Engaging the Snowbird Community in Supporting K-12 Computer Science

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Agenda

- Why CS K-12 education is important
- K-12 CS in the national landscape
- The need for a national efforts

A Little CSTA Context

- An international membership organization of 12,000 members
- 37 chapters in the U.S. and Canada
- Develops and publishes the de facto national standards for K-12 CS education
- Provides professional development for teachers
- Conducts and publishes research
- Provides classroom resources and CS promotional materials

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Knowledge for Today and Beyond

We consider it critical that students be able to read and write and understand the fundamentals of math, biology, chemistry and physics. To be a well-educated citizen in today's computing-intensive world, students must have a deeper understanding of the fundamentals of computing as well.

Very Scary Numbers

Schools Offering Introductory Computer Science

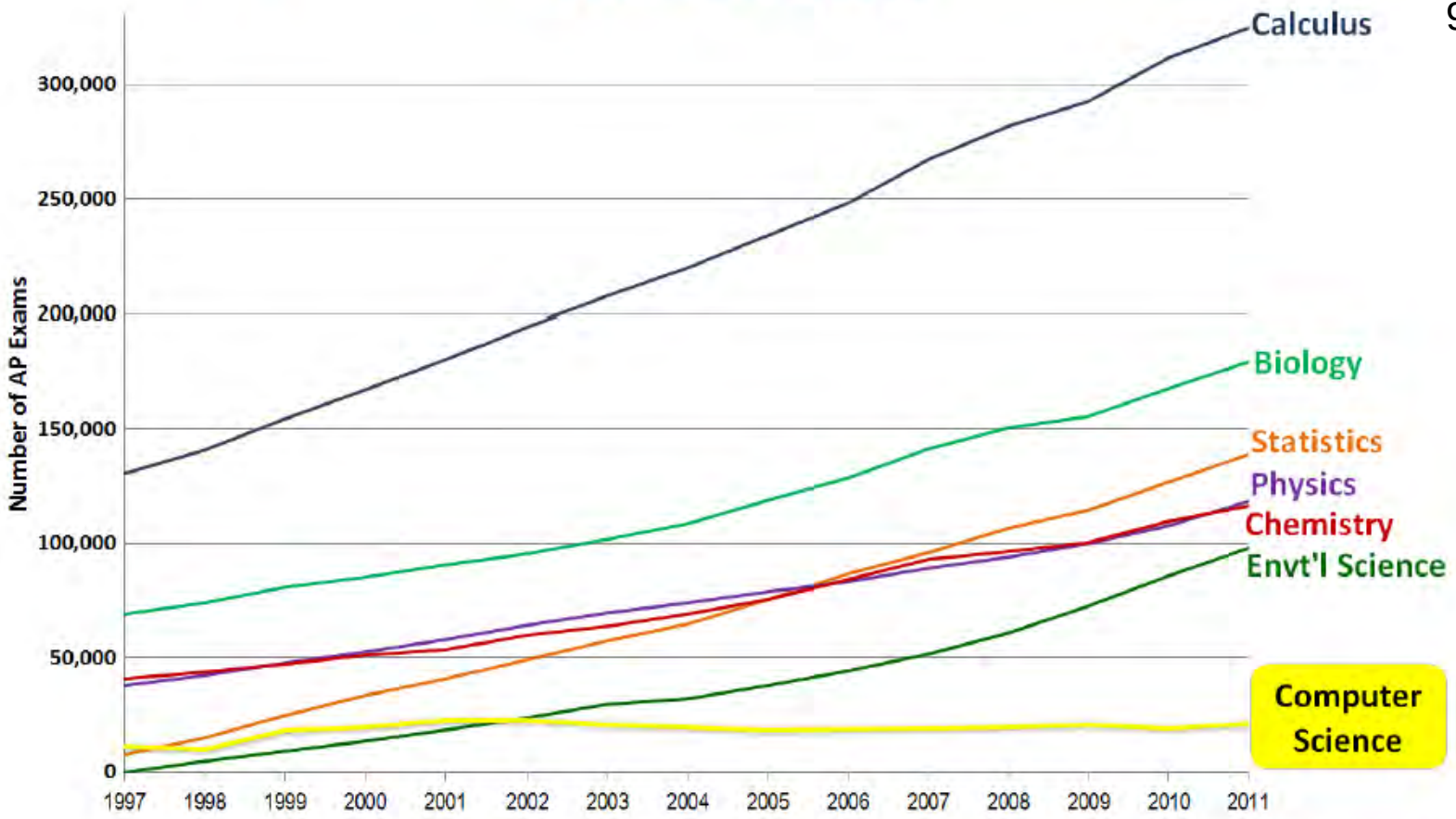
2005	2007	2009	2011
78%	73%	65%	69%

Schools Offering Advanced Placement Computer Science

2005	2007	2009	2011
40%	32%	27%	36%

High School Advanced Placement

Exams 1997-2011

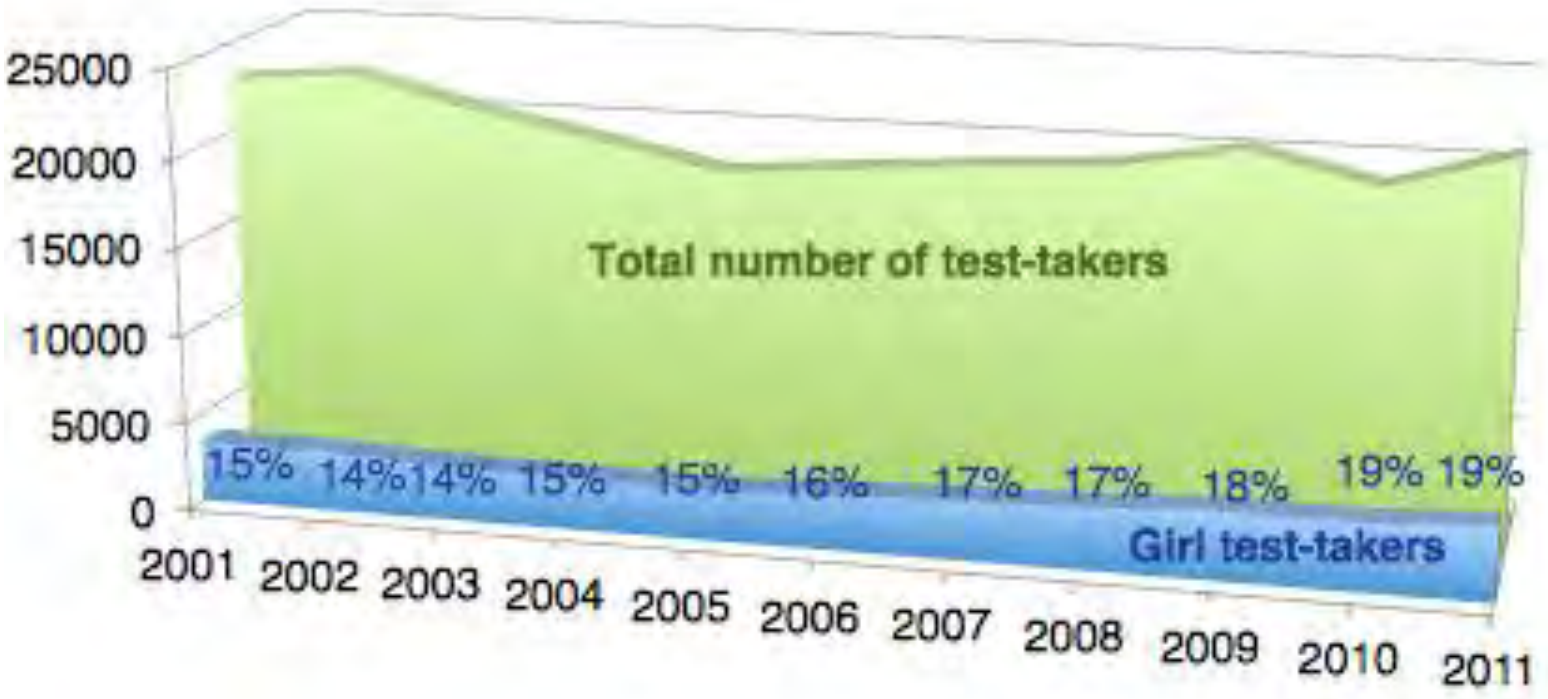


Source: College Board, Advanced Placement (AP) Exam Data 2011, available at http://professionals.collegeboard.com/data-reports-research/ap/data. Calculus represents the combined data of Calculus AB and BC. Physics represents the combined data of Physics B, C:Electricity and Magnetism, and C:Mechanics. Computer Science represents combined data of Computer Science A and B.

