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LEADERSHIP
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Meeting California's Workforce Needs in STEM Fields



Nancy Shulock
Sacramento State University

Presentation to
MESA Board of Directors
October 22, 2009



Overview

- Context of STEM shortage – CA higher education performance
- Documenting STEM shortage and its cause
- Some key policy issues
 - Community colleges
 - Career pathways
 - State planning and leadership
- Recommendations

The Grades are In:

California lags most other states in important aspects of higher education performance

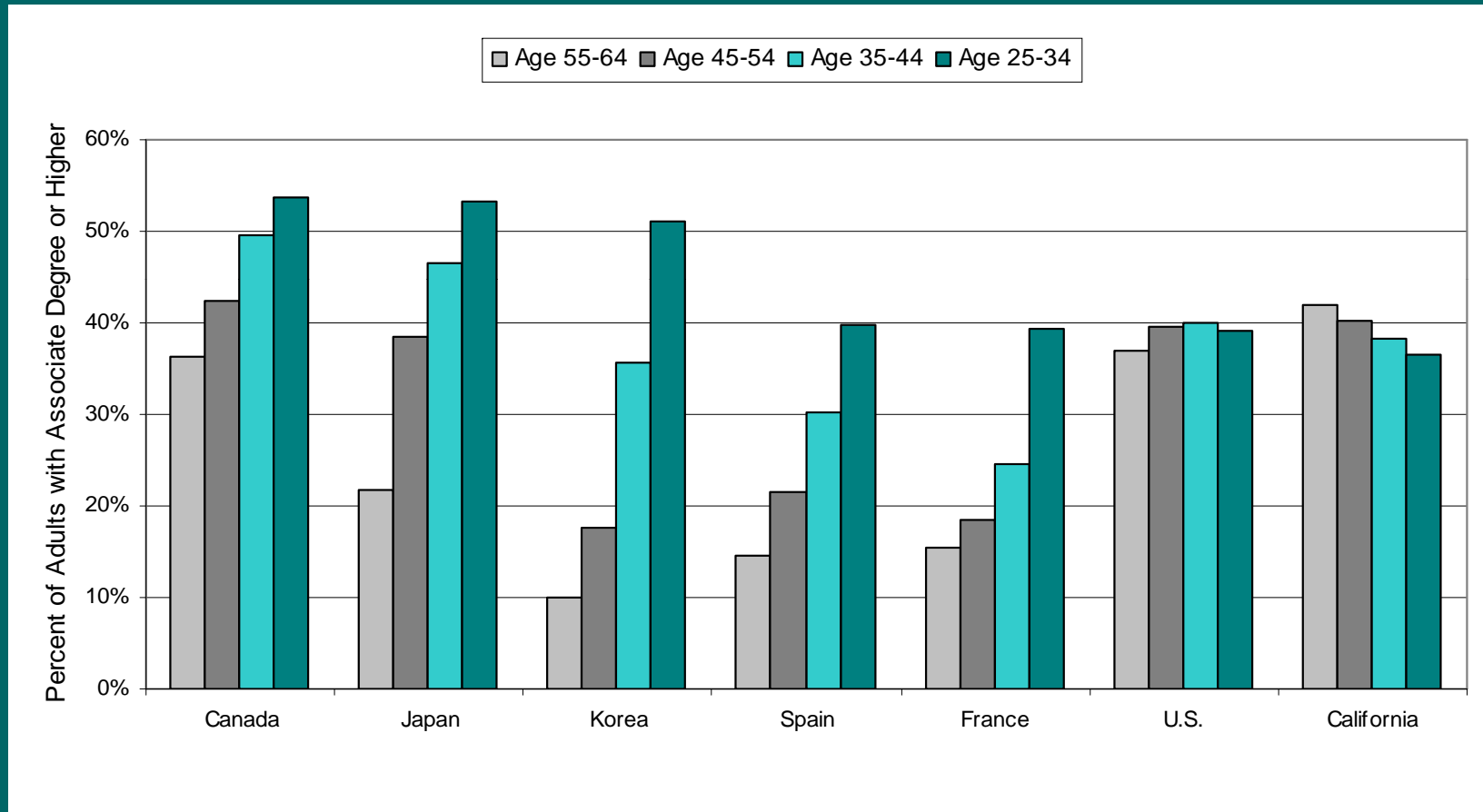
- 45th in share of HS students taking advanced math/science
- 40th in rate of HS grads going directly to college
- 47th in number of degrees/certificates awarded in relation to enrollment
- Shortage of 1 million college-educated workers by 2025 (PPIC)
- Percent of working-age adults with a college degree is declining with each younger age group

California Is Becoming Less Educated Than Other States

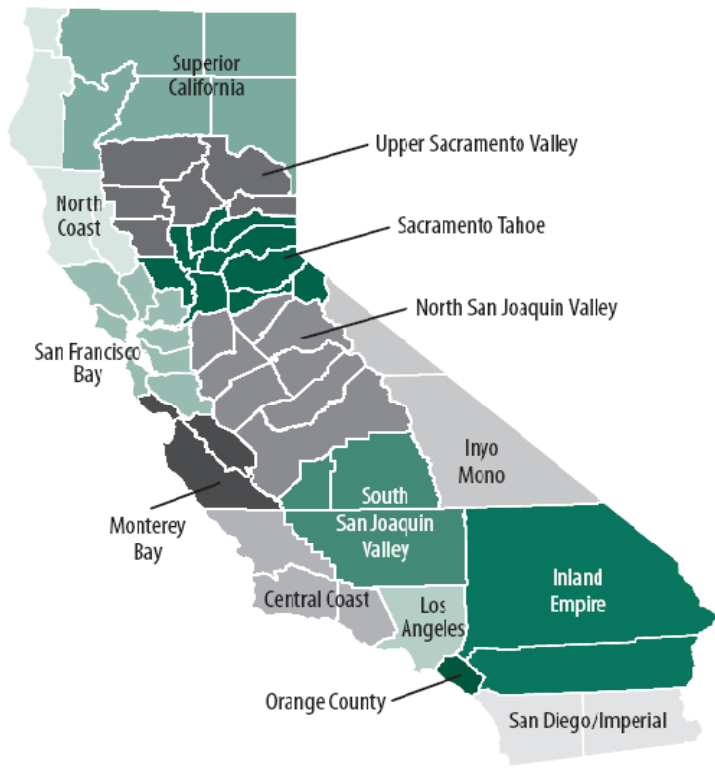
(Rank Among States in % with College Degrees)

Age Group:	AA or Higher	BA or Higher
>64	3 rd	4 th
45-64	14 th	13 th
35-44	26 th	17 th
25-34	31 st	26 th

Percent of Adults with an Associate Degree or Higher by Age Group— Leading OECD Countries, the U.S., and California



