The Case for Increasing the Priority of Community College Career Technical Education Programs

Nancy Shulock, Colleen Moore, Jeremy Offenstein

IHELP

Sacramento State University

www.csus.edu/ihelp

PACE Seminar for Education Policymakers and Scholars

October 7, 2011

Key Topics

- Career technical education – national context
- Evidence of unmet potential in CA
- Preliminary findings – structure and finance
- Preliminary findings – program inventory
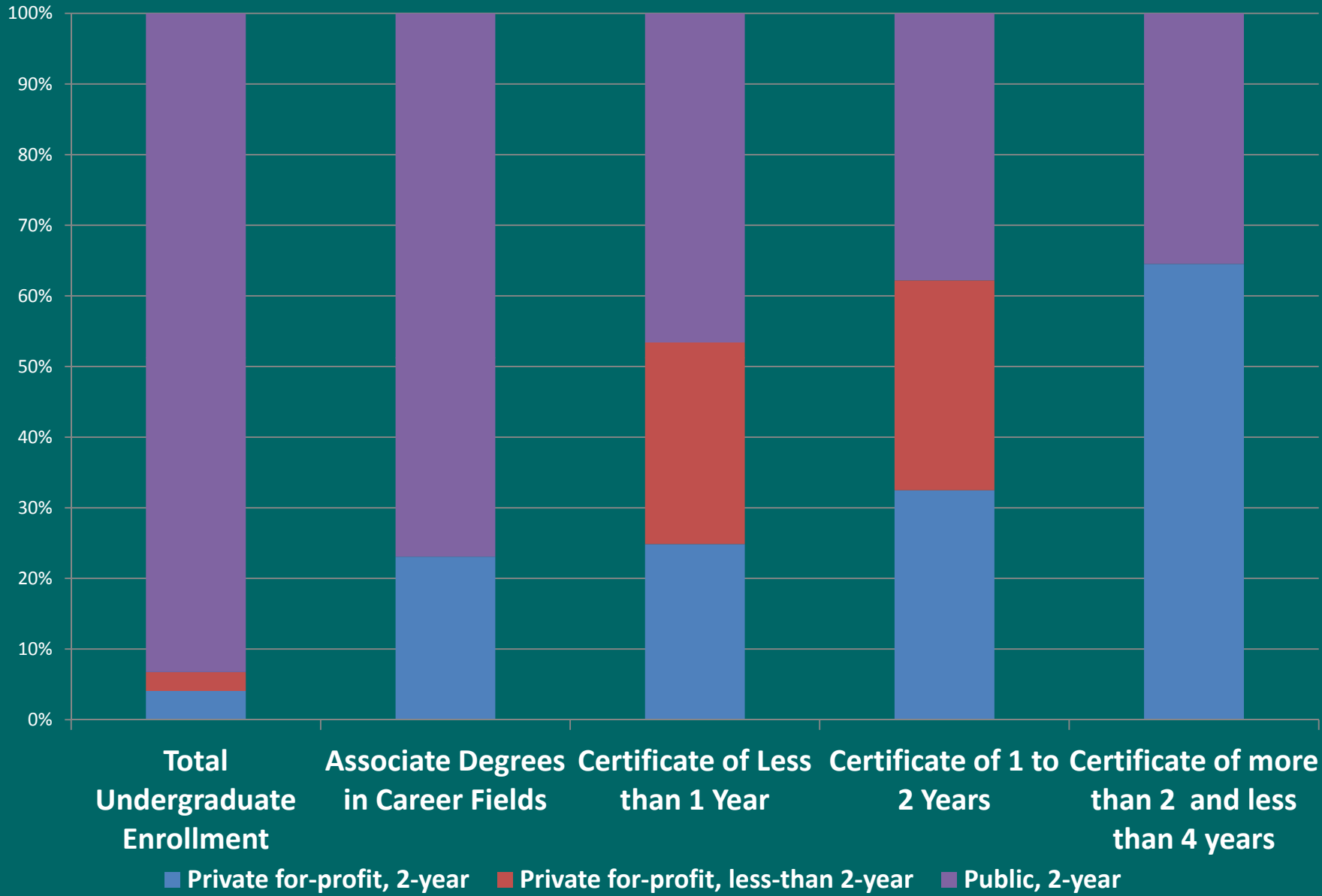- Policy implications and ongoing research directions

