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# California Community College Career Technical Education Programs and the College Completion Agenda

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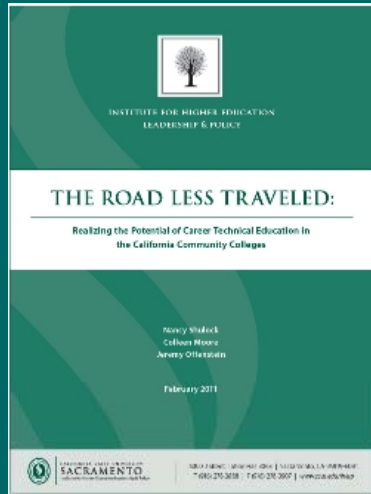
UC/ACCORD Pathways to Postsecondary Success Convening

January 26, 2012

San Diego, CA

## CTE in the National Context

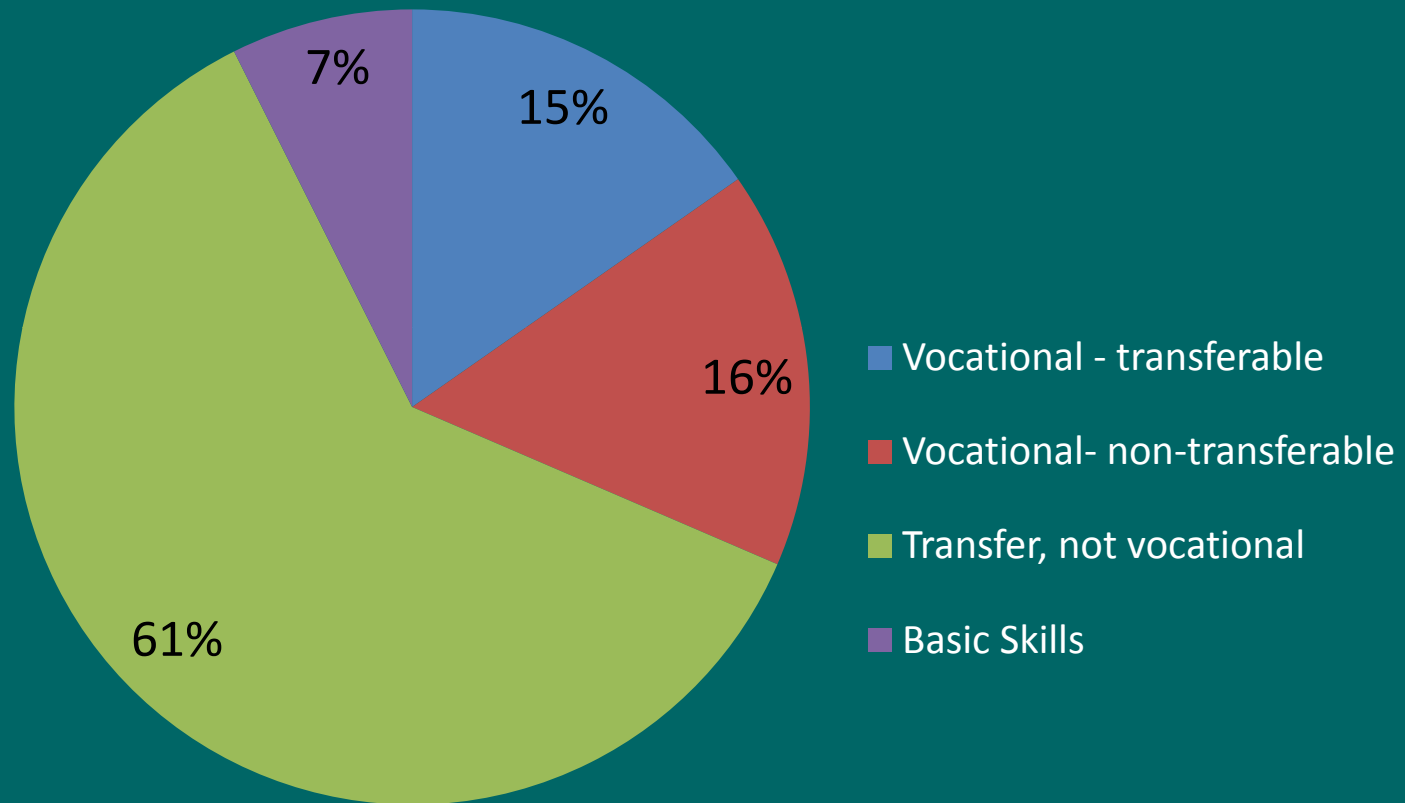
- National attainment agenda – emphasis on bachelors
- Growing recognition of importance of CTE
  - Projected job openings with 2 years college
  - High value – often higher than 4r-year degree
  - Career pathways addressing tracking concerns
  - Certificates – which have value?
  - “Some college/no degree”
- Focus not usually on traditional college-age student
  - Missed high school pipeline opportunities



