STEM EDUCATION INVESTMENT AT THE NATIONAL SCIENCE FOUNDATION

Presentation to the National Science Board Committee on Education and Human Resources

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on behalf of the NSF Assistant Directors

Why does the National Science Foundation invest in STEM education?

Basic scientific research is scientific capital…How do we increase this scientific capital? First, we must have plenty of men and women trained in science, for upon them depends both the creation of new knowledge and its application to practical purposes.

-Vannevar Bush

Science: The Endless Frontier

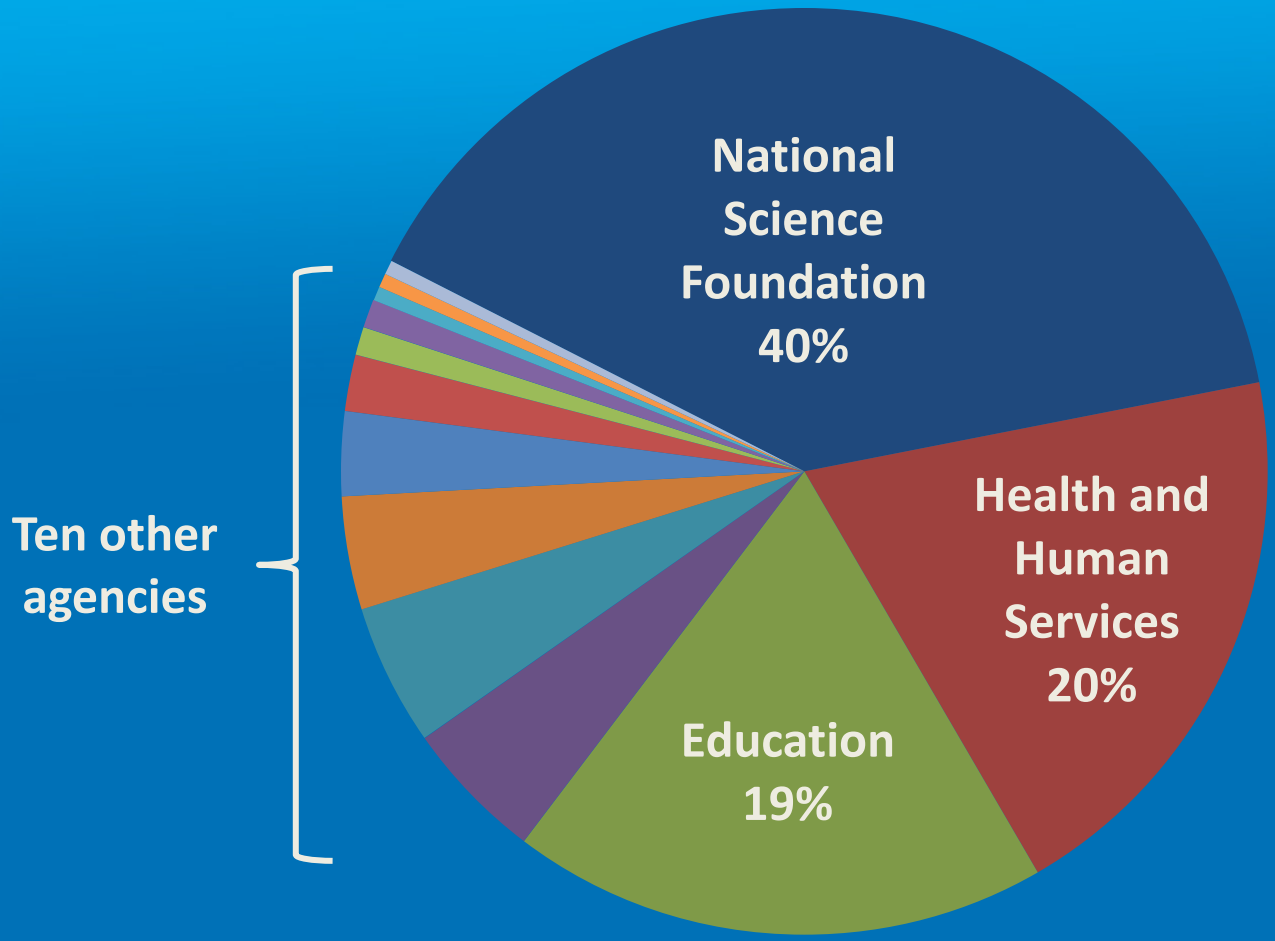
The total of U.S. education spending was about $1.1 Trillion in FY 2010.