CTE in the National Context

- National attainment agenda – emphasis on bachelors
- Growing recognition of importance of CTE
    - High value – often higher than four-year degrees
    - Skills mismatch
    - Career pathways address tracking concerns
    - Certificates – which have value?
        - "Some college/no degree"
- Inadequate language blurs fields/credential types
- Some leading states: KY, WA, AR, OR, WI, FL, OH
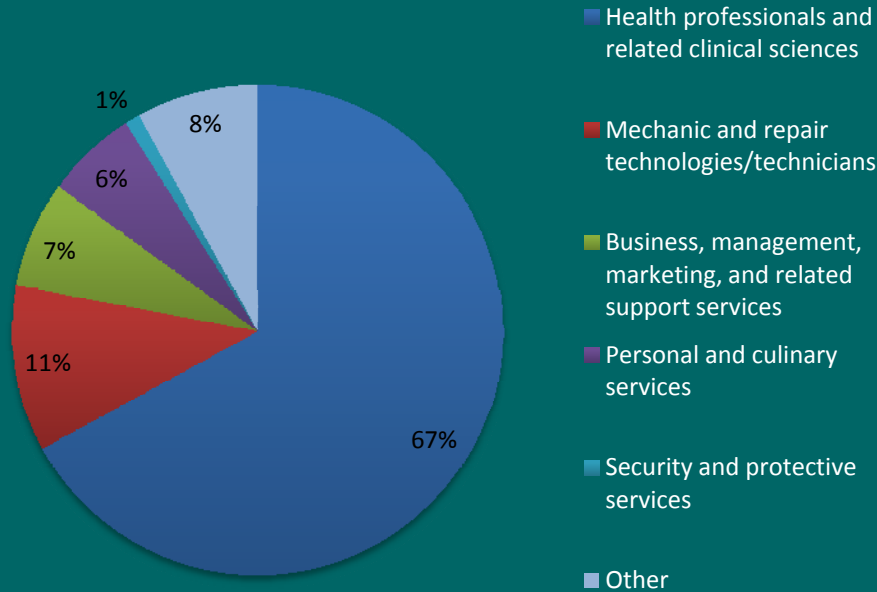- Focus not usually on traditional college-age student

Evidence of Unmet Potential – from
IHELP: *The Road Less Traveled,* February, 2011

- Potential
  - Meet completion, workforce, equity goals
  - Increase productivity
  - Realize benefits of high school reforms
- Limitations
  - Lack of system priority; siloed
  - Weak credential structures and pathways
  - Higher costs not well supported
  - Under-developed data for accountability

Share of Total Enrollment Compared to Share of Completion in Career Fields, For-Profits and Community Colleges in California

Legend:
- Private for-profit, 2-year
- Private for-profit, less-than 2-year
- Public, 2-year

X-axis categories:
- Total Undergraduate Enrollment
- Associate Degrees in Career Fields
- Certificate of Less than 1 Year
- Certificate of 1 to 2 Years
- Certificate of more than 2 and less than 4 years

Certificates and Associate Degrees Awarded in Career Fields by Private For-Profit 2-Year Colleges

- Health professionals and related clinical sciences
- Mechanic and repair technologies/technicians
- Business, management, marketing, and related support services
- Personal and culinary services
- Security and protective services
- Other

1%
8%
6%
7%
11%
67%

Certificates and Associate Degrees Awarded in Career Fields by Public 2-Year Colleges

- Health professionals and related clinical sciences
- Mechanic and repair technologies/technicians
- Business, management, marketing, and related support services
- Personal and culinary services
- Security and protective services
- Family and consumer sciences/human sciences
- Other

