California community colleges students taking CDCP short-term vocational courses have higher median wages across all academic years compared to those taking ESL or basic skills courses. (Photo credit: Orange Coast College)

Career Development & College Preparation Program

California Community Colleges Chancellor's Office
Jack Scott, Chancellor

JULY 2012

STATE OF CALIFORNIA **JACK SCOTT, CHANCELLOR**

CALIFORNIA COMMUNITY COLLEGES
CHANCELLOR'S OFFICE
1102 Q STREET
SACRAMENTO, CA 95811-6549
(916) 445-8752
http://www.cccco.edu

July 13, 2012

The Honorable Jerry Brown
Governor of California
State Capitol
Sacramento, California 95814

Dear Governor Brown:

I am pleased to present to you the 2012 *Career Development and College Preparation* (CDCP) annual report, prepared by the Chancellor's Office Technology, Research and Information Systems Division.

In 2006, the state created a specific funding category of career development and college preparation courses, sometimes referred to as enhanced noncredit courses or CDCP. This report provides research results on the effects of these courses on two performance indicators: term-to-term persistence and annual wages.

If you have any questions or comments regarding this report, please contact Erik Skinner, executive vice chancellor for programs, at (916) 323-7007 or eskinner@cccco.edu.

Thank you for your continued support for these programs and the students they serve.

Sincerely,

Jack Scott, Ph.D.
Chancellor

Career Development and College Preparation

Executive Summary

Table of Contents

The California Community Colleges served more than 2.6 million students in 2010-11 and is the largest system of higher education in the nation. The state's 112 colleges offer certificates and degrees to job seekers in the 21st century, provide basic skills education, and prepare students for transfer to baccalaureate granting institutions.

In 2006, Senate Bill 361 (SB 361) (Scott, Chapter 631) increased funding for all noncredit community college courses and created specific categories of career development and college preparation (CDCP) courses, sometimes referred to as "enhanced noncredit" courses. These special categories involved enhanced funding for specific noncredit courses that community colleges must organize into sequences leading to specialized noncredit certificates.

SB 361 required accountability reporting on CDCP performance. This CDCP reporting became part of the California Community College Chancellor's Office's (CCCCO) Accountability Reporting for Community Colleges (ARCC) project as of the 2008 ARCC report. While the 2008 ARCC report presented pilot college-level CDCP data, state oversight agencies (the California Department of Finance and the Legislative Analyst's Office) requested a report on systemwide CDCP performance. Rather than add another task to the ARCC report and its stringent production schedule, the CCCCO and oversight agencies agreed that the CCCCO would produce this supplemental report and issue it after meeting the legislative deadline for the regular ARCC report.

The 2012 CDCP report uses several “analog” cohorts of students who took courses that had been retroactively recoded as CDCP courses. These analog cohorts are necessary because enhanced funding for noncredit (i.e., CDCP) began in 2006/07, but a substantial number of years of data are required to study the effects of programs. This report presents the effects of CDCP on two performance indicators: term-to-term persistence and annual wages.

Policy makers should exercise caution when drawing conclusions about the effects of enhanced funding for noncredit courses because the data for CDCP analysis have continued to undergo change. However, the currently available data indicate a positive impact of CDCP on persistence and wages. The results are included in this report.

Introduction

SB 361 directs that community colleges must organize their Career Development and College Preparation (CDCP) program courses into sequences that lead to either of the following noncredit certificates:

- Noncredit certificate of completion leading to improved employability or job opportunities, or
- Noncredit certificate of competency in a recognized career field articulated with degree-applicable coursework, completion of an associate degree, or transfer to a baccalaureate institution.

The courses and their related sequences must be approved by the Chancellor's Office. Unfortunately, data on these two types of noncredit certificates are still insufficiently aggregated for use in this report. As proxy measures of performance for the CDCP program, this report continues to use the two alternative performance indicators that the three previous annual CDCP reports employed.

These two performance indicators and their associated research questions are as follows:

CDCP Persistence (Term-to-Term)

1. *What percentage of a cohort of first time students who take only CDCP courses (or CDCP plus other noncredit) in a given term return and enroll in courses in the subsequent term? The persistence sequence can be fall to fall, fall to spring, spring to fall, spring to spring.*
2. *Is there a threshold number of CDCP hours (positive attendance hours) in the first term that seems to lead to persistence? What is the relationship between hours attended in the first CDCP term and persistence?*
3. *When students do persist (or do not), what types of CDCP courses do they take in their initial term(s)? For example, what percentages persisted when they started with CDCP courses/programs classified as:*
    a. *ESL?*
    b. *elementary and basic skills?*
    c. *short-term vocational?*

4. *What percentage of the cohort persists into credit courses, or credit plus CDCP courses?*

5. *How well do students who persist fare in the subsequent term (e.g., positive attendance hours, units completed)?*

Because the data reflect a relatively new program, the persistence indicator measures an effect that does not depend as much on elapsed time as does other separately reported measures of CDCP performance such as credit degree attainment, transfer to a Baccalaureate granting institution, becoming transfer prepared and so on.

Wages for CDCP Participants

1. *For what percentage of CDCP students is there a wage data match (i.e., valid Social Security number and wage data reported to the California Employment Development Department)?*

2. *What are the overall effects of participation on wages?*

3. *What is the wage trend (pre-exit through to post-exit) for students who complete some threshold of CDCP hours?*

4. *What happens to wages for students in the various courses/programs (e.g., short term vocational with high employment potential, CDCP ESL, etc.)?*

5. *What percentage of CDCP students moved from zero wages reported to greater than zero wages?*

Key Findings

Summary results for the two performance indicators are presented below. The results section contains more detailed findings in each area.

CDCP Term-to-Term Persistence

- The percentage of students persisting to a subsequent term (e.g., fall to fall, fall to spring) ranged from 24 percent to 49 percent depending on the cohort.
- The percentage of students persisting to credit ranged from 4 percent to 10 percent.
- While the percentage of students persisting to credit was relatively small, those students who moved to credit achieved high success rates in their subsequent attempts at credit courses.
- At least 80 percent of students who attempted subsequent credit courses earned units in those courses.
- More than 55 percent of students who persisted to a subsequent term took CDCP English as a Second Language (ESL) courses during their initial term.
- Of those students who *persisted to credit courses* in a subsequent term, the highest percentages enrolled in CDCP basic skills courses during their initial term.

Wages for CDCP Participants

- While the wage data analyses do not show dramatic effects of participation, the analyses provide evidence of upward trends in wages for most cohorts immediately following the initial CDCP term of enrollment.
- At least 23 percent of the students moved from zero reported wages in all years prior to their participation to reported wages in years following enrollment.

Data and Reporting Limitations

Several challenges were encountered when analyzing data for this report. These challenges are described below:

1. Any data matches requiring Social Security numbers (SSNs) will yield incomplete data given that only about 30% of CDCP students report a SSN. This will especially affect any wage data that require matching students' SSNs with the California Employment Development Department's base wage file. Also, because measures of other program effects involve the "tracking" of individuals across time and location (i.e., across multiple community colleges), any problems that exist in college-generated student identifiers (the standard proxy for the SSN) will depress counts of successful outcomes.

2. A significant number of the students classified as participants for this report probably did not experience the full effects of the effort. Cohort participants took courses that had been retroactively coded as CDCP during a major data clean-up effort. Many took courses prior to the distribution of enhanced funding for noncredit courses and prior to the course "sequencing" intended to lead to one of the two noncredit certificates.

3. Currently, the Chancellor's Office Management Information System is in the process of collecting CDCP certificate completion data and resolving data coding issues surrounding that data. Only six colleges are correctly reporting CDCP certificates (Appendix D). This makes it difficult to study the wage data for the CDCP certificate completion cohort as was done for completers of credit vocational awards (as shown in the 2007 through 2011 ARCC reports).

4. This report uses a measure of persistence largely as a short-term indicator of student success in CDCP. Persistence in itself is not a core student outcome; it is viewed here as a critical element in the process for achieving student success (progressing to college-level coursework or to work-related activities). Because persistence can act as a sort of "leading indicator" for eventual student success, and because policymakers need a relatively immediate performance indicator, this report relies extensively upon persistence numbers.

Methodology

Term-to-Term Persistence for Students Who Begin in CDCP Courses

The Chancellor's Office Management Information System staff searched systemwide to identify students taking courses for the first time at any California community college and taking only CDCP course(s) or CDCP and other noncredit courses during fall 2006 (Cohort 1), spring 2007 (Cohort 2), fall 2007 (Cohort 3), spring 2008 (Cohort 4), fall 2008 (Cohort 5), spring 2009 (Cohort 6), and fall 2009 (Cohort 7). Although funding began officially in February 2007 (spring term), colleges had been encouraged to recode relevant courses as CDCP retroactively, thus allowing us to study earlier cohorts (fall 2006 and spring 2007) with longer academic histories. This recoding occurred as part of a major data clean-up effort - Curriculum Reporting for Community Colleges - initiated by the Chancellor's Office Management Information System.

Students who took at least one credit course plus one or more CDCP courses during the qualifying term were excluded. The intention was to select only students starting out in CDCP or CDCP and other noncredit. This approach does eliminate coverage of outcomes for those students who take a CDCP course subsequent to a credit course. This exclusion should have little effect upon the performance indicators reported here because these indicators appear primarily as rates rather than as counts. Had research focused upon performance indicators that were counts (i.e., sums), then this exclusion would have created an undercount of the outcomes.

Other data specifications include the following: Courses are designated as CDCP via a course control number and/or course identification number by the Chancellor's Office Academic Affairs Division. When SSNs were available, Management Information System staff used the SSN to search the database systemwide for first-time students; otherwise staff used student identification numbers to search district wide. Where possible, students with prior enrollments outside the California Community Colleges were excluded.

Persistence was defined as enrollment in any California community college course in a subsequent term (e.g., fall to spring, fall to fall, spring to spring, spring to fall). The Management Information System data extraction for this indicator included cohort variables for type of initial CDCP course(s) (i.e., ESL, basic skills, and short-term

vocational), and number of positive attendance hours reported for the initial course(s). The persistence variables included term(s) of subsequent course(s), course type (credit, noncredit), positive attendance hours, units attempted, units earned, and grade.

