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# Challenges and Opportunities Facing California Higher Education in Science, Technology, and Career Education

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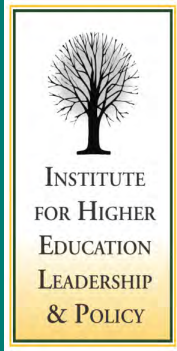
California Council on Science and Technology

May 27, 2009

California State University, Sacramento

## Growing Chorus of Concern

- Campaign for College Opportunity
- National Center: CA projected drop in per capita income most severe in US
- PPIC: shortage of college-educated workers
- CA EDGE Campaign: workforce shortage
- National Center:
  - Master Plan in “serious disrepair”
  - CA consistently in bottom one-third in baccalaureate degree production



## *The Grades Are In – 2008*

### What We Found

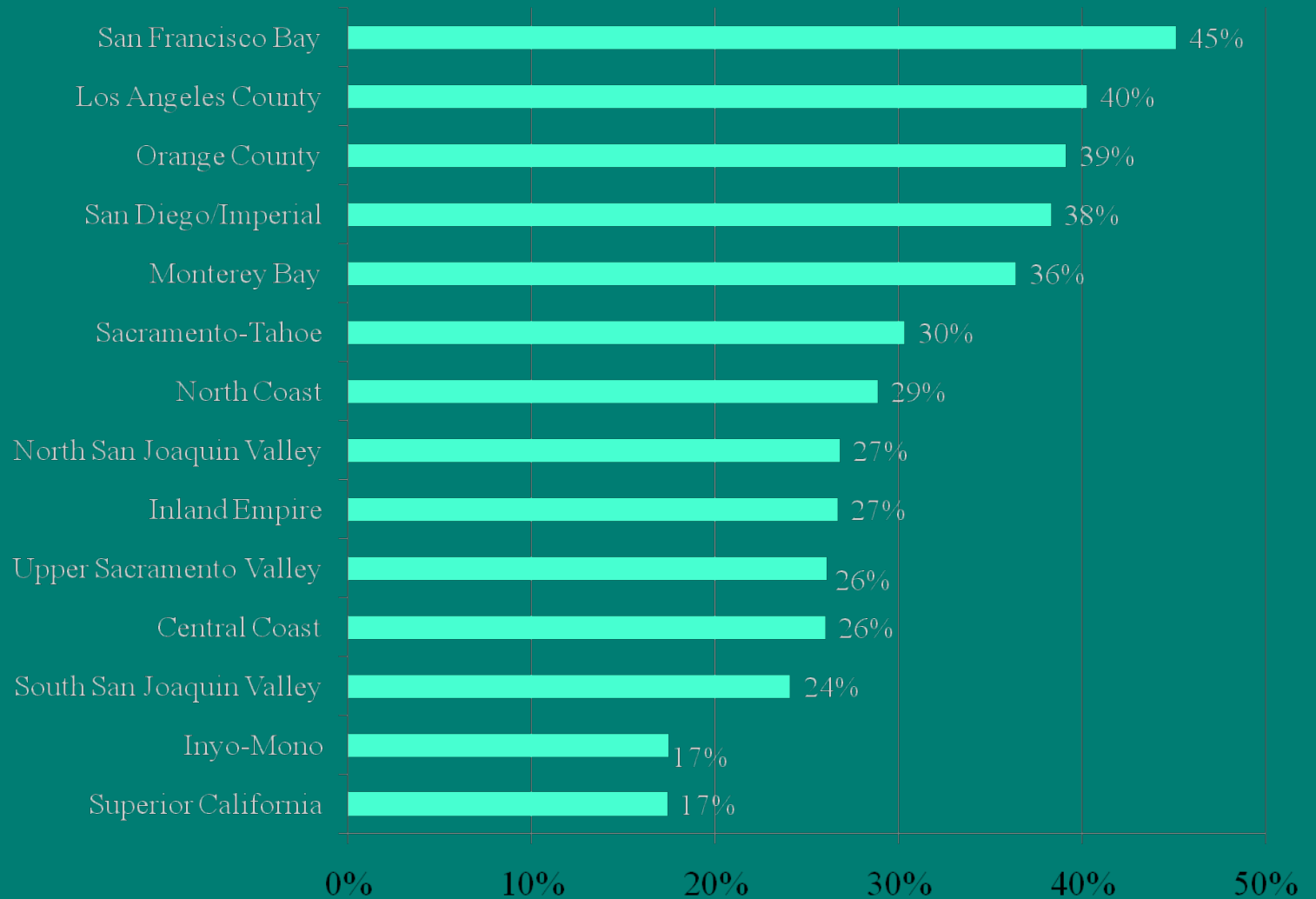
California lags many other states in important aspects of education performance

