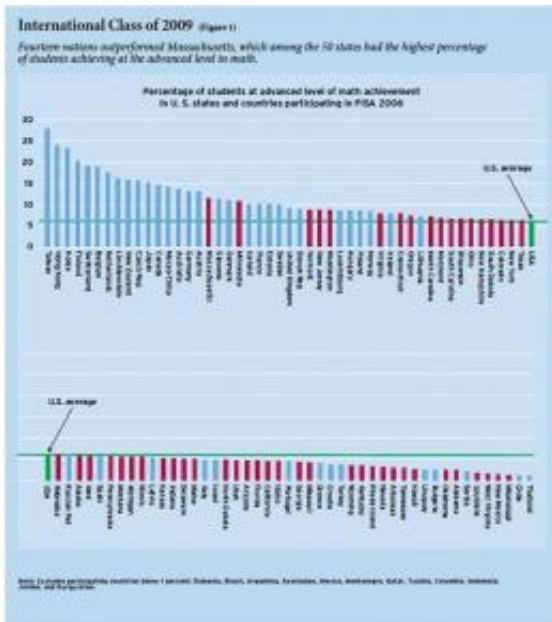


U.S. students advancing in math trails most industrialized nations

11 November 2010, By Paul E. Peterson



performing at advanced levels. Most states in the U.S. rank closer to developing countries than to developed countries. Thirteen developed countries have more than twice the percentage of advanced students as does the U.S., including Germany, Canada, the Czech Republic, Japan, Finland and Austria.

The lagging U.S. performance is not just explained by its heterogeneous population. The report also compared to other countries U.S. white students and children of parents with college degrees—two groups against which the case of discrimination cannot be made easily. The analysis found that only 8 percent of white students and 10 percent of students from all races with at least one college-educated parent performed at the advanced level. By comparison, 18 countries saw 10 percent of all their students performing at the advanced level. The percentage of high-performing students in each state, as well as the ranking of each state in comparison to other countries, is provided in the accompanying table and figure.

According to the first-ever comprehensive study comparing the percentage of U.S. students in the graduating class of 2009 who have advanced skills in math with the percentages of similar high achievers in 56 other countries, only six percent of U. S. students perform at the advanced level in math, as compared to 28 percent of Taiwanese students and more than 20 percent of students in Finland and Korea. Overall, the United States ranks 31st out of 56 countries, falling behind most industrialized nations. The report is available on the web at www.educationnext.org.

The study, sponsored by the journal *Education Next* and Harvard's Program on Education Policy and Governance, was co-authored by Eric A. Hanushek of Stanford University, Paul E. Peterson of Harvard University and Ludger Woessmann of the University of Munich. The authors analyzed state-by-state the percentage of students

United States Advanced Math Performance in World Perspective

Table 1
Percentage of all students at the advanced level per state and countries with similar and higher percentages of the advanced level in overall student population

