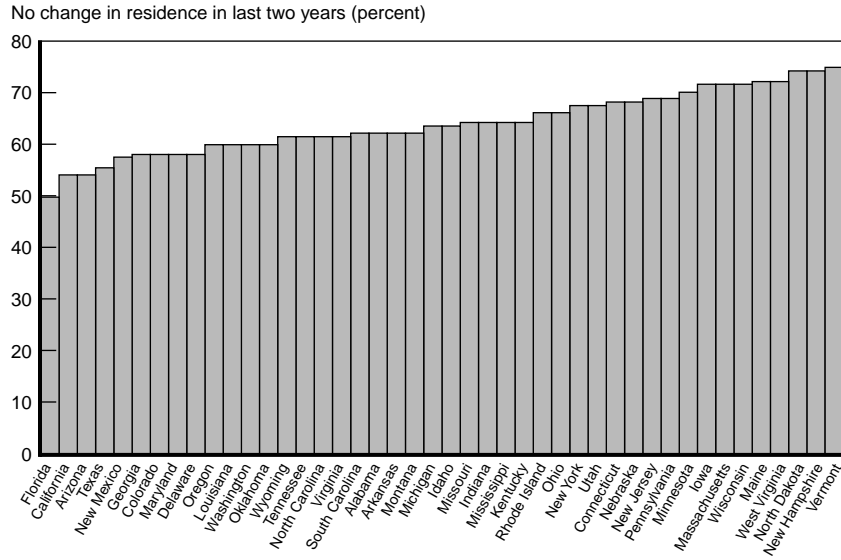
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SOURCE: 1990 Census for families with children 8–10.

Figure A.14—Estimated Percentage of Mothers Working Full or Part Time of 4th-Grade Students

RANDMR924-A.15



SOURCE: 1992 4th grade NAEP tests.

Figure A.15—Estimated Percentage of 4th-Grade Students Reporting No Residential Relocation Over Last Two Years

STATE EDUCATION CHARACTERISTICS

The states have a remarkable variance in key characteristics of their educational systems and teachers. These differences are partly the result of correlation with family characteristics and partly due to nonfamily factors. The correlation coefficients with family characteristics are shown in Table A.3. The correlation between specific educational characteristics and specific family characteristics is generally around 0.5 or less. The schooling variables most correlated are teacher salary and per-pupil expenditure. The highest correlation (0.63) is between teacher salary and family income. The correlation of pupil-teacher ratio and family characteristics is below 0.3, with even less correlation between family and public prekindergarten.

Figures A.16 through A.22 show seven measures of the educational policies and teacher characteristics among states that might be hypothesized to lead to score differences: pupil-teacher ratio, per-pupil spending, average teacher salary, percentage of teachers with no degree beyond the bachelor's, percentage of teachers with more than 20 years of experience, proportion of children in public prekindergarten, and percentage of teachers responding in the lowest (least adequate) category of the adequacy of their resources for teaching. These variables have generally been constructed using data from the *Digest of Educational Statistics* (NCES, 1996, 1990, 1986), but several refinements, such as COL adjustments, have been made. The teacher resource variables are taken from the NAEP teacher surveys administered with the test. See Appendix F for detailed definitions of these variables.

Table A.3
Correlation Coefficients Among Family and Educational Policy Variables

	SES	SES-FE	Family Income	Parents' Education (College)	Single Parent	Black (%)	Hisp (%)
Per-pupil expenditure	0.48	0.44	0.51	0.50	-0.24	-0.26	-0.11
Pupil-teacher ratio	-0.27	-0.25	-0.15	-0.20	0.16	0.08	0.29
Teacher salary	0.44	0.40	0.63	0.54	-0.17	-0.28	0.04
Teacher degree (BA)	0.17	0.20	-0.26	0.08	-0.36	-0.19	0.04
Prekindergarten	0.02	0.01	0.22	0.10	-0.09	0.01	0.14
Teacher experience							
4-9 years	-0.21	-0.17	-0.39	-0.20	-0.04	-0.04	0.34
10-20 years	-0.17	-0.17	-0.16	-0.24	0.16	0.12	-0.19
20+ years	0.26	0.23	0.45	0.29	-0.04	-0.03	-0.17