- 45<sup>th</sup> in share of HS students taking advanced math/science
- 48<sup>th</sup> in 8<sup>th</sup> grader science proficiency
- 40<sup>th</sup> in rate of HS grads going directly to college
- 47<sup>th</sup> in number of degrees/certificates awarded in relation to enrollment
- Rank in percent of working-age adults with a college degree is **declining** with each age group

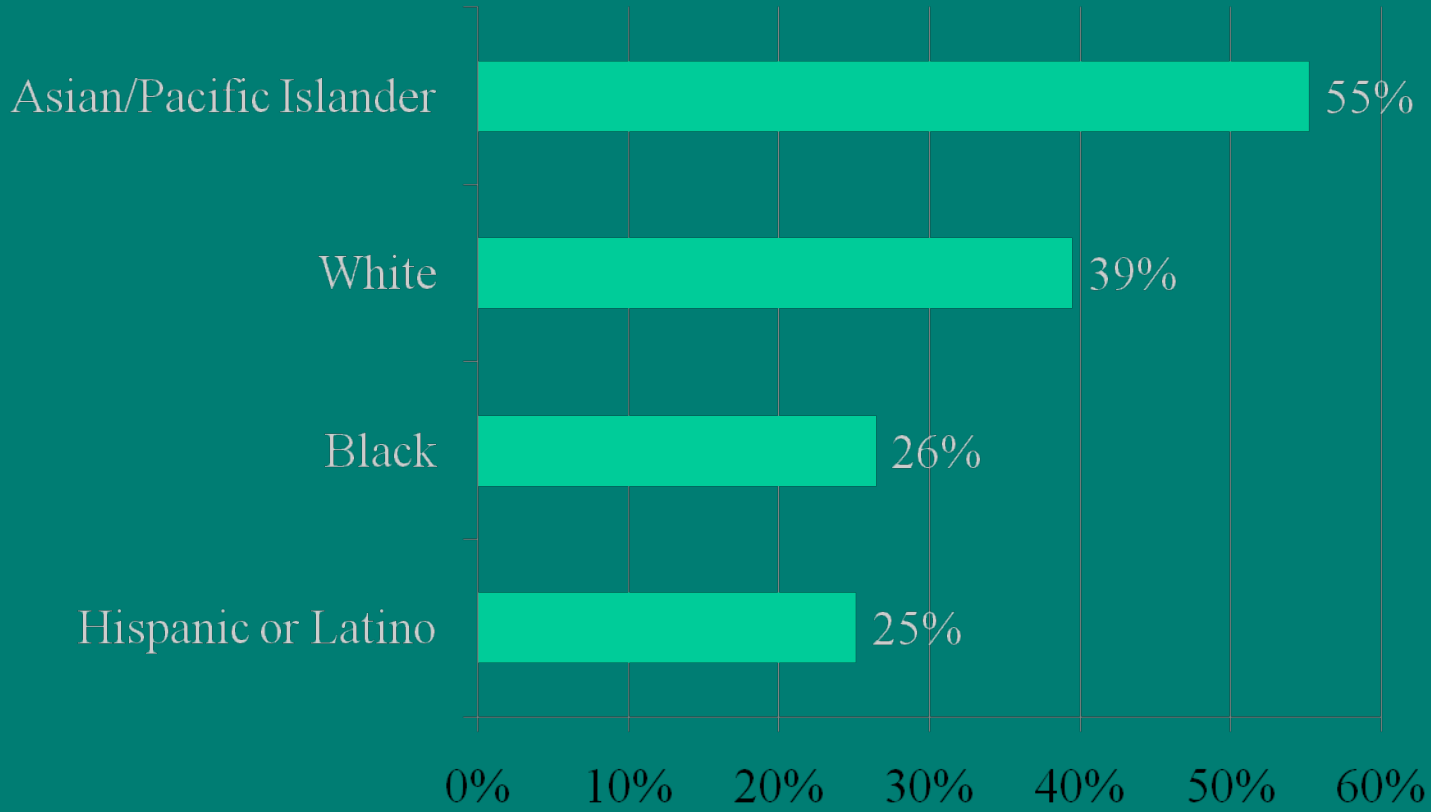
# California Is Becoming Less Educated Than Other States (Rank Among States in % with College Degrees)