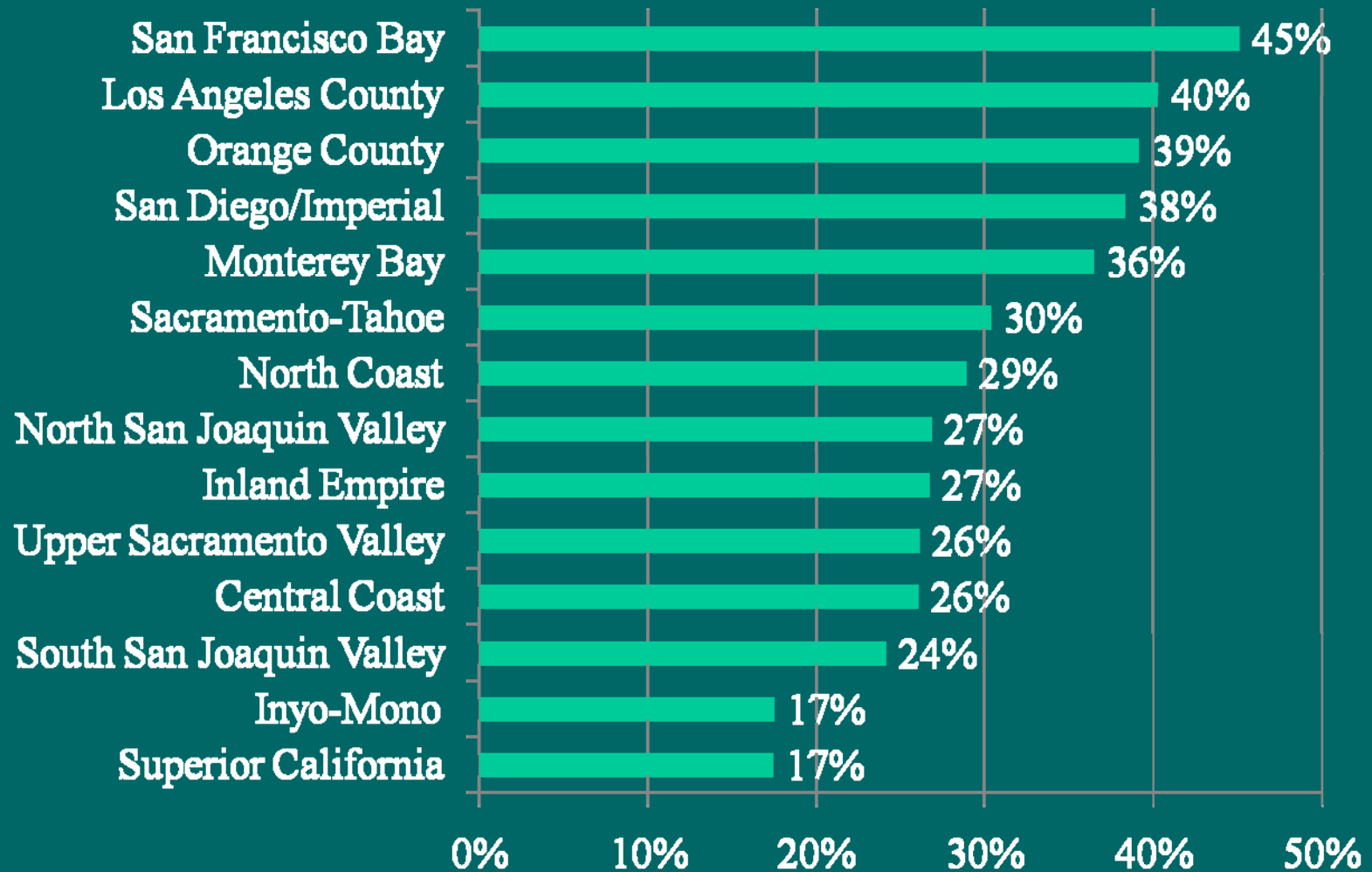
Source: Organisation for Economic Cooperation and Development, *Education at a Glance 2007*; Not shown on the graph are Belgium, Norway, Ireland and Denmark, which also rank ahead of the U.S. on attainment among young adults (attainment is increasing for younger populations as in the other countries)



Regional and Group Differences are Big Factors

- Large, urban areas perform significantly better on most measures
- Growing regions – San Joaquin Valley and Inland Empire – lag
- Latinos and blacks lag whites and Asians at every point along pipeline

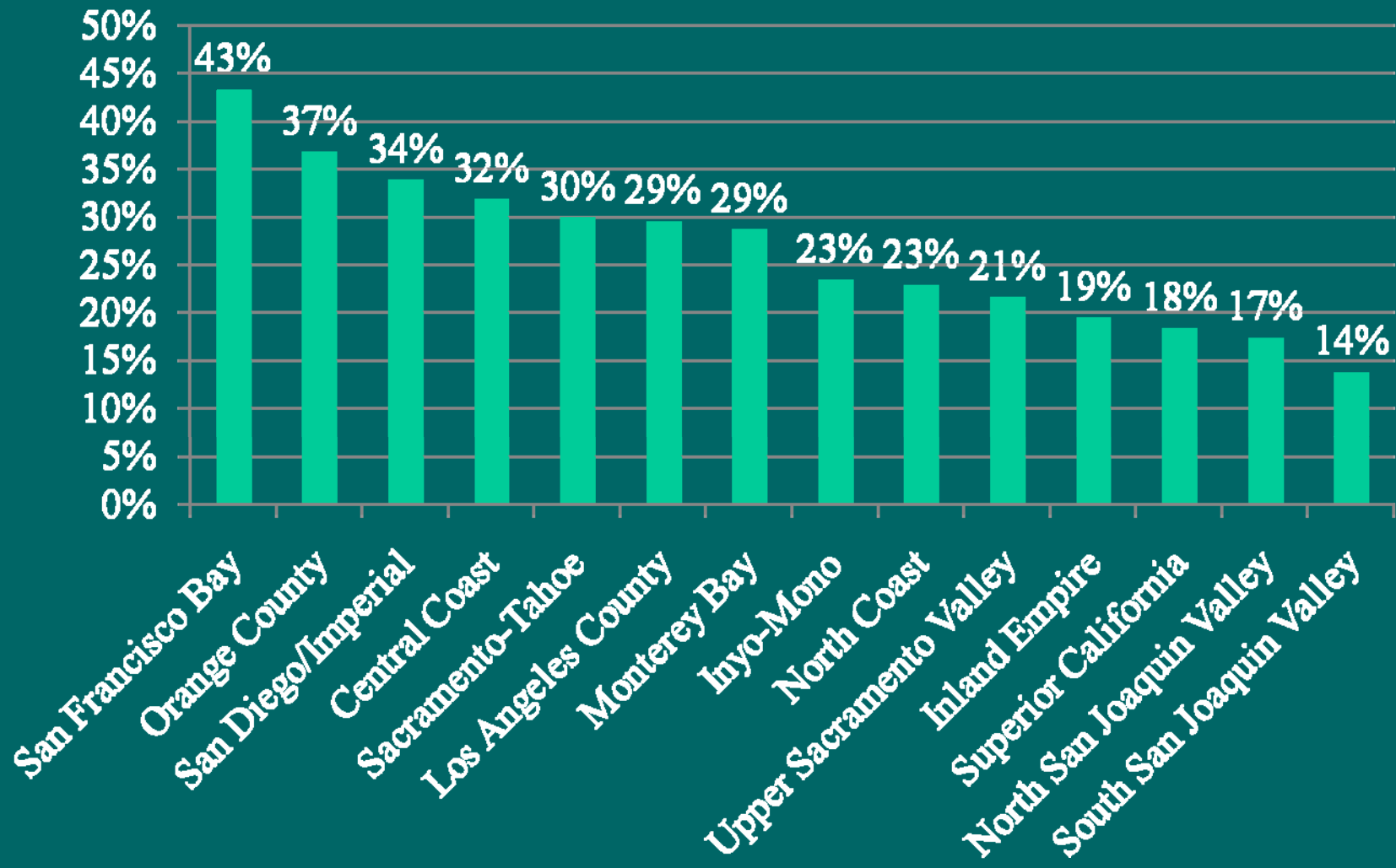
Regional Variation: Share of HS Graduates Completing a-g