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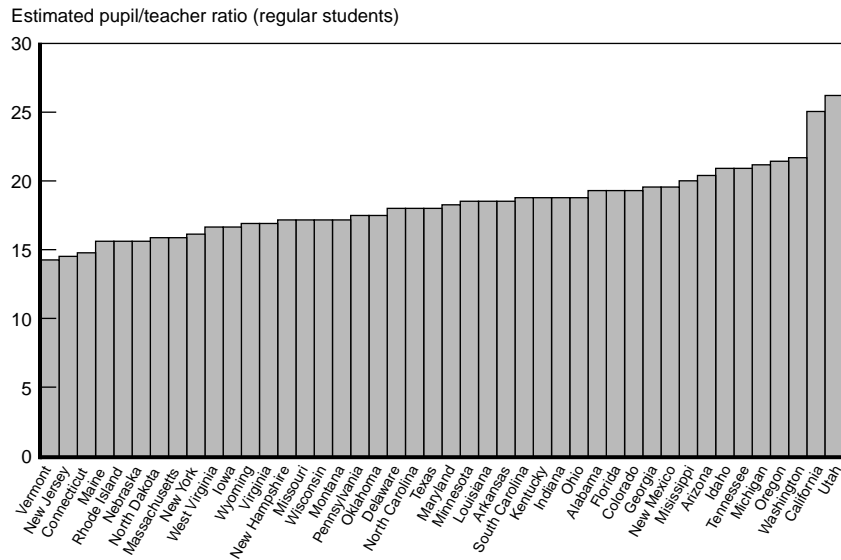


Figure A.16—Estimated Pupil-Teacher Ratio for 4th-Grade NAEP Test States in 1992 Averaged Over Years in School

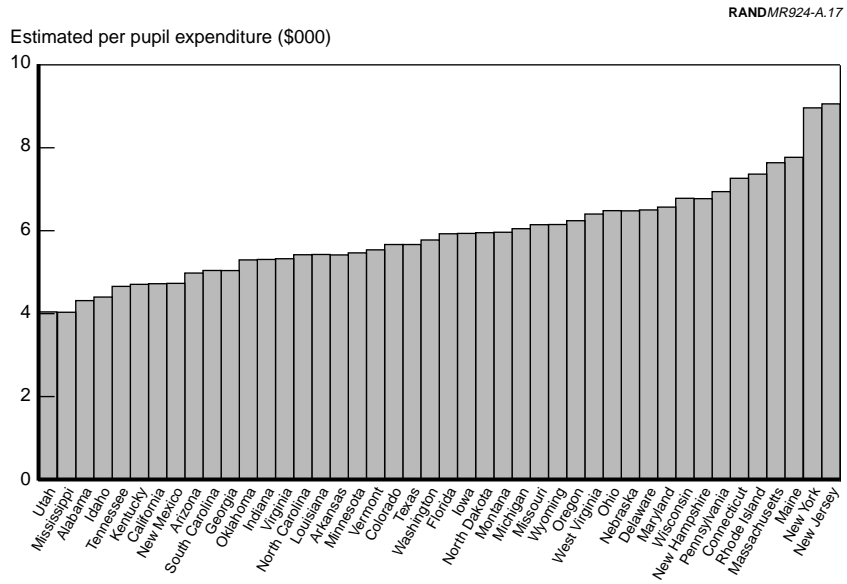


Figure A.17—Estimated Per-Pupil Expenditures for NAEP 4th-Grade Test States in 1992 Averaged Over Years in School (Adjusted for COL, 1993–1994 Dollars)

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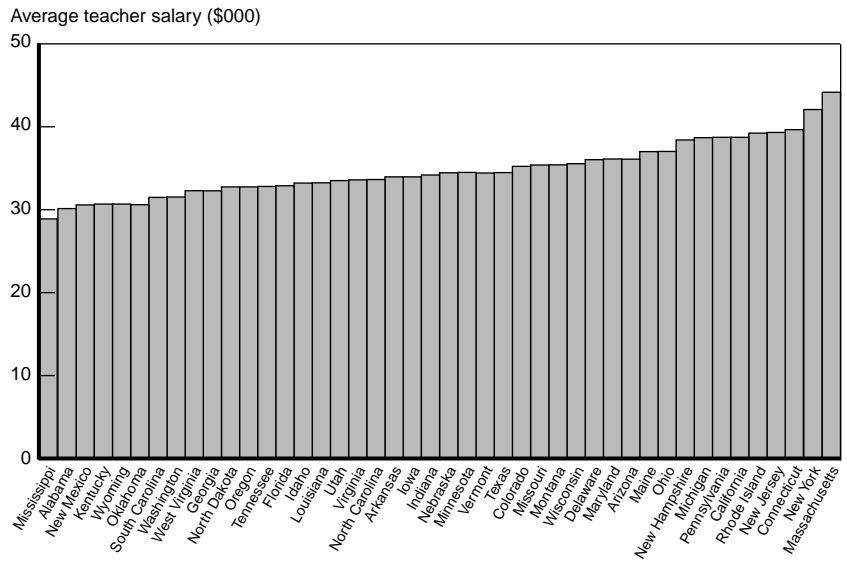


