9-12 Computer Science Academy

An intensive overview of content and teaching methods for introductory programming courses and AP Computer Science

Take-Home Message

Computing touches everything in society

One of the fastest growing professions

Shortage of prepared/interested students

Only $\approx 10\%$ of K-12 schools offer CS

Let's work together to change the world!

U.S. Employment through 2020

How Computing Stacks Up To Healthcare

22% **job growth rate**

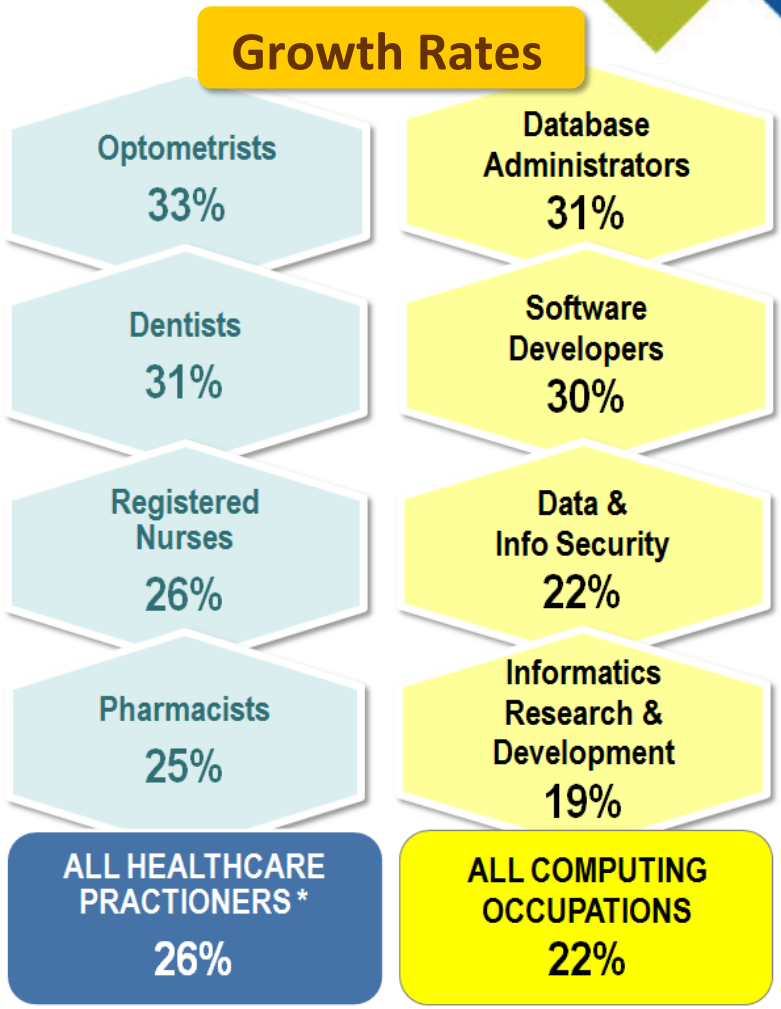
in computing jobs, as **comparable to healthcare** job growth rates 2010-2020.

51,000 **projected shortfall**

in qualified **health IT workers** 2011-2015.

90% **of physicians**

to use **electronic health records** by 2019 as a result of the federal HITECH Act of 2009.



* Healthcare practitioners and technicians

Association for Computing Machinery

Advancing Computing as a Science & Profession

Sources: Bureau of Labor Statistics (BLS), Employment Projections 2010-2020, available at http://www.bls.gov/emp/. U.S. Department of Health and Human Services (HHS), HITECH Programs, http://www.healthit.gov. Congressional Budget Office, Analysis of HITECH Act of 2009.