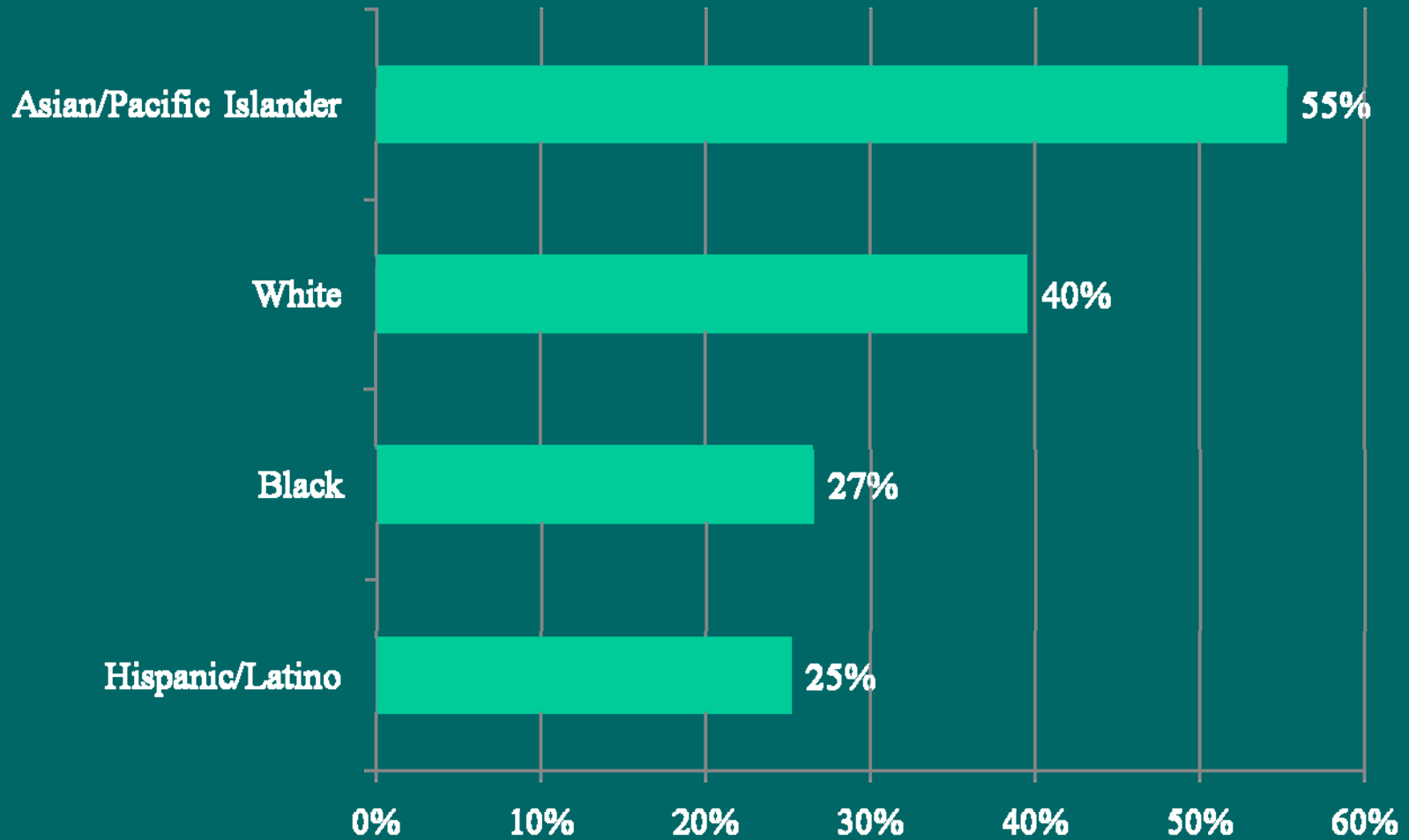
Regional Variation: Percent of 18-24 Year Olds Enrolled in College

Region	
Upper Sacramento Valley	56%
Central Coast	52%
Orange County	49%
San Francisco Bay	47%
Monterey Bay	44%
Sacramento-Tahoe	43%
San Diego/Imperial	43%
Los Angeles County	43%
North San Joaquin Valley	34%
North Coast	33%
Inland Empire	33%
Superior California	32%
South San Joaquin Valley	26%

Regional Variation: Percent of Working-Age Adults with BA

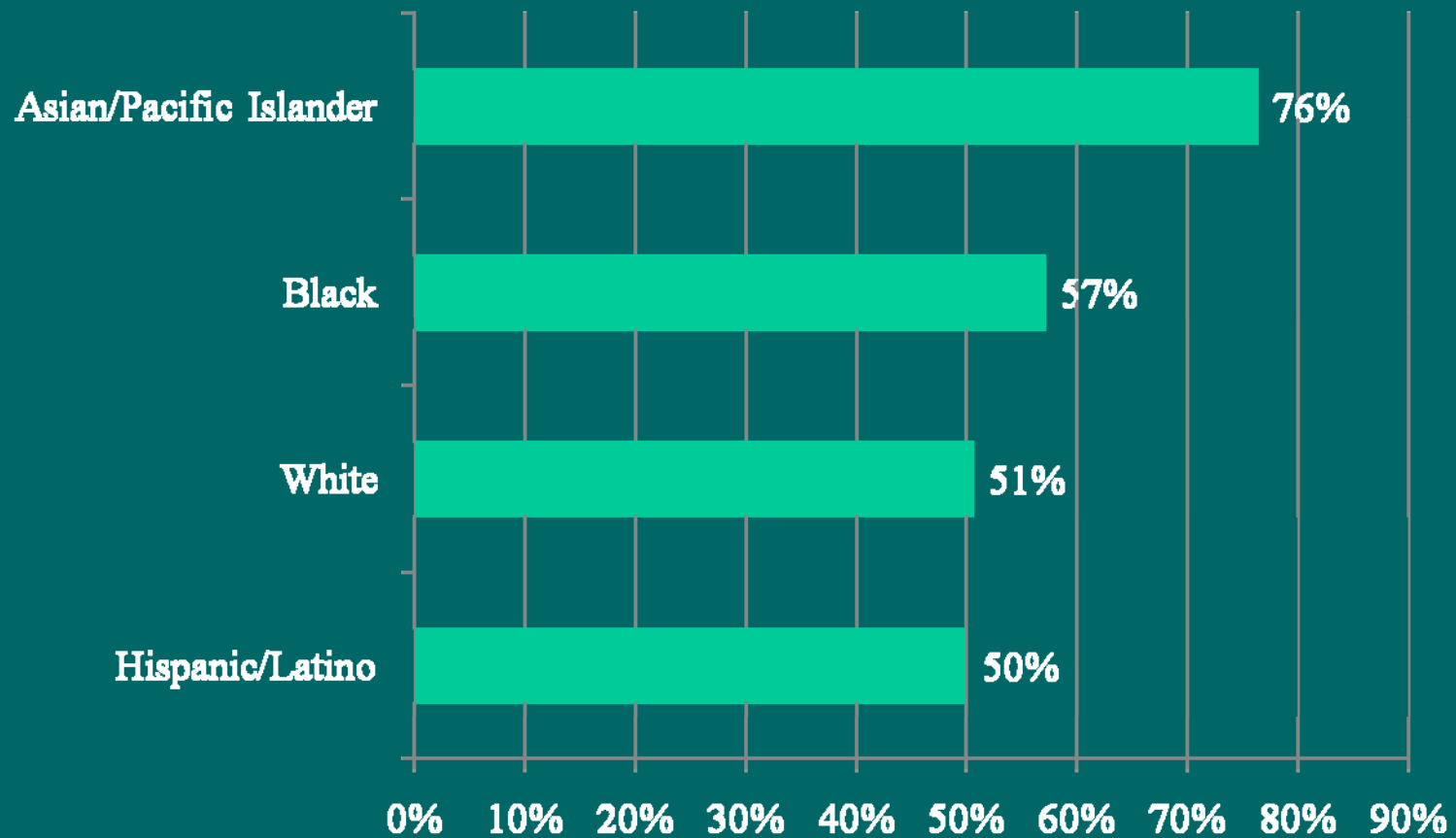


Racial/Ethnic Gaps in Share of HS Graduates Completing a-g



Racial/Ethnic Gaps in College-Going

While black and Latino HS grads go directly to college at about the same rate as white grads...



