

**Summary of Research on Effects of
Community College Attendance on Earnings**
(created in 2008, updated in 2012)

In 2008, Catharine Liddicoat compiled and reviewed studies on the topic of wage changes for enrollees of community colleges. The purpose of the literature review was to provide researchers, administrators and policymakers with sound and rigorous research for citation purposes in other analyses, relevant decisions and appropriate communications.

As new studies have emerged and the discussion of wage gain of students attending community colleges continues, Ryan Fuller has recently updated this summary of research studies. This document provides identifying information to the article or publication, as well as the data source of the study and a summary of research results.

The summary of research studies, if available, also includes actual links to the publication. In other cases, research or educational libraries will have to be accessed to acquire copies of the articles.

Research, Analysis and Accountability
California Community Colleges Chancellor's Office

Summary of Research on Effects of Community College Attendance on Earnings

Author(s)	Year	Research Document Title and Source	Wage Data Source	Results Summary
Bailey, Kienzl, and Marcotte	2004	Bailey, T., Kienzl, G., & Marcotte, D.E. (2004). <i>The return to a sub-baccalaureate education: The effects of schooling, credentials and program of study on economic outcomes</i> . Washington, D.C.: U.S. Department of Education. http://www.ed.gov/rschstat/eval/sectech/nave/subbac-ed.pdf	National Education Longitudinal Study of 1988 (NELS), 2000 follow-up Beginning Postsecondary Students Longitudinal Study (BPS89) Dataset High School and Beyond (HS&B)	Students benefit from sub-baccalaureate education compared with those achieving only a high school diploma. Certificate and associate degree awardees generally have significantly higher returns than those with similar years of postsecondary education but no credential (the sheepskin effect), but the difference is often not statistically significant. Those in occupational programs do economically at least as well as, and in some cases significantly better than, students in academic programs. Women experience greater economic benefit from schooling and credentials than men.
Baum and Payea	2004 (rev. 2005)	Baum, S. and Payea, K., (2004; 2005 revision). Education pays: The benefits of higher education for individuals and society. <i>Trends in higher education series</i> . Washington, D.C.: The College Board.	U.S. Census Bureau, 2004, PINC-03; Internal Revenue Service, 2003, Table 3; McIntyre, et al., 2003; calculations by the authors. Day and Newburger, 2002; calculations by the authors.	“...[A]dults with associate degrees earned 22 percent more than high school graduates.” [p. 10] “All of the differences in earnings reported here may not be attributable to level of education. Education credentials are correlated with a variety of other factors including, for example, parents’ socioeconomic status and some personal characteristics.” [p.10] “Average lifetime earnings for individuals with associate degrees are almost 25 percent higher than average lifetime earnings for high school graduates.” [p. 11]
Baum, Payea, and Steele	2006	Baum, S., Payea, K., & Steele, P. (2006). Education pays: Second update. <i>Trends in higher education series</i> . Washington, D.C.: The College Board.	U.S. Census Bureau, 2006, PINC-03.	“The median earnings premium for associate degree holders relative to high school graduates ranges from \$7,300 for 25- to 34-year-olds to \$9,900 for 45- to 54-year-olds.” [p. 3] “On average, earnings are higher for individuals who have completed higher levels of education. However, there is considerable variation in earnings among individuals with similar levels of education...”[p. 4] ... About 15 percent of high school graduates and 27