## Findings – from Exploratory Research in Four Fields

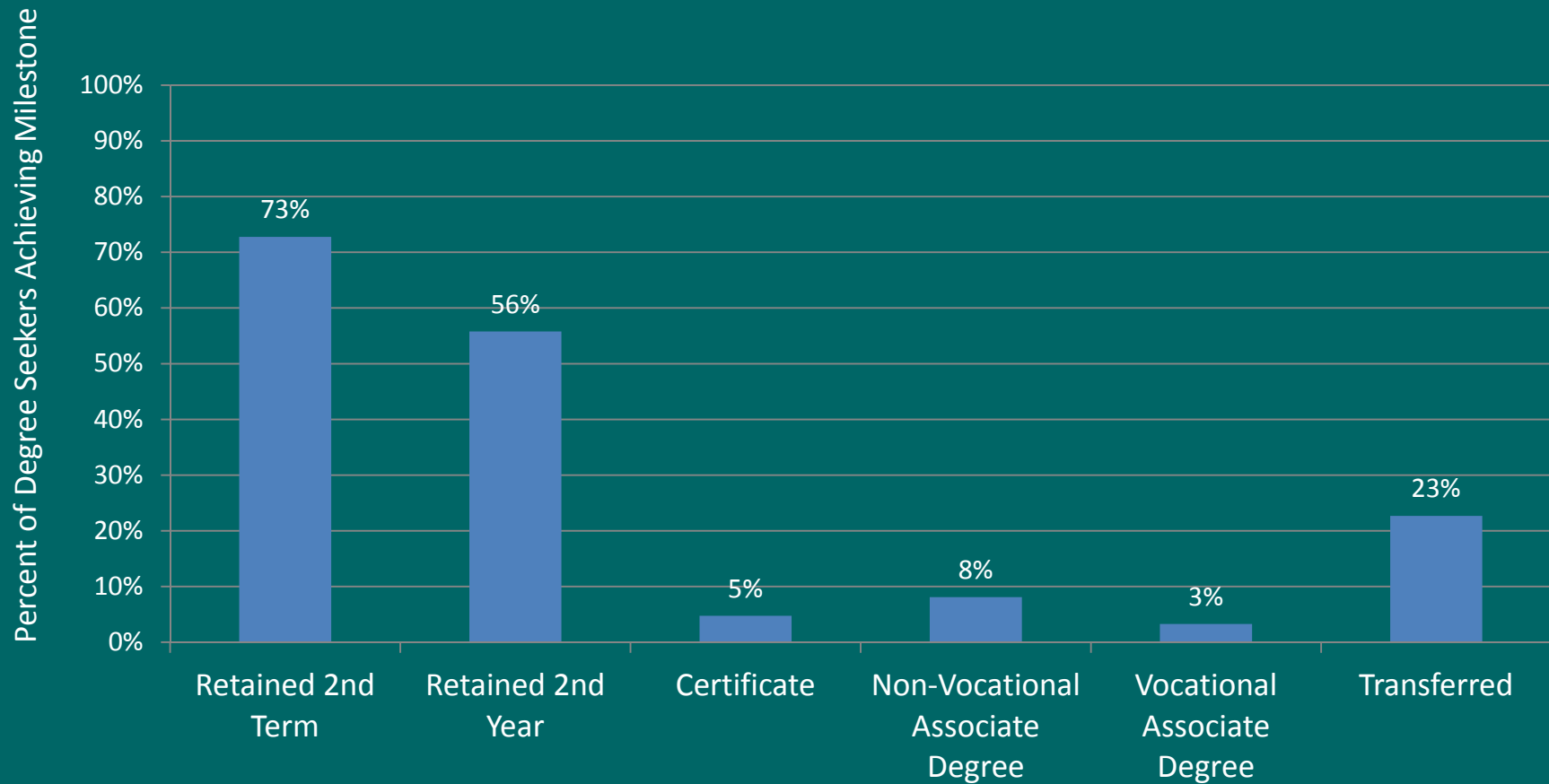
- Good student progress not translating into certificates and degrees
  - 30+ credits; math but no credential
- Pathways don't often lead to *technical* credentials
- Little evidence of sequential progression in field
- Extensive program offerings and variability

# One Third of Course Enrollments are Vocational



# Few Students Earn Vocational Credentials

Milestone Attainment within 6 Years among Degree Seekers



# Current Research Agenda

## Strengthening CTE through Policy Reform

1. Document CCC structure and funding for CTE and economic and workforce development
2. Inventory and analysis of programs offered
3. Leading states – what can we learn?
4. Analysis of CCC policy environment – help or hinder the CTE mission?