About 94% of this was spent by the nation's state and local postsecondary and K-12 systems.

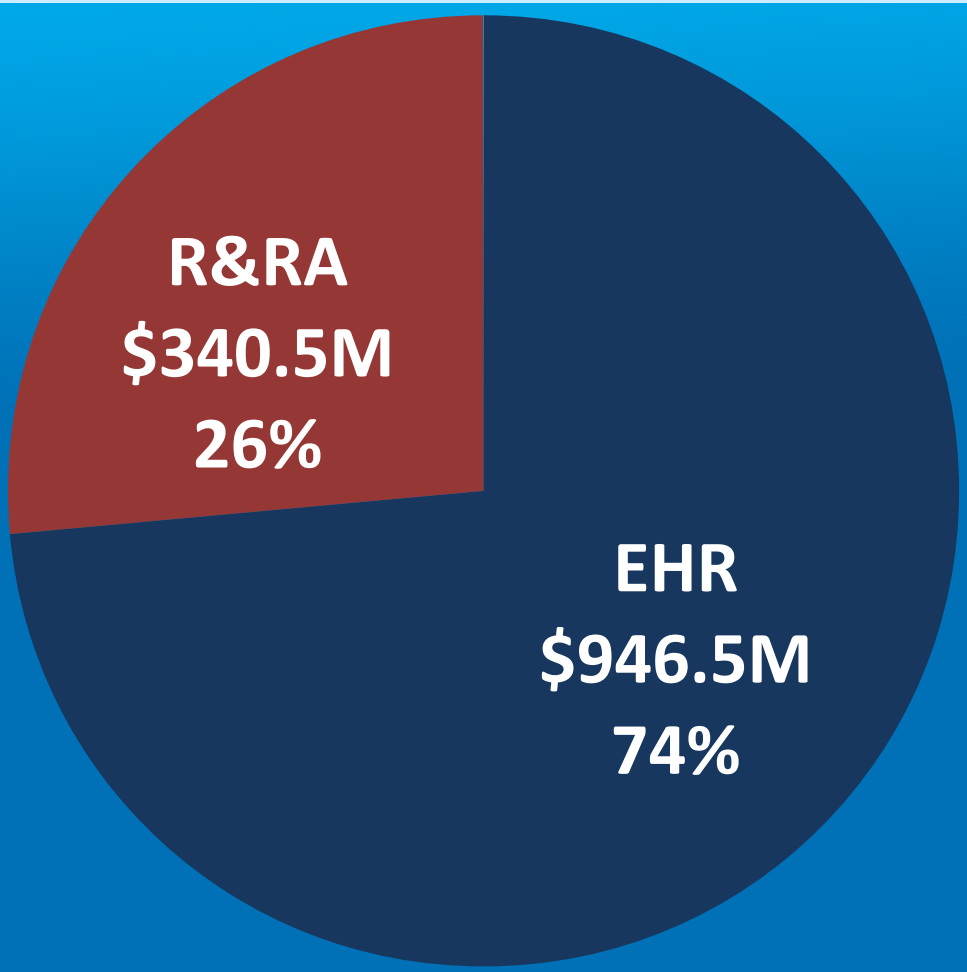
Almost 6% is Federal K-12 investment through the U.S. Department of Education.

Only .3% comes from Federal agencies and is directed toward STEM.

The Federal government spent $2.9B on STEM education in FY 2011. NSF's investment is the greatest.