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				<p>percent of associate degree holders earned more than the median earnings of four-year college graduates. Sixty-eight percent of advanced degree holders earned more than the median income for four-year college graduates...[p.4]</p> <p>... About one-third of associate degree recipients ages 35–44 working full-time earned less than the \$32,200 median earnings of high school graduates. Nineteen percent of bachelor’s degree recipients and 8 percent of advanced degree holders earned less than the median for high school graduates.” [p. 4]</p>
Baum and Ma	2010	<p>Baum, S. & Ma, J. (2010). Education pays: The benefits of higher education for individuals and society. <i>Trends in higher education series</i>. Washington, D.C.: The College Board.</p> <p>http://trends.collegeboard.org/downloads/Education_Pays_2010.pdf</p>	<p>U.S. Census Bureau, 2009, The College Board, 2009</p> <p>U.S. Census Bureau, <i>Current Population Survey, 2009 Annual Social and Economic Supplement</i></p>	<p>“The median earnings of bachelor’s degree recipients working full-time year-round in 2008 were \$55,700, \$21,900 more than the median earnings of high school graduates.” [p.10]</p> <p>“Individuals with some college but no degree earned 17% more than high school graduates working full-time year round. Their median after-tax earnings were 16% higher.” [p. 10] Note: These are annual earnings for typical, full-time, year-round workers, ages 25 and older.</p> <p>“Eighty percent of college graduates ages 25 or older had earnings in 2008 and 60% worked full-time year-round. Sixty-three percent of high school graduates ages 25 or older had earnings, and 44% worked full-time year-round.” [p. 10]</p> <p>Expected lifetime earnings for those with an associate degree were 24 % higher than those with only a high school diploma. Those with only ‘some college’ but no degree had 13% higher expected lifetime earnings than high school graduates.</p> <p>“For the typical student who borrows to cover tuition and fees at a community college and earns an associate degree two years after high school graduation, total earnings net of</p>

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				<p>loan repayment exceed the total earnings of high school graduates by age 33, after 13 years of work.” [p. 13]</p> <p>The authors also present findings on poverty, unemployment, public assistance, and other variables by educational level.</p>
Belfield and Bailey	2011	Belfield, C.R. & Bailey, T. (2011). The Benefits of Attending Community College: A Review of the Evidence. <i>Community College Review</i> , 39(1), 46-68.	Comprehensive review of research on economic benefits of Community College attendance.	<p>“ all studies have found positive earnings gains from an associate’s degree, with an average estimate across the studies of 13% for males and 22% for females.” [p. 49]</p> <p>“...almost all studies have found gains to credits or years of study at community college that do not lead to a completed degree. The average earnings gain for attending community college without obtaining a credential is estimated at 9% for males and 10% for females.” [p. 49]</p> <p>“...only two studies (Grubb, 1997; Marcotte, Bailey, Borkoski,& Kienzl, 2005) have reported on the earnings effects from vocational certificates. Both studies found significant earnings gains ranging from 7% to 24%.” [p. 52]</p>
Bills and Wacker	2003	Bills, D.B. & Wacker, M.E. (2003). Acquiring credentials when signals don’t matter: Employers’ support of employees who pursue postsecondary vocational degrees. <i>Sociology of Education</i> , 76(2), 170-187	<p>1995 Adult Education Interview of the National Household Education Survey (NHES:95) -- Developed by the National Center for Education Statistics and conducted by Westat</p> <p>N = 7,816</p>	<p>“Employers evidently recognize the value of vocational degrees beyond the utility of these degrees as signals of productive capacity in the absence of fuller information. Employers hire holders of vocational degrees over otherwise similar applicants and then pay them more (Kerckhoff and Bell 1998). While this finding is consistent with a human capital interpretation, it could be explained via a signaling (or even a credentialist) argument. Employers who hire employees from outside their firms lack information on candidates' productive capacities. A vocational education credential may signal both technical skills and valued noncognitive orientations.” [p. 184]</p> <p>“...The fact that employers willingly provide substantial tangible support - direct instruction, time off, classroom space, reimbursement of costs - to their current employees suggests that they see vocational education as an effective</p>

