

Princeton Joint Professional Chapter
ACM and IEEE Computer Society

State of Computer Science in New Jersey

Daryl Detrick
December 7, 2017

Introductions



Daryl Detrick

Computer Science teacher at Warren Hills HS

Involved with Computer Science Advocacy on a local, state and national level:

- | | |
|------------|-----------------------|
| ➤ CSTA | ➤ CS4HS Google |
| ➤ CSTANJ | Ambassador |
| ➤ CSNJ | ➤ ETS – CS Praxis NAC |
| ➤ CSALT | ➤ Building CS in NJ - |
| ➤ Code.org | Martinson Foundation |
| ➤ CS@WH | Grant / TCNJ |

DarylDetrick@cstanj.org

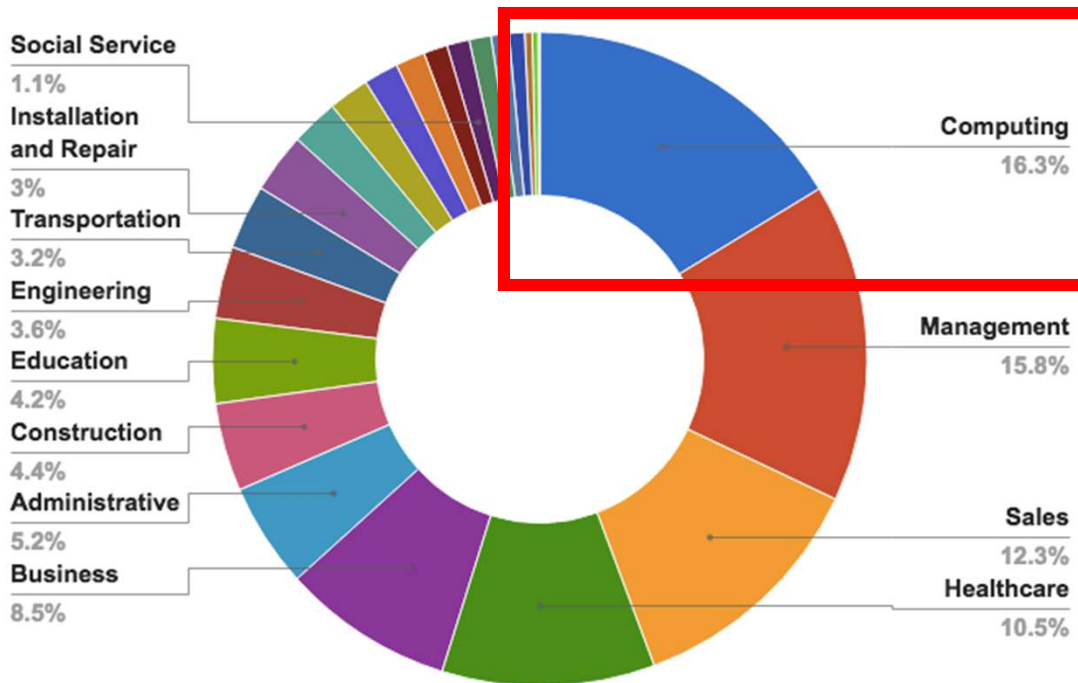
Every student should
have the opportunity
to study
computer science.

It can change their lives.

Economic Opportunities



Computing jobs are the #1 source of new wages in the United States



500,000 current openings: These jobs are in **every** industry and **every** state, and they're projected to grow at twice the rate of all other jobs.

Code.org

21,770 current openings in NJ.

Average computing salary \$102,535

Computer Science affects *every* field:



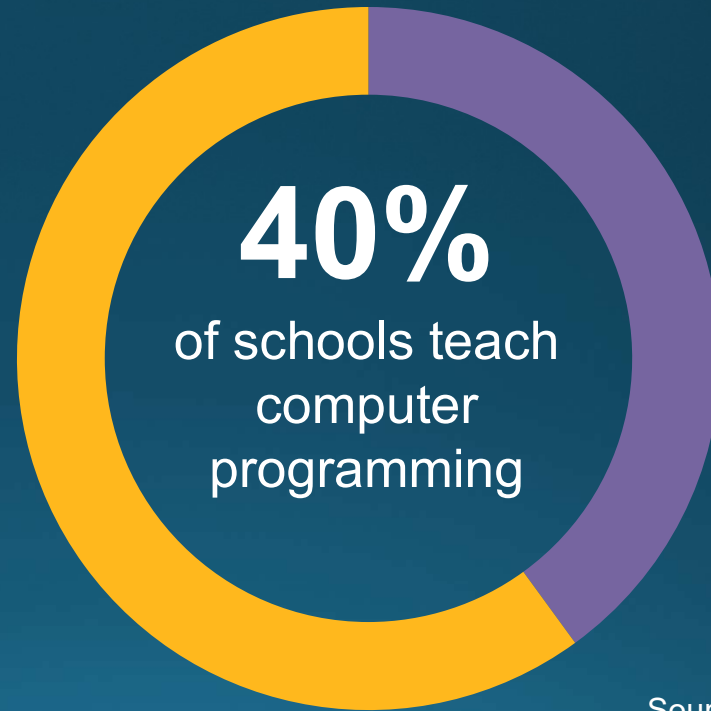
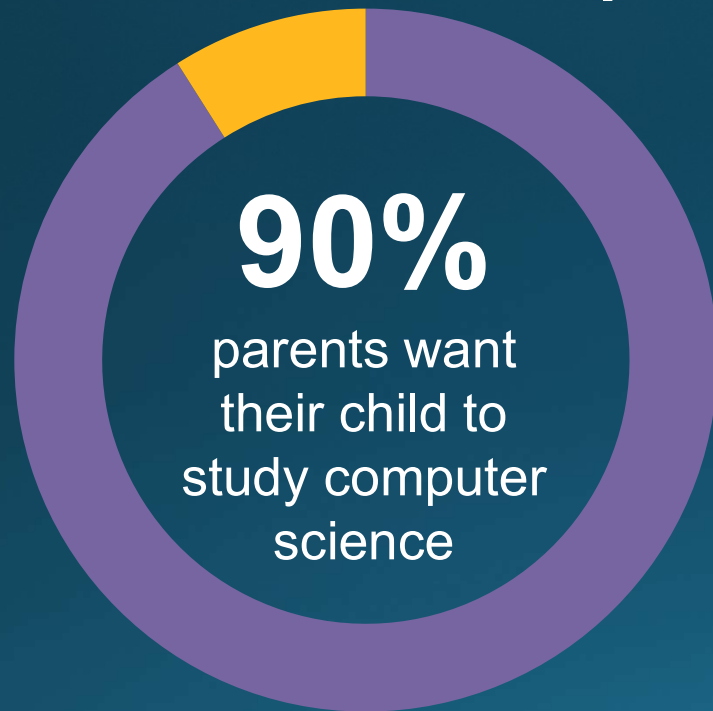
The states with the best
Computer Science
education programs will
increase their chances of
attracting these high
paying jobs.