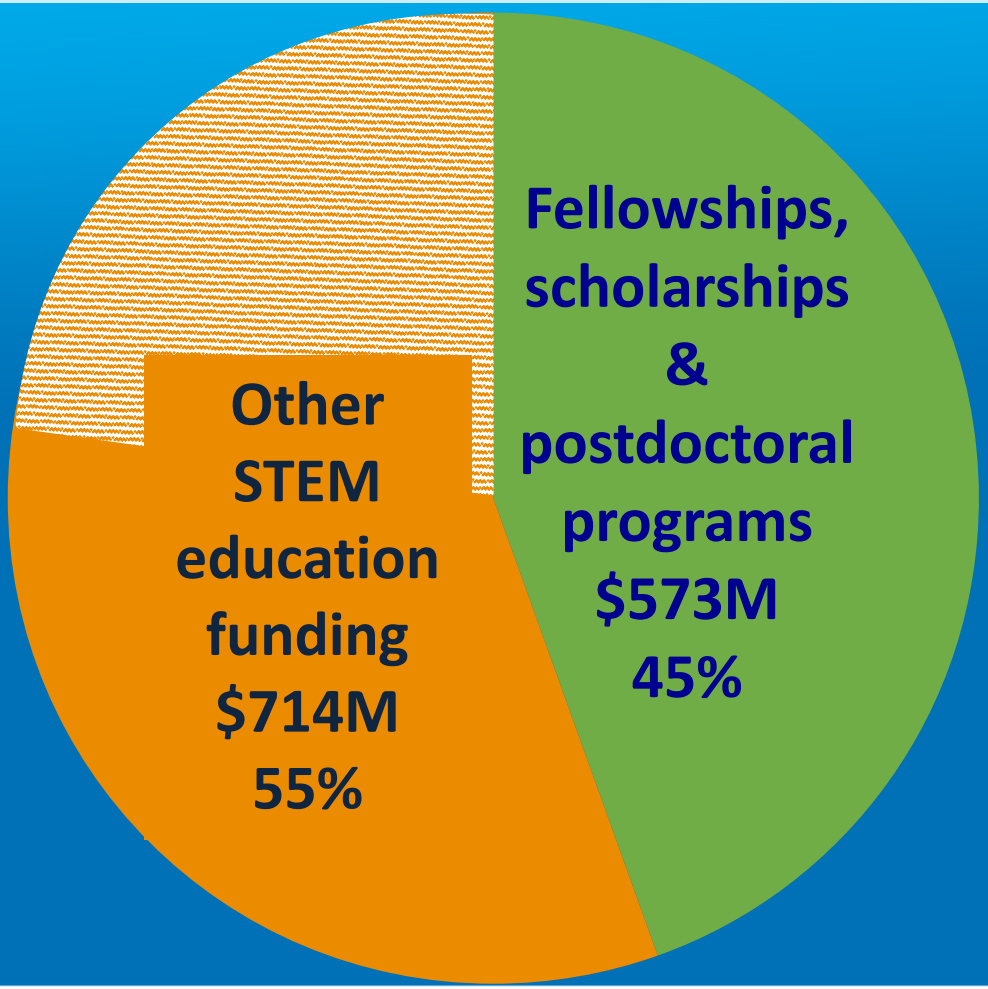


All NSF directorates invest in education.



FY 2014 Estimate
Total: $1.287B

Almost half of NSF STEM education dollars are spent on fellowships and scholarships.