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				means of enhancing job skills.... ... Still, this support is not provided equally to everyone. Younger workers, in particular, and, to a lesser extent, women receive less help in pursuing degrees. Overall, though, we are struck by evidence that employers respond to skills, rather than to workers or occupations. Our single most powerful predictor - whether the employer required the participation in programs - indicates the level of employers' motivation to enhance employees' skills." [p. 184]
Carnvale, Rose and Hansen	2012	Carnvale, A.P., Rose, S.J. & Hanson A.R. (2012). Certificates: Gateway to Gainful Employment and College Degrees. (Center on Education and the Workforce) Washington, DC. Georgetown University	The National Longitudinal Study of Youth (NLSY), 1997 cohort, and the combined 2004 and 2008 panels of the Survey of Income and Program Participation (SIPP).	<p>"The median worker with a high school diploma earns slightly more than \$29,000, while certificate holders earn slightly less than \$35,000, meaning that the certificate premium over high school is 20 percent." [p.18]</p> <p>"...certificate holders acquire job-specific skills that are rewarded in the labor market above and beyond their general academic skills and that certificate programs are an efficient option for high school graduates with average and below average grades." [p.19]</p> <p>"Among certificate holders, 44 percent have occupations related to their certificate, and these occupation matches earn 31 percent more than those who aren't in a related occupation." [p. 22]</p> <p>"Certificate holders who work in field earn 37 percent more than those with just a high school diploma and are within 4 percent of workers with an Associate's degree. Certificate holders working out of field earn 1 percent higher than workers with a high school diploma and no postsecondary education." [p. 22]</p>
Dadgar and Weiss	2012	Dadgar, M. & Madeline, J.W. (2012). Labor Market Returns to Sub-Baccalaureate Credentials: How Much Does a Community College Degree or Certificate Pay?. (Community College Research Center: Working Paper	Community College Student Records in Washington State Board of Community	"...long-term certificates and associate degrees have a strong, positive impact on students' likelihood of employment, and a more modest positive impact on hours worked per week for those who are employed." [p. 29]

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		No. 45). New York, NY: Columbia University. http://ccrc.tc.columbia.edu/Publication.asp?UID=1101	and Technical Colleges; 4 Year enrollments from National Student Clearinghouse; Unemployment insurance Wage data from Washington, Alaska, Idaho, Montana, Oregon as well as Federal, Military and Postal Service Records	<p>“Associate degrees lead to positive returns across almost every field of study. There is variation in the magnitude of these awards ...However, unlike the other credentials, there are almost no associate degree and field combinations that have zero or non-significant returns...” [p.34]</p> <p>“...there are substantial wage returns to long-term certificates and associate degrees for women (14 percent higher quarterly wages for obtaining a long-term certificate and 8 percent higher quarterly wages for obtaining an associate degree compared with attending a college and not obtaining a credential), and modest returns for men (2 percent increase in quarterly wages for long-term certificates and 3.6 percent increase in quarterly wages for obtaining an associate degree).” [p. 35]</p>
Day and Newberger	2002	Day, J.C.& Newburger, E.C. (2002). <i>The big payoff: Educational attainment and synthetic estimates of work-life earnings</i> . P23- 210. Current Population Reports. Washington, DC: U.S. Census Bureau. http://www.census.gov/prod/2002pubs/p23-210.pdf	U.S. Census Bureau, Current Population Surveys, March 1998, 1999, and 2000.	<p>Adults ages 25 to 64 with associate degrees who worked at any time during the study period earned an average of \$33,000 per year. FT, year-round workers in this age and degree group earned an average of \$38,000 per year. This is compared to high school graduates in the respective groups who earned \$25, 900 and \$30.400 per year. [p. 2]</p> <p>Full time, year round workers comprised 74.9% of the age 25-64 associate degree group. [p. 2]</p> <p>People who earned an associate’s degree might expect work-life earnings of about \$1.6 million compared to \$1.2 million for high school graduates and \$2.1 million for those who earned a bachelor’s degree. [p. 4]</p> <p>Breakdowns by gender and ethnicity are included in the paper as well.</p>
Friedlander	1993	Friedlander, J. (1993). <i>Using wage record data to track the post-college employment rates and wages of California community college students</i> . (ERIC	California Employment Development	Wage record data available for 75% to 80% of students, 1 to 3 years after leaving college.