## Two Related CCC Missions – Common Goal: Strengthen California Workforce

- Career Technical Education (CTE)
  - Serve primarily *students* (college credentials)
  - K-12 articulation
- Economic and Workforce Development (EWD)
  - Serve primarily *employers* (customized training)
  - Work with other state agencies, e.g. Labor & Workforce, HHS, Corrections and Rehabilitation
- Scope of our research
  - CTE; EWD as it influences CTE program/curriculum
  - Beyond our scope: entire state workforce system

## Hypotheses

1. Policies are geared more toward academic transfer mission – may not be ideal for CTE mission
  - E.g., adjunct faculty qualifications, faculty workload, course scheduling, financial aid, degree requirements, transfer of credits
2. Policies and programs established *specifically* for CTE/workforce development reflect serial legislative priorities – not coherent or efficient today



## Criteria for Effective CTE – from literature review

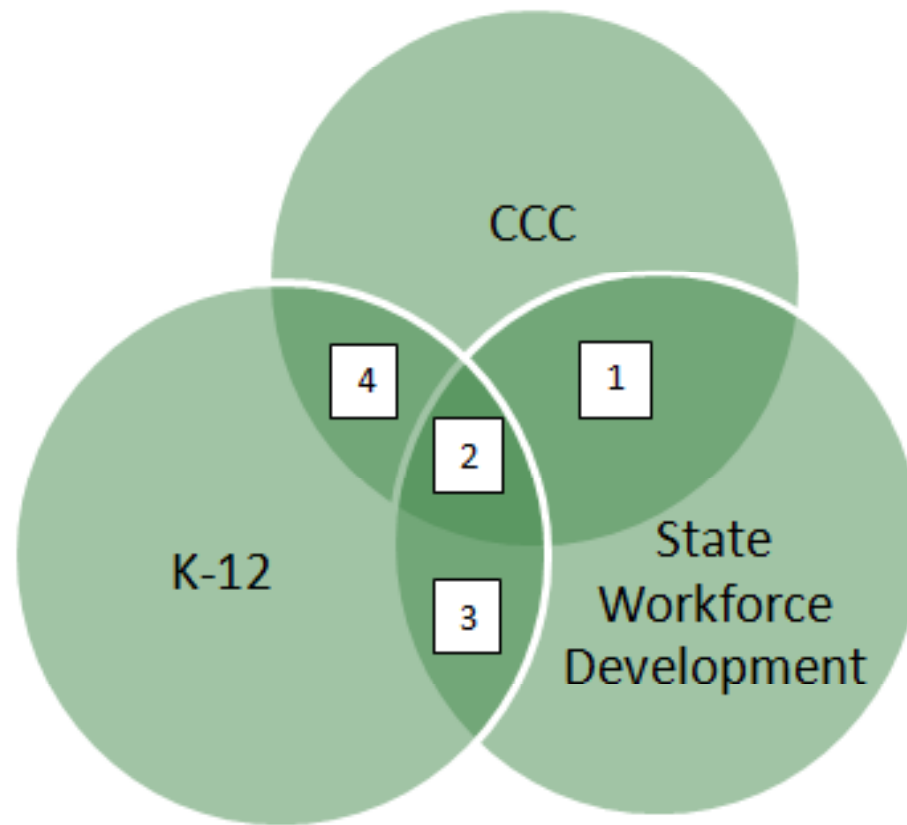
1. Programs articulate with K-12 where appropriate
2. Prospective students are helped to identify and enroll in community college CTE programs of interest
3. Program offerings adapt to changing labor market needs
4. Efficient pathways exist for transition into entry level credentials and advancement through credential levels
5. Students and employers understand the skills and competency outcomes of credential programs
6. Credentials offered have market value for students, as validated by outcomes data
7. Resource allocation for CTE programs is predictable and responsive to workforce priorities