21%
27%
5%
18%
5%
13%
11%
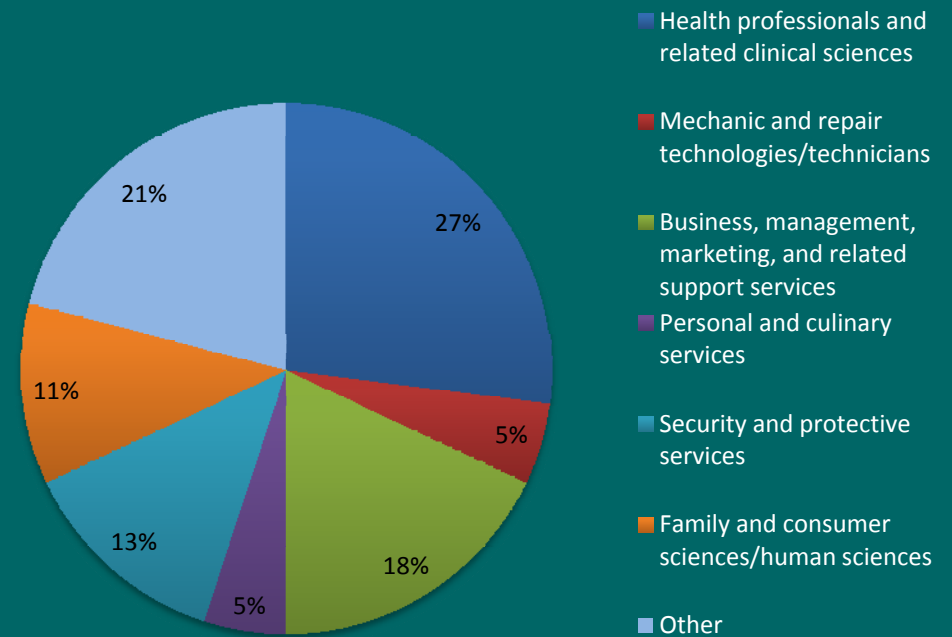
One Third of Course Enrollments are Vocational
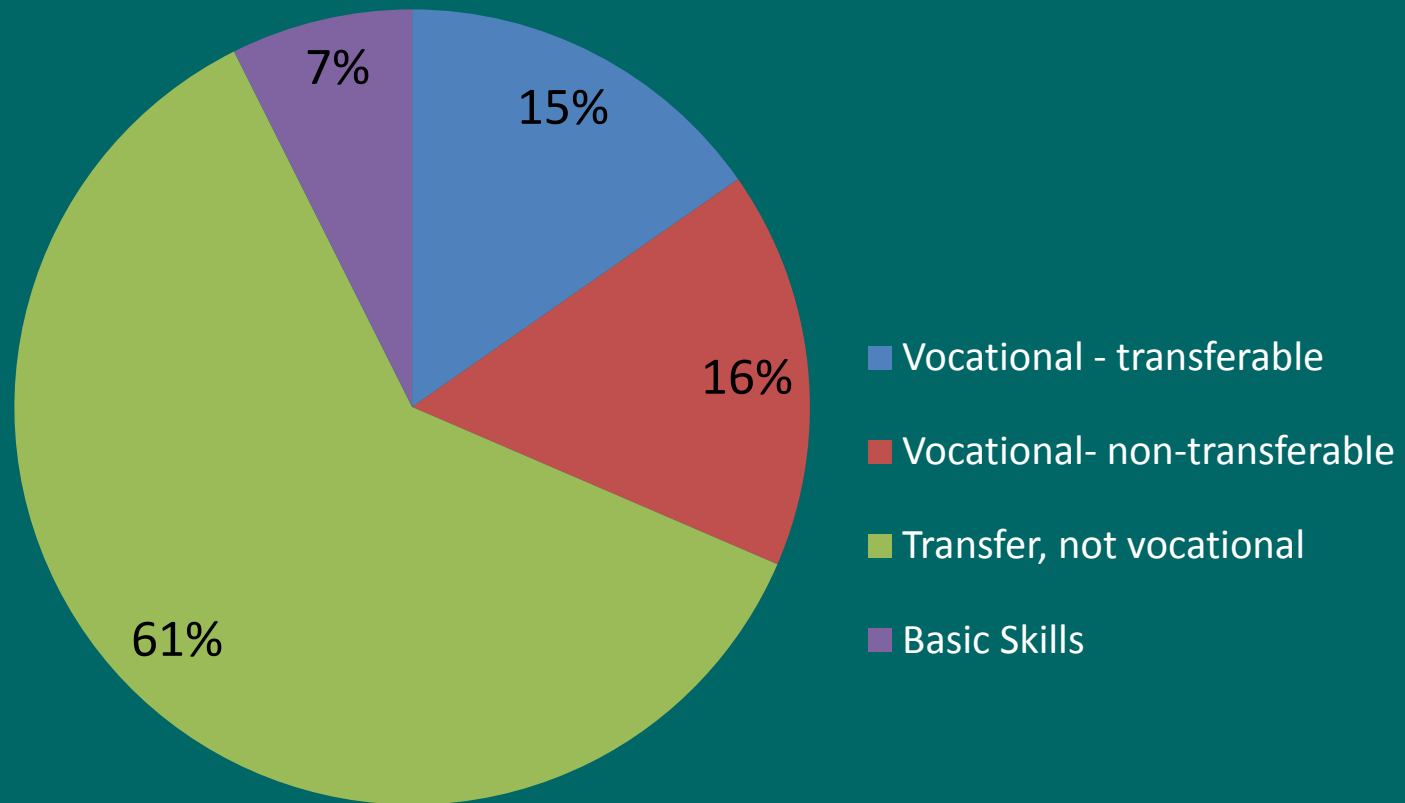
- Vocational - transferable
- Vocational- non-transferable
- Transfer, not vocational
- Basic Skills

15%

16%

61%

7%
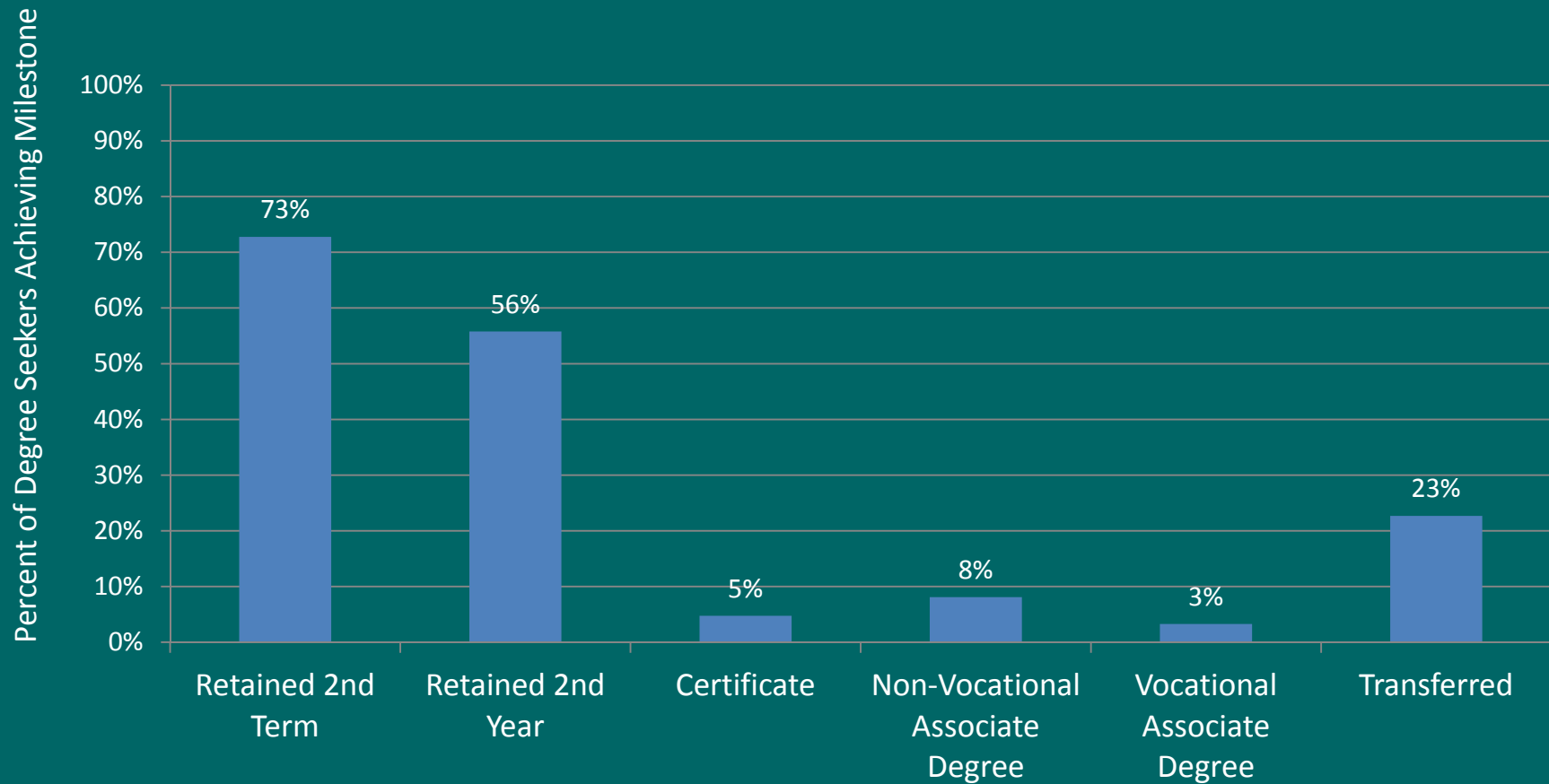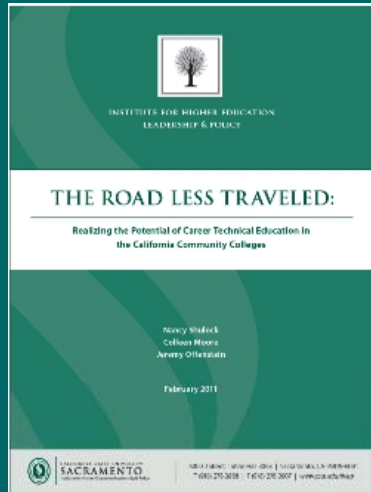
Findings – from Exploratory Research in Four Fields