Figure A.18—Average Teacher Salary (Adjusted for COL Differences)

RANDMR924-A.19

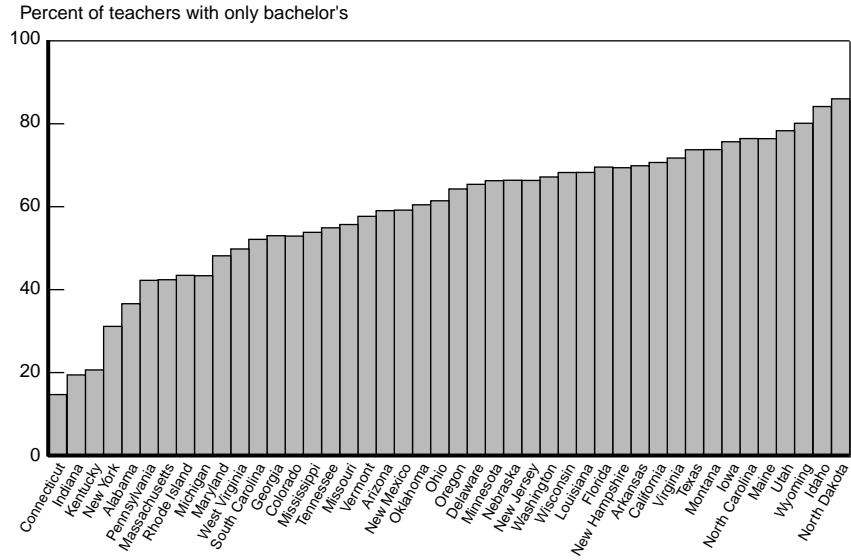
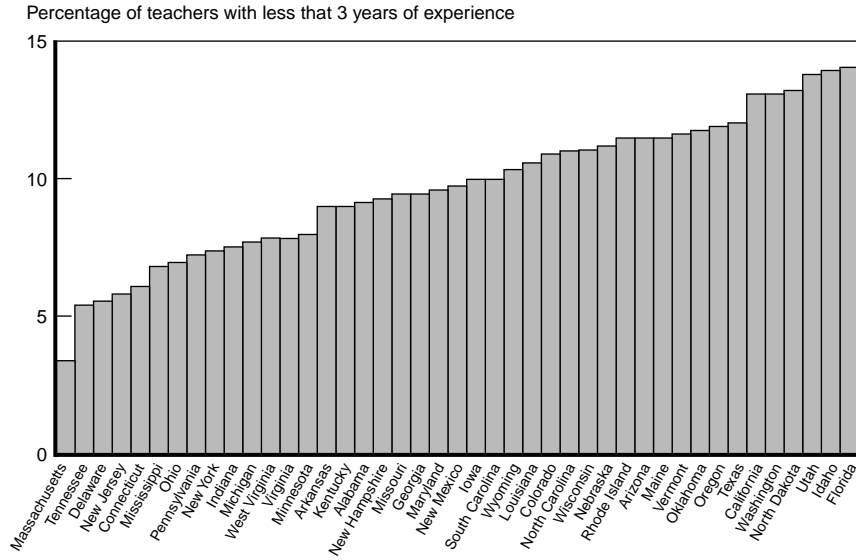


Figure A.19—Estimated Percentage of Teachers Having No Degree Beyond Bachelor's for 1992 4th-Grade NAEP Test States Averaged Over Years in School

RANDMR924-A.20



SOURCE: Digest of Educational Statistics.

Figure A.20—Estimated Percentage of Teachers with Less Than Three Years of Experience for 4th-Grade NAEP Test States in 1992 Averaged Over Years in School