FY 2014 Estimate
Total: $1.287B

Graduate and postdoc

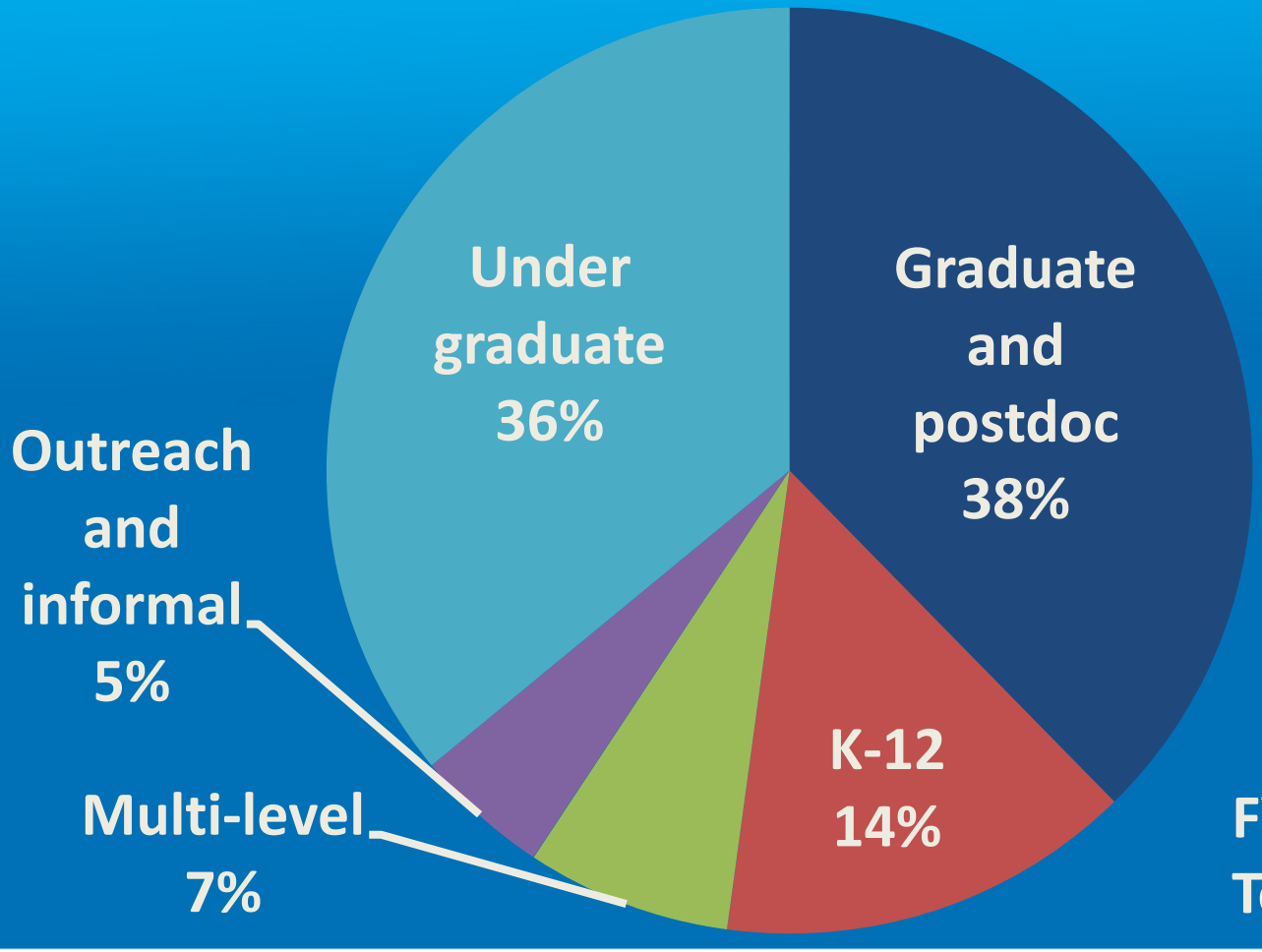
Undergraduate

What is in the NSF education portfolio?