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		Document Reproduction Service No. ED360007) http://www.eric.ed.gov/ERICWebPortal/detail?accno=ED360007	Department Unemployment Insurance Wage Records; Student Record Files in COMIS (program completers and leavers, 1985-86 to 1989-90) Sample of 23,622 students from Santa Barbara City College and Grossmont College.	Post college employment rates and earnings greater for occupational AA/AS degree students than for those who completed 12+ occupational units, but no degree. Students who completed degree or certificate saw their wages triple from time of completion to 3 years after. Students with 12+ units (but no degree or cert) saw their wages double in this same time period. Post college earnings and employment rates of economically disadvantaged students who completed AA/AS were almost as high as those for students not economically disadvantaged.
Friedlander	1996	Friedlander, J. (1996). <i>Using wage record data to track the post-college employment rates and wages of California community college students.</i> (ERIC Document Reproduction Service No. ED390507) http://www.eric.ed.gov/ERICWebPortal/detail?accno=ED390507	California Employment Development Department Unemployment Insurance Wage Records; Student Record Files in COMIS (program completers and leavers) Sample of 173,535 students at 18 CCCs.	Follow up to an earlier study (Friedlander, 1993). UI wage data were available for a vast majority of students one to three years after they attended community college. Friedlander presents 28 specific findings on wage changes related to age groups, degree attainment (versus unit completion), gender, etc. Wages for students who attained a degree or certificate in an occupational program were higher than wages for students who left an occupational program without a degree or certificate, or who completed non-occupational programs. Students with occupational degrees or certificates made a 47% gain in wages between their last year of college and third year post-college.
Gill and Leigh	2003	Gill, A. & Leigh, D. (2003). Do the returns to community colleges differ between academic and vocational programs? <i>Journal of Human Resources</i> , 38(1), 134-155.	National Longitudinal Survey of Youth (NLSY) between 1979 and 1996. Sample size = 4,758	Four-year college graduates who begin at two-year colleges do not appear to suffer a labor market disadvantage relative to those who started at four-year colleges. The size and significance of wage differentials for these groups depend on demographic characteristics and self-selection.

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				<p>Previous studies of payoffs to community college terminal training programs did not adequately control for self-selection. The results of this study control for self-selection and support the findings of earlier studies. For example, enrollment in a community college terminal training program increases earnings by between 31.1% for white males and for 45% for black males relative to the earnings of high school graduates. Hispanic males and black males appear to benefit even more than white males from community college terminal training programs.</p> <p>Individuals choosing the community college terminal training track do better in the labor market than an “average” sample member with the same observable characteristics by 12.2%.</p>
Grubb	1995	Grubb, W.N. (1995). Response to comment. <i>Journal of Human Resources</i> , 30(1), 222-228.	<p>National Longitudinal Survey of the High School Class of 1972 (NLS-72)</p> <p>Grubb responds to Kane and Rouse (1995) with additional analyses and corrections based on their input.</p>	<p>Types of credits, types of credentials, and completion matter when discussing the economic benefits of community college attendance.</p> <p>Credits earned by non-completers increase both wages and earnings. Vocational credits have a significant effect for male non-completers; academic credits have a significant effect for female non-completers.</p> <p>Vocational certificates and Associate degrees do not increase wages or earnings for men once personal characteristics are controlled for.</p> <p>For women, a vocational Associate degree significantly increases annual earnings even after controlling for personal characteristics and experience.</p> <p>Returns to Associate degrees are higher for health occupations for both men and women.</p> <p>“Within the limits of what can be ascertained with the NLS72 data, there are differences in returns to academic versus vocational credits, differences in returns to different</p>

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				fields of study, and likely ‘program effects’ for women if not for men.” [p.3]
Grubb	2002	Grubb, W.N. (2002). Learning and earning in the middle, part I: National studies of pre-baccalaureate education. <i>Economics of Education Review</i> 21(4), 299-321.	Comprehensive review of research on economic benefits of college attendance, with emphasis on community college benefits. Summarizes research dating from the 1970’s to 2002, and provides extensive reference list.	During the 1980s and 1990s the proportion of postsecondary students in two-year college has increased considerably, from about 20% of all postsecondary enrollments to 37%. Most studies find a significant return to Associate degrees. Returns are usually slightly higher for women than for men, and higher for earnings than for wages. “...With some exceptions, then, these results clarify that completing Associate degrees generally enhances wages, employment, and earnings by significant amounts, in both statistical and conventional senses.” [p. 306] Relatively few data sets contain information about certificates, so returns are harder to identify. Thirty units (about 1 year’s worth of full-time enrollment) increase wages and earnings by 5% to a high of 11.3% for men and 11.8% for women. The benefits of 12 or fewer units are not substantial.
Grubb	2002	Grubb, W.N. (2002). Learning and earning in the middle, part II: State and local studies of pre-baccalaureate education. <i>Economics of Education Review</i> , 21(5), 401-414.	State Unemployment Insurance Wage Record Data for CCs in California, Washington, Florida, Texas, North Carolina	State and local results resemble national results. State UI wage record matches to two-year student records run about 60% to 90%. State and local UI data generally do not provide information for comparison of CC students with high school students, so comparisons are internal (e.g., within subject, across programs, longitudinal). Technical and medical occupations have the highest returns.