Wage Trends for Students Taking CDCP Courses

As with the persistence analysis, Chancellor's Office Management Information System staff searched systemwide to identify students taking courses for the first time at any California community college and taking only CDCP course(s) or CDCP and other noncredit courses during fall 2006 (Cohort 1), spring 2007 (Cohort 2), fall 2007 (Cohort 3), spring 2008 (Cohort 4), fall 2008 (Cohort 5), spring 2009 (Cohort 6), and fall 2009 (Cohort 7).

The CDCP cohort members with valid SSNs were matched to the Employment Development Department's base wage file, even if zero wages were reported in a quarter, and their quarterly wage data were extracted for the most recent 40+ quarters available from the Employment Development Department. Wage data for the 2012 CDCP report are from the first fiscal quarter of 2000 (July to September) through the third fiscal quarter of 2011 (April to June). Given that CDCP cohorts were identified from fall 2006 through fall 2009, the wage data for quarters after CDCP enrollment were limited.

Calendar quarter wage data for CDCP students for academic "quarters" were recoded to more closely match the academic terms for which other CDCP data were reported. For example, wage data from calendar quarters 3 and 4 in 2007 (i.e., July to September and October to December) and calendar quarters 1 and 2 in 2008 (January to March and April to June) became wage data for academic "quarters" 1 and 2 in 2007 (July to September and October to December) and 3 and 4 in 2008 (January to March and April to June). These quarters were summed to obtain wages for academic year 2007/08.

Results

Term-to-Term Persistence for Students Who Begin in CDCP Courses

Following are the research questions and results for the term-to-term persistence evaluation.

1. *What percentage of a cohort of first time students who take only CDCP courses (or CDCP plus other noncredit) in a given term return and enroll in courses in the subsequent term? The persistence sequence can be fall to fall, fall to spring, spring to fall, and spring to spring. What percentage of the cohort persists into at least one credit course?*

Table 1
Percentages of CDCP Cohorts Persisting to Subsequent Term

Cohort	Cohort Number	Number Persisting	Percent Persisting	Number Persisting to Credit	Percent Persisting to Credit
Fall 2006	29,741	13,296	44.7%	3,008	10.1%
Spring 2007	29,507	9,650	32.7%	1,488	5.0%
Fall 2007	32,585	15,749	48.3%	2,872	8.8%
Spring 2008	28,941	9,710	33.6%	1,417	4.9%
Fall 2008	30,588	14,734	48.2%	2,500	8.2%
Spring 2009	28,113	6,648	23.6%	1,204	4.3%
Fall 2009	26,416	12,989	49.2%	2,210	8.4%

Table 1 shows that about 24 percent to 49 percent of the cohort participants persist to the subsequent term. The percentage persisting to credit is substantially less than the overall percentage. Apparently, most of the persistence involves another noncredit course. There seems to be a pattern where cohorts who begin in the spring term have a relatively lower percentage of students persisting. This indicates that students who enter a CDCP cohort in a spring term probably differ in some ways from students who enter the cohort in a fall term.

2. *Is there a threshold number of CDCP hours (positive attendance hours) in the first term that seems to lead to persistence? What is the relationship between hours attended in first CDCP term and persistence? In response to concerns among state officials, the Chancellor's Office explored the percentages for two separate groups—those with 0 to 7.9 hours compared to those with 8 or more hours in the first term.*

Table 2 provides some general information about CDCP positive attendance hours completed in the initial term for each cohort.

Table 2
CDCP Positive Attendance Hours in First Term

Cohort	Mean	Median	SD*	Min	Max
Fall 2006	66.7	30.0	350.5	0.1	17,836.3
Spring 2007	53.1	30.0	64.8	0.1	780.3
Fall 2007	52.9	30.0	62.2	0.1	684.5
Spring 2008	50.4	26.0	64.2	0.1	803.5
Fall 2008	108.9	32.0	897.3	0.1	26,666.4
Spring 2009	54.6	25.5	228.8	0.2	18,165.6
Fall 2009	66.0	33.0	451.5	0.1	26,710.4

**SD stands for standard deviation.*

The mean and median data shown in Table 2 indicate that a cutoff of 8 hours covers a small part of the distribution of hours in the initial term. Note: The minimum and maximum values for the data here may also reflect reporting or data entry errors.

Table 3 illustrates the percentages persisting to the subsequent term by threshold hours.

Table 3
Percentage Persisting by Number of CDCP Hours Taken During Initial Term

Cohort	Threshold Hours	Percent Not Persisting	Percent Persisting to Noncredit only	Percent Persisting to Credit	Total Number
Fall 2006	0 to 7.9	67.7%	15.0%	17.3%	6,450
	8 or more	51.9%	40.0%	8.1%	23,291
Spring 2007	0 to 7.9	80.8%	13.3%	5.9%	6,558
	8 or more	63.4%	31.8%	4.8%	22,949
Fall 2007	0 to 7.9	67.9%	17.3%	14.8%	7,509
	8 or more	46.8%	46.2%	7.0%	25,076
Spring 2008	0 to 7.9	78.8%	15.9%	5.3%	7,207
	8 or more	62.4%	32.9%	4.8%	21,734
Fall 2008	0 to 7.9	70.2%	17.8%	12.0%	6,751
	8 or more	46.6%	46.3%	7.1%	23,837
Spring 2009	0 to 7.9	89.3%	6.3%	4.4%	7,139
	8 or more	71.9%	23.8%	4.2%	20,974
Fall 2009	0 to 7.9	72.3%	17.0%	10.7%	5,211
	8 or more	45.5%	46.7%	7.8%	21,205

In general, larger percentages of students completing eight or more CDCP hours persisted to the subsequent term. However, a pattern emerges when comparing fall and spring cohorts on persistence to credit. Whereas threshold CDCP hours do not appear to make much difference in persistence to credit for spring cohorts, for each of the fall cohorts the percentage of students taking less than eight hours who

persist to credit is consistently larger than credit persistence for those taking eight or more hours.

The data in Table 3 reinforce the data presented in Table 2. Students who accumulated less than 8 CDCP hours in their initial term constitute a smaller percentage of the entire population (usually around 25 percent), not just a small interval of the distribution of hours amassed.

When the threshold of hours is at eight or more hours rather than at 0 to 7.9 hours, the percentage of students that persists to credit tends to drop in each cohort, especially for fall cohorts. In contrast, this shift in threshold has an increase in the percentage of students that persist only to noncredit. It is beyond the scope of this report to conclusively explain why this second pattern for persistence occurs. However, one hypothesis would be that the more academically prepared students may tend to quit the initial CDCP course early in the term (before completing eight hours) in recognition that the course content may be too elementary for them to constitute a meaningful gain in their education. These more able students subsequently have a higher propensity for persisting to the credit level of the curriculum. This hypothesis could explain the pattern in conjunction with the common assumption that many students also fail to complete many hours of the initial CDCP course because of life events or financial burdens.

3. *When students persist, what types of courses did they take in the cohort term? For example, what percentages persist when they started with CDCP courses classified as:*

    a. ESL?
    b. elementary and basic skills?
    c. short-term vocational?

    (Note: A student may be counted in more than one course, so the numbers will not equal the numbers of those persisting.)

Table 4
Number and Percentage Persisting by Type of CDCP Course(s) Taken During Initial Term

Cohort	ESL		Short-term Vocational		Basic Skills	
Fall 2006	7,398	55.6%	1,398	10.5%	4,971	37.4%
Spring 2007	6,433	66.7%	943	9.8%	2,822	29.2%
Fall 2007	9,608	61.0%	1,457	9.3%	7,032	44.7%
Spring 2008	6,525	67.2%	1,316	13.6%	3,995	41.1%
Fall 2008	8,507	57.7%	1,657	11.2%	6,448	43.8%
Spring 2009	4,584	69.0%	910	13.7%	1,611	24.2%
Fall 2009	9,197	70.8%	1,300	10.0%	3,468	26.7%

Table 4 shows that relatively high percentages of students who persisted to a subsequent term in credit or noncredit, or both, took CDCP ESL courses during initial term. This result could indicate several situations. It could signal that those who take ESL really have more preparation and incentive for taking a subsequent credit course. These may be more mature students or foreign students who attained better academic preparation based on a non-English language. It could also indicate that an ESL course enables a student to pursue courses they truly wanted in the first place. One could also hypothesize that students who begin with an ESL course may have a higher motivation to continue onward or they may experience less restrictive economic and social barriers (such as family and job commitments).

4. What percentage of the cohort persists into credit courses, or credit plus CDCP courses?

Table 5
Number and Percentage *Persisting to Credit* by Type of CDCP Course(s) Taken During Initial Term

Cohort	ESL		Short-term Vocational		Basic Skills	
Fall 2006	857	26.2%	234	7.1%	2,031	62.0%
Spring 2007	679	39.2%	198	11.4%	697	40.3%
Fall 2007	889	28.5%	207	6.6%	1,939	62.1%
Spring 2008	619	37.8%	270	16.5%	684	41.8%
Fall 2008	739	26.8%	260	9.4%	1,623	58.8%
Spring 2009	458	30.9%	246	16.6%	609	50.6%
Fall 2009	689	28.6%	258	10.7%	1,459	60.6%

Table 5 shows that relatively high percentages of students who persisted to credit courses in a subsequent term took CDCP basic skills courses during their initial term. This could indicate several situations. It could signal that those who take basic skills have more incentive for taking a subsequent credit course, e.g., they plan to transfer to a Baccalaureate granting institution. It could also indicate that CDCP basic skills courses enable students to pursue their goals. The relatively low percentages of those who began with a short-term vocational CDCP course may in turn reflect the need for a student to enter the labor force in lieu of persisting in college with a credit course. The high credit persistence of basic skills students might also be attributed to the institutional effort placed on enabling these students to progress to credit courses.

5. How well do persisting students do in their subsequent term (e.g., positive attendance hours, units attempted, and units completed)?