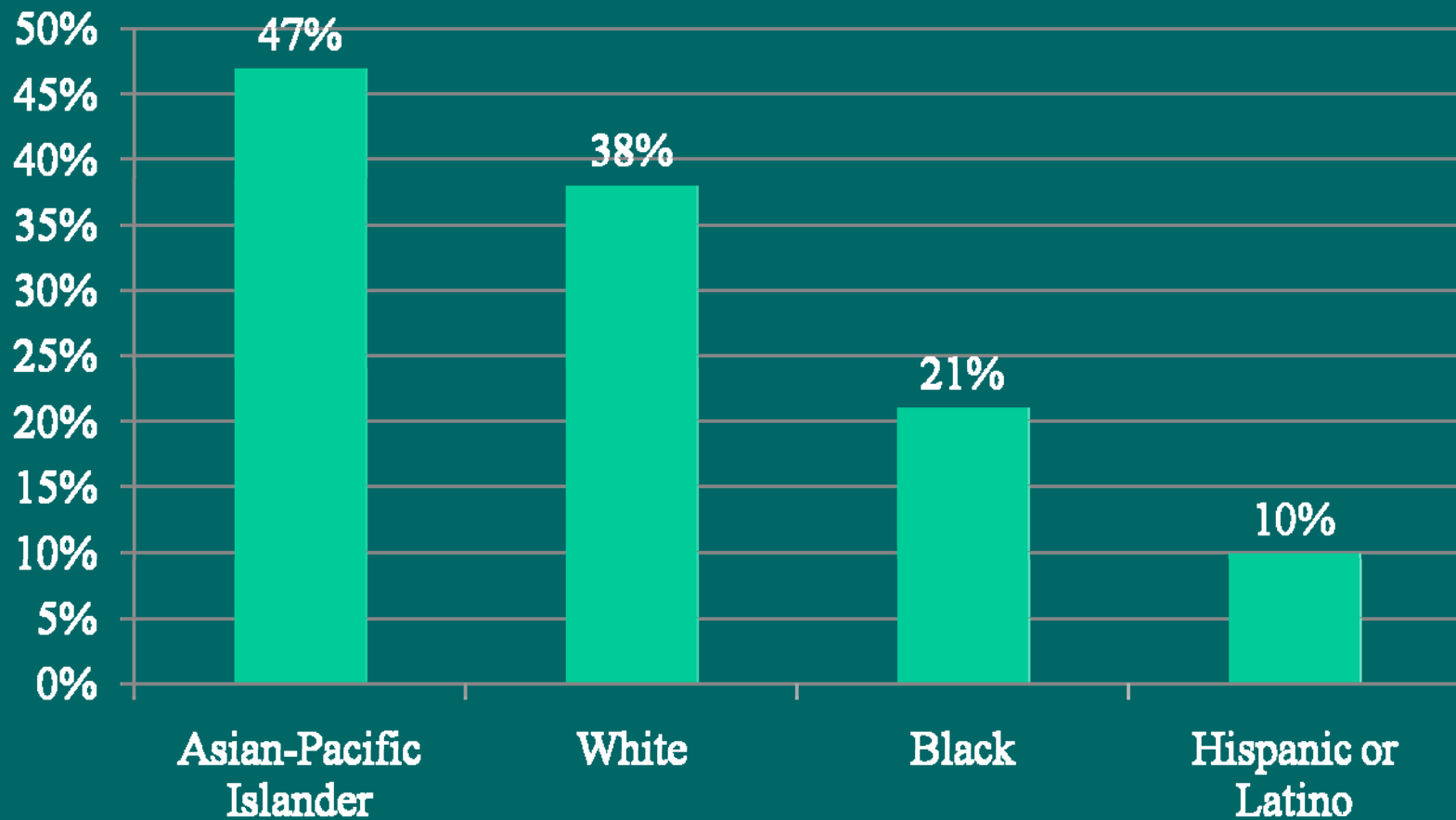
...more high school drop-outs in those populations results in large gaps in percent of young adults enrolled in college

Race/Ethnicity	Percent of 18-24 Year Olds Enrolled in College
White	45%
Black	35%
Hispanic or Latino	27%

Do equal rates of college going = equal opportunity?

- Blacks and Latinos are more concentrated in CCC
 - 80% of blacks and Latinos students are in CCC
 - Compared to 70% of whites
- CCC receive much less support per student
- CCC have lower completion rates – much more part-time, less financial aid
- Adds up to big gaps in degree attainment

Racial/Ethnic Gaps in Percent of Adults with a BA





STEM Shortages

Technical Difficulties: Meeting California's Workforce Needs in STEM Fields

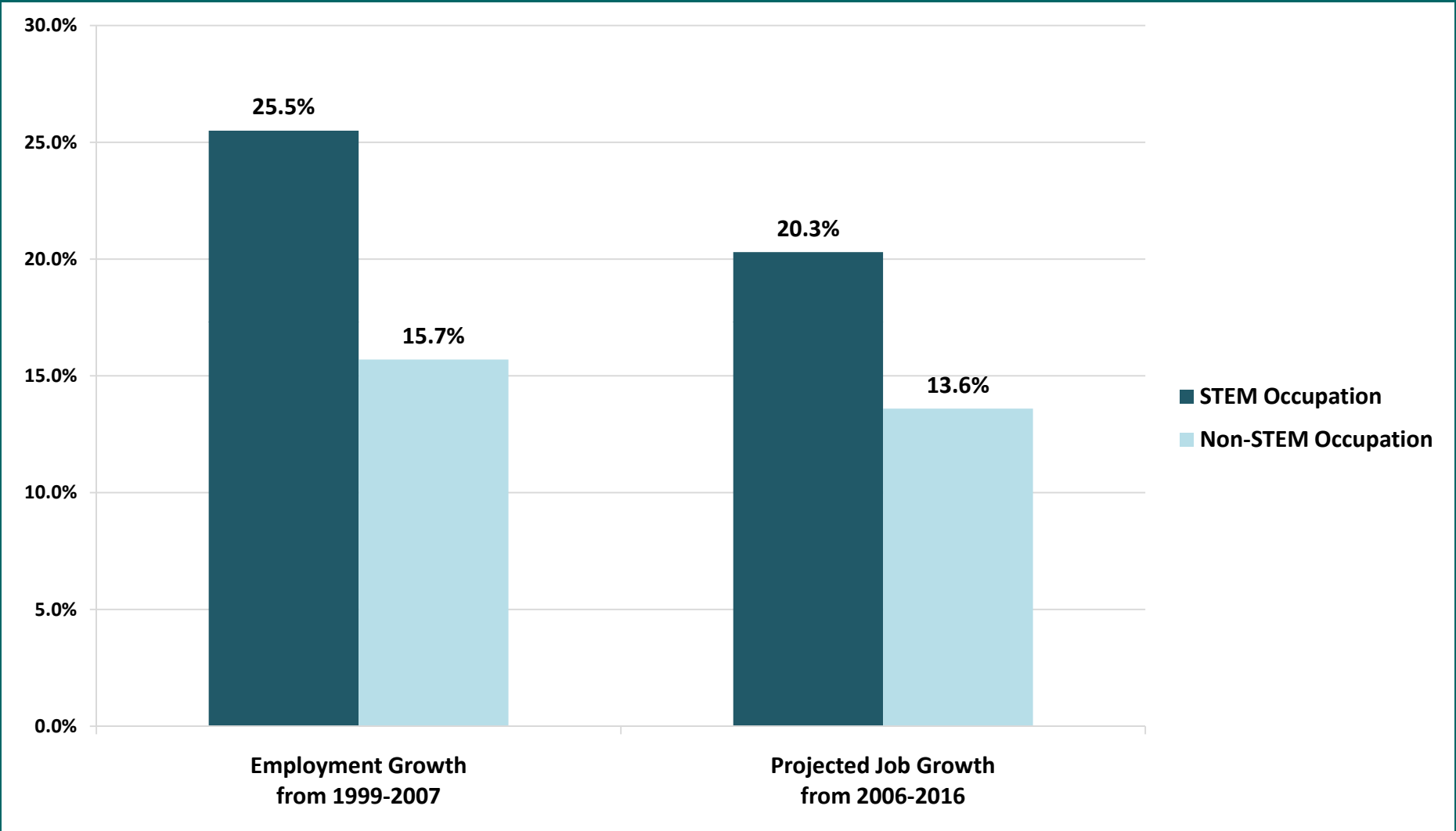
- Growing demand is outstripping supply
- Half of STEM occupations that require college degree have projected shortages
- For those fields, need 90% annual increase in degrees/certificates