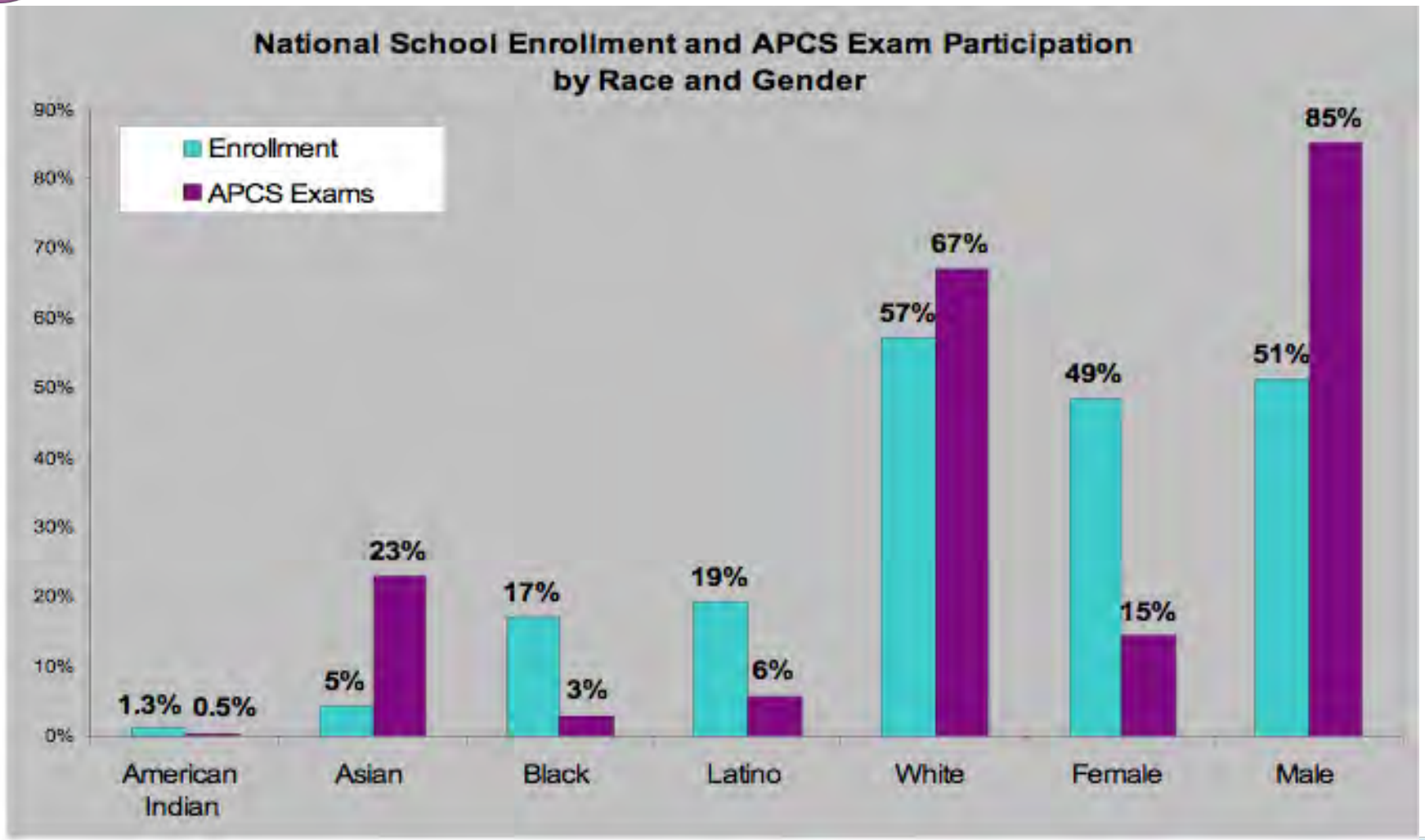
CS and Social Justice

- Students from minority homes are far less likely to be exposed to computer science knowledge in their home environment.
- Schools with high numbers of underrepresented minority students are far less likely to have access to rigorous computer science courses in schools
- Access to this privileged knowledge has become to social justice issues of the 21st century.