Table 6
Numbers and Percentages of CDCP Persisting Students Who Attempted/Earned Units in Subsequent Terms (by hours taken during initial term)

Cohort	Threshold Hours	Number Persisting to Subsequent Term	Number Attempting Credit Units in Subsequent Term	Percent of "Persisters" Attempting Credit Units in Subsequent Term	Number Earning Credit Units in Subsequent Term	Percent of "Attempters" That Earned Credit Units in Subsequent Term
Fall 2006	0 - 7.9	2,082	1,111	53.4%	947	85.2%
	8 or more	11,214	1,856	16.6%	1,601	86.3%
Spring 2007	0 - 7.9	1,259	380	30.2%	303	79.7%
	8 or more	8,391	1,064	12.7%	902	84.8%
Fall 2007	0 - 7.9	2,414	1,103	45.7%	961	87.1%
	8 or more	13,335	1,724	12.9%	1,494	86.7%
Spring 2008	0 - 7.9	1,530	305	19.9%	252	82.6%
	8 or more	8,180	723	8.8%	596	82.4%
Fall 2008	0 - 7.9	2,011	805	40.0%	664	82.5%
	8 or more	12,723	1,658	13.0%	1,417	85.5%
Spring 2009	0 - 7.9	764	247	32.3%	201	81.4%
	8 or more	5,884	592	10.1%	477	80.6%
Fall 2009	0 - 7.9	1,442	548	38.0%	461	84.1%
	8 or more	11,547	1,624	14.1%	1,428	87.9%

While the percentages of CDCP students persisting to credit are relatively small (see Table 1), Table 6 indicates that students who progress to credit have high success rates (credit units earned) in their subsequent attempts at credit courses.

Table 6 reinforces the pattern shown in Table 3. That is, the percentage of students attempting credit units in a subsequent term tends to be considerably less for those who take eight or more CDCP hours during their initial term compared with those taking under eight hours. Further exploration exceeds the scope of this report. However, these data tend to support the hypothesis (stated previously for Table 3) that more academically prepared students might quit an initial CDCP course earlier in the term before completing eight hours, recognizing that the course content might be too elementary. These students subsequently have a higher propensity for persisting to credit (i.e., attempting credit units in a subsequent term). That said, the percentages of those actually earning credit units in a subsequent term are roughly equivalent for the two groups.

Table 7
Units Attempted and Units Earned in Subsequent (Persisting) Term

Cohort	Units Attempted			Units Earned		
	Mean	Median	SD*	Mean	Median	SD*
Fall 2006	9.5	10.0	4.7	7.8	7.0	4.6
Spring 2007	8.8	8.0	5.4	7.9	7.0	5.1
Fall 2007	9.7	9.5	5.2	8.0	7.0	5.0
Spring 2008	9.2	9.0	5.8	8.1	7.0	5.6
Fall 2008	9.2	9.0	5.2	7.8	7.0	4.9
Spring 2009	8.7	8.0	5.6	7.6	7.0	5.2
Fall 2009	9.7	9.0	6.0	8.2	7.5	5.2

**SD stands for standard deviation.*

Table 7 presents simple descriptive information about credit units attempted and credit units earned in the subsequent term. In general, students attempted approximately 9 units in their subsequent terms and earned about 8 units. However, graphic analysis tells us something not shown by the standard summary statistics in Table 7. Actually, about 50 percent of the students earn all of the units they attempt in a subsequent term. Histograms (which appear in Appendices A, B and C) show that completion of all attempted units in a subsequent term is the most common outcome in this population (or the so-called “mode” of the data).

Data for the three cohorts in these histograms (fall 2008, spring 2009, and fall 2009) also show how a small segment of each cohort exhibits a range of failed units creating a mean difference of about one to two units for the cohorts in Table 7.

Table 8
Positive Attendance Hours Reported in Subsequent (Persisting) Term

Cohort	Mean	Median	SD*	Number
Fall 2006	122.1	87.6	130.9	13,281
Spring 2007	108.0	70.0	129.4	9,630
Fall 2007	129.5	83.9	150.2	15,720
Spring 2008	139.9	88.0	172.1	8,239
Fall 2008	129.2	82.5	153.8	14,725
Spring 2009	123.0	82.0	148.7	5,825
Fall 2009	126.8	90.0	135.9	12,962

**SD stands for standard deviation.*

Because the median values fall so far below the corresponding mean values, it seems that some students with very high hour counts have skewed the mean upward, relative to the median. In any case, these means and medians are inconclusive information about levels of success in the subsequent courses. It is possible that a student may attend fewer hours in a subsequent course because he/she has learned so much in the prior course.

On the other hand, a student may amass fewer hours in a subsequent course, relative to the initial course, for reasons outside of the quality of learning in the initial course. These students may have encountered a time constraint that limits their ability to complete a subsequent course. The possibility that a subsequent course may schedule fewer hours for completion than an initial course may also distort the interpretation of hours amassed in a subsequent course. The analysis of positive attendance hours as a measure of student success can have some complications.

Wage Trends for Students Taking CDCP Courses

Following are the research questions and results for the effects of CDCP participation on wages. The analysis relies upon the rather basic model of pre- and post-treatment measures (wages before and wages after CDCP) to infer the program's "effect" on student wages. Tables 10 and 11 specify the median wage data used to create most of the figures in this section. To avoid a lengthy report or extensive appendices, data tables for each figure are omitted. Tables of the raw data used to create specific figures are available upon request from the Research, Analysis and Accountability Unit in the Chancellor's Office.

Following are the six research questions and results for the CDCP student wage data:

1. *For what percentage of CDCP students is there a wage data match (i.e., valid SSN and wage data match with the Employment Development Department)?*

Table 9
Percentages of CDCP Cohorts with Employment Development Department (EDD) Wage Data Matches

Cohort	Cohort Number	Number with EDD SSN Match	Percent with EDD SSN Match
Fall 2006	29,741	7,915	26.6%
Spring 2007	29,507	7,152	24.2%
Fall 2007	32,585	8,302	25.5%
Spring 2008	28,941	6,577	22.7%
Fall 2008	30,588	7,715	25.2%
Spring 2009	28,113	6,155	21.9%
Fall 2009	26,416	5,778	21.9%

Table 9 provides a useful context for interpretation of this report's ensuing wage analyses. The report data may represent as little as one-fifth of the individuals who are in each cohort. The lack of a SSN match for the remaining individuals may justify treating 70 percent or more of the individuals as examples of missing data. That is, a very conservative interpretation of such missing data would argue that the report's tables cannot apply to the majority of the students.

2. *What are the overall effects of CDCP participation on wages?*

Figure 1 shows the annual median wage trends for all cohort members with a wage data match across an 11-year period for which the Employment Development Department provided data, even if zero wages were reported in some years. Median wages and numbers of students behind each annual data point for Figure 1 are presented in Table 10. Figure 2 (page 20) displays the annual median wage trends for cohort members with a wage data match and greater than zero wages in all years. Median wages and numbers of students behind each annual data point for Figure 2 are presented in Table 11. The shaded cells in each table indicate the median wage in the academic year in which the students enrolled in their first CDCP courses.

Figure 1
Median Wage Trends by Cohort (includes years with zero wages)

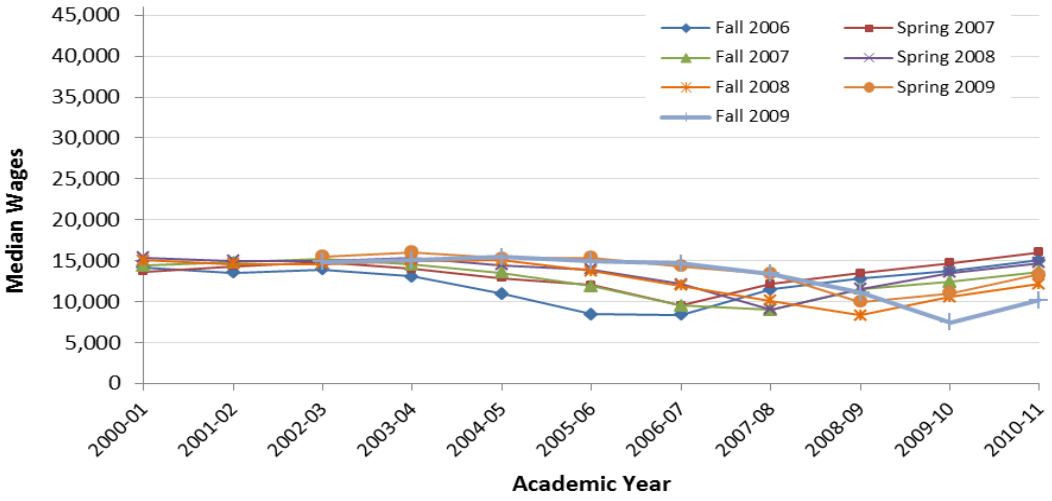


Figure 2
Median Wage Trends by Cohort (wages in all years)

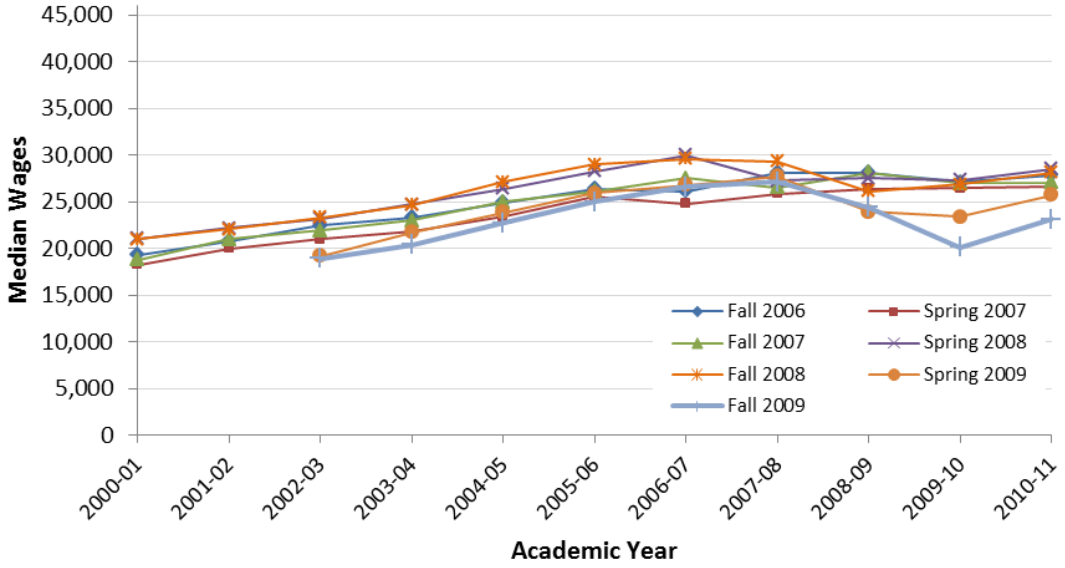


Table 10
Median Wages and Numbers with Wage Match
(includes students with zero wages reported in a given year)