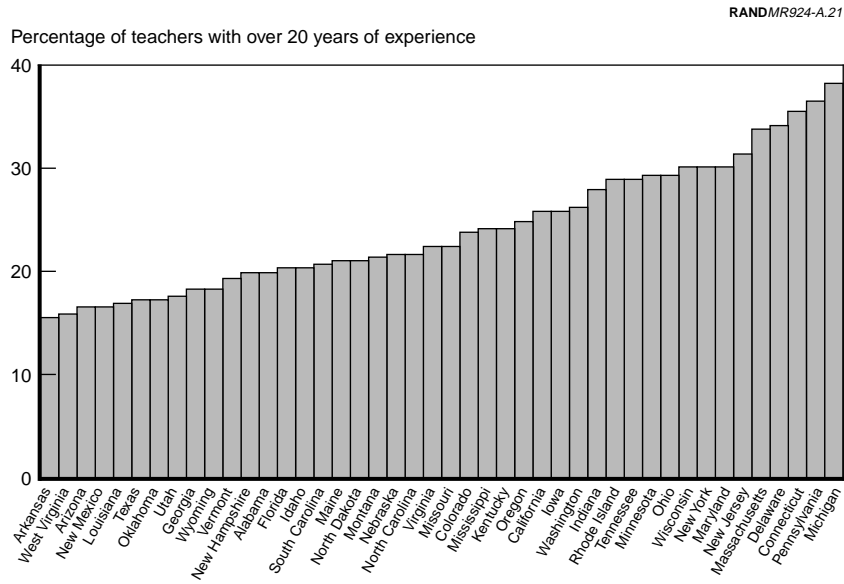


Figure A.21—Estimated Percentage of Teachers with Over 20 Years of Experience for 4th-Grade NAEP Test States in 1992 Averaged Over Years in School

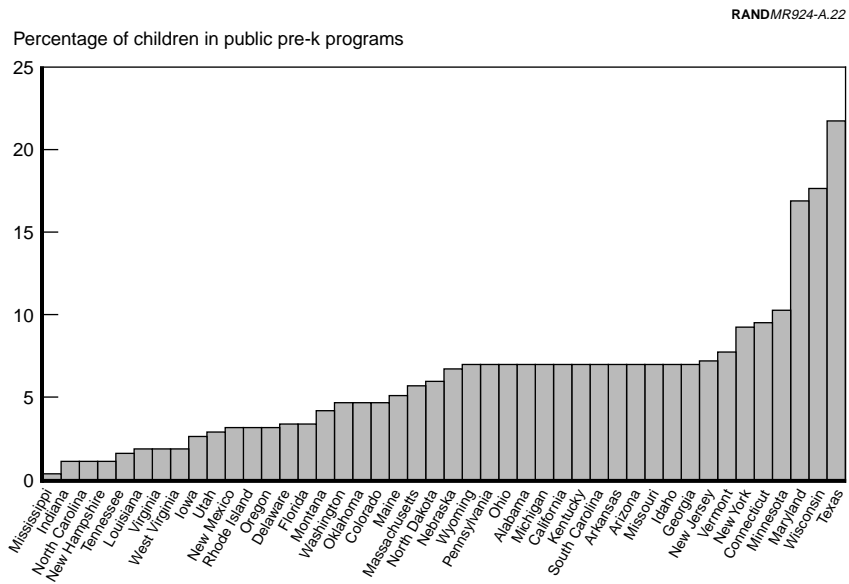
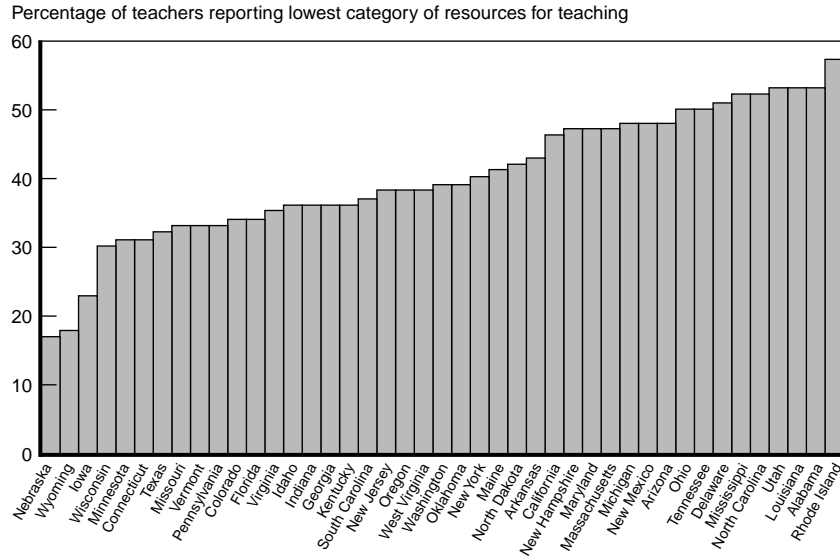


Figure A.22—Estimated Percentage of 4th-Graders in Test States Who Attended a Public Prekindergarten Program

RANDMR924-A.23



SOURCE: 1992 4th grade math NAEP test-teacher survey.

Figure A.23

Figure A.23—Percentage of 4th-Grade Teachers in 1992 Responding in Lowest (Most Inadequate) Category for Adequacy of Resources to Teach