- Amazon HQ2 Headquarters
- \$5 billion construction project
- 50,000 jobs
- NJ proposed Newark location
- NJ offered \$7 billion in tax breaks
- Many other companies will follow

Not so Good News
on the National Level

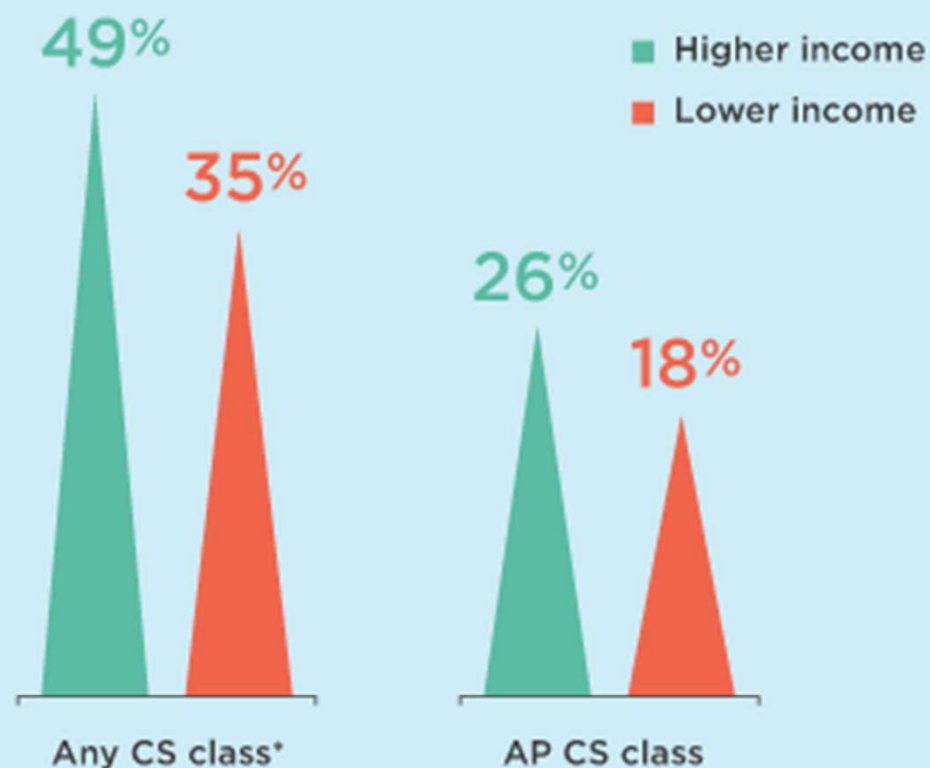
The majority of schools don't teach Computer Science



Source: Gallup

Low-income students have less access to computer science classes

Percentage of 12th-graders whose high schools offer computer science classes, 2015



Brought to you by
{CHANGE THE EQUATION}

SOURCE: CTEq analysis of data from the U.S. Department of Education, National Assessment of Educational Progress, 2015 Mathematics Assessment

*Includes AP and non-AP classes

“Access to CS Education has become the social justice issue of the 21st century. The way to get people out of poverty is to give them access to privileged skills.”

