# NEWS RELEASE

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**Nation’s Report Card: Fourth-graders’ Science Scores Decline, No Change for
*Eighth- and 12th-graders***

**Widespread declines among lowest-performing fourth- and eighth-graders overall and in most science content areas**

WASHINGTON (May 25, 2021)—Science scores of fourth-graders declined since 2015, according to results from The Nation’s Report Card released today by the National Center for Education Statistics (NCES), while science scores of eighth-graders and high school seniors did not change between 2015 and 2019.

The decline in the overall score for fourth grade was driven by declines for lower- and middle-performing students, while the scores for higher-performing students held steady. NCES has reported similar patterns of divergence between lower- and higher-performing students recently across the National Assessment of Educational Progress (NAEP) reading and mathematics assessments, as scores for lower-performing students have generally declined while scores for higher performing students have held steady or improved.

“Once again, the lowest-performing students are falling further behind,” said Peggy G. Carr, the associate commissioner of assessments at NCES, which runs NAEP, known as The Nation’s Report Card. “This is a repeated pattern across multiple subjects and grade levels. We need a renewed focus on the educational needs of our struggling students.

Among high school seniors, there was no change overall or for lower-performing and higher-performing students from 2015. However, 41 percent of 12th-graders scored below the *NAEP Basic* achievement level and the scores of the lowest performing students declined in the content areas of physical and life science.

“Among 12th-graders, we saw declines in specific science content areas, similar to what occurred at fourth and eighth grade,” said Lynn Woodworth, the commissioner of NCES. “Perhaps more troubling is that, compared to earlier grades, higher percentages of high school seniors—about four in 10—are unlikely to know key principles, facts, laws, and theories in science. Far too many students will leave high school with only passing familiarity of science fundamentals.

**Widespread Declines Among Lowest-Performing Fourth-, Eighth-, and 12th-Graders Across Science Content Areas**

At fourth grade, scores declined overall and in two of the three science content areas compared to 2015, and scores declined for lower-performing students in all three science content areas (physical science, life science, and earth and space sciences). However, scores for higher-performing students held steady in each of the three science content areas.

At eighth grade, there was no significant change in scores for eighth-graders in all three science content areas compared to 2015. Scores declined for the lowest-performing students in all three science content areas, while scores for higherperforming students increased in physical science and life science.

At 12th grade, there was no significant change in overall scores across content areas compared to 2015, but scores for the lowest-performing students declined in two content areas: physical science and life science.

## **Gender Gap Now Eliminated at Eighth Grade**

Eighth-grade girls closed the gender gap in 2019 after fourth-grade girls had previously closed the gender gap on the 2015 assessment, marking the first time there was no gender gap between both fourth- and eighth-grade girls and boys in science. Score gains for fourth- and eighth-grade girls have outpaced improvement for boys at both grades since 2009.

“Over the past decade, the gender gap in eighth grade closed while the performance of both girls and boys improved, which is the best way to close an achievement gap,” Carr said.

Though 12th-grade boys continued to score higher than 12th-grade girls overall, there was no gender gap among students who were taking advanced science courses.

“While boys outperform girls at 12th grade, this score difference disappears among boys and girls who have completed Advanced Placement classes,” Carr said. “This shows that girls who take challenging science courses perform as well as boys.

## **Racial/Ethnic Achievement Gaps Narrow Since 2009**

Overall, the scores of fourth-graders and eighth-graders increased from 2009 to 2019, and achievement gaps for several racial/ethnic groups narrowed over that 10-year period. The gaps closed because the scores of racial and ethnic minorities increased more than scores of White students.

At grade 4, gaps narrowed between White students and Black, Hispanic, and American Indian/Alaska Native students, and students of Two or More Races. Scores for Asian/Pacific Islander students also rose, and these students now score the same as their White counterparts, on average.

At grade 8, scores improved for students of all racial/ethnic groups between 2009 and 2019. Gaps narrowed between White and Black students, White and Hispanic students, and White students and students of two or more races, while Asian/Pacific Islander students now score the same as their White counterparts, on average.

At grade 12, there were no statistically significant changes in scores for these student groups and no narrowing of achievement gaps between 2009 and 2019.