- 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

Current Research Agenda – Strengthening CTE

Scope limited to educational mission:

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?

the James Irvine foundation
Expanding Opportunity for the People of California

Criteria for Effective CTE/Workforce Education

1. Program offerings meet labor market needs
2. Credentials offered have market value for students
3. Prospective students are helped to identify and enroll in CTE programs of interest
4. Students have clear understanding of program requirements, length, competencies, relevant careers to choose accordingly
5. Efficient pathways exist for career advancement
6. Programs articulate with K-12 where appropriate
7. Credentials send clear messages to employers about what knowledge, skills, and abilities they certify
8. College offerings align with available resources

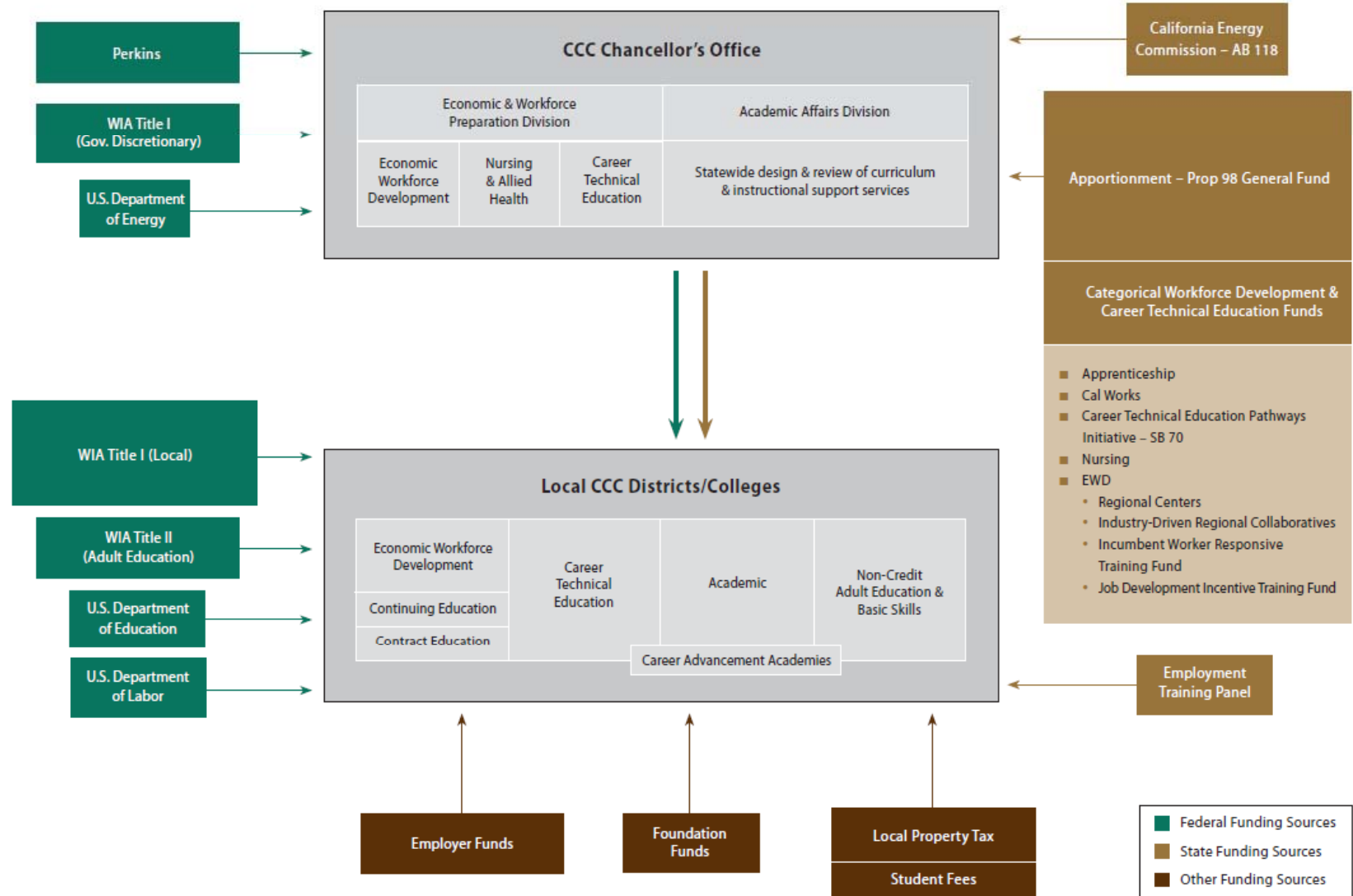# Preliminary Findings – Structure and Finance