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				<p>In general, students completing Associate degrees or certificates have higher than those leaving without credentials (e.g., Washington and California studies).</p> <p>From Florida data: "... those with any postsecondary vocational credits—whether in high school district postsecondary programs, community college adult programs, or regular community college programs — earn substantially more than high school graduates right after leaving schooling. Individuals with Associate of Science degrees earn more than twice as much as high school graduates... and even more than those with baccalaureate degrees*; those with Associate of Arts degrees (largely in academic subjects) earn less than those with vocational credits." [p. 407]</p> <p>*Grubb points out the need to disentangle reported results by program, experience, and gender. AS degrees in one field alone (nursing) account for this finding.</p> <p>In North Carolina: Traditional age students leaving with credentials earned 16.5% more than those leaving without credentials. This pattern reverses for older groups, where non-completers earn more than completers, most likely because they already have high-paying jobs.</p> <p>Information on prior earnings, intentions, age, and experience will help with interpretation of the data.</p>
Grubb and Lazerson	2004	Grubb, W.N. & Lazerson, M. (2004). <i>The education gospel: The economic power of schooling</i> . Cambridge, MA: Harvard University Press.	<p><i>Current Population Survey</i>, Annual Demographic Survey, March supplement, 2000 – U.S. Census</p> <p>Authors also present results of other studies.</p>	<p>Authors present the mean annual earnings of men and women by ethnicity (White, Black, Latino/a) by level of schooling as of 2000. For all males achieving an Associate Degree, the mean was \$42,457; for women in this category, the mean was \$25,900.</p> <p>"On the average, then, it is worth continuing in school as long as an individual can afford to do so." [p. 159]</p> <p>"At the postsecondary level, the economic benefits of one-</p>

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				<p>year certificates are high for women in business and health occupations, while fields like child care, engineering, and computer-related field for women, and craft occupations for men, have low benefits or even no benefit. Among two-year associate degrees, only those in business, engineering- and computer-related fields, and health (dominated by nursing) are substantially more valuable than others, while those in education (largely child care), public service (like fire and police protection), and various craft occupations yield no greater benefits than a high school degree.” [p. 161]</p> <p>The authors discuss the pitfalls of a “college for all” approach in that more schooling leads to higher earnings on the average, but does not guarantee higher earnings. They also describe “reverse transfer” – where individuals with baccalaureate degrees in poorly paid occupations return to community colleges to train for well-paid fields.</p>
Hilmer	1999	<p>Hilmer, M.J. (1999). <i>Is two-year college attendance a good initial investment for students who persist to a baccalaureate degree?</i> Arlington, VA: National Science Foundation Grant #RED-9452861.</p> <p>http://papers.ssrn.com/sol3/papers.cfm?abstract_id=181331#PaperDownload</p>	<p>Baccalaureate and Beyond Survey -- a national U.S. Department of Education nationally representative survey of college graduates from the class of 1993, with re-interviews in 1994; full undergraduate transcripts collected whenever possible</p> <p>Sample = 5,269 students</p>	<p>This study looks at predicted earnings for students who attend a two-year college before transferring to their graduation four-year college, attend a different four-year college before transferring to their graduation four-year college, or attend their graduation four-year college exclusively. Self-selection bias is considered in the analyses.</p> <p>“The results suggest that there is no statistically significant difference in predicted earnings for two-year transfers relative to what they would have been predicted to earn if they had instead transferred between different four-year colleges or attended the same four-year college exclusively. This finding, combined with the fact that students can potentially save thousands of dollars in by attending a two-year college rather than a four-year college for their initial two years suggests that the increasing number of Baccalaureate degree aspirants choosing to start at two-year colleges are making wise investment decisions.” [p. 21]</p>