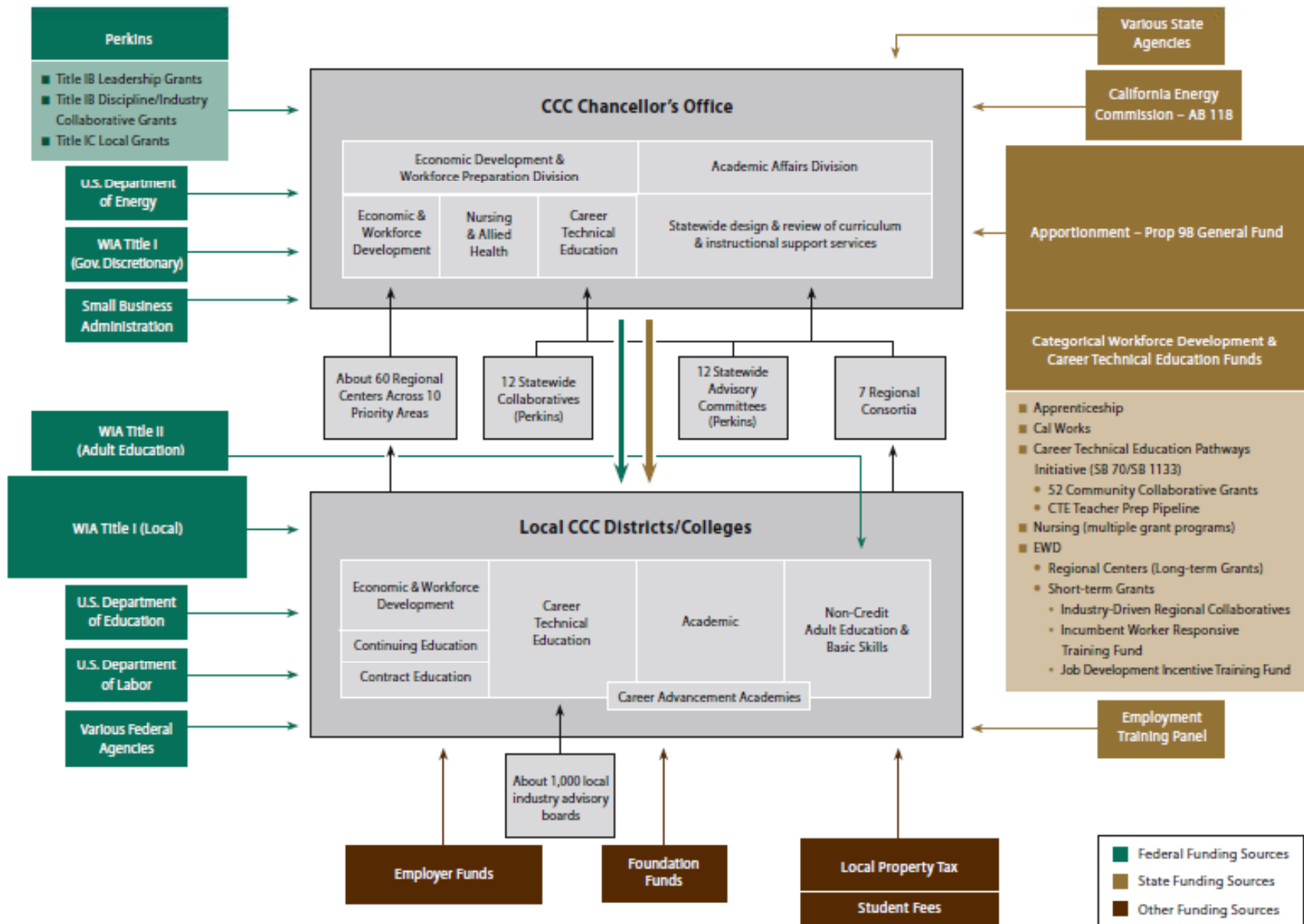
# Findings – Structure and Finance



Figure 3  
Community College Role in Workforce Development



California Community Colleges Career Technical Education/Workforce Preparation Structure and Funding (Fall 2011)



## Issue 1

### Structure is Fragmented and Overly Complex

- EWD - 10 strategic priorities
  - mix of industry and capacity building
- CTE - 12 statewide collaboratives
  - ≠ 12 statewide advisory committees
  - don't map to strategic priorities
  - don't coordinate with local advisory committees
- Statewide advisory committees ≠ 15 industry sectors
  - No systematic linkages to local advisory committees

## Issue 2

### Silos Marginalize CTE and Hinder Program Vitality

- CTE/EWD separate from Academic Affairs
  - CTE seen as not academic
  - Basic skills for CTE not a priority
- CTE separate from EWD
  - Hinders responsiveness to industry needs
- Silos at system and college levels

## Issue 3

### Reliance on Competitive Grants Distorts Resource Allocation

- General fund allocations don't accommodate higher costs of CTE programs
  - Disincentive for high cost/high need programs
- Huge array of state/federal/private competitive grants
  - Uneven capacity – rich get richer
  - Money chase shapes the mission
  - Competition rather than regional cooperation

## Issue 4

### Chancellor's Office Lacks Capacity for Strategic Leadership

- Largely compliance and grant administration
- Strategic leadership lacking to:
  - Promote common vision
  - Leverage and maximize available grant funding
  - Establish skill and competency standards
  - Ensure access to quality labor market data
  - Expedite program approval; minimize program duplication
  - Lead transition from course-based to program-based CTE
  - Develop robust accountability
- Reliance on lead campuses
  - Responsibility exceeds authority
  - Potential conflict of interest



## Issue 5

### Accountability for Outcomes is Inadequate

- No *program* data
  - Students do not enroll *in programs* (a few exceptions)
  - Course outcomes  $\neq$  program outcomes
- No systematic link to labor market outcomes
- State accountability reporting (ARCC)
  - Annual counts of activities and enrollments
- Ineffective program review and discontinuation policies

# Preliminary Findings – Analysis of Program Inventory



## Methods

- CCC's inventory of approved programs (associate degrees, certificates of 18+ credits)
- College catalogs for college-approved certificates
- Definitions:
  - Field: An area of study defined at the 4-digit TOP code level (Taxonomy of Programs), for example 0514 = Office Technology or 1306 = Nutrition, Foods, & Culinary Arts
  - Program: A certificate or degree program at an individual college, for example AS in Dental Hygiene at Foothill College or certificate in Court Reporting at Cypress College
- Only CTE fields (TOP codes) in credit programs