CCC Occupies Key Role in State Workforce System

- CDE – high school pathways should connect to CCC
- Labor and Workforce Agency – WIA, ETP
  - Many local programs use CCC for training
  - State/regional workforce development efforts, with CCC
  - Support for business for target populations and industry sectors – CCC contract education
- Health and Human Services Agency – CalWORKS
- Department of Industrial Relations – Apprenticeships
- Department of Corrections – CCC contract education
- Department of Rehabilitation – MOU for services

EWD and CTE

- Economic &Workforce Development program (EWD)
  - Focus on business as client
- Career Technical Education (CTE)
  - Focus on college/student as client
- Integration – desirable goal but not well achieved
- Scope of our project:
  - CTE; EWD as it integrates with CTE
  - Beyond our scope: strengthening state workforce system

Career Technical Education Structure and Funding Sources

Perkins

WIA Title I (Gov. Discretionary)

U.S. Department of Energy

CCC Chancellor's Office

Economic & Workforce Preparation Division			Academic Affairs Division
Economic Workforce Development	Nursing & Allied Health	Career Technical Education	Statewide design & review of curriculum & instructional support services

California Energy Commission – AB 118

Apportionment – Prop 98 General Fund

Categorical Workforce Development & Career Technical Education Funds

- Apprenticeship
- Cal Works
- Career Technical Education Pathways Initiative – SB 70
- Nursing
- EWD
  - Regional Centers
  - Industry-Driven Regional Collaboratives
  - Incumbent Worker Responsive Training Fund
  - Job Development Incentive Training Fund

WIA Title I (Local)

WIA Title II (Adult Education)

U.S. Department of Education

U.S. Department of Labor

Local CCC Districts/Colleges

Economic Workforce Development	Career Technical Education	Academic	Non-Credit Adult Education & Basic Skills
Continuing Education			
Contract Education			
	Career Advancement Academies		

Employment Training Panel

Employer Funds

Foundation Funds

Local Property Tax

Student Fees

Legend	
■	Federal Funding Sources
■	State Funding Sources
■	Other Funding Sources

Silos Impede Integration

- EWD/CTE separated from Academic Programs
- EWD separated from CTE
- Silos at system and college levels

Potential impact:

- Credential programs are not current/high priority
- Few pathways from short-term training to longer-term credit/credentials
- CTE marginalized at colleges
  - Basic skills not addressed for CTE programs
  - High cost programs not well supported
  - Transferable CTE credentials not developed

Primacy of (over-reliance on?) Competitive Grant Funding

- Basic apportionments not seen as supporting CTE
- Perkins - departments compete
- Career pathway initiative (SB 70)
- Huge array of state/federal/private grants

Potential Impact:

- Resources misaligned with program need/quality
- Disincentive for high cost/high need programs
- Unnecessary duplication
- Competition rather than regional cooperation
- Mission shaped by sources of grant money

Inadequate Governance Provisions

- Insufficient capacity and authority at Chancellor's Office
  - Administer grants
  - Approve programs (limited review; across silo)
  - Strategic leadership lacking around:
    - Distribution of program offerings
    - Consistency in program standards (frameworks)
    - Developing workforce-oriented degrees (AAS, applied bacc)
    - Labor market technical assistance
    - Acquisition and distribution of grant funding
- Local responsiveness compatible with greater state/regional coordination

Preliminary Findings –
Analysis of Program Inventory

Methods

- Reviewed CCC's inventory of approved programs (associate degrees, certificates of 18+ credits)
- Reviewed 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
- Focused only on CTE fields (TOP codes) and on credit programs

Program Offerings

- Huge array of programs
  - 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 CC) - 275 (Long Beach CC)
  - Average per region: 959 programs in 91 fields
  - Most commonly offered fields (both 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)		