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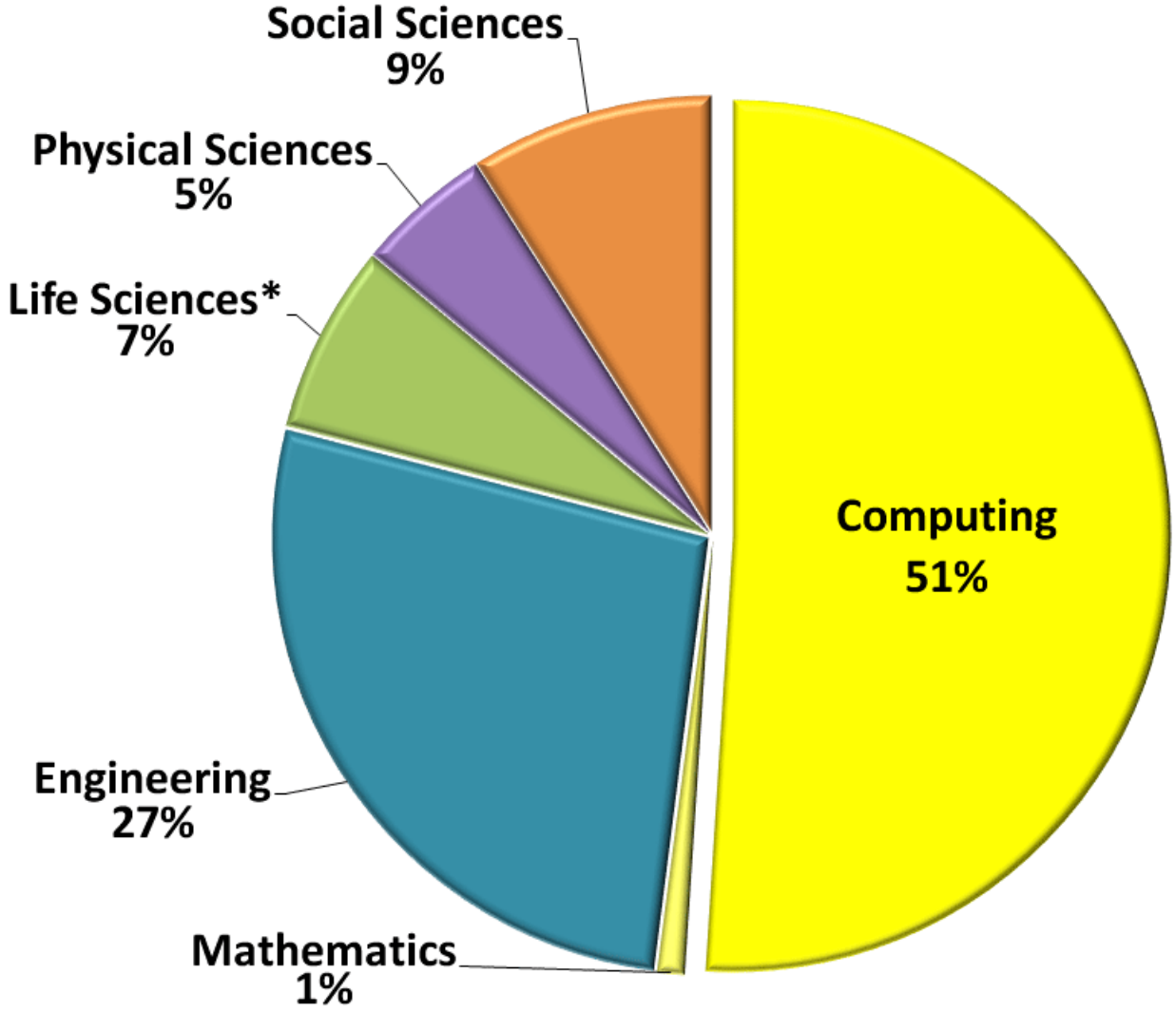
Where the STEM Jobs Will Be

Projected Annual Growth of Total STEM Job Openings 2010-2020



* STEM is defined here to include non-medical occupations.

Source: Jobs data are calculated from the Bureau of Labor Statistics (BLS), Employment Projections 2010-2020, available at http://www.bls.gov/emp/.

Virginia Workforce Statistics
(See http://cew.georgetown.edu/stem/)

- **Virginia will demand a total of 374,320 STEM jobs by 2018, up from 288,430 in 2008.**
- **64 percent of STEM jobs in Virginia will be in Computer Occupations by 2018.**