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Hudson, Kienzl, and Diehl	2007	Hudson, L., Kienzl, G. & Diehl, J. (2007). <i>Students entering and leaving postsecondary occupational education: 1995–2001</i> (NCES 2007–041). U.S. Department of Education. Washington, DC: National Center for Education Statistics. http://nces.ed.gov/pubs2007/2007041.pdf	Beginning Postsecondary Students Longitudinal Study (BPS: 96/01) data – for labor market outcomes analysis (Note: Study looks at other aspects of postsecondary occupational education in addition to labor market outcome)	<p>Average 2001 salary of occupational certificate completers was \$25,900. Salary was lower than the average salary of occupational associate degree completers (\$30,100). However, at least some of this difference appears to be due to the higher rate of fulltime employment among associate degree completers. Comparing only full-time workers, there was no measurable difference in the 2001 salaries of these groups (\$27,900 versus \$30,700, respectively).</p> <p>No measurable relationship was found between average 2001 salary and credential completion for either former certificate or associate’s degree students overall or for those working full time.</p> <p>Obtaining a postsecondary occupational credential was not related to employment rates or to salary, but “years of education was related to salary (only) among those in jobs related to their education.” [p. 72]</p> <p>Under human capital theory, the job-specific skills provided through occupational education should have labor market benefits only if the worker is employed in a job that uses those skills.</p> <p>Findings are consistent with the role of skill development (rather than a “sheepskin”) in fostering labor market success. The relationship between “salary and years of education for those in training-related jobs supports the argument that in the short term, postsecondary occupational education provides valuable job skills that are rewarded in the labor market (via salary)—as long as one works in a field that uses those skills.” [p. 72]</p>
Jacobson, Lalonde and Sullivan	2003, 2005	Jacobson, L., Lalonde, R. & Sullivan, D.G. (2003). <i>Should we teach old dogs new tricks? The impact of community college retraining on older displaced workers</i> . Federal Reserve Bank of Chicago Working Paper No. 2003-25.	Washington state administrative data: UI claims (1990-94), quarterly wage records (1987-2000), CC transcript records	<p>Study emphasizes older workers (age 35+ at job loss). Older displaced workers differ considerably from their younger counterparts. Job loss more costly for older workers.</p> <p>Ten years after displacement, younger workers have</p>

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		<p>Available at SSRN: http://ssrn.com/abstract=484482</p> <p>Jacobson, L., Lalonde, R. & Sullivan, D.G. (2005). The impact of community college retraining on older displaced workers. Should we teach old dogs new tricks? <i>Industrial and Labor Relations Review</i>, 58 (3), 398-415.</p> <p>http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1020996</p>	(1989-1996)	<p>returned to their pre-displacement earning levels. But earnings of older displaced workers remain well below their pre-displacement levels.</p> <p>Older workers participate in retraining at lower rates than young counterparts.</p> <p>“...older workers, those 35 or over when they lost their jobs, experienced similar per-period impacts from community college retraining as younger displaced workers.” [p. 45]</p> <p>CC schooling raised older workers’ earnings by about \$9 per credit over the long term (with a negative impact in the short term).</p> <p>One academic year of retraining raises older males' earnings by about 7% and older females' earnings by about 10% – similar to findings for younger workers. However, the rates of return differ from younger workers to older workers. Returns also differ based on types of courses. Completion of more quantitatively oriented courses, or courses in health occupations or the trades yield better returns than less quantitative courses.</p>
Jacobson, Lalonde and Sullivan	2004	<p>Jacobson, L., Lalonde, R. & Sullivan, D.G. (2004). Estimating the returns to community college schooling for displaced workers. <i>IZA Discussion Paper No. 1017</i>; Bonn, Germany: The Institute for the Study of Labor. Also: Federal Reserve Bank of Chicago Working Paper No. 2002-31.</p> <p>Available at SSRN: http://ssrn.com/abstract=376363</p>	<p>Administrative records of WA state’s unemployment insurance system: information on quarterly earnings and hours worked from 1987-1995.</p> <p>Transcripts from the state’s 25 community colleges, covering the period starting with Fall 1989 to the end of 1995.</p>	<p>Researchers need to look at long-term data; it appears to take several quarters to see the impact of education. Despite specific problems with modeling impacts, tentatively estimate that the equivalent of a year of community college credits increases displaced workers’ earnings by about 9 percent for men and 13 percent for women. Greater gains from more technically-oriented vocational and math and science classes.</p> <p>“...on average, community college schooling is at least a marginally productive social investment for displaced workers studied in this sample. Whether it is socially productive more generally appears to depend a great deal on the type of schooling that displaced workers receive.” [p.25]</p>