Chris Stevenson
Former CSTA Executive Director

Good News on the National Level

Funding for CS Education

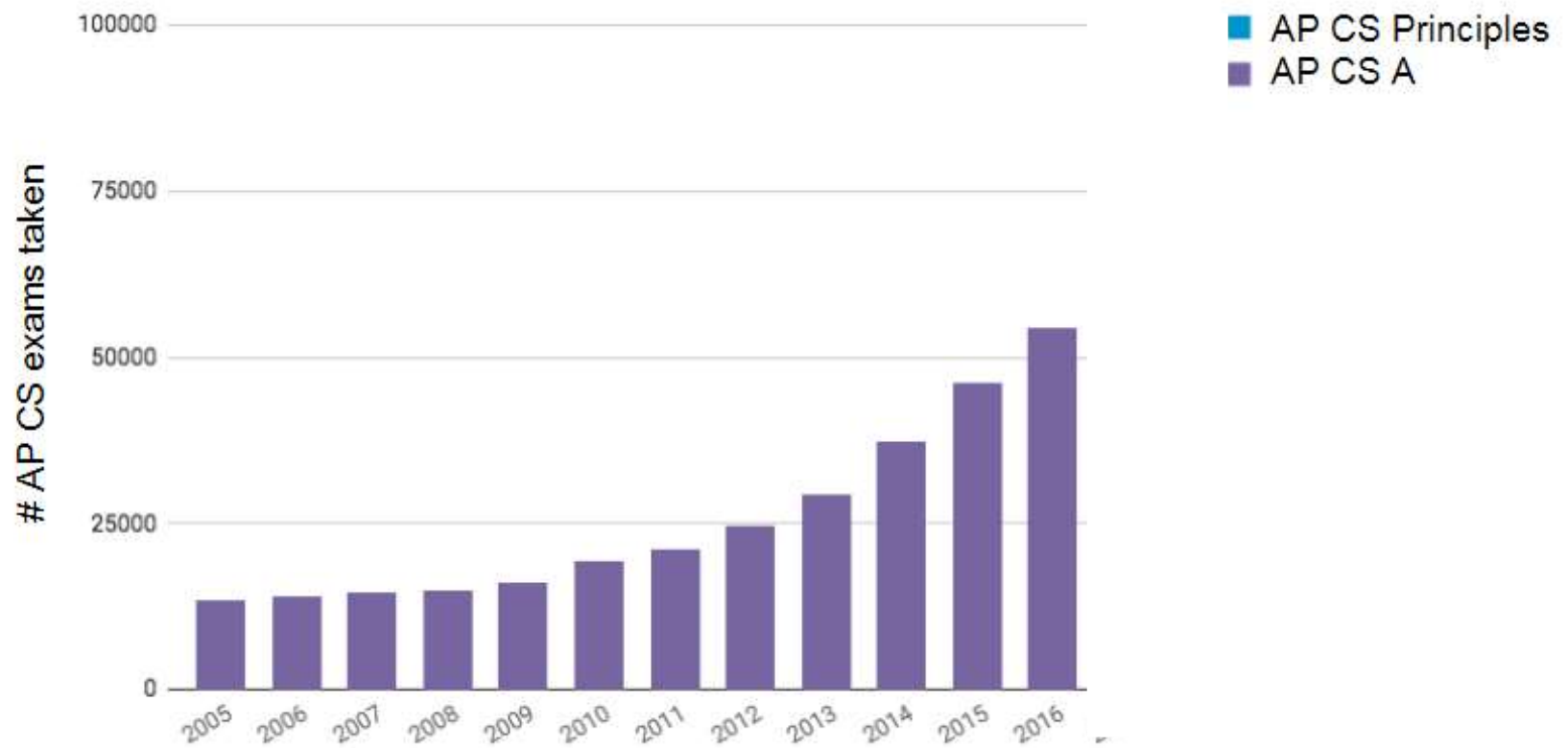
POLICY

President Trump Earmarks \$200 Million in Federal Grants for STEM, Computer Science Programs

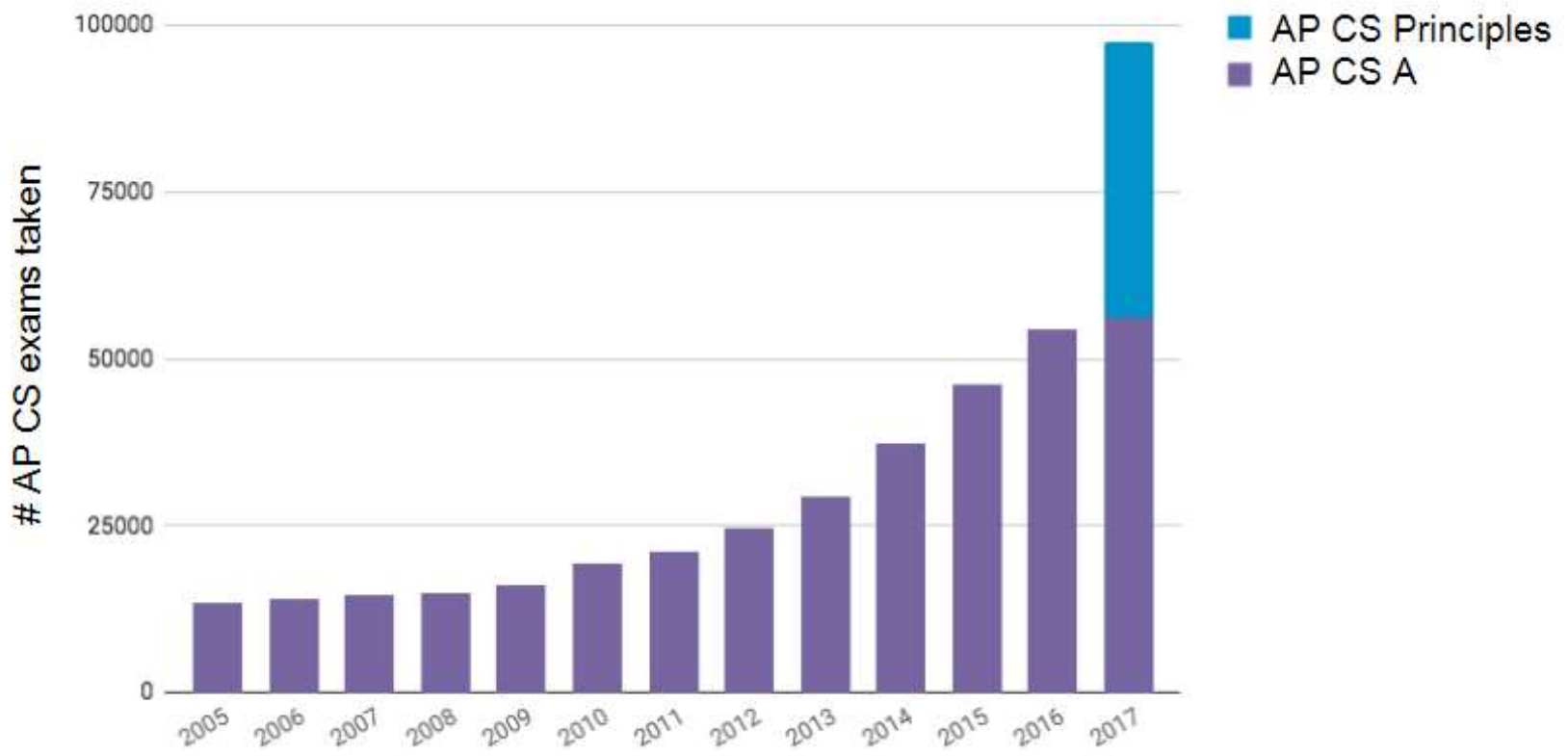
Tech Firms Add \$300 Million to Trump Administration's Computer Science Push