## Huge Array of Program Offerings

- About 8,000 certificate programs and 4,500 associate degree programs in 142 fields
- Average per college: 113 programs in 25 fields
- Range of programs: 28 (Porterville) - 275 (Long Beach)
- Average per region: 959 programs in 91 fields
- Most commonly offered fields (certificate and degree)
  - Office Technology
  - Automotive Technology
  - Child Development/Early Care and Education

# Example of Multiple Program Offerings Per Field

San Joaquin Delta College (#units in parentheses)

Office Technology	Child Development / Early Care and Education	Automotive Technology
AS , Office Management	AA, Early Childhood Education	No associate degree
Cert, Office Mgmt (37)	Cert, ECE Site Supervisor (60)	Cert, Auto Dealer Tech (67)
Cert, Admin Asst (35)	Cert, ECE Master Tchr (48)	Cert, Auto Master Tech (59)
Cert, General Office (31)	Cert, ECE Teacher (40)	Cert, Auto Elec Tech (43)
Cert, Word Process/ Desktop Publishing (30)	Cert, ECE Assoc Teacher (12)	Cert, Auto Mech Tech (41)
Cert, Medical Office Asst (7)		Apprenticeship, Auto Master Tech (40)
Cert, Office Apps (13.5)		
Cert, Office Asst (12)		

# Highly Variable Program Structure

- Certificates – Many short-term certificates
  - Average : 24 credits
  - Program range : 0.5 - 102 credits
  - 4 fields have average credit requirements of 15 or less
  - 3 fields have an average credit requirement of over 60 credits (requirement for associate degree (Physicians Asst, Radiologic Tech, Diagnostic Medical Sonography – likely licensure requirements))
- Degrees
  - Average *major subject* requirements: 34 credits
  - Lots of variation within similar programs in major requirements
  - Program range: 18 - 124 *major* credits
  - One field has an average of <20 major credits (Health Occupations, General)
  - 3 fields have an average of at least 65 major credits (Respiratory Care/Therapy, Radiologic Tech, Physicians Asst)

# Example of Variation across Programs

## Associate Degree in Engineering Technology

Merced College	San Joaquin Delta College	Modesto Junior College
<p>30 major credits, as follows:</p> <ul style="list-style-type: none"><li>• General Chemistry (5)</li><li>• Physics (4)</li><li>• Engineering Materials (3)</li><li>• FORTRAN Programming (3)</li><li>• Elementary Mechanics (3)</li><li>• Direct and Alternating Current Circuits (5)</li><li>• Descriptive Geometry (3)</li><li>• Calculus I (4)</li></ul>	<p>18 major credits, selected from (all 3 credits):</p> <ul style="list-style-type: none"><li>• Drafting (Engineering, Computer-aided, Civil, Machine)</li><li>• Materials &amp; Measurement</li><li>• 3-dimensional Modeling</li><li>• Machine Design</li><li>• Mech. &amp; Elec. Systems</li><li>• Industrial Control Systems</li><li>• Applied Surveying</li><li>• Technical Statistics</li><li>• Applied Statistics</li></ul>	<p>31 major credits, as follows:</p> <ul style="list-style-type: none"><li>• General Chemistry (5)</li><li>• General Physics OR Mech. Heats &amp; Waves (5)</li><li>• Intro to Engineering &amp; Architecture (1)</li><li>• Engineering Graphics (4)</li><li>• Elementary Statistics (5)</li><li>• 6 credits from General Computer Lit (3), Machine Tool Tech (4), Arc &amp; Gas Welding (3)</li><li>• 5 elective credits from a list (mostly Drafting or Calculus)</li></ul>