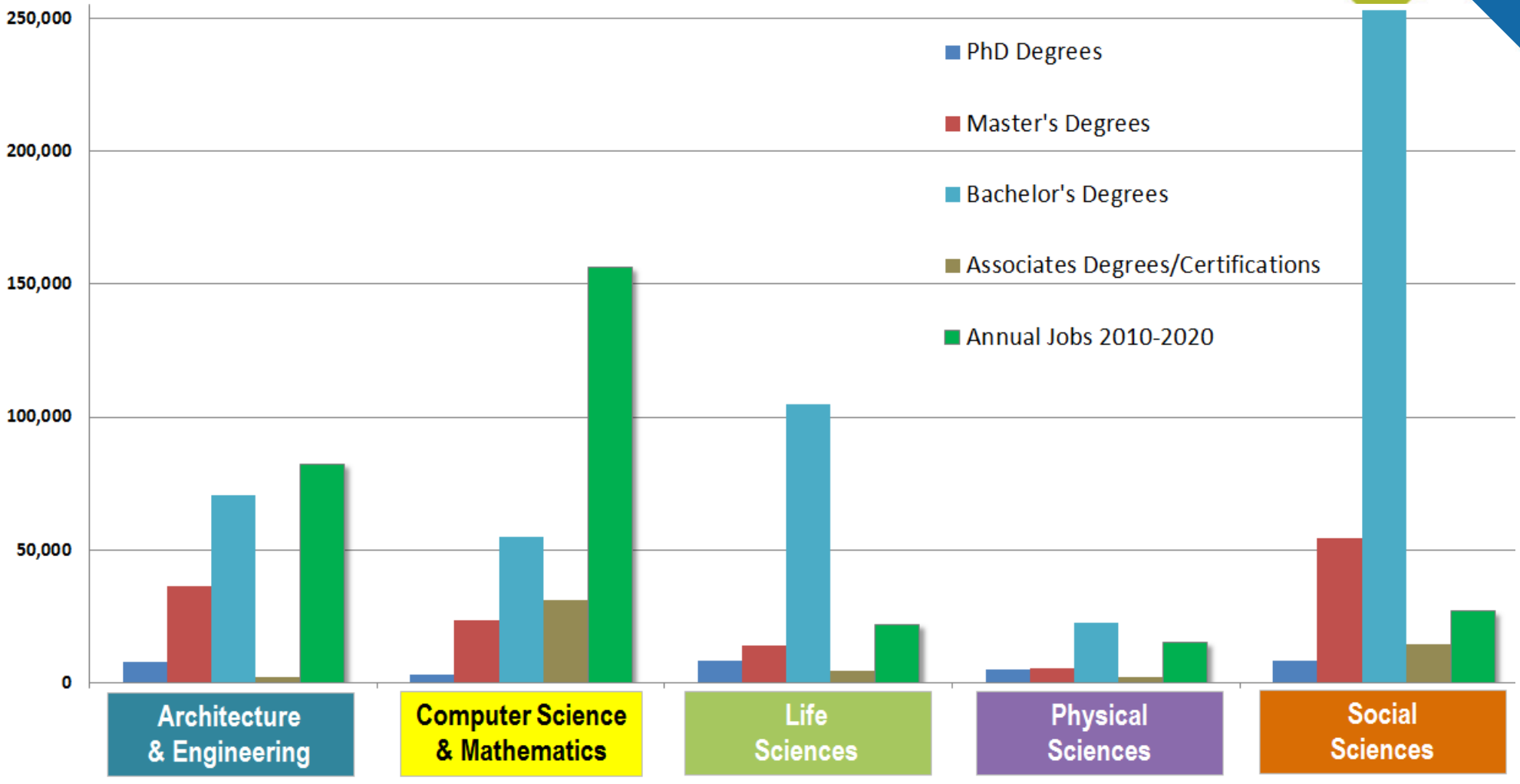
Occupational Distribution of STEM Jobs through 2018

	COMPUTER OCCUPATIONS*	ENGINEERS & ENGINEERING TECHNICIANS	LIFE & PHYSICAL SCIENCE OCCUPATIONS	ARCHITECTS, SURVEYORS & TECHNICIANS	MATHEMATICAL SCIENCE OCCUPATIONS	TOTAL△
Number of Jobs	239,880	76,370	25,500	19,940	12,630	374,320
% of all STEM Jobs	64%	20%	7%	5%	3%	100%

*Computer Technicians, Programmers, and Scientists
△Totals may differ slightly due to rounding

Where the STEM Jobs Will Be

Degrees vs. Jobs Annually



Sources: Degree data are calculated from the National Science Foundation (NSF), Science and Engineering Indicators 2012, available at http://www.nsf.gov/statistics/seind12/appendix.htm. Annual jobs data are calculated from the Bureau of Labor Statistics (BLS), Employment Projections 2010-2020, available at http://www.bls.gov/emp/. STEM is defined here to include non-medical degrees and occupations.