tinyurl.com/CSfundingFAQs

Computer Science is the fastest growing AP Course of the past decade



Computer Science is the fastest growing AP Course of the past decade



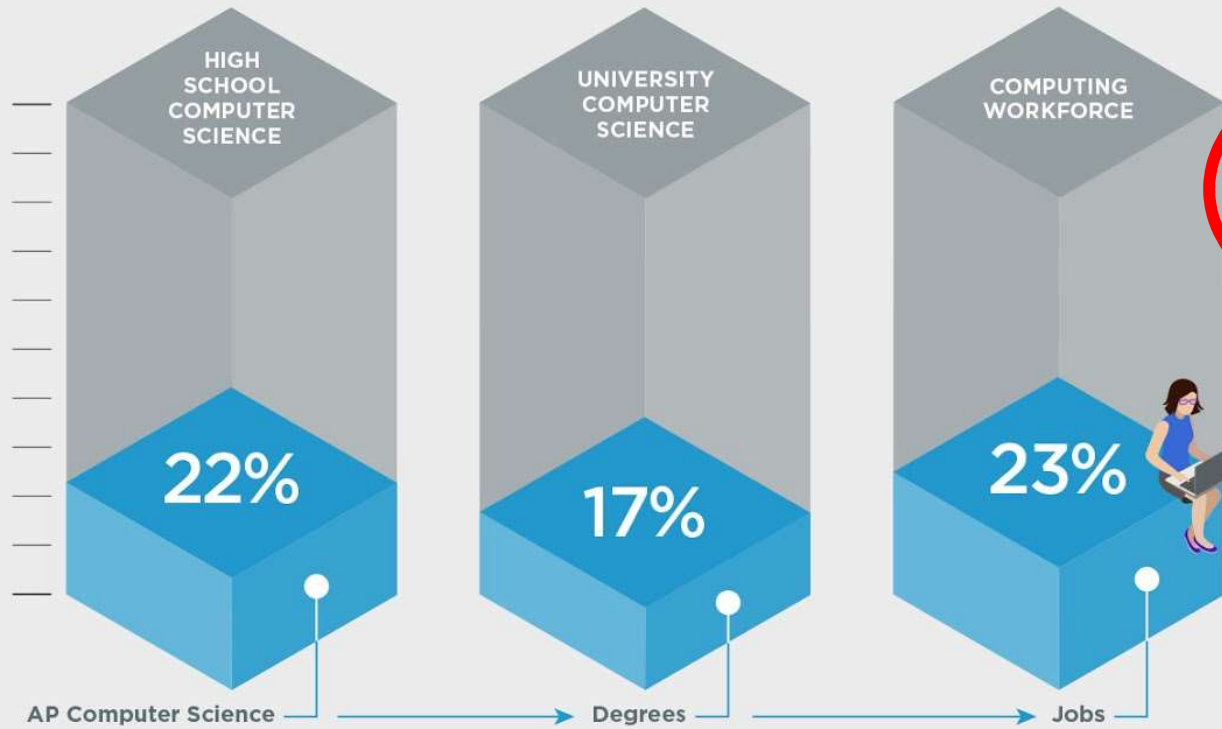
AP[®] Computer
Science Principles
Creative Thinkers Wanted



AP CSP - New AP Class in 2017

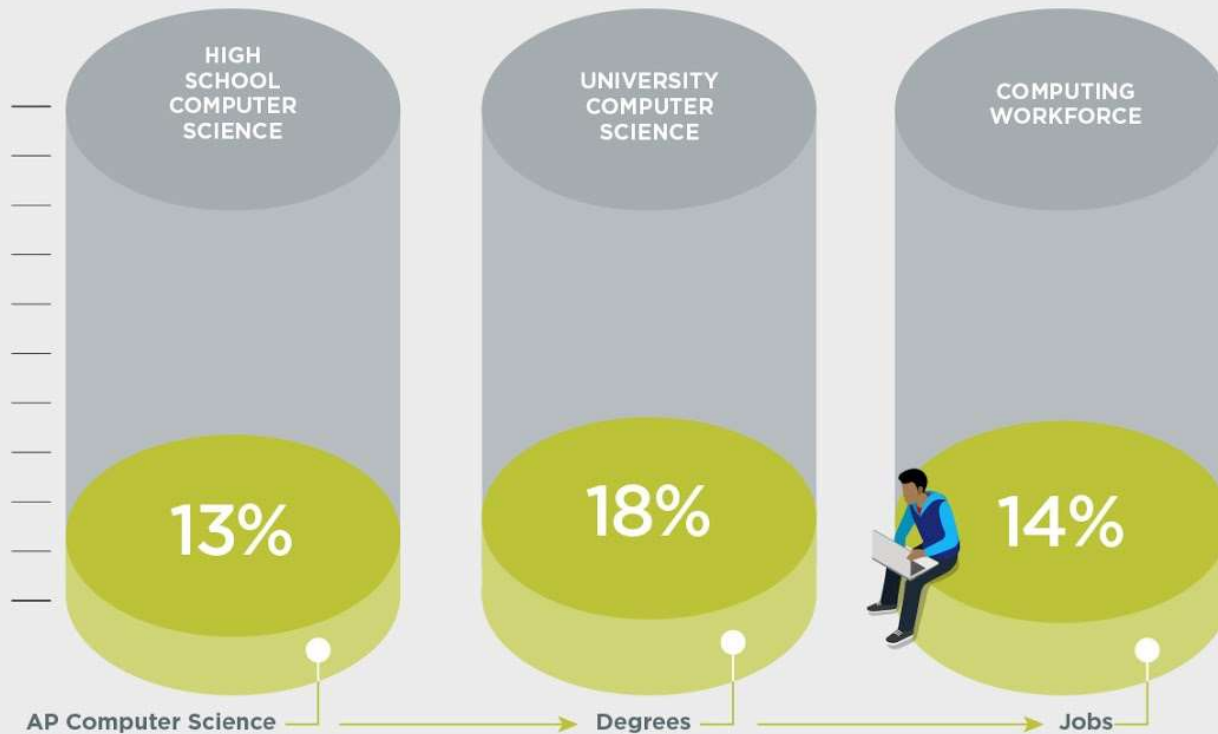
- Meant to increase the diversity in computer science
- Equivalent to CS for non-majors in college
- 7 big ideas: Creativity, Abstraction, Data and Information, Programming, the Internet and Global Impact
- Largest AP course launch ever
 - 2500+ schools
 - 45,000+ exams