Cohort		2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11
Fall 2006	Wages	14,221	13,510	13,952	13,064	10,957	8,432	8,382	11,499	12,806	13,744	15,020
	Students	2,108	2,248	2,445	2,746	3,338	4,373	5,754	5,849	5,559	5,183	5,157
Spring 2007	Wages	13,661	14,327	14,837	13,982	12,894	12,004	9,518	12,158	13,444	14,722	16,006
	Students	2,294	2,394	2,557	2,808	3,241	3,910	5,111	5,445	5,104	4,717	4,710
Fall 2007	Wages	14,400	14,774	15,218	14,521	13,499	11,892	9,500	8,960	11,578	12,425	13,690
	Students	2,263	2,367	2,488	2,744	3,134	3,824	4,857	6,128	5,912	5,551	5,527
Spring 2008	Wages	15,349	14,955	14,950	15,300	14,467	13,917	12,126	9,062	11,530	13,560	14,688
	Students	1,990	2,095	2,203	2,352	2,641	3,073	3,655	4,681	4,615	4,360	4,377
Fall 2008	Wages	15,056	14,606	14,606	14,955	15,017	13,734	11,944	10,086	8,289	10,573	12,164
	Students	2,056	2,148	2,282	2,436	2,700	3,191	3,796	4,600	5,365	5,126	5,252
Spring 2009	Wages			15,485	16,047	15,300	15,407	14,310	13,381	9,966	11,017	13,346
	Students			2,207	2,340	2,619	2,909	3,313	3,778	4,165	4,117	4,242
Fall 2009	Wages			14,848	15,022	15,448	14,885	14,673	13,386	11,121	7,450	10,142
	Students			1,691	1,812	1,916	2,206	2,501	2,954	3,309	3,885	4,175

Note: Omitted 2000-01 and 2001-02 wage data for spring 2009 and fall 2009 terms due to low number of matching cases with the EDD.

Table 11
Median Wages and Numbers with Wage Match
(includes students with wages reported in all years)

Cohort		2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11
Fall 2006	Wages	19,339	20,769	22,440	23,337	24,881	26,385	26,136	28,096	28,105	27,127	27,826
	Students	870	870	870	870	870	870	870	870	870	870	870
Spring 2007	Wages	18,219	19,957	20,957	21,786	23,348	25,486	24,775	25,876	26,359	26,425	26,550
	Students	948	948	948	948	948	948	948	948	948	948	948
Fall 2007	Wages	18,752	20,985	21,884	22,972	24,996	26,094	27,520	26,501	28,116	26,949	27,055
	Students	943	943	943	943	943	943	943	943	943	943	943
Spring 2008	Wages	21,017	22,207	23,213	24,738	26,357	28,281	29,949	27,258	27,499	27,339	28,499
	Students	780	780	780	780	780	780	780	780	780	780	780
Fall 2008	Wages	20,947	22,033	23,338	24,656	27,102	28,977	29,553	29,329	26,112	26,868	28,143
	Students	793	793	793	793	793	793	793	793	793	793	793
Spring 2009	Wages			19,204	21,716	23,861	25,926	26,785	27,719	23,926	23,353	25,692
	Students			949	949	949	949	949	949	949	949	949
Fall 2009	Wages			18,919	20,388	22,683	25,009	26,561	27,108	24,389	20,142	23,083
	Students			738	738	738	738	738	738	738	738	738

Note: Omitted 2000-01 and 2001-02 wage data for spring 2009 and fall 2009 terms due to low number of matching cases with the EDD

The trend lines for each cohort in Figure 1 suggest that reported wages began a slight decline just before the academic year in which cohort members took their first CDCP course(s), then "bottomed out" in the academic year corresponding to the cohort term. For example, academic year 2006/07 is the year in which the fall 2006 cohort took their initial CDCP course(s) and the trend line for the cohort bottoms out in academic year 2006/07. The trend lines appear to rebound upward after the cohort academic year. This rebound effect could reflect increased wage rates, more work hours, or both. However, incomplete data in the post-CDCP years make it difficult to interpret the upward trends. Such incomplete data pose the "censored data" problem for analysts. Because the post-CDCP wage data are from fairly recent quarters, it is difficult to tell whether the upward trends will continue and to what extent post-CDCP wages may increase.

Note: These data are referred to as "censored" because researchers must characterize observations that contain a time constraint as limited in their content. That is, the observed students have not had an adequate span of time in which to exhibit the intended program effect (wage change). For more information, see Singer, J.D. and Willett, J.B. (2003). *Applied Longitudinal Data Analysis*. Oxford University Press: New York.

Although caution must be used when interpreting trends shown in Figure 1, the downward slopes just prior to the CDCP enrollment years could indicate declines in reported wages (e.g., because of fewer hours worked or job loss) that might prompt enrollment in community college courses. While only first-time California Community Colleges' students who enrolled in CDCP were included in the cohorts, the declines might also signal some sort of academic enrollment prior to the initial term (e.g., noncredit courses, enrollment at other institutions) that resulted in a wage decline.

Recall that trend lines in Figure 2 reflect median wages for students who had wages reported in all years under consideration, which indicates that these students were employed at least part-time during all reported years prior to their CDCP enrollments. From academic year 2000/01 and onward, the trend lines tend to show the expected, steady earnings increases that occur naturally over time when individuals are employed. The cohort trend lines increase or level out until the academic year of first CDCP enrollment. In that year, each trend line exhibits a decline followed by an upward trend in the year or years following enrollment with a few exceptions. From the spring 2008 cohort onward, median wages tend to stagnate for two years at about the same level of wages as at first CDCP enrollment. Perhaps, the economic recession in the late 2000s may have had an effect on earnings of students who started the CDCP program during that time. For these cohorts, we still lack sufficient years of post-CDCP wage data to determine whether the upward trend in wages will continue and whether or not the slope of the post-CDCP trend line will indicate an effect of CDCP course participation (e.g., a slope steeper than that which would occur for the wage earners with the passage of time). This is part of the aforementioned censored data issue. However, the trend lines for the earlier cohort (spring 2007) show a considerable upward trend in both figures, giving a tentative indication that CDCP participation may indeed affect wages.

Figures 3 and 4 are included on page 24 to provide some perspective on wages for participants. Using data and corresponding trend lines from the fall 2009 cohort, additional trend lines were inserted for California's median household income and per capita income. These "comparison trends" were also used with the systemwide wage metric in the regular ARCC report. For the current comparison, fall 2009 data were chosen because those are data for one of the recent cohorts with sufficient wage data.

Data for California per capita income are the estimated figures from the Bureau of Academic Analysis. The second line, California median household income, comes from the American Community Surveys.

In both figures, the fall 2009 cohort trend line begins and remains below the trend lines for per capita income and household median income, although the difference is not as pronounced for the fall 2009 cohort members earning wages in all years (Figure 4). These data provide a perspective on the economic status of participants. However, when wage trends are categorized by the type of initial CDCP course (e.g., ESL, basic skills, short-term vocational), a different picture emerges. Breakouts by course type are provided in Figures 7 and 8 later in this report.

Figure 3
Fall 2009 CDCP Cohort Wages and Comparison Trends
(includes years with zero wages)

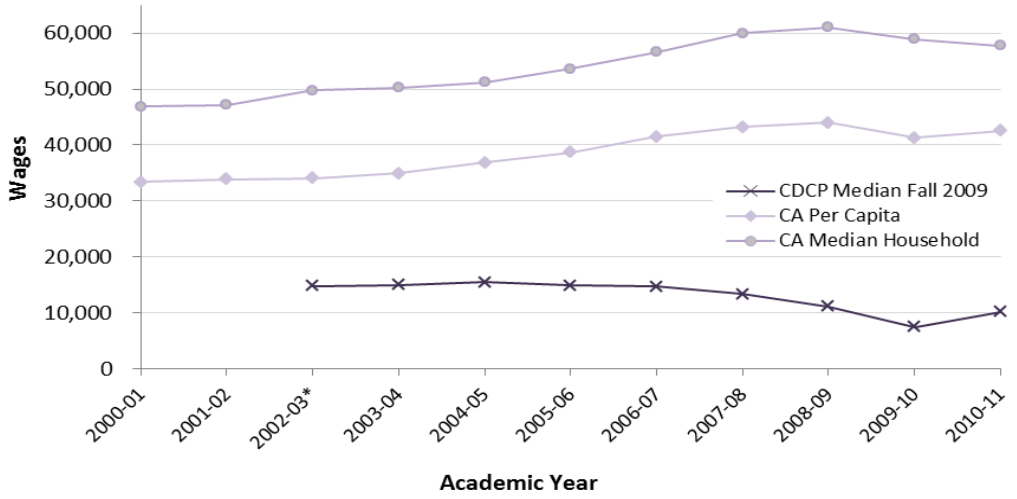
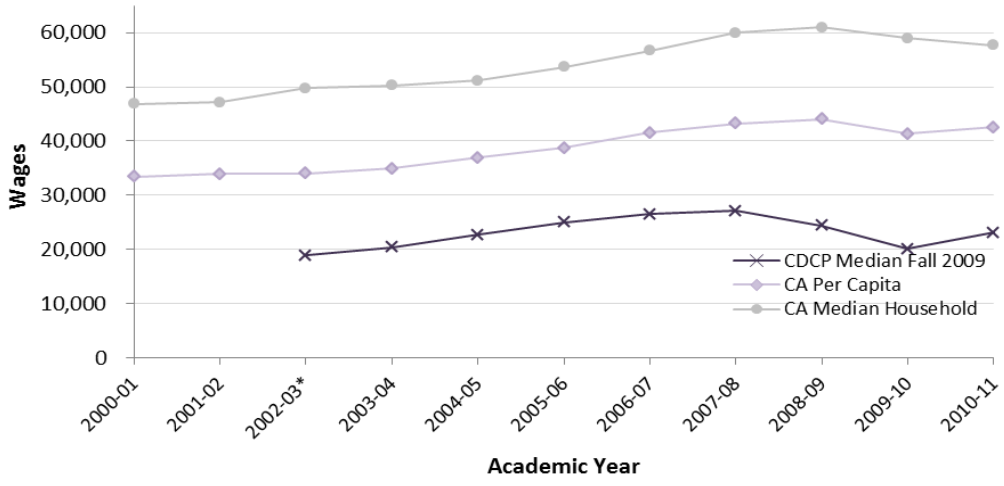


Figure 4
Fall 2009 CDCP Cohort Wages and Comparison Trends
(wages in all years)



3. *What is the wage trend (pre-completion/post completion) for students who complete some threshold of CDCP hours?*

Wage trends for all cohort members (i.e., including those with zero wages reported in some years) are presented in Figures 5 and 6. Figure 5 shows the trends for those with 0 to 7.9 CDCP positive attendance hours, while Figure 6 shows the trends for students with 8 or more CDCP positive attendance hours.