# Example of Variation across Programs

## Certificate in Computer Programming

Laney College	Gavilan College	San Jose City College
<p>47 - 56 credits</p> <ul style="list-style-type: none"> <li>• Intro. Comp. Sci. (5)</li> <li>• Intro. Programming (5)</li> <li>• C Programming (4)</li> <li>• Intro to Op. Sys. (1)</li> <li>• Op. Sys. Scripting (1)</li> <li>• Web Publishing (1)</li> <li>• Data Comm./Networks (4) OR Web Pub. II (2)</li> <li>• One writing class (3)</li> <li>• Programming w/C++ (4)</li> <li>• Data Struc./Algorithms (4)</li> <li>• Java Programming I (4)</li> <li>• UNIX/LINUX Op. Sys. (4)</li> <li>• 3 electives (e.g., Java, Assembly Language, Info Security, XML Apps.)</li> </ul>	<p>21 - 22 credits</p> <ul style="list-style-type: none"> <li>• C++ Programming I (4) OR C++ Scientific Prog. (3)</li> <li>• C++ Programming II (4)</li> <li>• UNIX/LINUX Op. Sys. (4)</li> <li><i>10 credits from among:</i></li> <li>• Web Page Authoring I (2)</li> <li>• Assembly Lang. Prog. (4)</li> <li>• Java Programming I (4)</li> <li>• C#.NET Programming (4)</li> <li>• Visual Basic.NET Prog. (4)</li> <li>• Perl Programming/Lab (3)</li> <li>• Web Sites with SQL and PHP (4)</li> </ul>	<p>30 credits</p> <ul style="list-style-type: none"> <li>• Intro. Comp. Info. Sys. (3)</li> <li>• C++ Programming (3)</li> <li>• Visual Basic Prog. (3)</li> <li>• Data Structures (3)</li> <li>• Object-oriented Prog. (3)</li> <li>• Java Programming (3)</li> <li>• Intro to UNIX (3)</li> <li>• 9 credits of CIS department electives</li> </ul>



## High Degree of Concentration - Enrollments

- 18% of fields account for 75% of FTES (25 of 142)
- Most popular fields based on FTES
  - Administration of Justice
  - Nursing
  - Child Development/Early Care and Education
  - Accounting
  - Fire Technology
  - Office Technology
  - Information Technology
  - Nutrition/Foods/ Culinary Arts
  - Cosmetology
  - Automotive Technology

## Completions Concentrated in Few Fields

- 6% of fields account for over 50% of completions between 2008 and 2010 (8 of 142)
  - Nursing, Child Development/Early Care and Education, Administration of Justice, Fire Technology, Business Administration, Accounting, Automotive Technology, Business Management
- Most fields have very few completions
  - 70% of the fields produce 10% of completions (99 of 142)
- Breakdown of completions
  - 40% associate degrees
  - 41% short-term certificates (<30 credits)
  - 19% longer-term certificates (30 + credits)

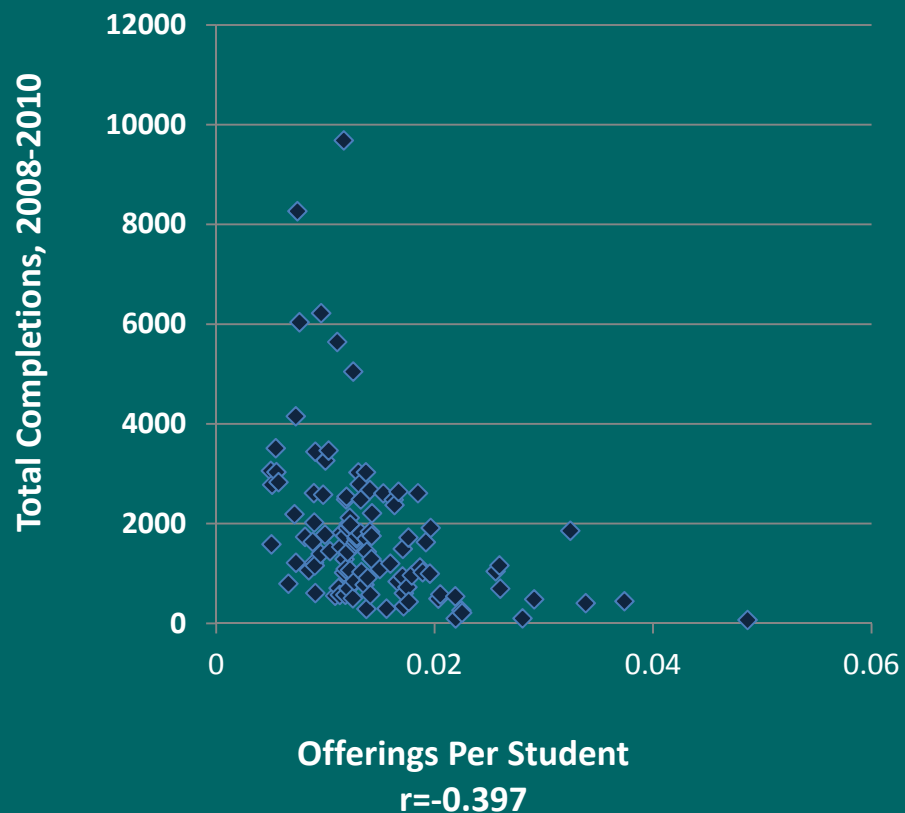
# Spread too Thin?