The diversity problem in tech starts in schools



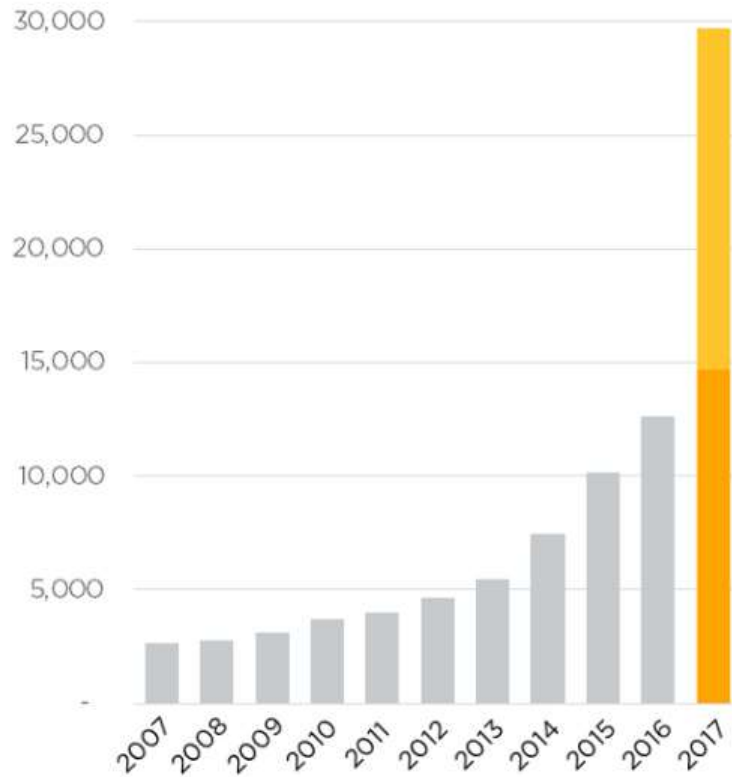
Women who try AP Computer Science in high school are **ten times more likely to major in it in college.**

The diversity problem in tech starts in schools

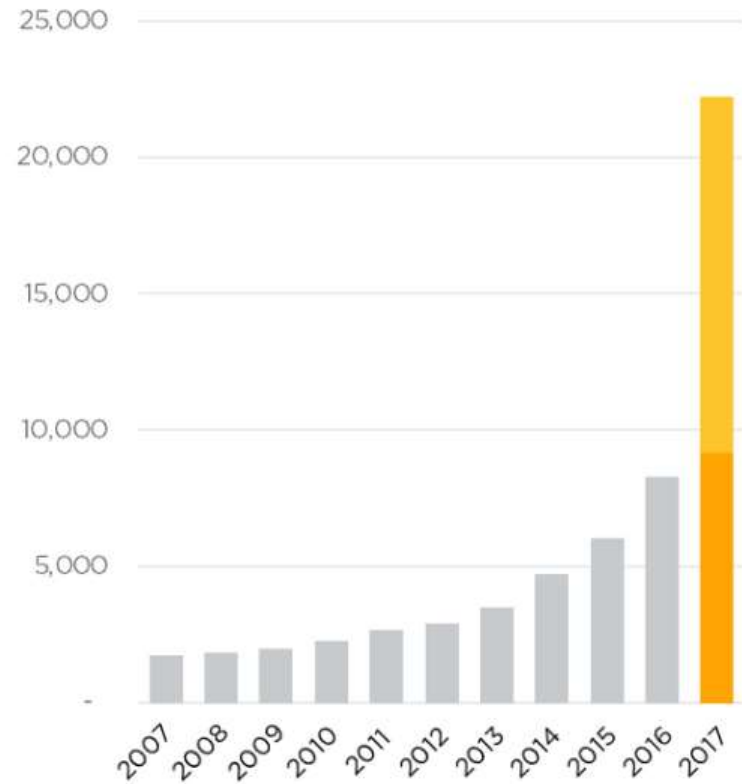


Hispanic and Black students who try AP Computer Science in high school are seven times more likely to major in it in college.