Causes of Shortfall

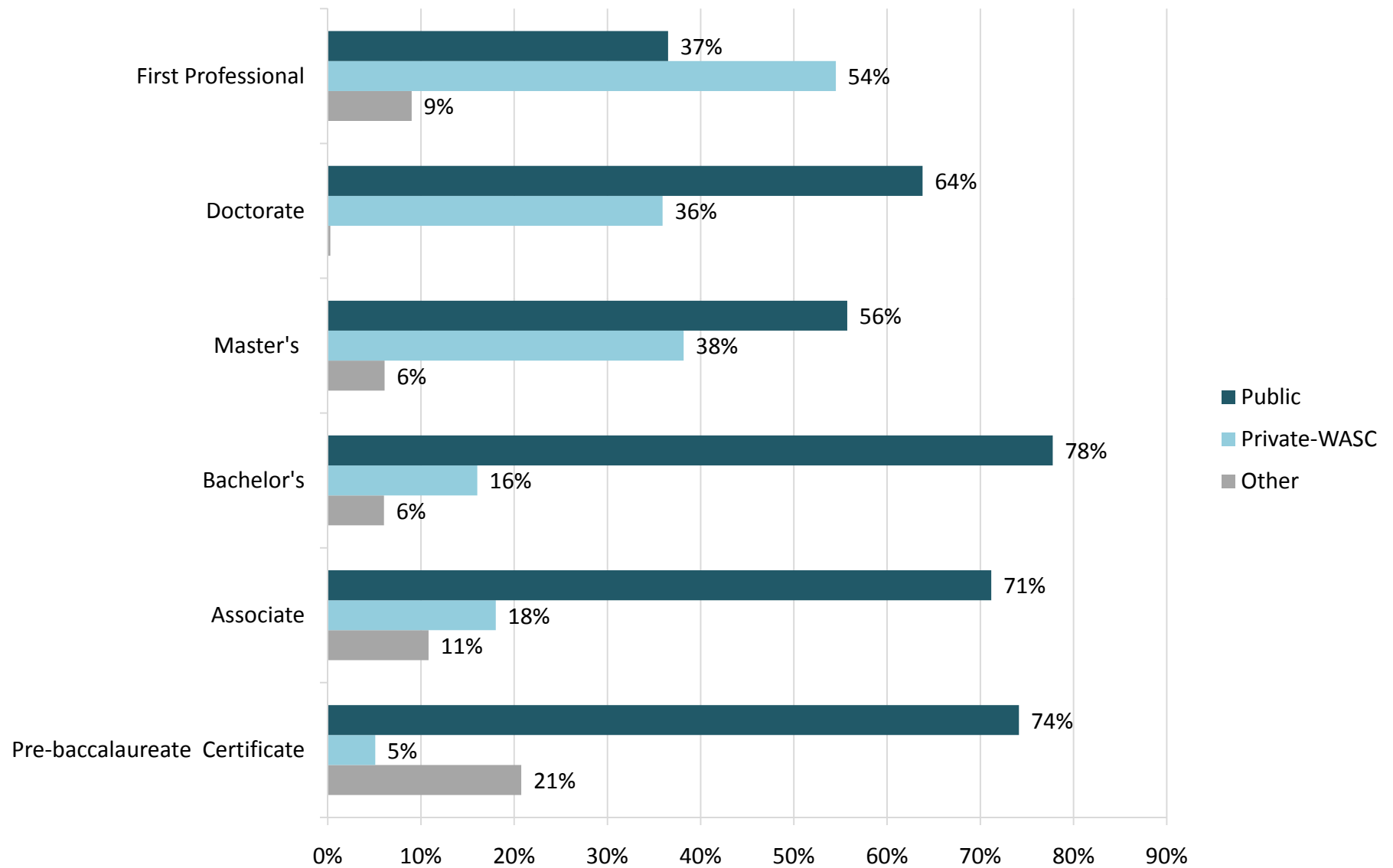
- High demand
 - STEM employment growing faster than non-STEM
 - Competition from other states and nations is rising
 - Aging population requires more healthcare workers
 - Retirees have high education levels
- Inadequate supply
 - STEM degree production increasing more slowly
 - CA is 9th of 10 “new economy” states in producing bachelor’s degrees in science and engineering
 - Race/ethnicity and gender disparities worsen shortfall
 - State budget cuts may especially hurt STEM (high cost)



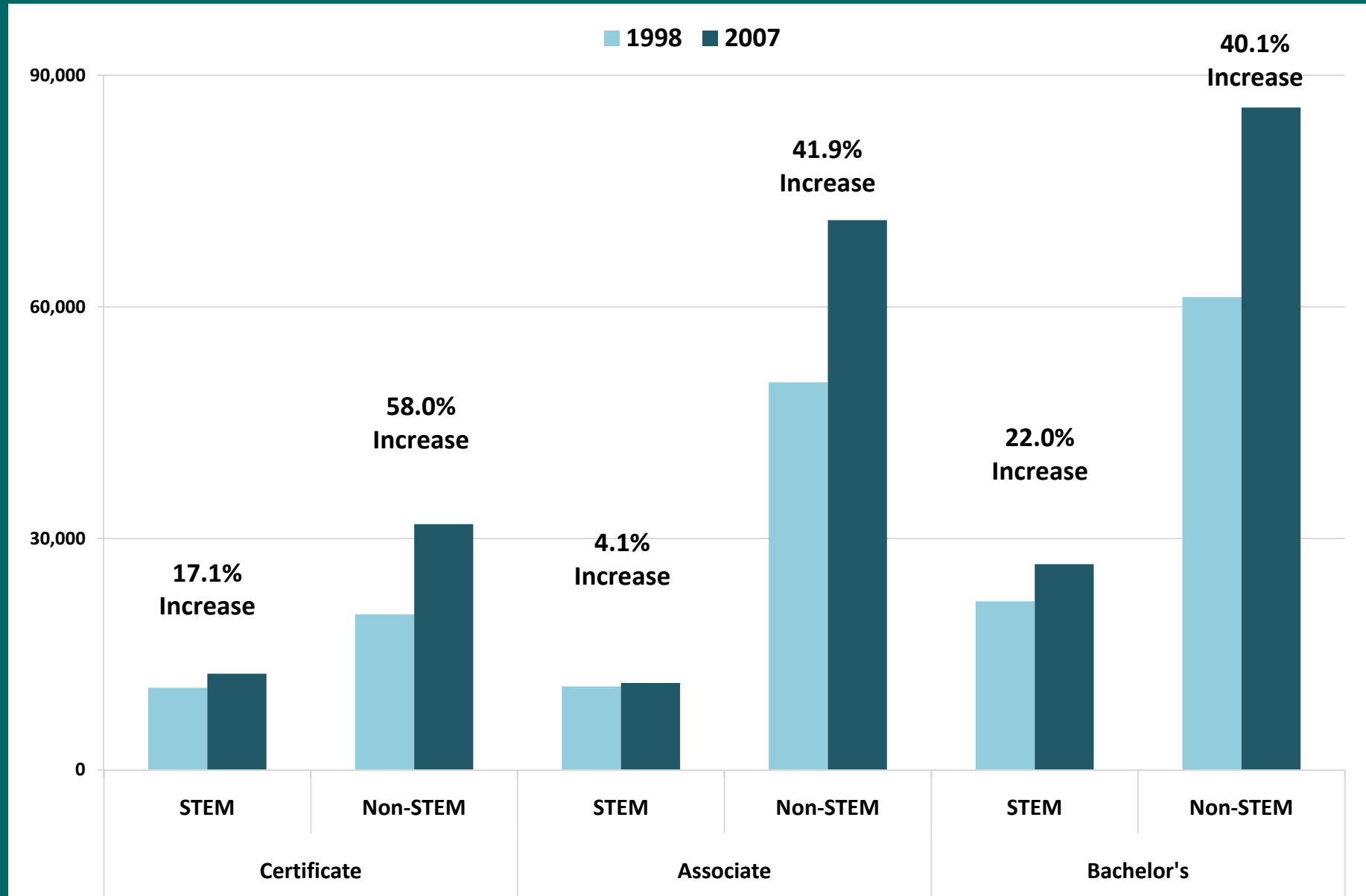
Growth in STEM Employment Greater than Non-STEM