- Smaller colleges offer more programs per student, which is associated with lower completions per program

Figure 1: Relationship between College Size and Program Offerings Per Student



Figure 2: Relationship between Program Offerings Per Student and Completions



## Key Issues

- Program offerings appear too extensive
  - Not reflective of careful planning about which programs are most essential to students and economy
  - May reflect faculty interests/availability and/or ineffective processes for eliminating programs
- Abundance of short-term certificates limits value
  - Of little value to students with no prior college credential
  - Could serve as building blocks to something of value, but no evidence they currently do
- Variability across similar programs problematic
  - Prevents good understanding by students and employers about the meaning and value of credentials

## Revisiting Criteria for Effective CTE

1. Programs articulate with K-12 where appropriate
  - Difficult with decentralized, course-centric paradigm
2. Prospective students are helped to identify and enroll in community college CTE programs of interest
  - Too few counselors who understand programs
  - Transitions from not-for-credit not smooth
3. Program offerings adapt to changing labor market needs
  - Uneven access to labor market data and industry advice
  - Absence of effective program review and discontinuation
4. Efficient pathways exist for transition into entry level credentials and advancement through credential levels
  - Lack of systemic attention to pathways paradigm
  - Silos prevent seamless transition

## Revisiting Criteria for Effective CTE (cont.)

5. Students and employers understand the skills and competency outcomes of credential programs
  - Too much variability among similar programs
6. Credentials offered have market value for students, as validated by outcomes data
  - No systematic approach to validating labor market outcomes
7. Resource allocation for CTE programs is predictable and responsive to workforce priorities
  - No accommodation of high-cost, high-need programs
  - Uneven capacity to compete for grants; unpredictable finances



# Preliminary Findings – Effective Policies in Other States

## Some Leading States

- Several states have made notable attempts at reforming their system of CTE delivery, including:
  - Arkansas
  - Florida
  - Kentucky
  - Ohio
  - Oregon
  - Tennessee
  - Washington
  - Wisconsin



## Effective Policies in Other States

- Pathways in fields of work run from K-12 through University
  - Programs should be offered at secondary schools, with articulation to community colleges
  - At community colleges, programs reach from adult basic education (ABE) up to university transfer, with multiple entry and exit points in between
- As seen in: Washington, Arkansas, Wisconsin, Ohio, Florida, Kentucky, Oregon

## Effective Policies in Other States

- Programs are structured and aligned with labor market needs
  - The programs that students study meet a need and will have jobs available
  - Programs meet industry standards so that students are prepared for employment and employers understand what skills and competencies graduates possess
  - New programs are added as new needs develop and unnecessary programs are efficiently removed
- As seen in: Tennessee, Florida, Arkansas, Wisconsin, Washington

## Effective Policies in Other States

- Programs use available data to track student outcomes
  - Programs track job placement and salaries to ensure that students are entering the professions they trained for and receiving strong wages
  - Data is used to analyze labor markets and ensure programs are offered in high-demand and high-wage fields
- As seen in: Arkansas, Kentucky, Wisconsin, Florida