**AP CS Exams:
Total Female Students**

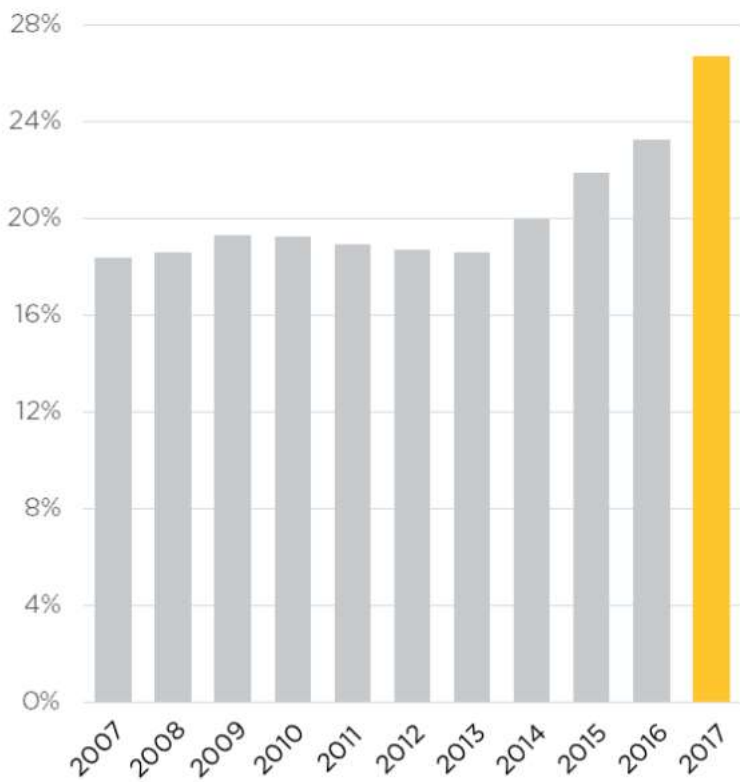


**AP CS Exams: Total
Underrepresented Minorities**

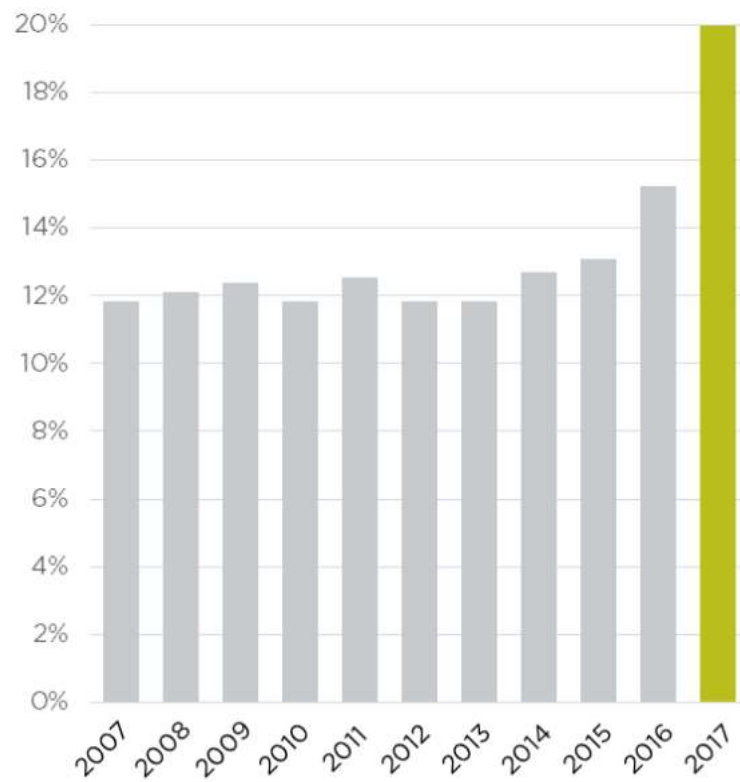


- Students taking the AP Computer Science A exam
- Students taking the AP Computer Science Principles exam

**AP CS Exams:
Percent Female Students**



**AP CS Exams: Percent
Underrepresented Minorities**



New Jersey CS Statistics

Good News
and
Bad News

AP Computer Science A Test 5 year summary in New Jersey

	2010	2016	% Growth
# of students tested	942	3056	224%
# of schools offering AP CS	136	190	40%
# of females tested	156	697	347%
# of black students tested	22	82	272%
# of Hispanic students tested	53	277	422%

Data from: <http://home.cc.gatech.edu/ice-gt/596>

New Jersey Statistics on AP exam

Females – 23% of the test takers
(compared to 50% of NJ population)

Blacks – 2.7% of the test takers
(compared to 14% of NJ population)

Hispanics – 9% of test takers
(compared to 18% of the NJ population)

Legislation and NJDOE



STATE OF NEW JERSEY
DEPARTMENT OF EDUCATION

A Period of Transition

NJDOE CS Specialist

NJDOE Computer Science
Specialist **Esther Lewars.**

Thank you **Chief Innovations
Officer Joshua Koen.**

Standards

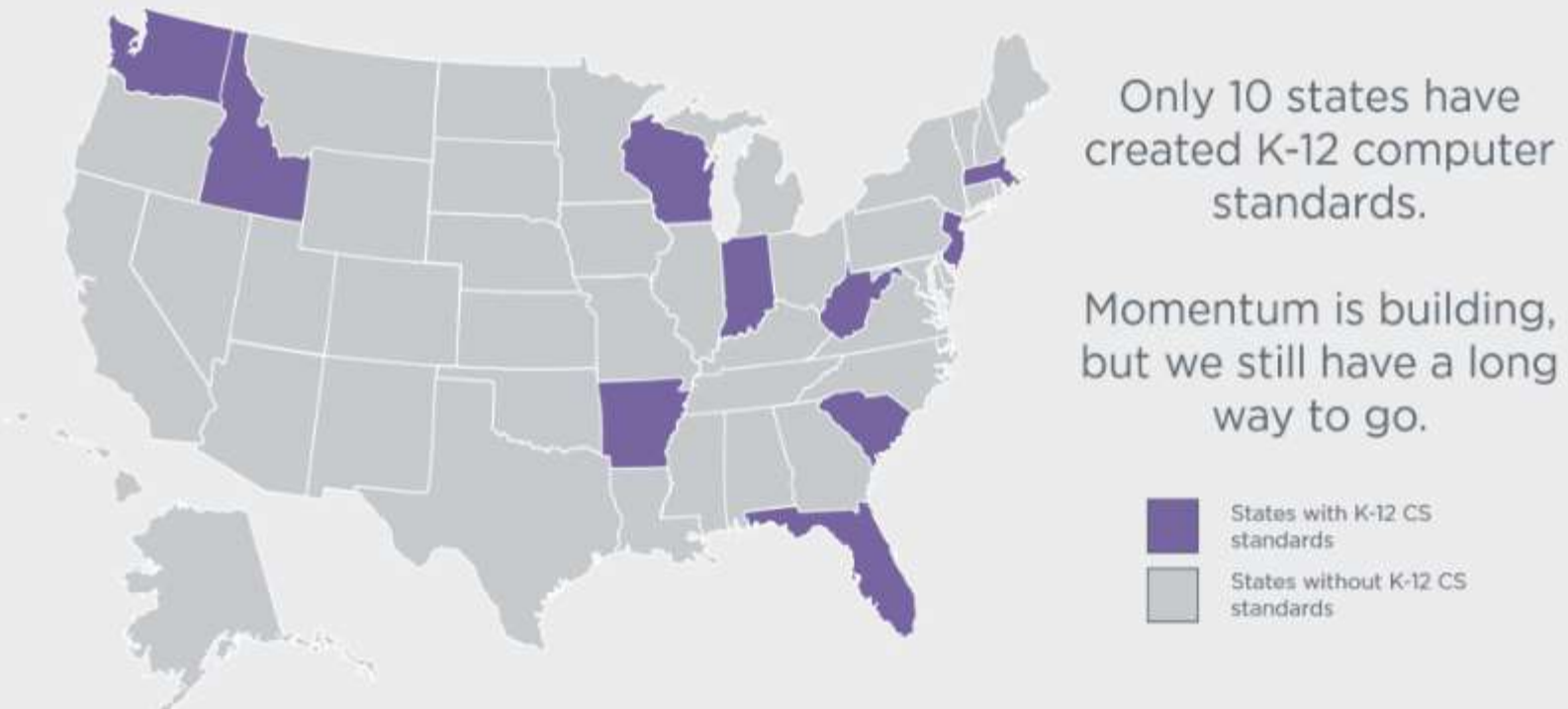
Technology Standards 8.2.E

Computational Thinking : Computer Programming

- Standards released in October 2014
First in the Nation??
- Very basic, but a good start

CS Standards

The state of K-12 computer science standards



**Arkansas is leading the way in CS Education ... by far.
We want NJ to be one of the leaders.**

A3440 / S2030

The Department of Education shall undertake a **review of the Core Curriculum Content Standards to ensure that they incorporate modern computer science standards** where appropriate.