The Public Sector Awards Most STEM Degrees



Increase in Degrees/Certificates Greater for Non-STEM Fields



STEM Degree Production 1998-2007: Even Increases Not Showing Strong Pattern

Largest increase in bachelors degree:

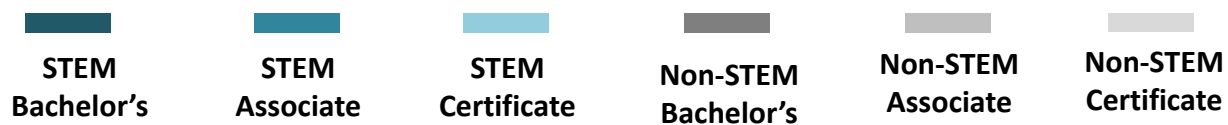
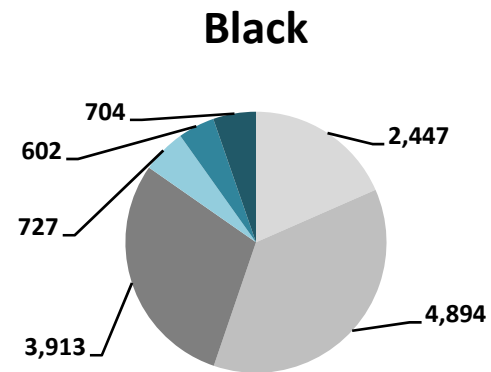
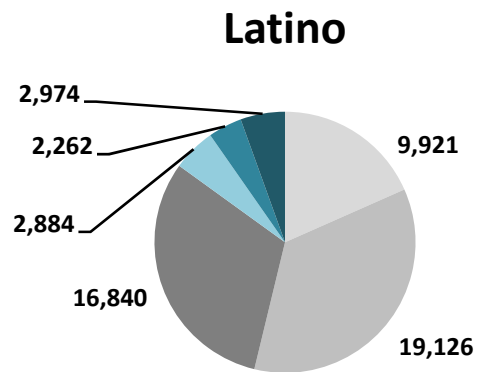
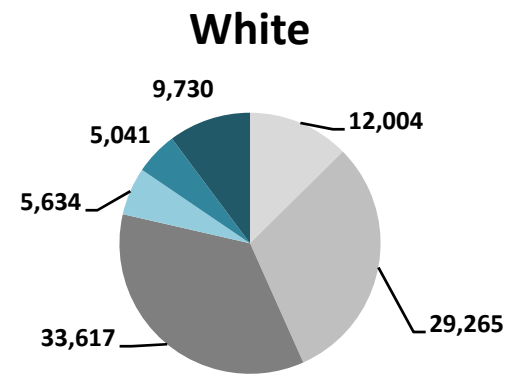
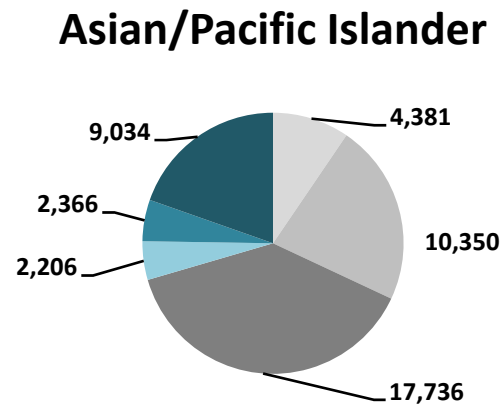
- Engineering
- Health (mixed growth/decline)
- Biological sciences (mixed growth/decline)
- Computer and info. sciences (annual declines since 2003)