## **Results by Grade**

**Grade 4:** The overall performance of fourth-graders declined by two points since 2015. Since 2009, scores for fourthgraders increased by one point. In 2019, 36 percent of fourth-graders were at or above *NAEP Proficient,* which was two points lower than in 2015 and two points higher than in 2009. In 2019, 27 percent of fourth-graders were below *NAEP Basic*, which was higher by three points than in 2015 and the same as 2009.

**Grade 8:** The score of eighth-graders has not changed since 2015, but it has increased by four points since 2009. In 2019, 35 percent of students scored at or above *NAEP Proficient,* which was not statistically significantly different compared to 2015 (34 percent), and the percentage of eighth-graders reaching *NAEP* Proficient was four points higher in 2019 than in 2009, when 30 percent of eighth-graders reached that achievement level. One-third of eighth-graders were below *NAEP Basic,* which was not different than in 2015 and was lower than 2009.

**Grade 12:** Scores of high school seniors were not measurably different in 2019 compared to 2015 and 2009. Twenty-two percent of 12th-graders scored at or above *NAEP Proficient* in 2019, which was not different from either 2015 or 2009. Forty-one percent were below *NAEP Basic*—the same as previous years.

## **How Results Are Reported**

Student performance on the NAEP assessments is reported in two ways: scale scores and NAEP achievement levels.

Scale scores represent the average performance of students on a scale of 0 to 300. Science scores are reported at the national level and for groups of students based on racial/ethnic groups, gender, eligibility for the National School Lunch Program, and other demographic characteristics.

NCES also reports scores at five percentiles: the 10th, 25th, 50th, 75th, and 90th. Students at the 10th and 25th percentiles are considered “lower-performing” students, while those at the 75th and 90th percentiles are considered “higherperforming” students.

Student performance on NAEP is also reported by the percentages of students reaching three NAEP achievement levels: *NAEP Basic*, *NAEP Proficient*,and *NAEP Advanced*. Students performing at or above the *NAEP Proficient* level on NAEP assessments demonstrate solid academic performance and competency over challenging subject matter. The *NAEP Proficient* achievement level does not represent grade-level proficiency as determined by other assessment standards.

The NAEP achievement levels are set by the National Assessment Governing Board, which sets policy for the NAEP program. The NAEP achievement levels are used on a trial basis and, therefore, should be interpreted with care to ensure a proper understanding of performance.

## **About the Assessment**

In 2019, NCES assessed a total of 88,200 students in science across all three grades on a digital platform for the first time. The assessment included scenario-based tasks that required students to solve scientific problems simulating a natural or laboratory setting, as well as hands-on tasks that challenged students to apply their scientific knowledge in real-world contexts.

The NAEP science assessment measures students’ knowledge of three broad content areas—physical science, life science, and Earth and space sciences—and four science practices—identifying science principles, using science principles, using scientific inquiry, and using technological design. These four practices describe how students use their science knowledge by measuring what they are able to do with the science content.

The science assessment was revised in 2009 based on new frameworks developed by the National Assessment Governing Board. The changes reflected new science standards as well as advances in science and cognitive research.

Visit <https://www.nationsreportcard.gov/>to view the report.

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*The National Center for Education Statistics, a principal agency of the U.S. Federal Statistical System, is the statistical center of the U.S. Department of Education and the primary federal entity for collecting and analyzing data related to education in the U.S. and other nations. NCES fulfills a congressional mandate to collect, collate, analyze, and report complete statistics on the condition of American education; conduct and publish reports; and review and report on education activities internationally.*

*The National Assessment of Educational Progress (NAEP) is a congressionally authorized project sponsored by the U.S. Department of Education. The National Center for Education Statistics, within the Institute of Education Sciences, administers NAEP. The commissioner of the National Center for Education Statistics is responsible by law for carrying out the NAEP project. Policy for the NAEP program is set by the National Assessment Governing Board (NAGB), an independent, bipartisan board whose members include governors, state legislators, local and state school officials, educators, business representatives and members of the general public. Since 1990, NAGB has been developing achievement levels, which are being used on a trial basis.*