K-12

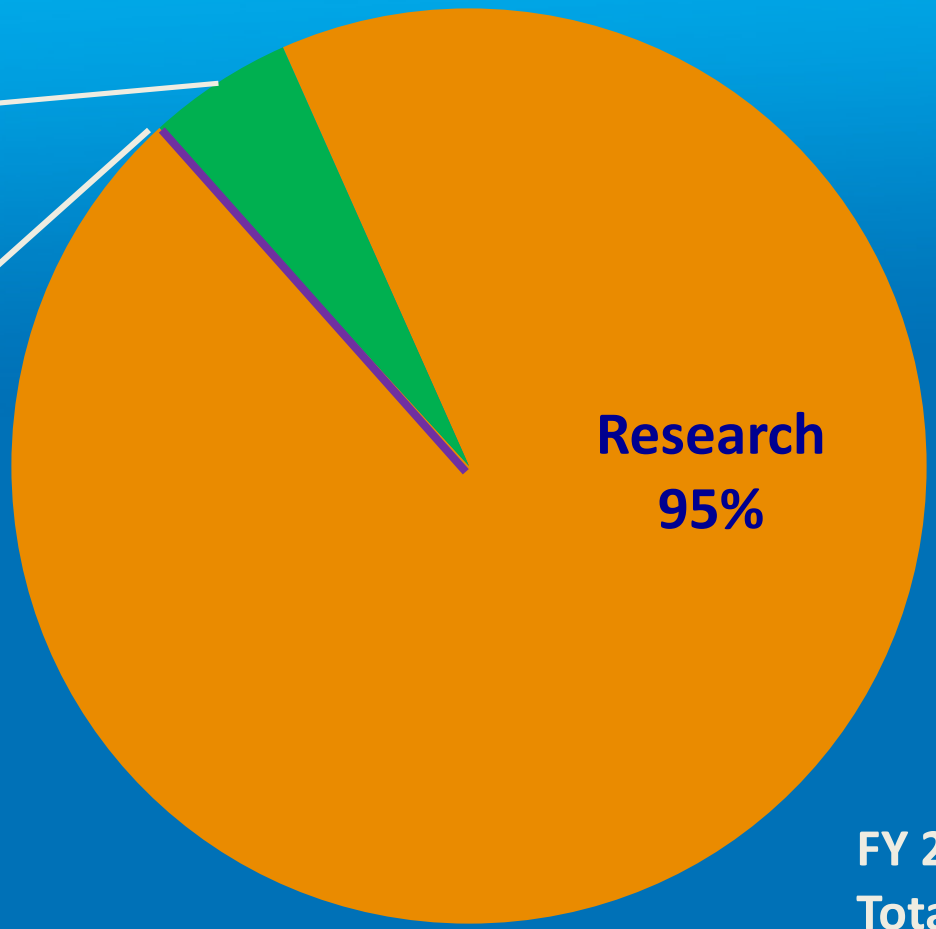
Outreach and Informal

About 75% of the NSF STEM education investment goes to postsecondary education.



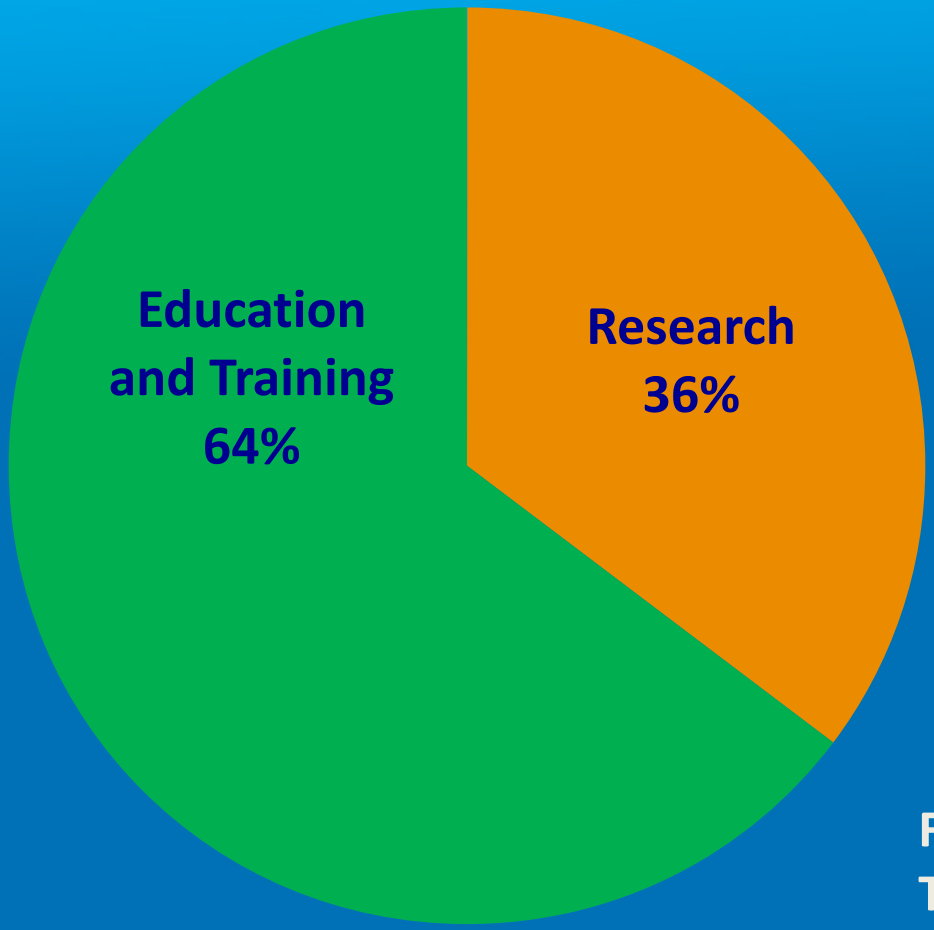
FY 2014 Estimate
Total: $1.287B

Typically, 95% of R&RA dollars are allocated to domain research.