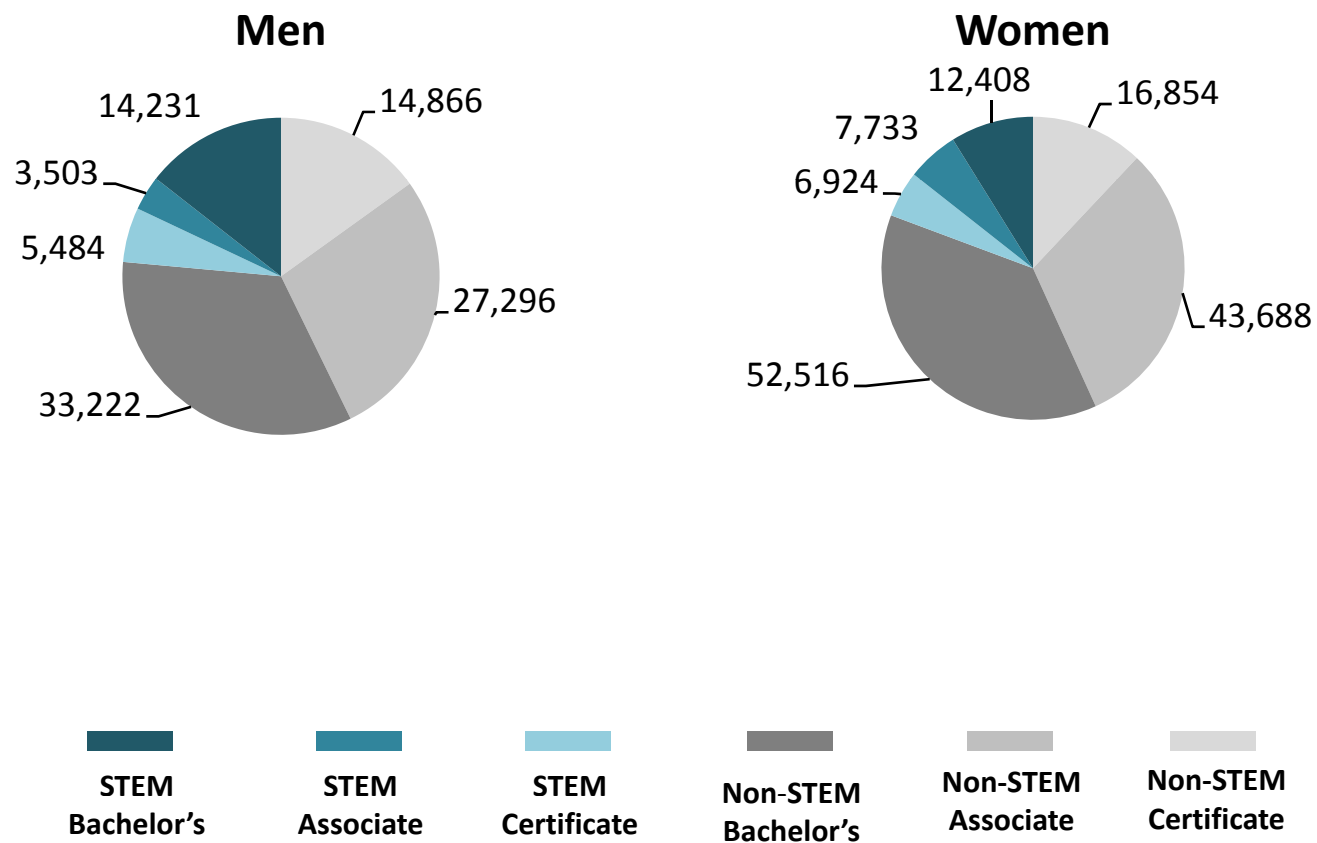
The Latino Dimension

- Almost 50% of high school graduates by 2020
- Attend and graduate college at lower rates
- Pursue STEM at lower rates
- More likely to attend community college
 - lower completion
 - less STEM
 - poor transfer, especially in STEM career fields

Smaller Share of Blacks and Latinos Earn STEM Bachelor's Degrees



Smaller Share of Women Earn STEM Bachelor's Degrees



Policy

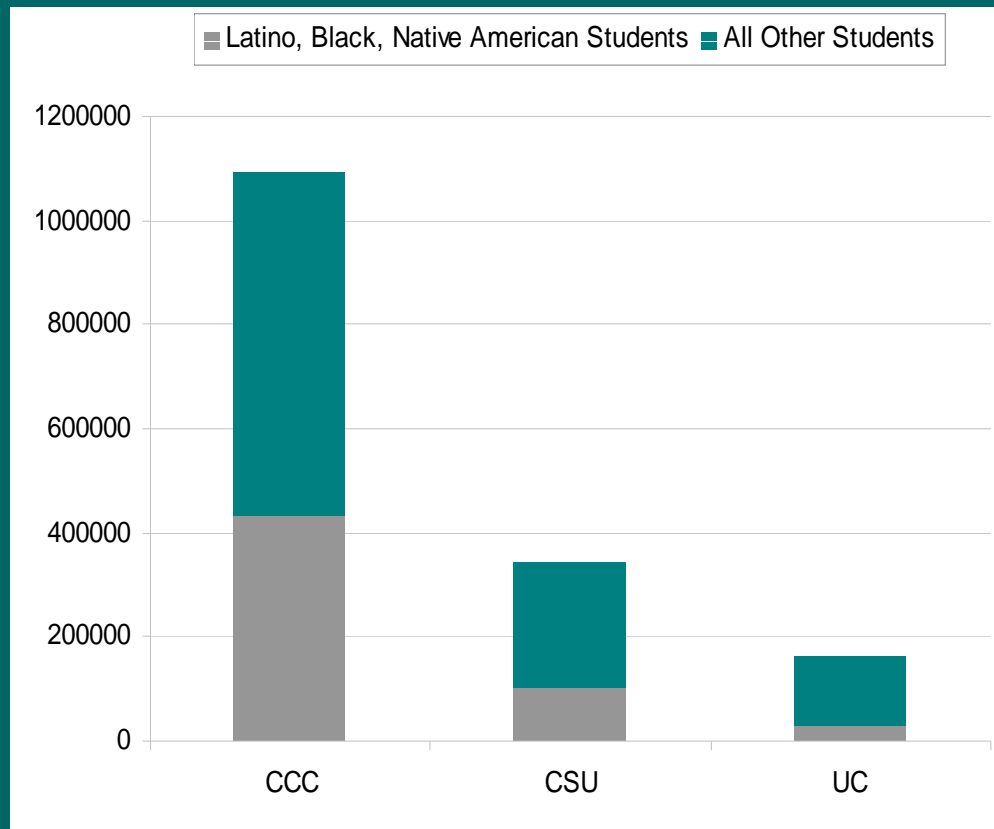
- Community college student success



- Career Pathways

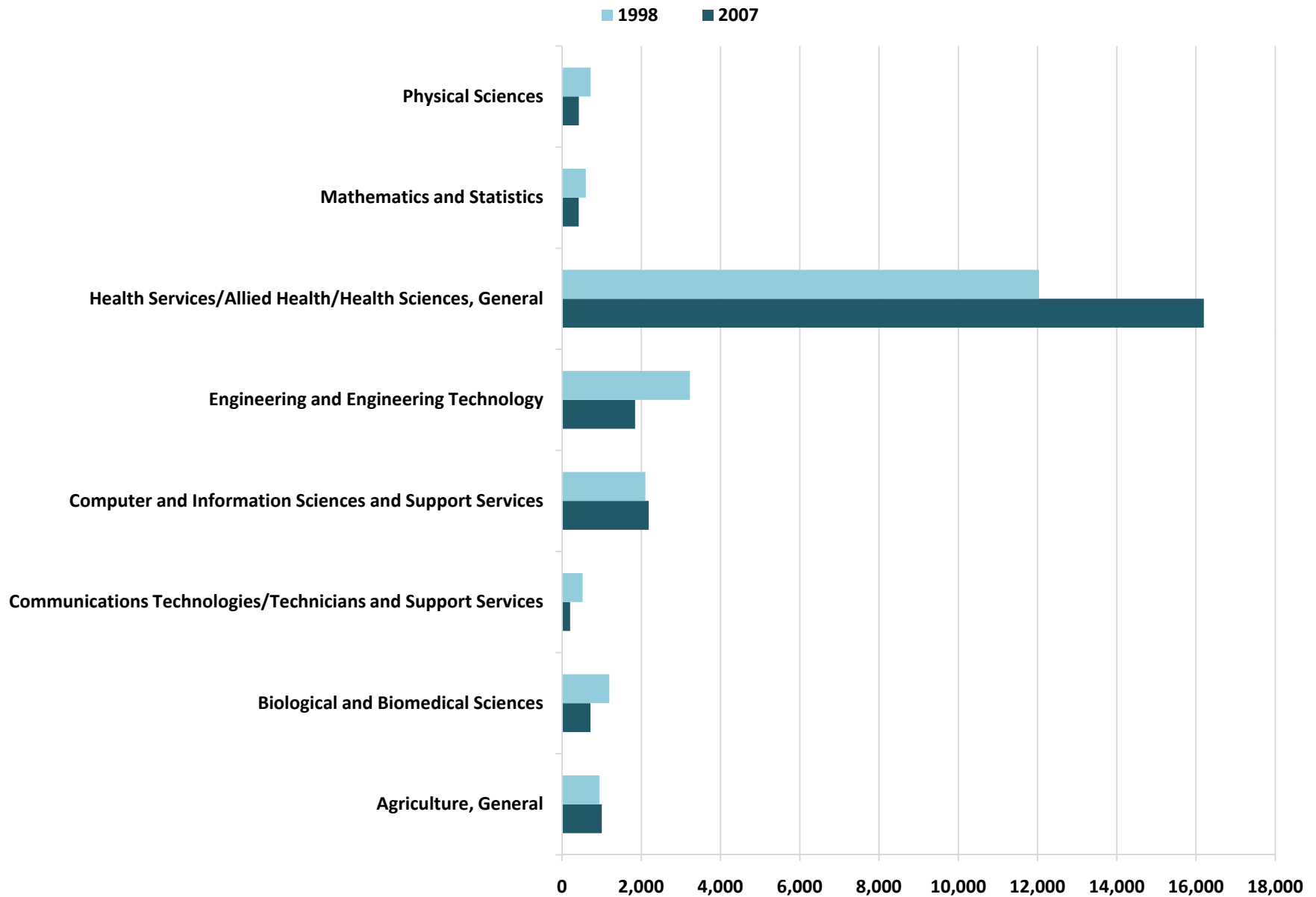
- Higher Education Leadership

Importance of Community Colleges



- CCC serves the vast majority of students, especially under-represented
- 70% of students receiving degrees from the state's public colleges attended CCC
- 45% of occupations with projected shortfall require postsecondary education less than bachelors degree