Definition and Structure of the Programs

- Certificates – Many short-term certificates
  - Lots of variation in credit requirements; average is 24 credits
  - Programs range from 0.5 to 102 credits
  - 4 fields have average credit requirements of 15 or less
  - 3 fields have an average credit requirement that exceeds the 60 credits required for an associate degree (Physicians Asst, Radiologic Tech, Diagnostic Medical Sonography – likely licensure requirements)
- Degrees – Much variation in major credit requirements
  - Lots of variation in major credit requirements; average is 34 credits
  - Programs range from 18 to 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
30 major credits, as follows: • General Chemistry (5) • Physics (4) • Engineering Materials (3) • FORTRAN Programming (3) • Elementary Mechanics (3) • Direct and Alternating Current Circuits (5) • Descriptive Geometry (3) • Calculus I (4)	18 major credits, selected from (all 3 credits): • Drafting (Engineering, Computer-aided, Civil, Machine) • Materials & Measurement • 3-dimensional Modeling • Machine Design • Mech. & Elec. Systems • Industrial Control Systems • Applied Surveying • Technical Statistics • Applied Statistics	31 major credits, as follows: • General Chemistry (5) • General Physics OR Mech. Heats & Waves (5) • Intro to Engineering & Architecture (1) • Engineering Graphics (4) • Elementary Statistics (5) • 6 credits from General Computer Lit (3), Machine Tool Tech (4), Arc & Gas Welding (3) • 5 elective credits from a list (mostly Drafting or Calculus)

Example of Variation across Programs

Certificate in Computer Programming

Laney College	Gavilan College	San Jose City College
47 - 56 credits • Intro. Comp. Sci. (5) • Intro. Programming (5) • C Programming (4) • Intro to Op. Sys. (1) • Op. Sys. Scripting (1) • Web Publishing (1) • Data Comm./Networks (4) OR Web Pub. II (2) • One writing class (3) • Programming w/C++ (4) • Data Struc./Algorithms (4) • Java Programming I (4) • UNIX/LINUX Op. Sys. (4) • 3 electives (e.g., Java, Assembly Language, Info Security, XML Apps.)	21 - 22 credits • C++ Programming I (4) OR C++ Scientific Prog. (3) • C++ Programming II (4) • UNIX/LINUX Op. Sys. (4) *10 credits from among:* • Web Page Authoring I (2) • Assembly Lang. Prog. (4) • Java Programming I (4) • C#.NET Programming (4) • Visual Basic.NET Prog. (4) • Perl Programming/Lab (3) • Web Sites with SQL and PHP (4)	30 credits • Intro. Comp. Info. Sys. (3) • C++ Programming (3) • Visual Basic Prog. (3) • Data Structures (3) • Object-oriented Prog. (3) • Java Programming (3) • Intro to UNIX (3) • 9 credits of CIS department electives

Match to Labor Market Needs

- Really a regional question, but beyond our scope
- Strong production in 4 of the 10 fields associated with the occupations with the most projected job openings

Top 10 Sub-Baccalaureate-Level Occupations with the Highest Number of Projected Job Openings, 2008-18

| *(occupations in bold are those that match to CCC programs among the 10 with the most completions)* |
| --- |
| **Registered Nursing** |
| Computer Support and Other Computer Specialists |
| **Licensed Vocational Nursing** |
| Medical Secretaries |
| **Automotive Service Technicians and Mechanics** |
| **Preschool Teachers** |
| Fitness Trainers |
| Cosmetologists |
| Insurance Sales Agents |
| Paralegals and Legal Assistants |

Source: California Employment Development Department, *Occupational Employment Projections 2008-2018.* Included are the subset of occupations with Education and Training Levels 6 (Associate Degree) and 7 (Postsecondary Vocational Education)

Labor Market Match, cont.

- Neither completions, nor offerings, as a whole, match well with growing or in-demand occupations in CA, although many programs in the growing fields have seen an increase in FTES