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Jacobson, Lalonde and Sullivan	2005	<p>Jacobson, L., Lalonde, R. & Sullivan, D.G. (2005, October). <i>Do displaced workers benefit from community college courses? Findings from administrative data and directions for future research</i>. Paper presented at the conference on the Effects of Community Colleges on the Earnings of Displaced Workers, Hudson Center for Employment Policy.</p> <p>http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1020996</p>	<p>Quarterly earnings records of Washington State UI claimants who were laid off and filed claims during the first half of the 1990s. Administrative records from 25 of the state's community colleges and from persons who received subsidies to enroll in CCs. Survey of displaced workers in WA state. BLS data to construct measures of labor market conditions.</p>	<p>“The low completion and persistence rates provide strong indications that focusing on retraining, rather than job-search and job placement, may be a highly risky strategy for displaced workers and policy makers.” [p.14]</p> <p>“[D]isplaced workers with some postsecondary schooling, but no college degree, were more likely to enroll at a community college than other displaced workers.” [p.16]</p> <p>“...the equivalent of a year of community college credits raises displaced workers’ earnings by about 7 percent for men and by about 11 percent for women.” [p. 17]</p> <p>Even older workers experienced gains. Impacts are larger for displaced workers who focus on more quantitative subjects.</p> <p>But there are caveats and implications for future research and cautions on using administrative data.</p> <p>Most dislocated workers do not currently receive reliable information about expected benefits/costs of attending school. Imparting reliable information helps displaced workers make better training decisions, potentially increasing the returns to such training initiatives.</p>
Jepsen, Troske and Coomes	2012	<p>Jepsen, C., Troske, K., & Coomes, P. (2009). The labor market returns to community college degrees, diplomas and certificates (Discussion Paper Series 2009-08). Lexington, KY: University of Kentucky Center for Poverty Research.</p>	<p>Kentucky Community and Technical College System</p>	<p>“...associate’s degrees and diplomas have quarterly returns of nearly \$1,500 for men and around \$2,000 for women. Certificates have small positive returns of around \$300 per quarter for men and women.” [p. 35]</p> <p>“The highest returns for associate’s degrees and diplomas are for health-related awards. The highest returns for certificates are in vocational fields for men and health fields for women.” [p. 36]</p> <p>“...we find that earning credits at a community college without receiving an award has a positive effect on</p>

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				earnings.” [p. 36]
Kane and Rouse	1995	Kane, T.J. & Rouse, C.E. (1995). Labor market returns to two- and four-year college. <i>The American Economic Review</i> , 85(3), 600-614.	<p>National Longitudinal Survey of the High School Class of 1972 (NLS-72) – tracked to 1986</p> <p>National Longitudinal Survey of Youth (NLSY) with annual surveys 1979 through 1990.</p> <p>Sample sizes varied based on the analysis.</p>	<p>Over 30 years, the CC student who completes even only one semester will earn more than enough to compensate for cost of schooling.</p> <p>More data are needed to evaluate the economic value of a CC education.</p> <p>There are similar returns to earned credits at two-year and four-year colleges.</p> <p>Using NLS data, the authors found that the average person who attended a two-year college earned about 10% more than the person without college education, even if the CC student didn’t complete the AA/AS. Similar results for NLSY data.</p> <p>Estimated returns to a credit at both two-year and four-year are positive and remarkably similar – 4% to 6% earnings gain for every 30 completed credits (two semesters).</p>
Kane and Rouse	1995	Kane, T.J. & Rouse, C.E. (1995). Comment on W. Norton Grubb: 'The varied economic returns to postsecondary education: New evidence from the class of 1972. <i>Journal of Human Resources</i> , 30(1), 205-221.	<p>National Longitudinal Survey of the High School Class of 1972 (NLS-72)</p> <p>Reanalyzed data from a previous study (Grubb, 1993) after correcting errors in the original data.</p> <p>Sample Size = 7,262</p>	<p>Men and women who attend two-year colleges without completing an AA/AS earn more than HS graduates with no postsecondary training.</p> <p>“...in the NLS-72 it appears that completed two-year college course work is as important for earnings as are AAs.” [p.213]</p> <p>No evidence that returns differ by type of AA degree.</p> <p>“...there is some evidence that both men and women earn more than comparable high school graduates after attending a two-year college whether or not they complete the degree and these effects remain even after controlling for labor market experience. [p. 219]</p>