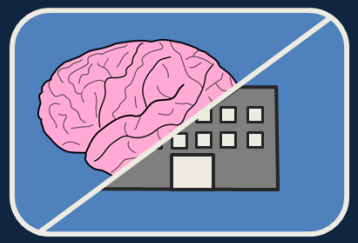
FY 2014 Estimate
Total : $5.808.9B

Typically, 36% of EHR dollars are spent on research on STEM education.

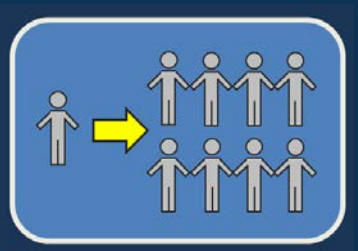


FY 2014 Estimate
Total : $834.6M

Strategic Re-envisioning for the Education and Human Resources Directorate, May 2013, EHR Advisory Committee

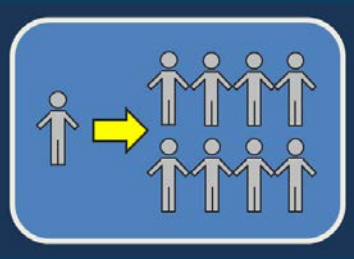


Learning & Learning Environments



Broadening Participation

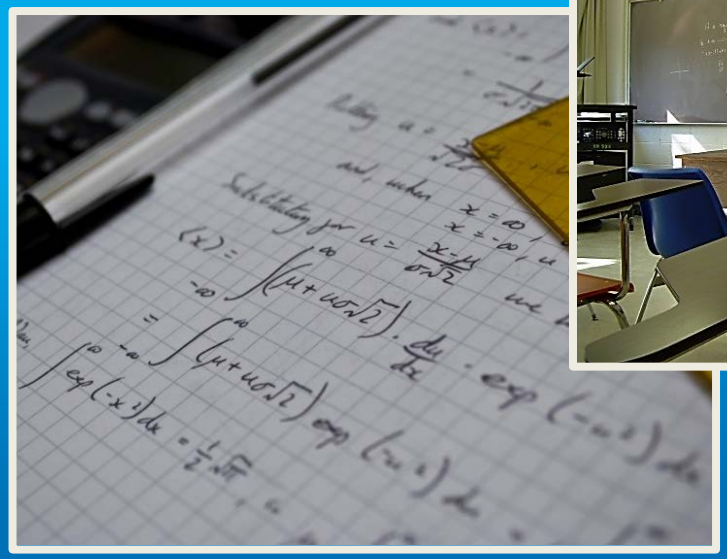
Workforce Development

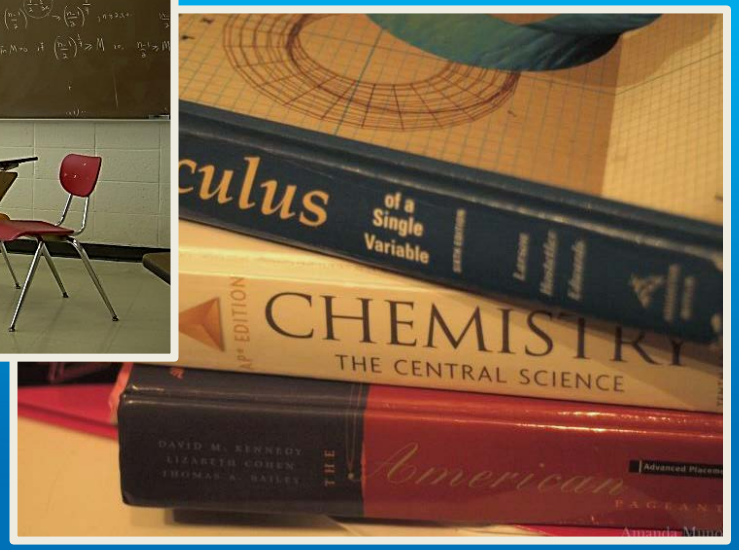


Broadening Participation

*"…the members of the Advisory Committee see an historic opportunity to move away from deficit models of broadening participation to ones that see **broadening participation as a solution** to societal challenges and as contributing toward a richer culture of science that draws on powerful designs suggested by diverse communities."*