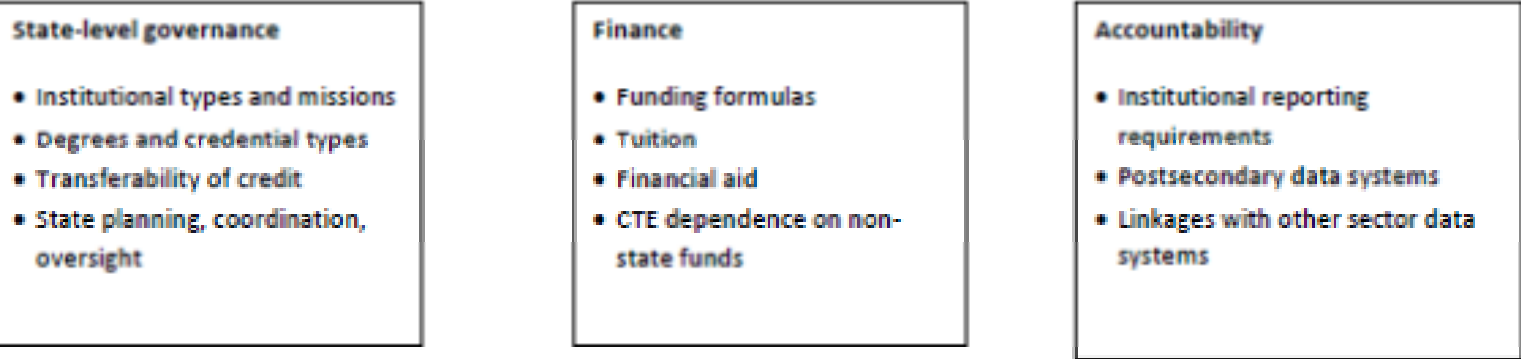


# Policy Implications and Ongoing Research Directions

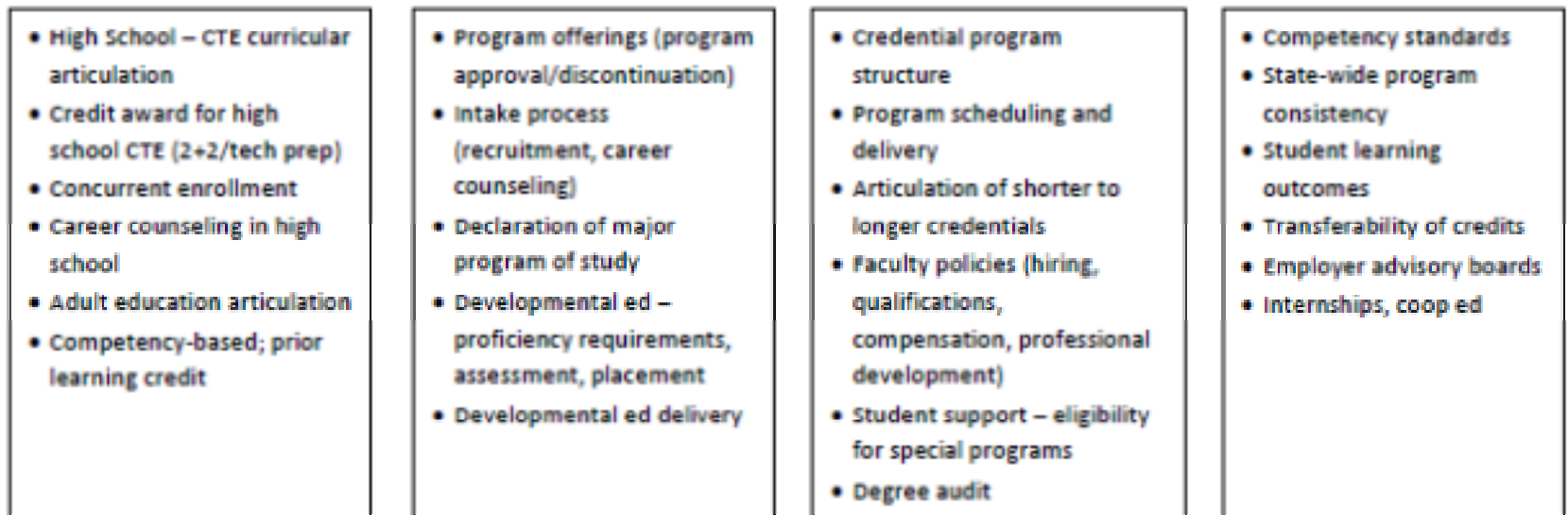


## Identifying Policy Barriers to Effective Community College CTE Program Outcomes

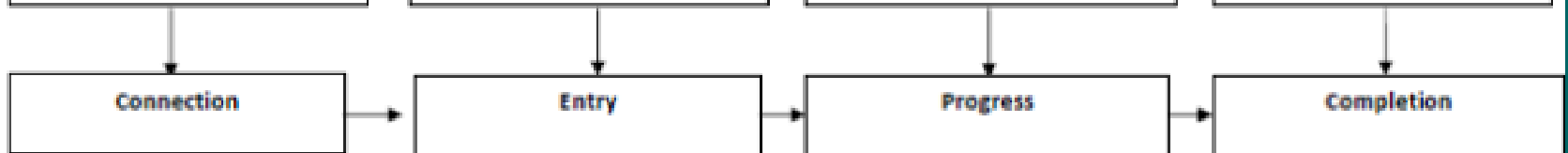
### Governing Policies



### Educational Policies



### Student Progress



## Examples of Policy Barriers

- *Associate Degree requirement*
  - Math course with prereq. of elementary algebra or equiv. creates disincentives for contextualized math in CTE courses
- *Transfer of credits*
  - Substantive CTE coursework can't transfer if taught as upper division at CSU
  - High school-CCC articulation agreements are faculty- and course-specific, and don't create pathways
- *Program approval*
  - Too slow for credit CTE
  - Full process required even if program operates in other colleges, e.g., retail management certificate
  - Program elimination requires academic senate approval

## Examples of Policy Barriers - continued

- *Faculty hiring*
  - Full-time faculty obligation
  - Part-time workload limit of 67% of full load
  - Part-time pool processes
  - Minimum degree requirements – problematic in some fields
  - Teaching credential required to teach high school CTE
- *Faculty workload provisions*
  - Semester-based policies don't accommodate some CTE
    - e.g. Academy format - must pay higher contract rates if exceed # days
  - Open labs must be scheduled courses at higher \$\$
  - Professional development and outreach not compensated

## Opportunities for Reforms to CTE

- New EWD/CTE leadership
- Student Success Task Force
  - Program of study emphasis
  - Education plans
  - College scorecards
  - Basic skills - alternative approaches
- Career Advancement Academies
- Legislative interest in workforce issues
- EWD sunset January





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### Reports on community college student success:

*Rules of the Game*, February 2007

*Beyond the Open Door*, August 2007

*Invest in Success*, October 2007

*It Could Happen*, February 2008

*Crafting a Student-Centered Transfer Process in CA*, August 2009

*Steps to Success*, October 2009

*Divided We Fail*, October 2010

*The Road Less Traveled*, February, 2011

*Sense of Direction*, August, 2011