Students taking 0 to 7.9 CDCP hours (Figure 5) tended to have median wage trends similar to those for students taking eight or more CDCP hours (Figure 6).

When the CDCP analysis began in 2008, the wage data were categorized by threshold hours to determine if there was a logical "cutoff" point that indicated how CDCP hours affected wages. Several threshold hours were examined at 10th percentile, 20th percentile, and 25th percentile groups. In general, students who are in the lowest 20 percent to 25 percent of CDCP hours tend to have higher persistence- to-credit rates compared to other groups for fall cohorts. Therefore, the analyses stay at two categories: 0-7.9 hours and eight or more hours. The trend lines in Figures 5 and 6 provide little rationale for this cutoff. However, threshold hours may still affect persistence, as indicated by the fall term persistence patterns seen in Table 3.

What is clear in Figures 5 and 6 is the "rebound" effect of participation where the post-CDCP trend lines appear to slope more steeply upward than the pre-CDCP trend lines. In the absence of more post-CDCP data points, one cannot definitively identify a program effect. However, these trends will be of interest in future analyses.

Figure 5
Median Wage Trends for Students with 0 to 7.9 CDCP Hours
(includes years with zero wages)

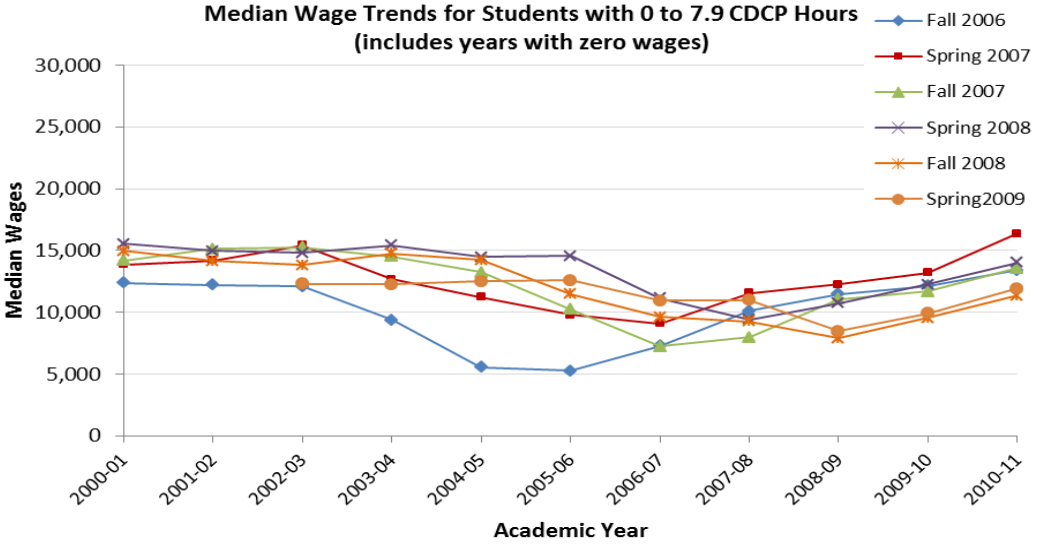
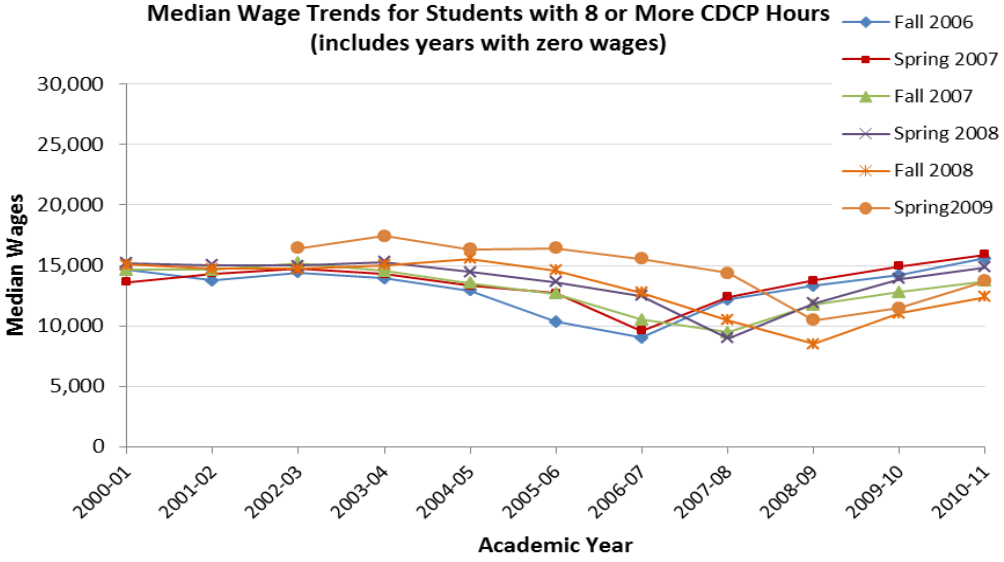


Figure 6
Median Wage Trends for Students with 8 or More CDCP Hours
(includes years with zero wages)



4. What happened to wages for students in the various CDCP courses/programs (e.g., short-term vocational with high employment potential, CDCP ESL, etc.)?

Figures 7a to 7f (pages 28-29) show the median wage trends by type of initial CDCP course in which the student enrolled for the six cohorts with sufficient data for analysis. The legend at the top of the page indicates the type of initial course: ESL, elementary and secondary basic skills, or short-term vocational. The median wage trends shown in Figures 7a through 7f include students who may have had zero wages reported in one or more academic years.

While the trend lines in Figures 7a to 7f tend to follow similar patterns over time, students who took at least one short-term vocational course as their initial course(s) clearly had higher wages before and after participation than students taking basic skills or ESL as their initial CDCP course. Students taking at least one CDCP ESL course tended to have slightly higher wages than those enrolling in CDCP basic skills courses.

Figures 7a – 7f
Median Wages for CDCP Cohorts by Initial CDCP Course (including years with zero wages)