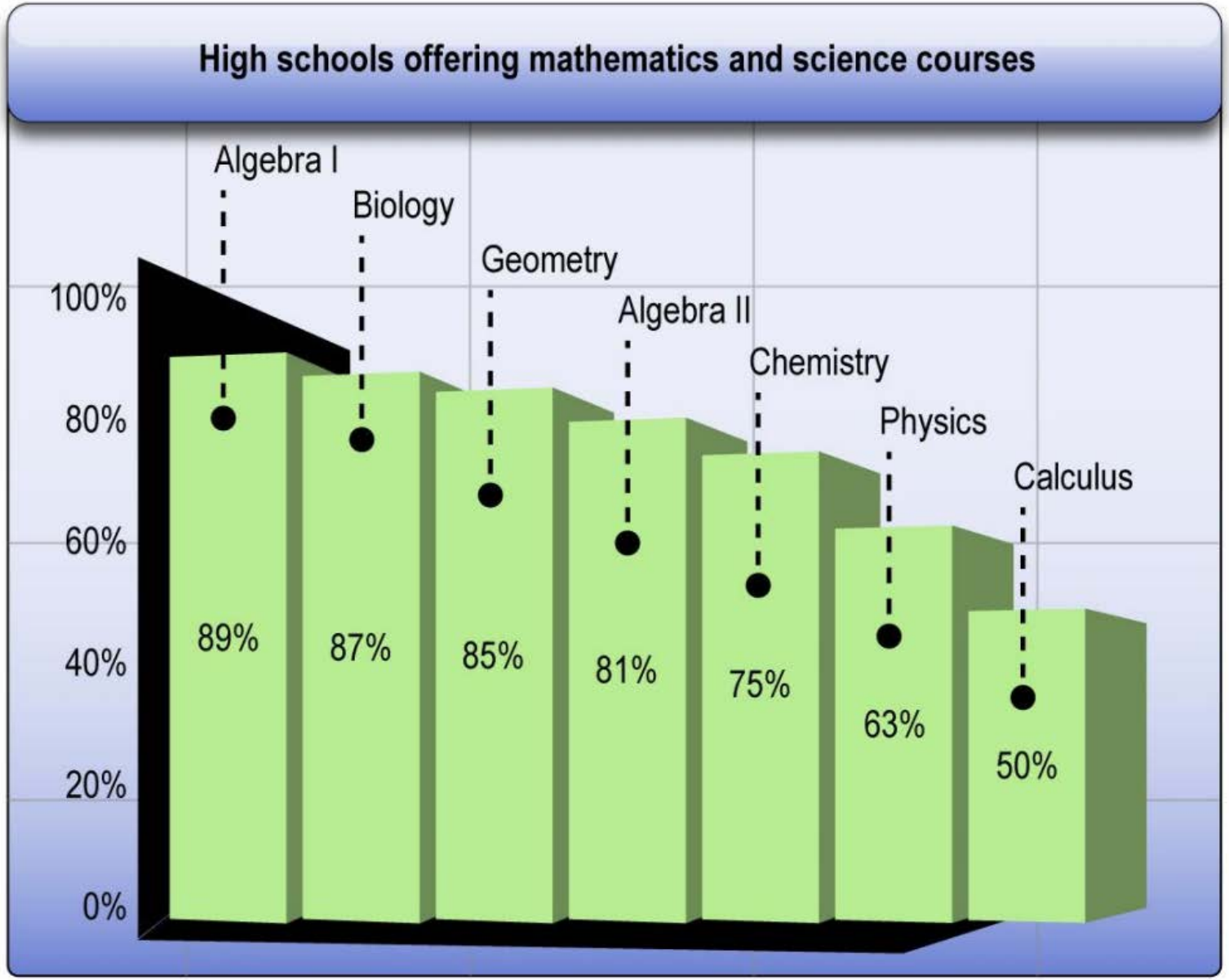
- EHR AC Report

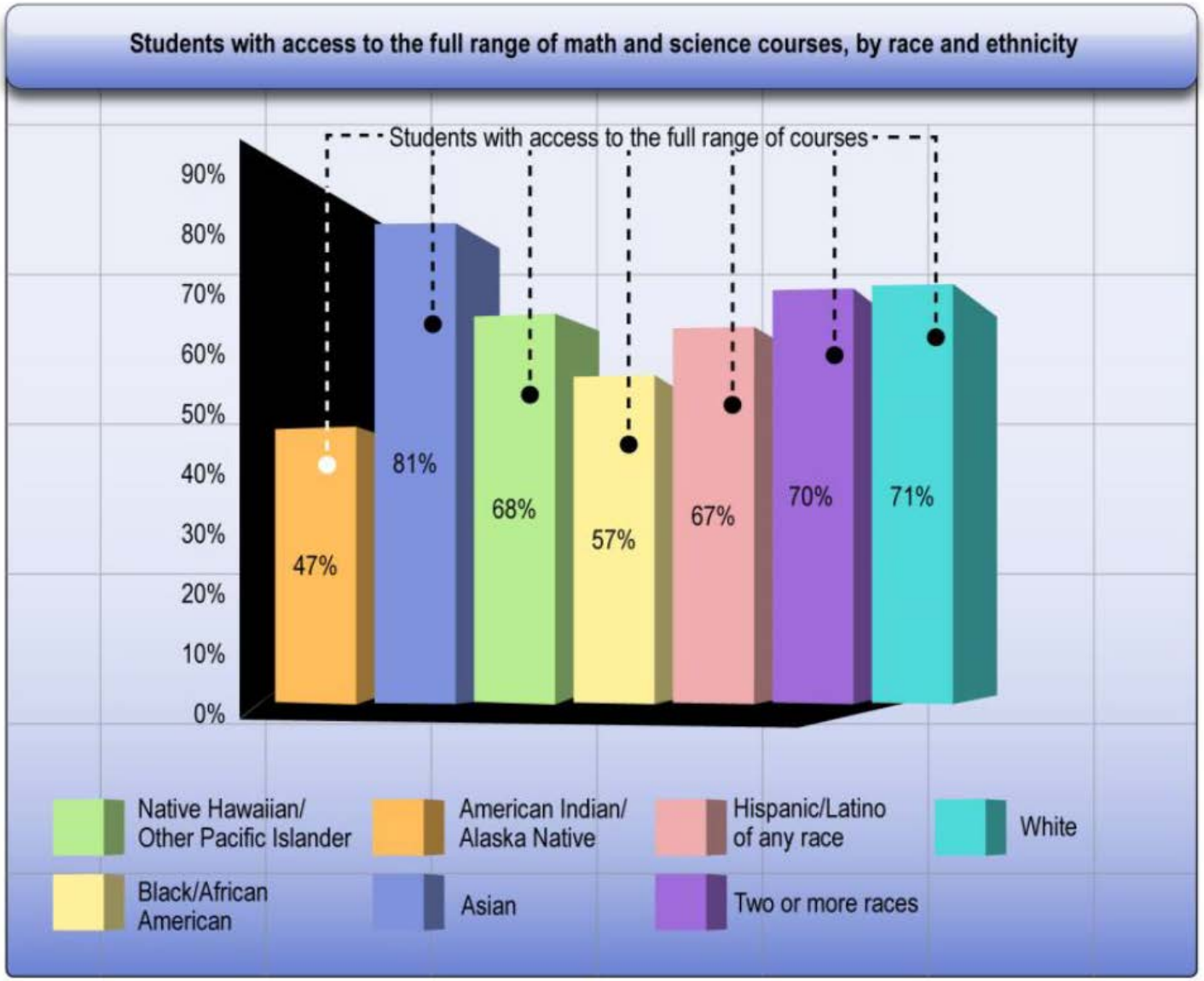




"Fixing the education system is the civil rights challenge of our era."

-Nicholas Kristof


High schools offering mathematics and science courses
Algebra I
Biology
Geometry
Algebra II
Chemistry
Physics
Calculus
100%
80%
60%
40%
20%
0%
89%
87%
85%
81%
75%
63%
50%


Students with access to the full range of math and science courses, by race and ethnicity
Students with access to the full range of courses
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
47%
81%
68%
57%
67%
70%
71%
Native Hawaiian/ Other Pacific Islander
American Indian/ Alaska Native
Hispanic/Latino of any race
White
Black/African American
Asian
Two or more races

Observations and comments from AD group

NSF faces interesting opportunities and trade-offs in its education investment.

- Enabling effective educational interventions to be used at scale vs. funding more research and development of innovative solutions
- Directorate-specific STEM education challenges and needs vs. more general crosscutting issues
- What is the place of investment in public outreach on science?