Completions in Occupations with Most Job Openings
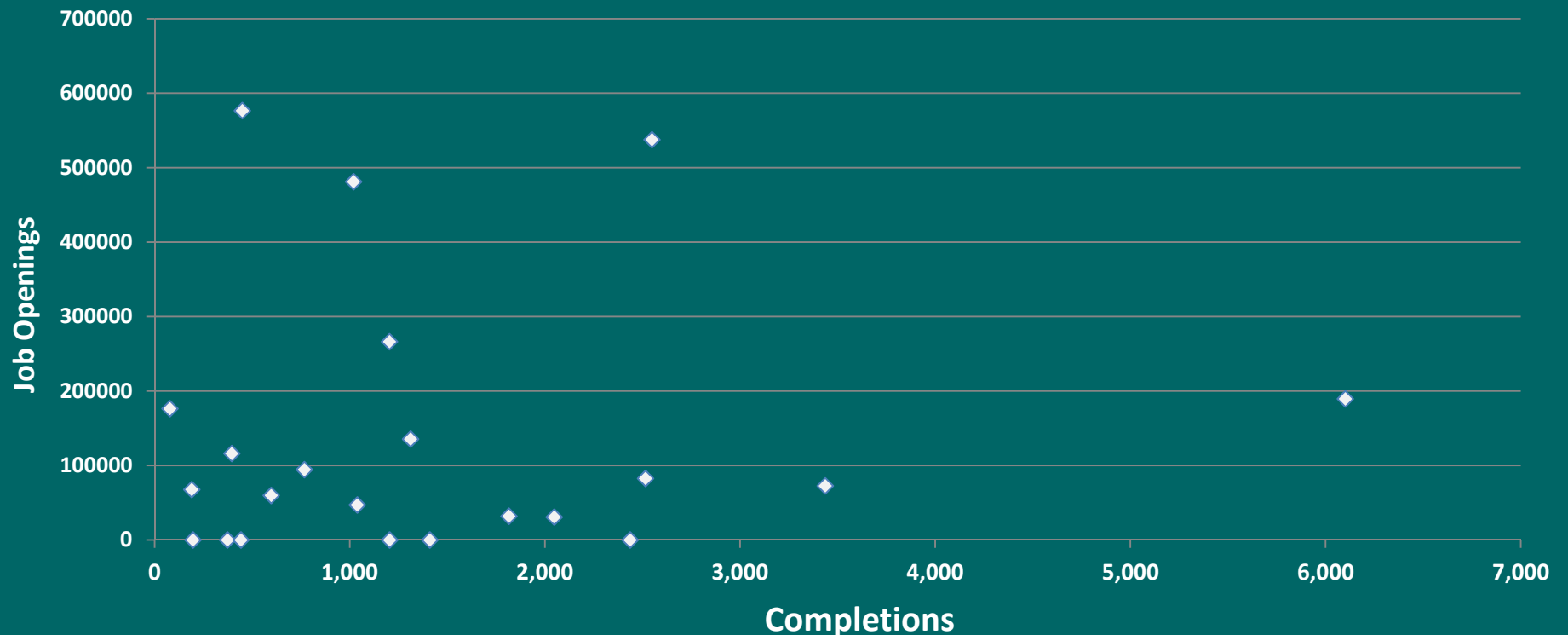
Programs Students are Pursuing

- Activity concentrated in smaller number of fields
  - 18% of fields accounts 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

Programs Students are Completing

- Completions highly concentrated in a small number of fields
  - 6% of fields accounted 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
  - Fields with most completions fairly similar across regions
- Most fields offered have very few completions
  - 70% of the fields combined to produce only 10% of the completions (99 of 142)

Evidence on Efficiency

- Smaller colleges offer more programs per student, which is associated with lower completions per program – likely spread too thin

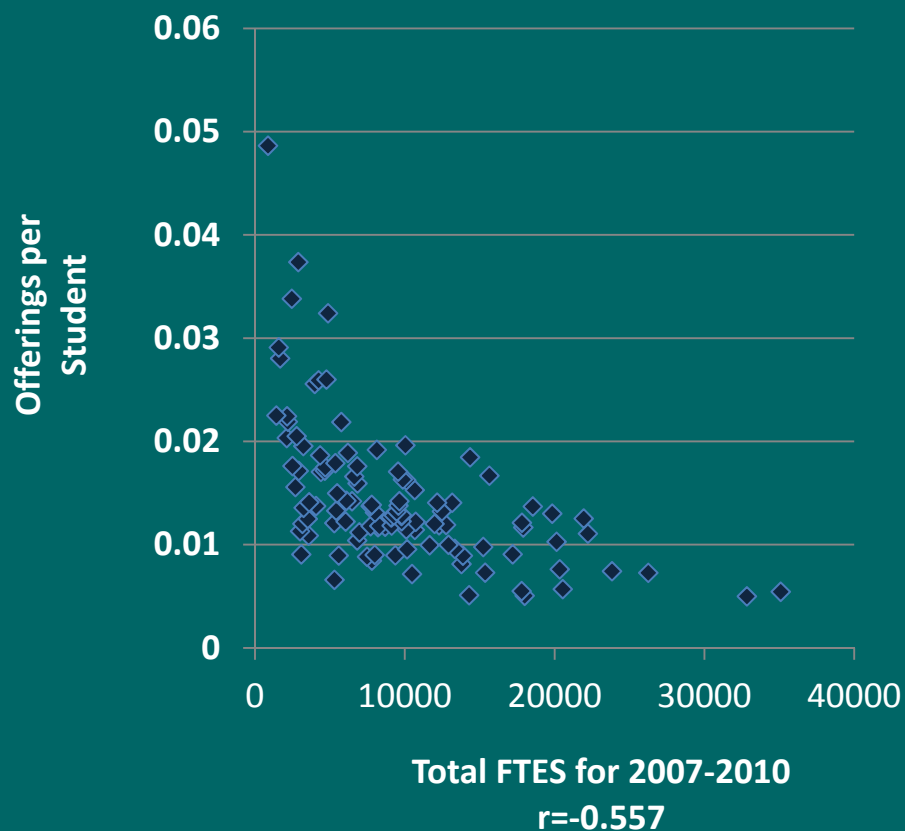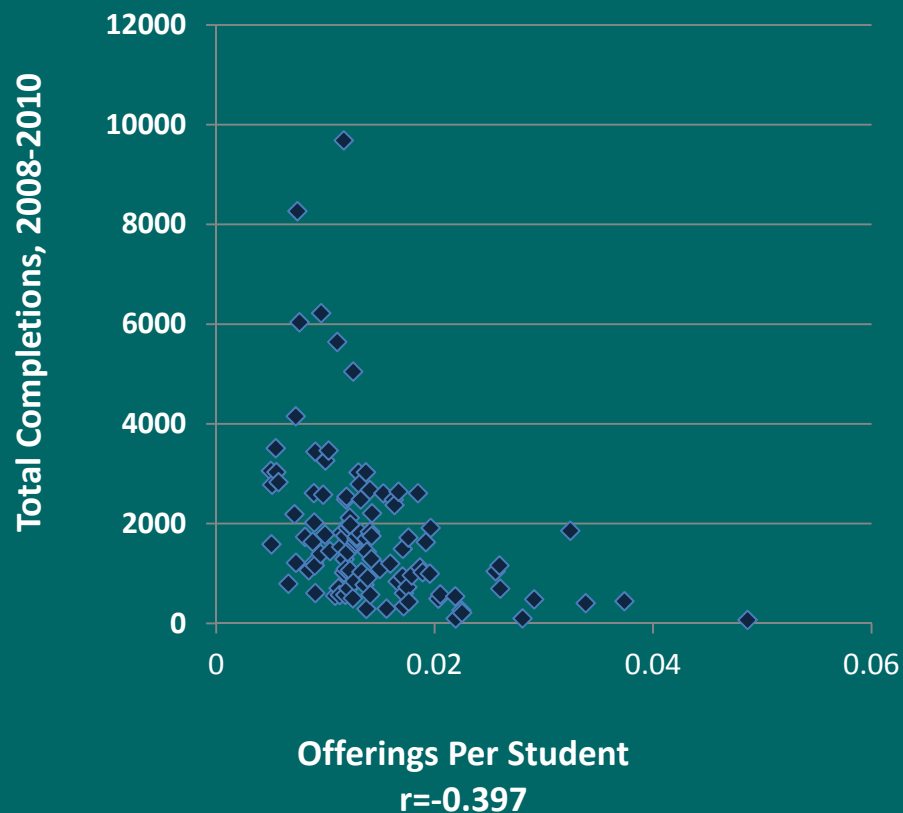**Figure 1: Relationship between College Size and Program Offerings Per Student**