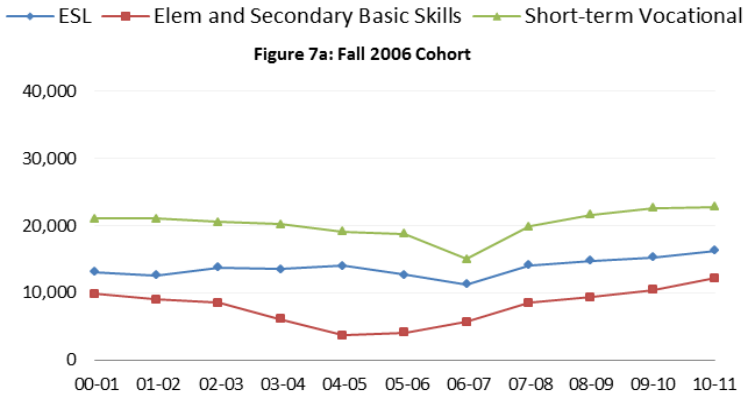


Figure 7a: Fall 2006 Cohort

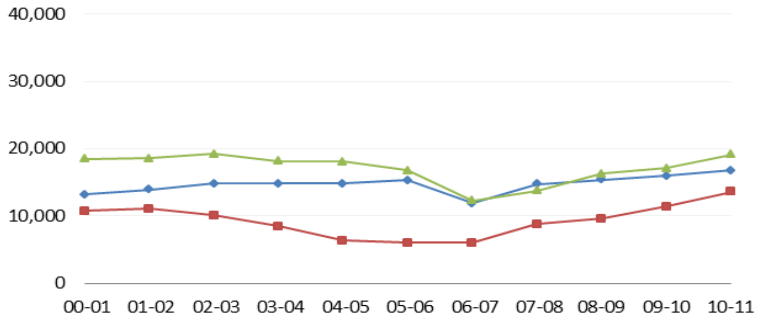


Figure 7b: Spring 2007Cohort

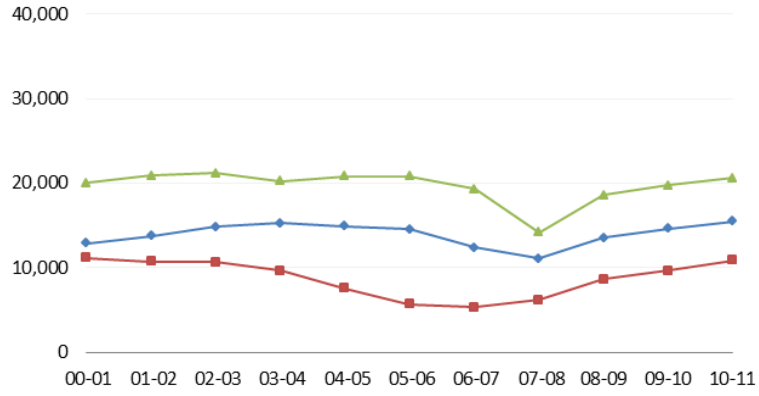


Figure 7c: Fall 2007 Cohort

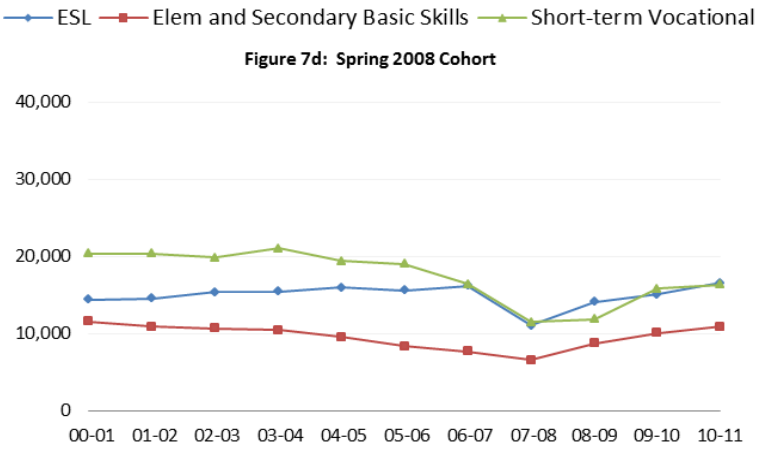


Figure 7d: Spring 2008 Cohort

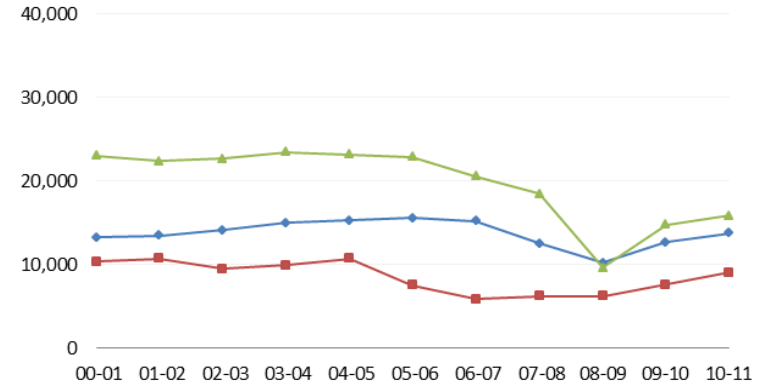


Figure 7e: Fall 2008 Cohort

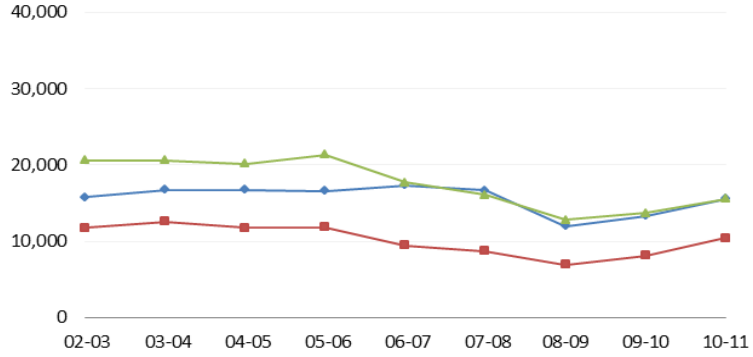


Figure 7f: Spring 2009 Cohort

The median wage trends shown in Figures 8a through 8f are for students who had wages greater than zero reported for all years.

Trend lines in Figures 8a to 8f (pages 31-32) tend to follow similar patterns over time. Many students with wages reported in all years who took at least one short-term vocational course for their initial CDCP course tend to have higher wages in all years than students taking basic skills or ESL as their initial course. This difference is most pronounced for the fall 2006, fall 2008, and spring 2009 cohorts. Wage trends for students taking at least one CDCP ESL course closely resembled wage trends for those enrolling in CDCP basic skills courses, with the exception of the spring 2007, fall 2007 and fall 2008 cohorts. In these cohorts, wages for those taking basic skills as their initial course tended to be slightly higher than wages for those taking ESL as their initial course.

Data in Figures 7a-7f and 8a-8f should be interpreted with some caution given that students within cohorts could enroll in multiple CDCP courses in their initial term. For example, some students may have taken both ESL and basic skills as their initial CDCP courses.

Figures 8a – 8f
Median Wages for CDCP Cohorts by Initial CDCP Course (wages in all years)

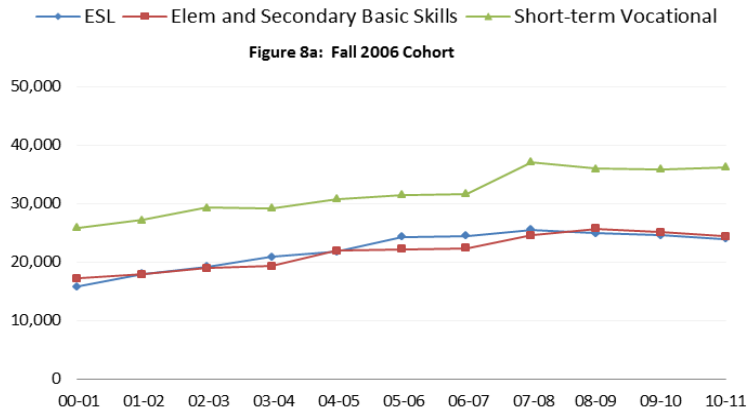


Figure 8a: Fall 2006 Cohort

Figure 8b: Spring 2007 Cohort

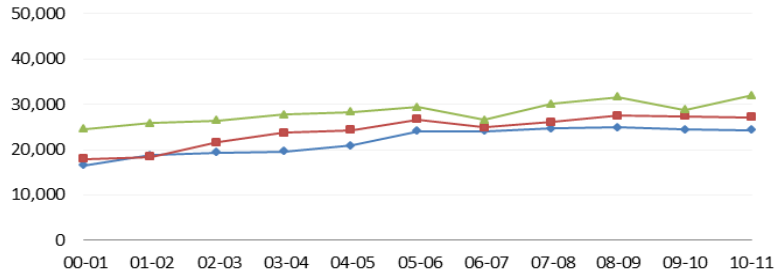
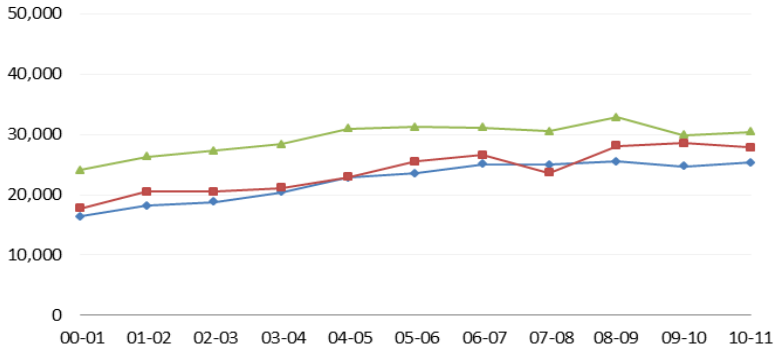


Figure 8c: Fall 2007 Cohort



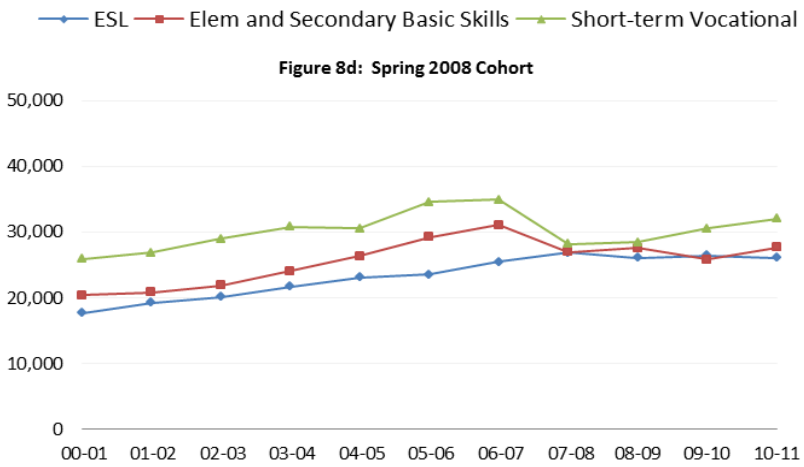


Figure 8d: Spring 2008 Cohort

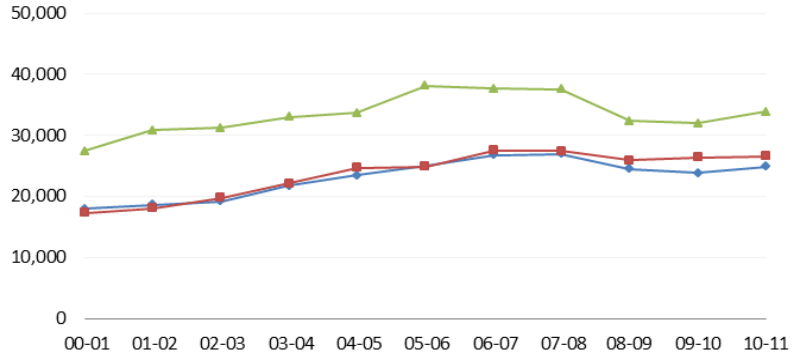


Figure 8e: Fall 2008 Cohort

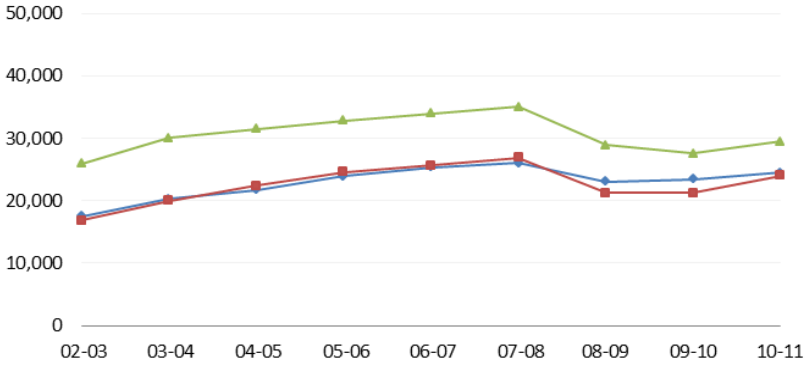


Figure 8f: Spring 2009 Cohort

5. *What percentage of CDCP students moved from zero wages reported to greater than zero wages?*