Age Group:	AA or Higher	BA or Higher
>64	2 <sup>nd</sup>	5 <sup>th</sup>
45-64	11 <sup>th</sup>	10 <sup>th</sup>
35-44	21 <sup>st</sup>	16 <sup>th</sup>
25-34	30 <sup>th</sup>	23 <sup>rd</sup>

# Regional Variation: Share of HS Graduates Completing a-g



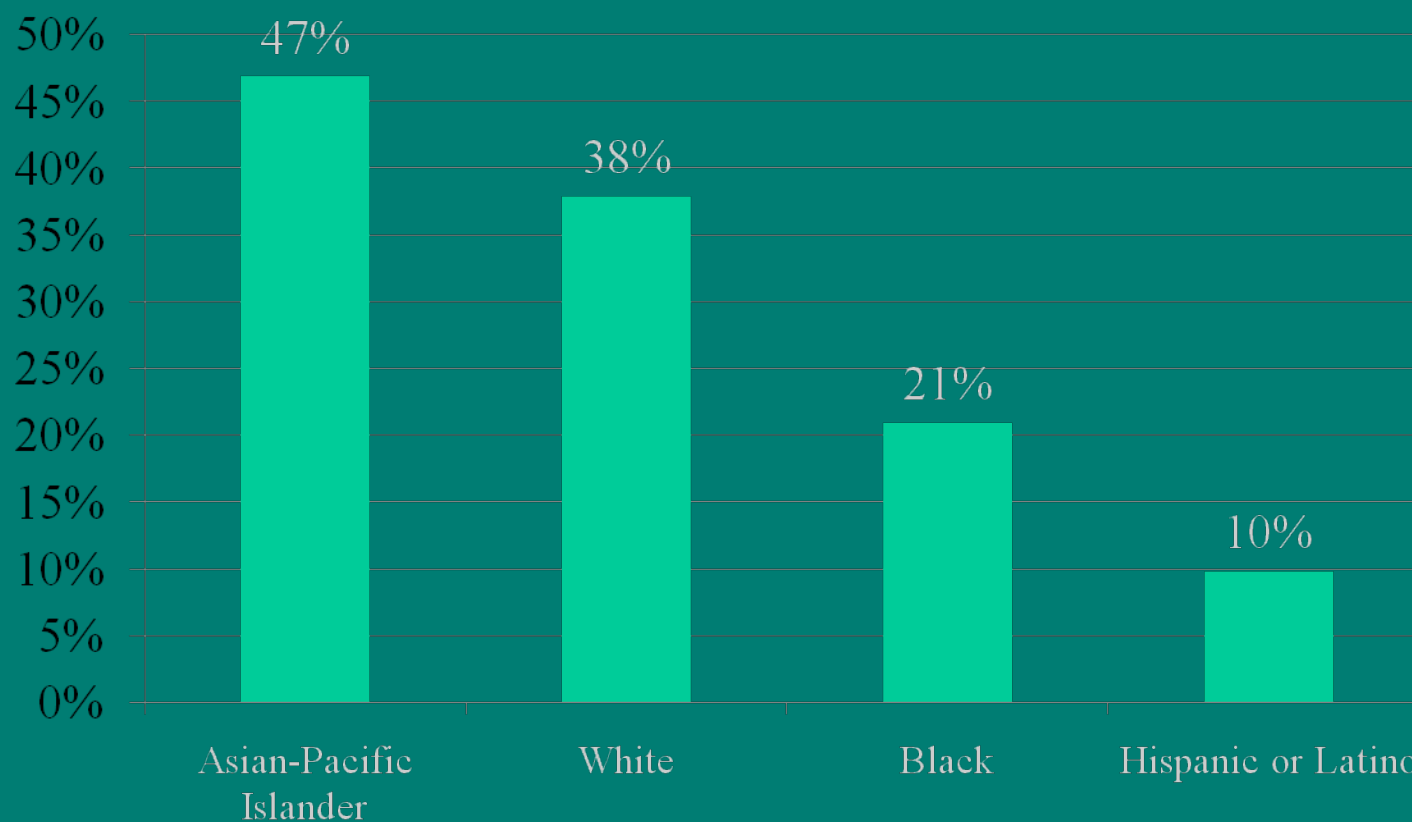
# Racial/Ethnic Gaps in Share of HS Graduates Completing a-g