STEM Certificates and Associate Degrees: Health Dominates



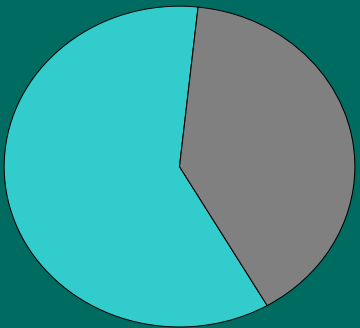
Policies to Promote Access

Incoming CCC Students
1999-2000



520,407
Students

Degree-Seekers: 60%



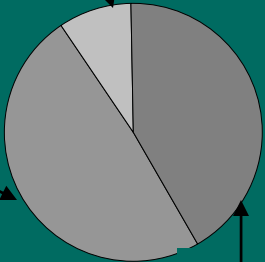
Non-Degree-Seekers: 40%

206,373
Students



Basic Skills: 9%

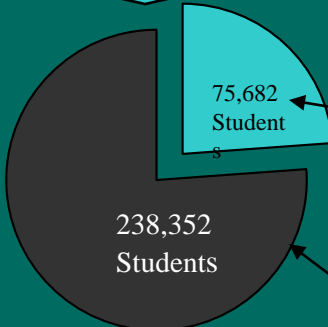
Job Skills: 49%



Personal Enrichment: 42%

314,034
Students

Policy Barriers to Completion



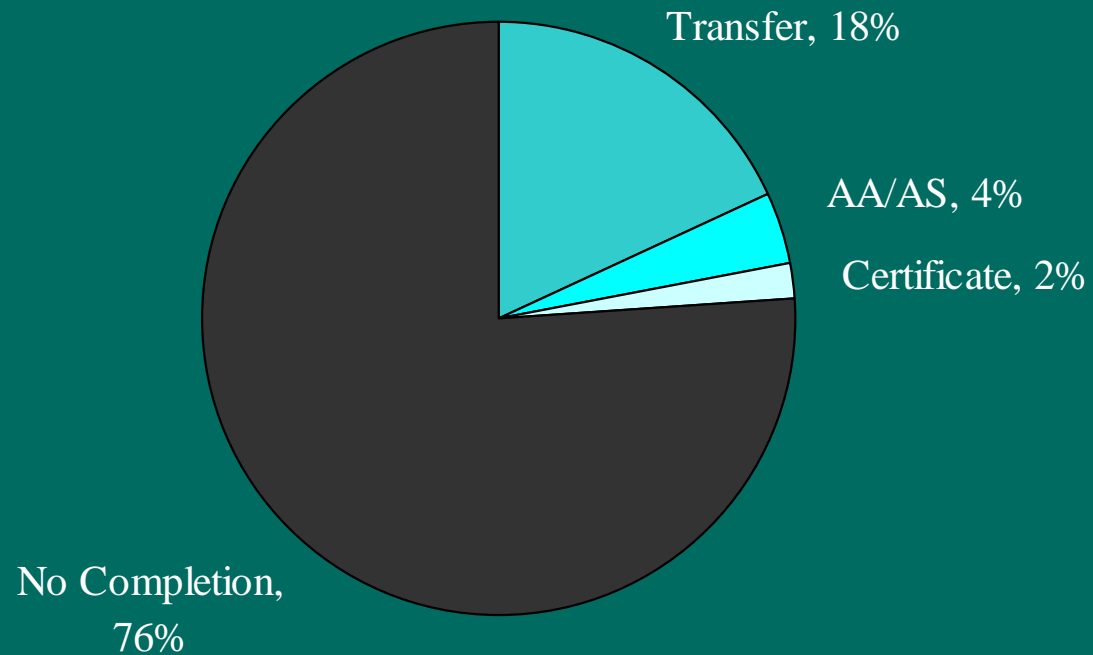
Complete Certificate, Degree or Transfer within 6 Years: 24%

Do Not Complete within 6 Years: 76%

75,682
Students

238,352
Students

Highest Completion Among Degree-Seekers After Six Years



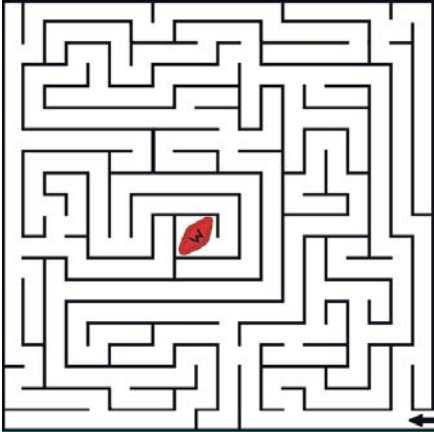
Completion Rates Worse for Certain Groups

- 33% for Asian students
 - 27% for white students
 - 18% for Latino students
 - 15% for black students
-
- 27% for students age 17-19
 - 21% for students in their 20s
 - 18% for students in their 30s
 - 16% for students age 40 or older

What Policies Impede Student Success?



1. Inadequate state investment for mission
2. Enrollment-based funding (3rd week)
3. Excessive restrictions on college use of resources
4. Misguided fee/financial aid emphasis
5. Lax approach to guiding students
 - Assessment/placement/advising
 - Lack of structured pathways



Lack of Clear Pathways

- Most CCC students do not enroll in programs or declare majors
- Certificates and associate degrees are not emphasized
- Credits do not build (stack) on one another
- Transfer process is not working well
- Career technical education (CTE) is outside the mainstream academic curriculum

Statewide Planning and Leadership



- Who is leading higher education planning for California?





What would effective planning and coordination look like?

- Strong leadership from governor
- Begin with needs of CA – not institutions
- Diagnose gaps and set goals – for higher education collectively
- Design policies to meet goals – a “public agenda”
- Accountability system to monitor outcomes and link to resources

Example: Illinois

Process (Year-long planning):

- Legislature, Board of Higher Education, Public Agenda Task Force (appointed by Governor)
- Study challenges & opportunities facing postsecondary education in IL, workforce needs, demographic trends, funding, financial aid

Principles:

- Higher ed is public good and public responsibility
- Priorities and policies should align with state goals
- Unique missions of institutions should be supported
- Adequate and equitable funding for P-20
- Comprehensive P-20 data system is vital

Example: Illinois - continued

Result:

- A public agenda for college and career success - to make Illinois “ready to face the future”
- “Call to arms” for students, parents, educators, unions, business executives, civic leaders, elected officials...

Goals:

1. Increase educational attainment to match best-performing states and countries
2. Ensure affordability for students and taxpayers
3. Increase credentials to meet needs of economy
4. Better integrate educational, research, and innovation assets to meet economic needs of state and regions



Recommendations to Address STEM Shortage

- “Public agenda” to guide strategic investments
- Improve K-12 preparation in math and science
- Improve career pathways and information about them
- Create financial incentives for students and institutions
- Increase STEM achievement in under-represented groups
- Better coordinate STEM programs with industry
- Maximize STEM employment among STEM degree-holders



1. How can we get the leadership we need?
2. How can we better mobilize external stakeholders?
3. Where should we start?

Contact Information:

Institute for Higher Education Leadership & Policy

www.csus.edu/ihelp

(916) 278-3888

ihelp@csus.edu; nshulock@csus.edu