State	Percent advanced	Significantly outperformed by*	Countries with similar percentages of advanced students**
1. Massachusetts	33.0%	16	Austria + Germany + Denmark + France + Iceland + Slovenia
2. Minnesota	29.8	26	Belgium + Canada + Finland + Luxembourg + Norway + Sweden
3. Vermont	28.8	22	U.S. + Hungary + Ireland + Luxembourg + Norway + Poland + Slovakia
4. New Jersey	28.2	26	Spain + Taiwan + U.S. + Hungary + Iceland + Ireland + Lithuania + Luxembourg + Mexico + Poland + Slovakia + Sweden
5. Maryland	27.2	25	U.S. + Hungary + Ireland + Lithuania + Luxembourg + Norway + Poland + Slovakia + Sweden
6. Virginia	26.8	22	U.S. + Hungary + Ireland + Lithuania + Luxembourg + Norway + Poland + Slovakia
7. Connecticut	26.8	22	Hungary + Ireland + Lithuania + Luxembourg + Norway + Poland + Slovakia
8. Oregon	26.2	23	Hungary + Ireland + Lithuania + Poland
9. North Carolina	25.2	21	Belgium + Canada + Lithuania + Poland
10. Maryland	24.8	20	Lithuania + Russia
11. North Carolina	24.2	20	Lithuania + Russia
12. Wisconsin	24.2	20	Lithuania + Russia
13. Ohio	23.8	20	Lithuania + Russia
14. New Hampshire	23.2	20	Lithuania + Russia
15. North Dakota	23.2	20	Lithuania + Russia
16. Colorado	22.2	20	Spain + Lithuania + Poland
17. New York	21.2	20	Lithuania + Russia
18. Idaho	20.2	20	Lithuania + Russia
19. Idaho	19.2	20	Russia
20. Nebraska	18.2	20	Spain + Lithuania + Poland
21. Alaska	17.2	20	Spain + Latvia + Russia
22. Iowa	16.2	20	Spain + Latvia + Russia
23. Connecticut	15.2	20	Spain + Israel + Italy + Lithuania + Latvia + Russia
24. Montana	14.2	20	Spain + Latvia + Russia
25. Michigan	13.2	20	Spain + Israel + Italy + Latvia + Russia
26. Illinois	12.2	20	Spain + Israel + Italy + Latvia + Russia
27. Kansas	11.2	20	Spain + Israel + Italy + Latvia + Russia
28. Indiana	10.2	20	Spain + Israel + Italy + Latvia + Russia
29. Delaware	9.2	20	Israel + Italy + Latvia
30. Maine	8.2	20	Israel + Italy + Latvia
31. North Dakota	7.2	20	Israel + Italy + Latvia + Portugal + Turkey
32. Utah	6.2	20	Israel + Italy + Latvia + Portugal + Turkey
33. Arizona	5.2	20	Israel + Italy + Portugal + Turkey
34. Florida	4.2	20	Israel + Italy + Portugal + Turkey
35. California	3.2	20	Israel + Italy + Portugal + Turkey
36. Hawaii	2.2	20	Israel + Italy + Portugal + Turkey
37. Missouri	1.2	20	Greece + Israel + Portugal + Turkey
38. Wyoming	0.2	20	Greece + Portugal + Turkey
39. Kentucky	0.2	20	Ukraine + Turkey
40. Nevada	0.2	20	Ukraine + Turkey
41. New York	0.2	20	Turkey
42. Arkansas	0.2	20	Bulgaria + Turkey
43. Tennessee	0.2	20	Bulgaria + Turkey
44. Kansas	0.2	20	Bulgaria + Turkey
45. Oklahoma	0.2	20	Bulgaria + Turkey + Uruguay
46. Alabama	0.2	20	Bulgaria + Turkey + Uruguay
47. Louisiana	0.2	20	Bulgaria + Turkey + Uruguay
48. West Virginia	0.2	20	Bulgaria
49. New Mexico	0.2	20	Bulgaria
50. Mississippi	0.2	20	Turkey

*Number of countries whose percent advanced was significantly outperformed.
**Number of countries whose percent advanced was not significantly outperformed. The number of outperforming countries may not add to the total of 50.

Some attribute the comparatively small percentages of students performing at the advanced level to the focus of the 2002 law, No Child Left Behind (NCLB), on the needs of very low-performing students. However, in mathematics, the percentage performing at an advanced level rose after the passage of the law, although not to internationally competitive levels.

"The incapacity of American schools to bring students up to the highest level of accomplishment in math is much more deep-seated than anything induced by recent federal legislation," Hanushek pointed out.

The analysis uses the National Assessment of Educational Progress (NAEP) 2005 advanced standard to compare U.S. state performances with performance in other countries. Since U.S. [students](#) took both the NAEP 2005 and the Program for International Student Assessment (PISA) 2006, it was possible to find the score on the PISA that is tantamount to scoring at the advanced level on the NAEP. The PISA is an internationally standardized assessment of student performance in [math](#), science and reading, established by the Organization for Economic Co-operation and Development (OECD).

"Maintaining national productivity depends importantly on developing a highly qualified cadre of scientists, engineers, entrepreneurs and other professionals," Woessmann observed.

More information: "U.S. Math Performance in Global Perspective: How well does each state do at producing high-achieving students?" is available at educationnext.org and hks.harvard.edu/pepg/

Other findings from the study include:

- Just 4.5 percent of the students in California are performing at the highly accomplished level, a percentage that trails 32 countries and is comparable to the performance of students in Portugal, Italy, Israel, and Turkey.
- The lowest-ranking states-West Virginia, New Mexico and Mississippi-fall behind Serbia and Uruguay.
- The only OECD countries-out of 30-producing a smaller percentage of advanced math students than the U.S. were Spain, Italy, Israel, Portugal, Greece, Turkey, Chile and Mexico.

"Public discourse has tended to focus on the need to address low achievement, particularly among disadvantaged students, and bring everyone up to a minimum level of proficiency," said Peterson. "As great as this need may be, there is no less need to lift more students, no matter their socio-economic background, to high levels of educational accomplishment."

Provided by Harvard Kennedy School

APA citation: U.S. students advancing in math trails most industrialized nations (2010, November 11)
retrieved 2 December 2020 from <https://phys.org/news/2010-11-students-advancing-math-trails-industrialized.html>

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