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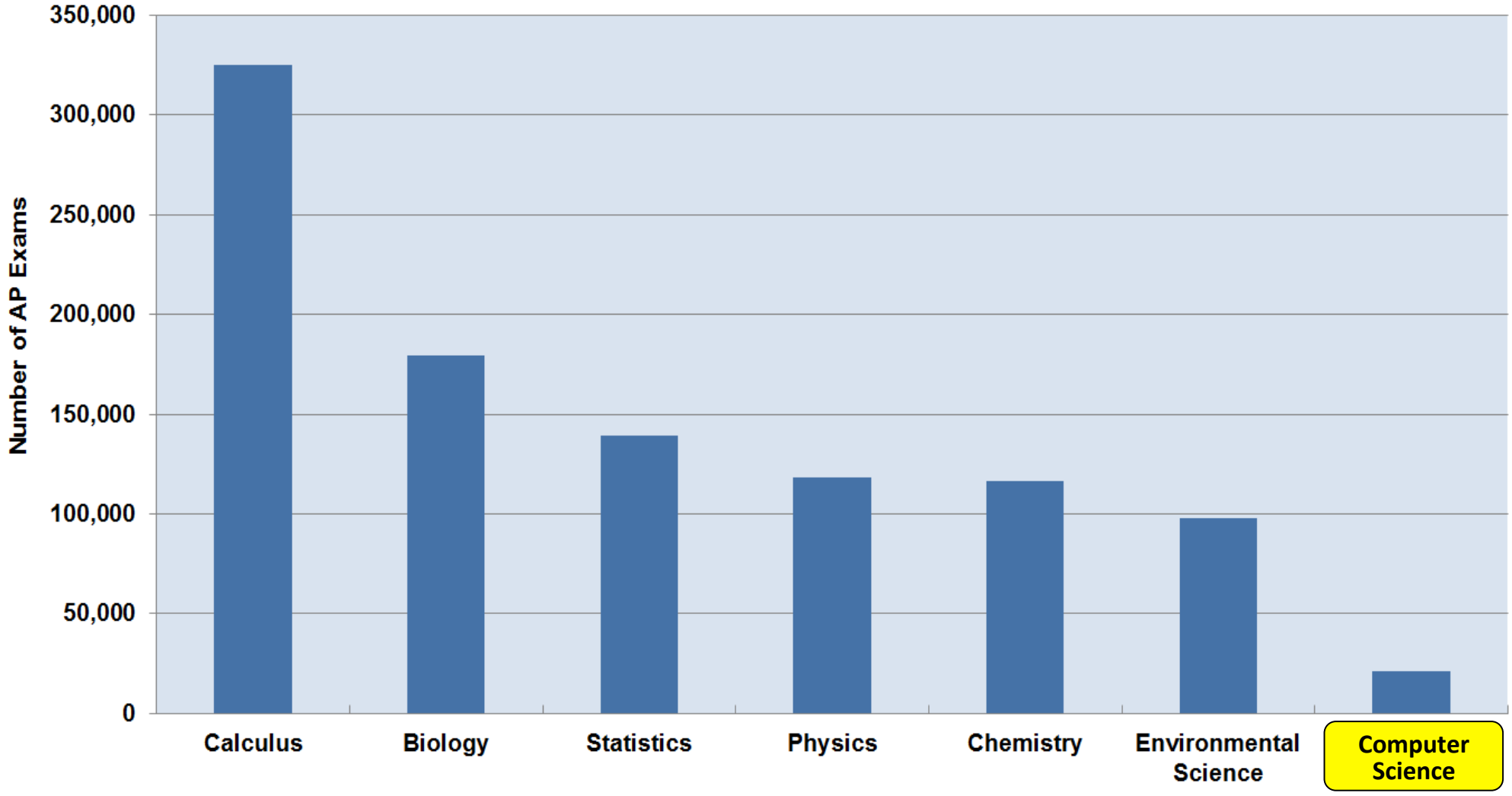
High School Advanced Placement

Exams 2011



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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.

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Computer Science $\neq$ Computer Literacy

- Computer Science: The study of computers and algorithmic processes, including their principles, their hardware and software designs, their applications, and their impact on society.
- Computer Literacy: The ability to use various software applications (often called "point and click education").
- Educational Technology: The use of computers to support learning across the curriculum.

What You Can Do

Write your Representative!

CS Education Act
http://goo.gl/9mroy

COMPUTING IN THE CORE

Use Scratch in your school!

Software, Curriculum
http://scratch.mit.edu/