Offerings per Student (y-axis, 0 to 0.06)
Total FTES for 2007-2010 (x-axis, 0 to 40000)
r=-0.557

Figure 2: Relationship between Program Offerings Per Student and Completions

Total Completions, 2008-2010 (y-axis, 0 to 12000)
Offerings Per Student (x-axis, 0 to 0.06)
r=-0.397

Policy Implications and Ongoing Research Directions

Analysis of the Policy Environment

Research hypothesis:

- Current set of policies affecting CCC are better suited to the transfer mission than to CTE and may impede effective CTE mission

Corollary hypotheses:

- Workforce and education are separate policy realms – not necessarily conducive to integration
- Effective state workforce education requires aligning several policy/funding realms: K-12, workforce, CCC - "academic", CCC – CTE, adult ed

Identifying Policy Barriers to Effective Community College CTE Program Outcomes

Governing Policies

State-level governance

- Institutional types and missions
- Degrees and credential types
- Transferability of credit
- State planning, coordination, oversight

Finance

- Funding formulas
- Tuition
- Financial aid
- CTE dependence on non-state funds

Accountability

- Institutional reporting requirements
- Postsecondary data systems
- Linkages with other sector data systems

Educational Policies

- High School – CTE curricular articulation
- Credit award for high school CTE (2+2/tech prep)
- Concurrent enrollment
- Career counseling in high school
- Adult education articulation
- Competency-based; prior learning credit

- Program offerings (program approval/discontinuation)
- Intake process (recruitment, career counseling)
- Declaration of major program of study
- Developmental ed – proficiency requirements, assessment, placement
- Developmental ed delivery

- Credential program structure
- Program scheduling and delivery
- Articulation of shorter to longer credentials
- Faculty policies (hiring, qualifications, compensation, professional development)
- Student support – eligibility for special programs
- Degree audit

- Competency standards
- State-wide program consistency
- Student learning outcomes
- Transferability of credits
- Employer advisory boards
- Internships, coop ed

Student Progress

| Connection | Entry | Progress | Completion |

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

Some Leading States

- Career Pathways Framework
  - Arkansas, Kentucky, Oregon, Washington, Wisconsin….
  - Enroll in credential program targeted to local workforce
  - Integrated work experience, support services
  - Mandatory employability certificate (Arkansas)
- Curriculum Frameworks
  - Florida sets standards for every vocational program
- Cohorts and block scheduling
  - Tennessee Technology Centers

Criteria for Effective CTE/Workforce Education - Revisited

1. Program offerings meet labor market needs
2. Credentials offered have market value for students
3. Prospective students are helped to identify and enroll in CTE programs of interest
4. Students have clear understanding of program requirements, length, competencies, relevant careers to choose accordingly
5. Efficient pathways exist for career advancement
6. Programs articulate with K-12 where appropriate
7. Credentials send clear messages to employers about what knowledge, skills, and abilities they certify
8. College offerings align with available resources

Opportunities in CA

- New EWD/CTE leadership
- Student Success Task Force
  - Program of study emphasis
  - Education plans
- Career Ladders Initiative – Career Advancement Academies
- Legislative interest in workforce issues
- EWD sunset in 2013

Next Steps

- Publish first two parts: structure/funding and inventory
- Learn more about other state policies – as applicable to California
- Track CA developments/opportunities
- Focus on policies – input from the field
  – Identify barriers in current policies
  – Identify policies needed
- Final report – Winter 2012/13

IHELP Contact Information

Reports and presentations: www.csus.edu/ihelp

(916) 278-3888

ihelp@csus.edu

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