Signed by the Governor on January 19, 2016

NJDOE Standards Taskforce – revising 8.2

- CSTANJ and NJTEEA
- Integrated standards for K-6, 7-8 and 9-12.
- Computational Thinking
- Engineering Design

A2597 / S2161

Advanced Placement computer science course to satisfy a part of the total credit requirement in mathematics.

Signed by the Governor on January 19, 2016

Working with NJDOE to create regulations

A3870 / S2397

Creates a computer science teaching endorsement.

CSNJ worked with Rutgers, Kean, TCNJ, Rowan, Richard Stockton and Ramapo to create a proposal for a CS endorsement.

Summary

- In addition to a certification in another area
- Recommendation, not requirement at first
- Recommend no more than 15 credits
- Grandfather clause for those currently teaching CS.

A3870 / S2397

Creates a computer science teaching endorsement.

Passed Senate Education Committee 2/6/17 (5-0)

Passed Assembly Education Committee 2/13/17 (12-0)

Passed the Senate 3/13/17 (37 – 0)

Sign change.org petition to encourage Speaker of the Assembly Prieto to put the bill on the agenda

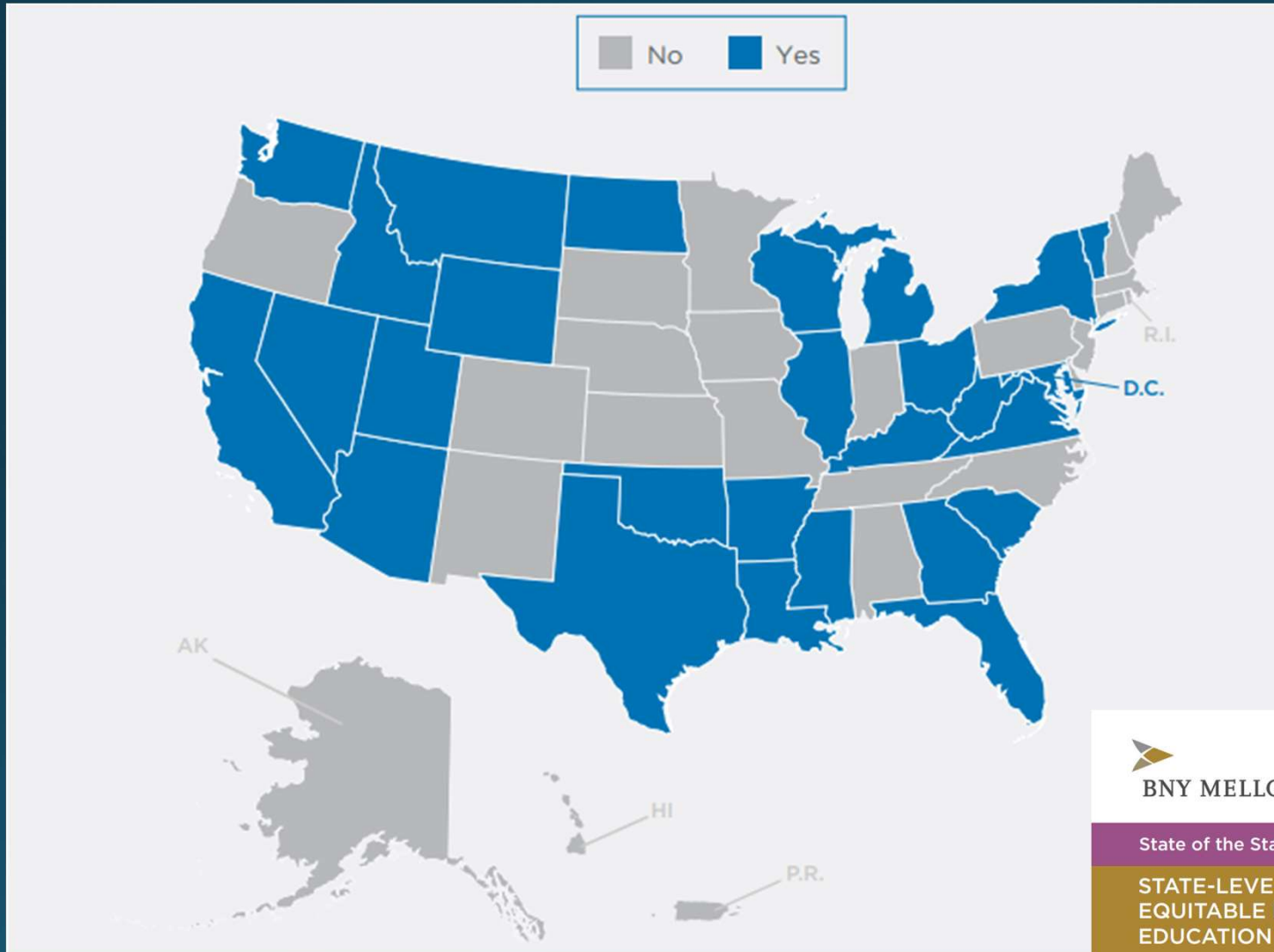
[tinyurl.com/CS4NJLEG](https://www.change.org/p/sign-a-petition-to-encourage-speaker-of-the-new-jersey-assembly-to-put-the-computer-science-teaching-endorsement-bill-on-the-agenda)

Additional certification info

Educational Testing Service (ETS) is currently working on a Computer Science Praxis exam that should be released in September 2018.

CSTANJ has begun discussion with NJDOE on both a 15 credit endorsement and full CS certification.

States with CS Teaching Certification



27 States
and DC.

NJ next?



BNY MELLON

State of the States Landscape Report:

STATE-LEVEL POLICIES SUPPORTING
EQUITABLE K-12 COMPUTER SCIENCE
EDUCATION

Universities prepare **WAY fewer computer science teachers** than we need.