Table 12
Percentages of Cohort Members with Zero Reported Wages before CDCP Participation and Greater than Zero Wages Reported Following CDCP Participation

Cohort	Number with EDD SSN Match	Number Moving from Zero Annual Wages Before CDCP to GT Zero After CDCP	Percent Moving from Zero Annual Wages Before CDCP to GT Zero After CDCP
Fall 2006	7,915	2,602	32.9%
Spring 2007	7,152	2,378	33.2%
Fall 2007	8,302	2,313	27.9%
Spring 2008	6,577	2,007	30.5%
Fall 2008	7,715	1,916	24.8%
Spring 2009	6,155	1,426	23.2%
Fall 2009	5,778	1,518	26.3%

Note: Data for 3-year moving period

Across cohorts, about 23 percent to 33 percent of the students moved from zero reported wages in all years prior to their participation to wages reported in years following CDCP enrollment. Keep in mind that cohort members who are self-employed would also have no wages reported to the Employment Development Department (and therefore no Employment Development Department wage match), so the percentages shown in Table 12 may actually underestimate the percentages of students who began or increased earnings following CDCP participation.

Discussion and Conclusions

Given the limitations of the CDCP data listed earlier in this report, conclusions about the effects of the program on persistence and wages are tentative. However, given that this is the fifth report on the effects of CDCP and data are available for more cohorts, there exists some increased confidence in the results and, therefore, the conclusions.

For the CDCP persistence outcome measure, the following conclusions are made from the term-to-term persistence results presented on pages 9-21.

- The percentage of students persisting ranged from 24 percent to 49 percent depending on the cohort.
- Across cohorts with complete data, the percentage of students persisting to credit was around 4 percent to 10 percent -- substantially less than the overall percentages of those persisting.
- In general, higher percentages of those taking eight or more CDCP hours persisted due to higher percentages of students who persist to noncredit courses.
- Relatively high percentages of students who persisted in noncredit or credit to a following term took one or more CDCP ESL courses during their initial term; usually more than 55 percent of those persisting took an ESL course in their initial term.
- When persistence to credit was analyzed, relatively high percentages of persisting students took a CDCP basic skills course during their initial term.
- While the percentage of students persisting to credit was relatively small, students who moved to credit achieved high success rates in their subsequent attempts at credit courses. Over 80 percent of CDCP students who attempted subsequent credit courses earned units in those courses.

For the CDCP wage outcome measure, the following general conclusions are indicated from the wage trends data beginning on page 18.

- Employment Development Department matches for wage data occurred for about 22 percent to 27 percent of the students in the fall 2006 through fall 2009 cohorts.
- The wage trends for the cohorts show a "drop" in median wages in the year(s) just before the academic year in which the participants took their initial CDCP course.
- A median wage "rebound" tends to follow the wage decline in the initial term of CDCP enrollment for all students, including those with zero wages reported in a given year.
- Students taking 0 to 7.9 CDCP hours tend to have median wage trends similar to those for students taking 8 or more CDCP hours.
- Students taking short-term vocational courses have higher median wages across all academic years compared to those taking basic skills or ESL courses.
- Each course type (ESL, basic skills, short-term vocational) showed a slight wage decline just prior to and including the cohort year and a rebound following enrollment.

In summary, CDCP-coded courses seem to positively affect persistence, especially for students whose first courses were classified as ESL or basic skills. Further, while the percentages of students persisting to credit courses were low, the "persisters" proved quite successful in their credit courses.

This report's wage data analysis does not show any dramatic effects of CDCP participation, but there is evidence of an upward "bump" or "rebound" in wages following the cohort years. That is encouraging. Realistically, a sophisticated model with additional student-level variables would usually be needed to estimate the wage effects of the CDCP program. For example, see Card, David (1999). "Causal Effect of Education on Earnings." Chapter in *Handbook of Labor Economics, Volume 3A*. Orley C. Ashenfelter & David Card (Editors), Amsterdam: Elsevier.

While beyond the scope of this supplemental report, other researchers may want to study the ways that colleges implement and deliver CDCP programs. Areas for examination include the numbers and sequences of courses leading to CDCP certificate attainment and corresponding effects on outcomes. Researchers might want to examine whether CDCP courses differ from regular noncredit courses in content or delivery as well as explore the effects of enhanced funding on access to courses (e.g., providing more courses and sections). If sufficient resources are available, future evaluations should focus on any additional efforts to deliver new "enhanced noncredit" services to meet SB 361's requirements for helping students transition to degree-applicable coursework or improve their employability and job opportunities.

The possible analyses of CDCP effects could extend well beyond the options mentioned above if stakeholders wish to do so. In this sense, any future analysis would benefit from the development of a so-called "logic model" that often guides program evaluation strategies. For more information on logic models in evaluation, see Reisman, Jane, Ph.D. & Clegg, Judith (2000). *Outcomes for Success!* Seattle, Washington: Organizational Research Services, Inc. & Clegg and Associates, Inc., and Frechtling, Joy A. (2007), *Logic Modeling Methods in Program Evaluation,* San Francisco: Jossey-Bass.

Acknowledgments

Chancellor Jack Scott would like to acknowledge and thank those who have made significant contributions to this report.

ARCC Technical Advisory Group

The alphabetical list below represents the active participants in 2008 and their affiliations at that time.

Michelle Barton, Palomar College
Steve Boilard, Legislative Analyst's Office (California)
Gari Browning, College of the Desert
Jim Fillpot, Chaffey College
Janet Fulks, Bakersfield College
Anna Garza, North Orange Community College District
Craig Hayward, Cabrillo College
Robert Johnstone, Skyline College
Edward Karpp, Glendale Community College
Jonathan Lee, California Department of Finance
Jean-Marie McKinney, California Department of Finance
Wim McSpadden, Butte-Glenn Community College District
Kenneth Meehan, Fullerton College
Bill Scroggins, College of the Sequoias
Paul Steenhausen, Legislative Analyst's Office (California)
Thomas Todd, California Department of Finance

CHANCELLOR'S OFFICE
CALIFORNIA COMMUNITY COLLEGES

Erik Skinner, *Executive Vice Chancellor*

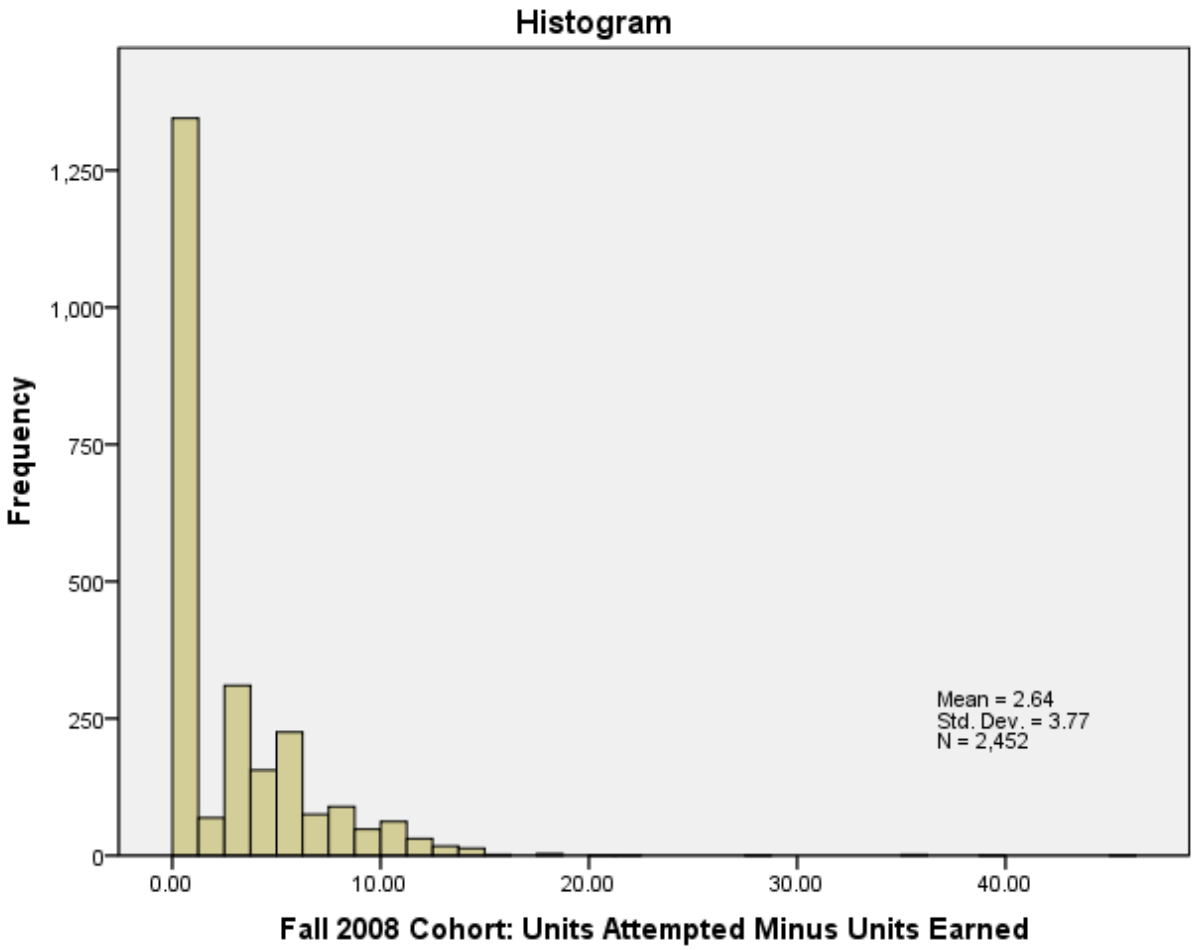
Technology, Research, and Information Systems Division