# Regional Variation: Percent of Working-Age Adults with BA



## Racial/Ethnic Gaps in Percent of Adults with a BA



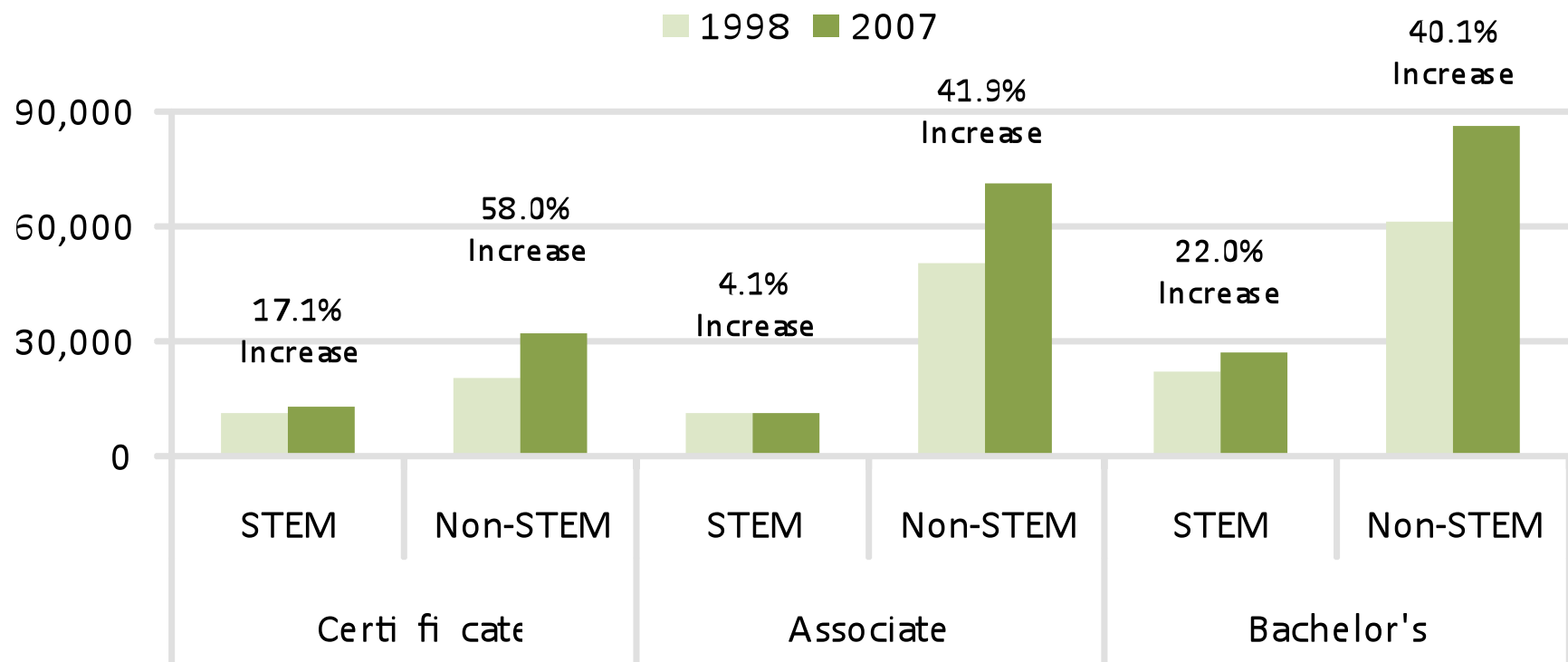


## Shortages in Science, Technology, Engineering, and Math (STEM) Fields

- Forthcoming report
- STEM job growth exceeds non-STEM growth
- STEM degrees increasing more slowly than non-STEM
- Huge impending retirements of educated workers
- Fewer Latinos, blacks, women pursue STEM
- International and national competition for STEM workers threatens CA competitiveness
- Growing shortage

Figure 7

The Number of Degrees and Certificates Awarded in STEM Fields Have Increased Less than in Non-STEM Fields in the CCC, CSU, and UC



## California Confers Fewer Bachelors Degree than Other New Economy States

	Top Ten Highest Scoring States on the New Economy Index (2007)	Bachelor's Degrees Conferred in Natural Sciences and Engineering per 1000 18-24 year olds (2005)
MA	96.1	12.2
MD	85.0	11.1
CO	78.3	11.1
NY	77.4	8.7
VA	79.5	8.4
DE	79.6	8.3
WA	84.6	7.3
NJ	86.4	7.2
<b>CA</b>	<b>82.9</b>	<b>6.9</b>
CT	81.8	6.8

California State University, Sacramento

## What Can be Done?

- Leadership
  - Executive branch
  - With urging from external groups
- Planning Framework – “Public Agenda”
  - Goals
  - Policies
  - Funding
  - e.g., KY, TX, OH, WA

## Some Lower-Cost Policy Changes

- **Flexible use of resources**
  - Break down silos
  - Hire and spend to best serve students
- **Incentives for success** (OH, TX, WA)
  - Fund course completion; degree completion
  - Reward progress *within* institutions
  - Incentives for high-need/high cost programs
  - Incentives to serve under-served
  - Incentives for collaboration
- **Clearer pathways to certificates and degrees**

# Career Pathways

- Plan around two populations
  - Define and align “career readiness” in high school
  - Design career pathways for adults; integrate with basic skills
- Support structured career pathways
  - WA: tipping point study and IBEST
  - Kentucky: 22 structured career pathways
  - Oregon: roadmaps for 35 high-demand careers
  - Ohio: stackable certificates
  - California: SB 70; Career Advancement Academies

## Bringing Career/Technical Education to Scale

- Identify policy barriers, e.g.
  - Faculty hiring
  - Traditional academic calendars
  - Funding levels – high cost programs, counseling
  - Rules and regulations that sustain silos
  - Financial aid
  - Data systems
- Institutionalize pathways
  - Student goals and counseling – “roadmaps”
  - Basic skills – stronger focus on career pathways
  - Structure and sequence of core CTE curriculum