12,528
math
teachers

11,917
science
teachers

75
CS teachers

A2873/ S2487

Requires all high schools in NJ to offer computer science class by 2018/19

~~Requires all students to take computer science class as a graduation requirement by 2022/23.~~

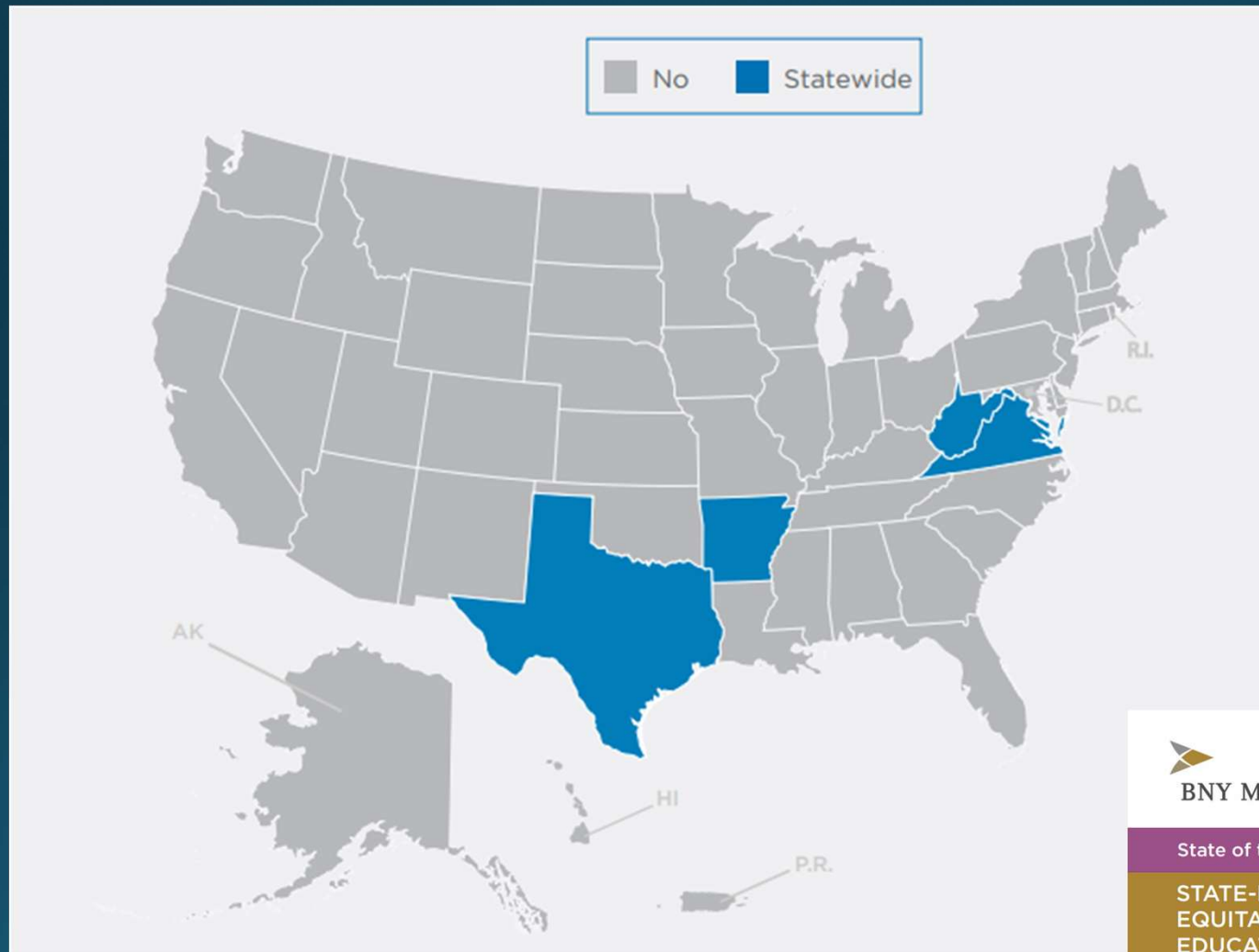
Passed Assembly Education Committee 6/20/16 (8-0)

Passed Senate 6/29/17 (35 – 0)

Sign change.org petition to encourage Speaker of the Assembly Prieto to put the bill on the agenda

tinyurl.com/CS4NJLEG

Requirements for all high schools to offer computer science



4 states

NJ next?



BNY MELLON

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STATE-LEVEL POLICIES SUPPORTING
EQUITABLE K-12 COMPUTER SCIENCE
EDUCATION

NJ Gubernatorial Race

The states that have made the most progress recently have had governors who were elected with CS Education as part of their platform.



Arkansas
Washington
Arizona
Rhode Island

Iowa
Virginia
Idaho
Nevada

Governor-elect Murphy supports CSforAll

Professional Development

CS4HS 2017 summer

- Rutgers
- Kean
- Princeton



NJ CS Summit on Diversity and Scalability

- Rutgers - 2nd annual - May 2017

Professional Development



Martinson Family Foundation Grant

- provide free PD to train computer science teachers
- spring and summer workshops (1 hour to 1 week)

Code.org Regional Partnership

- Training high school and middle school teachers to teach computer science using Code.org curriculum



CSTA Chapters in NJ



CSTA Northern NJ - Kean

- President Lee Hayden
- Email – lhayden@roxbury.org

CSTA Central NJ - Rutgers

- President Adam Michlin
- Email - amichlin@gmail.com

CSTA Southern NJ – Richard Stockton

- President Adam Swift
- Email - SWIFTA@eht.k12.nj.us

CSTANJ.org

Join CSTANJ chapters

Communications

- CSTANJ Google Group -
<https://groups.google.com/d/forum/cstanj>
- Twitter @CSTANewJersey
- www.facebook.com/cstanj

Join CSTA national at





CS4NJ.org

Building CS in NJ is working with NJDOE and CSTANJ to create a website of CS Education resources.

The website will be a partnership of input from all CS Education stakeholders in NJ.

More info soon.....very soon

Computer Science Education
Good for our Students
Good for our State

Any Questions?

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