Patrick Perry, *Vice Chancellor for Technology, Research and Information Systems*
Willard Hom, *Director, Research, Analysis and Accountability (now retired)*
Myrna Huffman, *Director, Information Systems*
Tonia Lu, *Specialist, Information Systems*
Tom Nobert, *Specialist, Information Systems*
Phuong Nguyen, *Research Program Specialist II, Information Systems*
Catharine M. Liddicoat, *Specialist, Information Systems (now deceased)*
Alice van Ommeren, *Director, Research, Analysis and Accountability*
Mei Cooc, *Specialist, Information Systems*
Ryan Fuller, *Specialist, Information Systems*

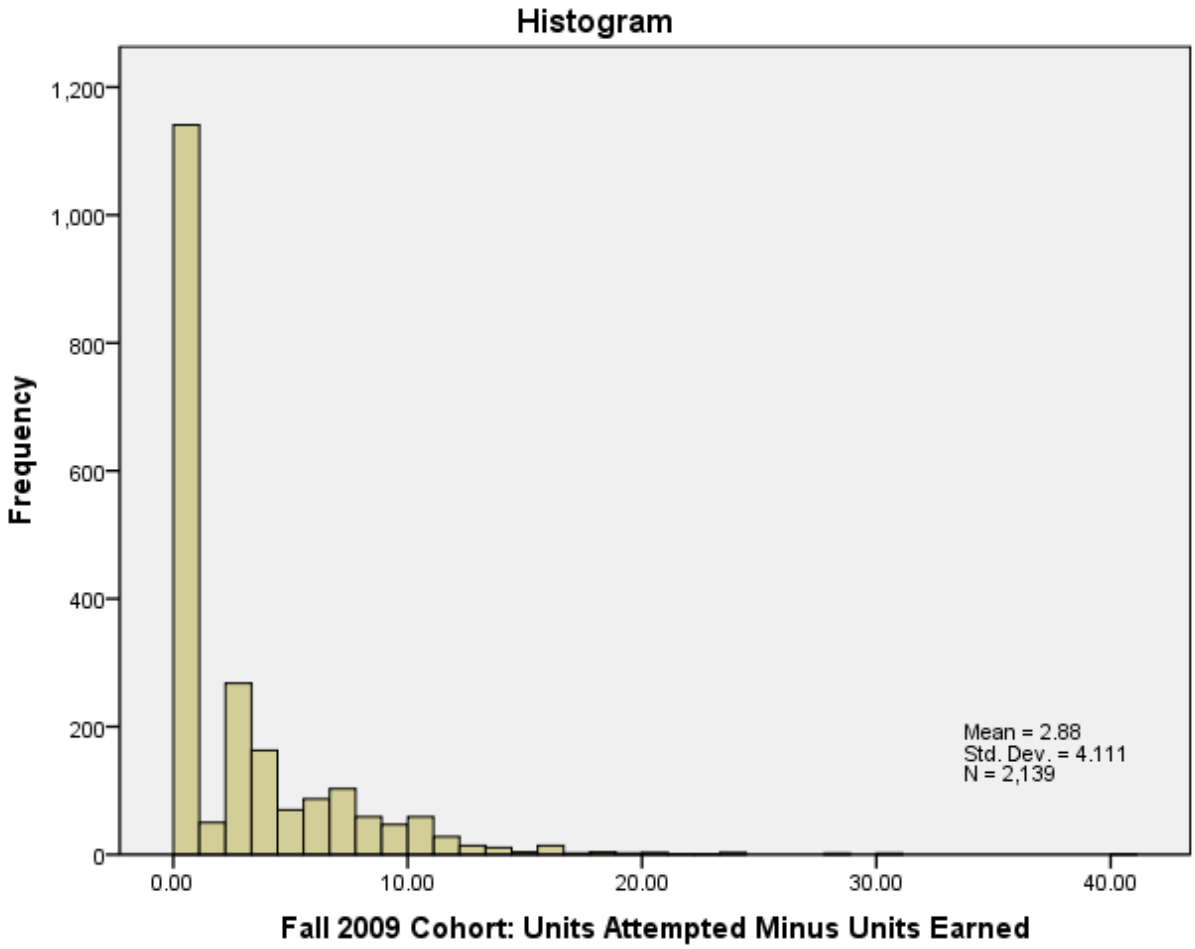
Office of Communications

Paul Feist, *Vice Chancellor of Communications*

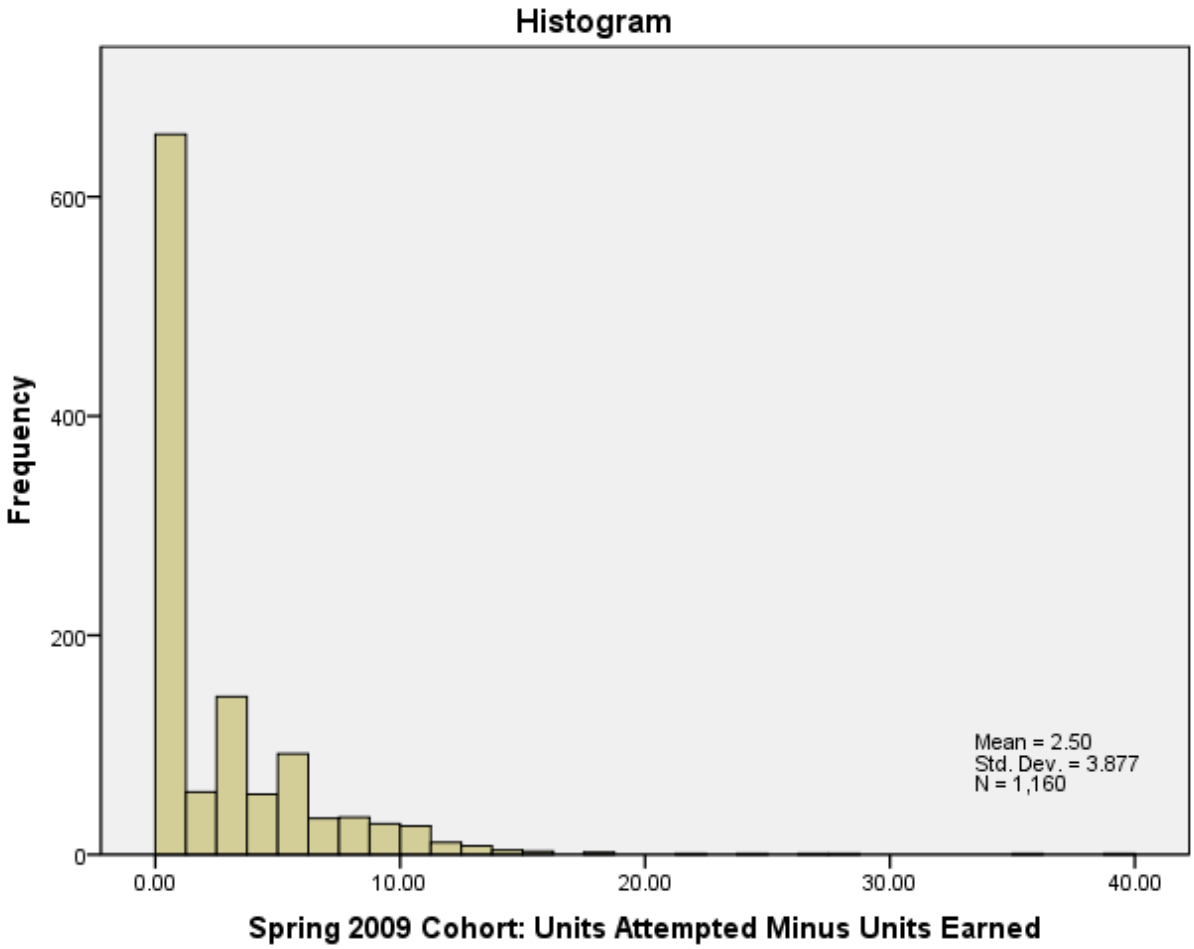
Appendix A


Histogram
Frequency
1,250
1,000
750
500
250
0
0.00
10.00
20.00
30.00
40.00
Mean = 2.64
Std. Dev. = 3.77
N = 2,452
Fall 2008 Cohort: Units Attempted Minus Units Earned

Appendix B


Histogram
Frequency
1,200
1,000
800
600
400
200
0
0.00
10.00
20.00
30.00
40.00
Mean = 2.88
Std. Dev. = 4.111
N = 2,139
Fall 2009 Cohort: Units Attempted Minus Units Earned

Appendix C


Histogram
Frequency
600
400
200
0
0.00
10.00
20.00
30.00
40.00
Mean = 2.50
Std. Dev. = 3.877
N = 1,160
Spring 2009 Cohort: Units Attempted Minus Units Earned

Appendix D – CDCP Certificates Reported

College	2009-10			2010-11		
	Basic Skills	ESL	Short-Term Vocational	Basic Skills	ESL	Short-Term Vocational
Allan Hancock						47
Noncredit award (192 to < 288 hours)						1
Noncredit award (48 to < 96 hours)						46
Glendale					35	52
Noncredit award (480 to < 960 hours)					29	22
Noncredit award (288 to < 480 hours)					6	6
Noncredit award (192 to < 288 hours)						24
Mendocino					1	
Noncredit award (192 to < 288 hours)					1	
Santa Ana	435			500		10
Noncredit award (960+ hours)	290			500		
Noncredit award (144 to < 192 hours)						10
Noncredit award (96 to < 144 hours)	145					
Santa Barbara Continuing Ed.	96		41	69		149
Noncredit award (288 to < 480 hours)	96			69		28
Noncredit award (192 to < 288 hours)						16
Noncredit award (144 to < 192 hours)			18			13
Noncredit award (48 to < 96 hours)			23			33
Noncredit award (< 48 hours)						59
Santiago Canyon	79		40	74		50
Noncredit award (960+ hours)	79			74		
Noncredit award (480 to < 960 hours)			15			19
Noncredit award (288 to < 480 hours)			14			22
Noncredit award (192 to < 288 hours)			11			9

California Community Colleges Chancellor's Office
1102 Q Street | Sacramento, CA 95811
www.cccco.edu

CORML #36