Female CS Test Takers

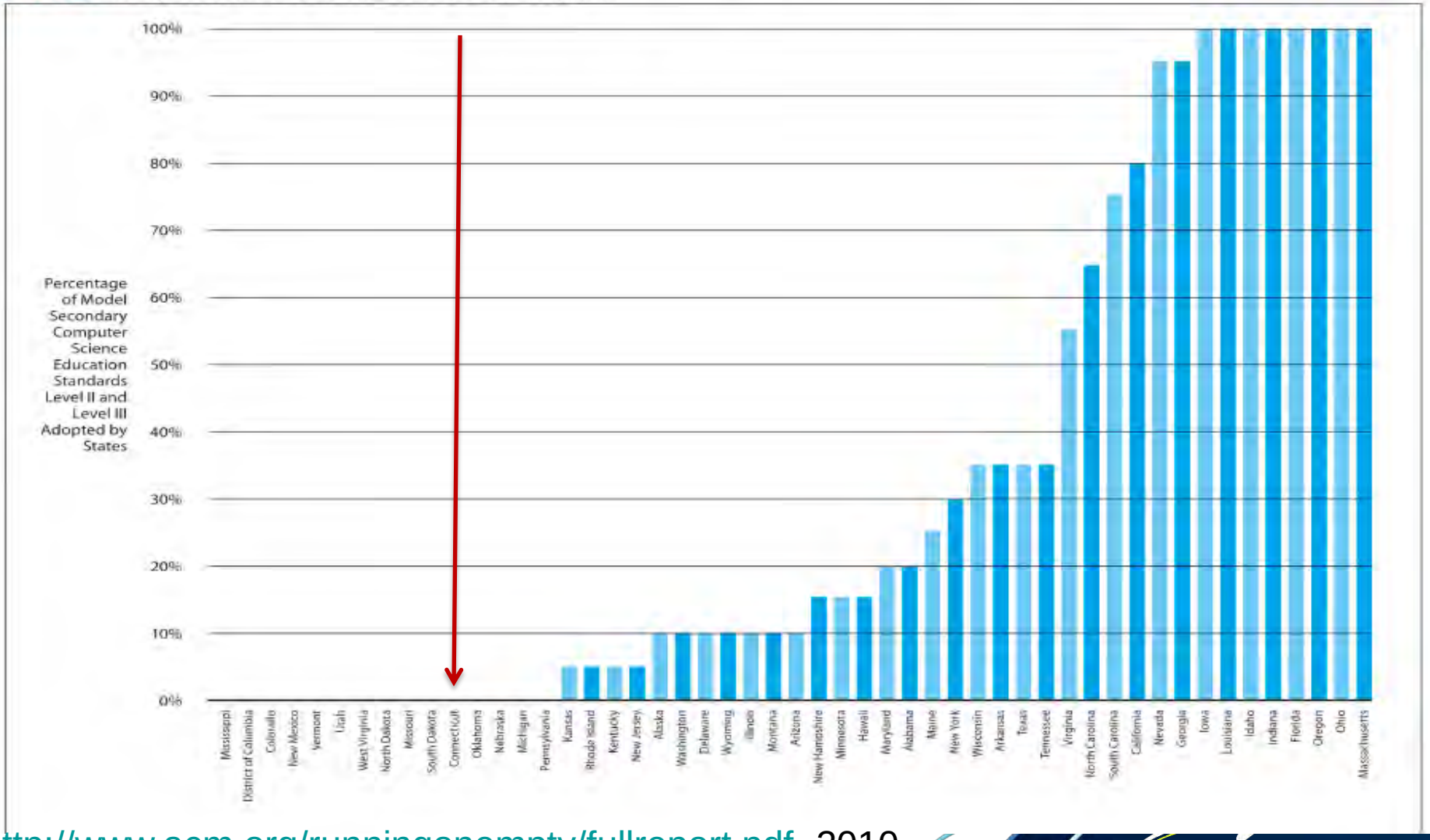


Joanne Cohoon, University of Virginia, 2012



Findings: Standards

FIGURE 3 Secondary School Standards Level II and Level III Adoption by State



http://www.acm.org/runningonempty/fullreport.pdf 2010

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Tool Users vs Tool Builders

- Using technology tools is an important skill; however it is not where innovation happens.
  - Flying a plane is not the same as designing a plane.
- We need technology "tool builders" to create the tools that will solve problems and improve lives.
- Computer science creates tool builders.

Systemic Issues

- CS is an elective
- CS does not count for graduation
- CS is often listed as a Technology Credit
- Access to rigorous computer science courses is limited to high-end schools with low minority populations.
- Teacher certification is a mess.

If we are going to achieve a true renaissance in CS education in K-12 we need to make both curriculum and policy changes at the state and national level and we need to work together as a community with:

- Common goals
- A consistent message
- Focused effort at state and national level