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Kane and Rouse	1999	<p>Kane, T.J. & Rouse, C.E. (1999). The community college: Educating students at the margin between college and work. <i>Journal of Economic Perspectives</i>, 13(1), 63-84.</p> <p>This study examines findings from other studies.</p>	<p>Studies cited by the authors used data from National Longitudinal Study of the Class of 1972 (NLS-72) or National Longitudinal Survey of Youth (NLSY). Also, 1990 U.S. Census microdata, data from Current Population Survey (1991, 1992) and wage data from JTPA programs.</p>	<p>The average CC student who enrolls but does not complete a CC degree (and does not attend a four-year college) earns 9% to 13% more than a high school student with similar HS grades and/or test scores between the ages of 29 and 38. Each year of credit at a CC is associated with a 5% to 8% increase in annual earnings, reportedly the same as the estimated value of a year's worth of credit at a four-year college.</p> <p>Displaced workers saw 2% to 5% increase based on a year of CC coursework in quantitative or technically oriented courses, but not in more qualitative courses. However, average earnings did not return to pre-displacement levels.</p> <p>JTPA enrollees (presumably most at CCs) also saw some earnings increases.</p> <p>Completing an associate's degree appears to be associated with 15% to 27% increase in annual earnings (over earnings of high school graduates), The earnings differential for degree attainment is larger for women – reflecting the pronounced impact of nursing degrees on earnings.</p>
Kerckhoff and Bell	1998	<p>Kerckhoff, A.C. & Bell, L. (1998). Hidden capital: Vocational credentials and attainment in the United States. <i>Sociology of Education</i>, 71(2), 152-174.</p>	<p>High School and Beyond (HS&B) dataset -- based on samples of high school sophomores and seniors in 1980, and the data were collected in 1980, 1982, 1984, and 1986.</p> <p>N = 11,147</p>	<p>“All our analyses of the effects of credentials on labor force outcomes controlled for a wide range of other variables that may affect labor force outcomes...SES; gender; minority status; and age), high school program (academic, general, vocational), high school achievement (grades, scores on mathematics and English tests), urbanity (city, suburb, or rural), region (North Central, Northeast, South, or West), married, parent, and months of labor force experience.” [p. 158]</p> <p>The authors report the effects of different types of credentials on earnings and occupational status.</p> <p>“The analysis indicates that vocational credentials provide a basis for earnings that is roughly comparable to an</p>

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				<p>associate's degree. And as this finding would suggest, the respondents with several of the vocational credentials had significantly higher earnings than did those in the high school-only group. What is more important, several of the vocational credentials led to higher earnings than were obtained by those who had gone to four-year colleges but had not obtained bachelor's or associate's degrees." [p. 160]</p> <p>"The analysis has many limitations, not the least of which is its dependence on less-than-adequate data. But the inadequacies of the data also reflect the low status of vocational postsecondary credentials. There is a Catch-22 element involved: More consistent national standards for and classification of vocational credentials will be needed if their distribution and labor force effects are to be fully assessed, but instituting a national classification and standards will change the system." [p. 168]</p> <p>"However, the pattern of these findings gives us confidence that the general conclusions we reached are probably correct. Even without national standards, these kinds of credentials do make a difference, but they make highly varied differences. Some of them (such as the one for nurse assistants) do not improve students' outcomes beyond those of high school graduates, but others (like the computer-related credential) lead to superior outcomes compared with those who obtain associate's degrees." [p. 168]</p> <p>"Lumping" all vocational credentials into one category obscures the variety of outcomes and makes some of the credentials appear less important than they really are.</p>
Leigh and Gill	1997	Leigh, D. & Gill, A. (1997). Labor market returns to community colleges: Evidence for returning adults. <i>Journal of Human Resources</i> , 32(2), 334-353.	<p>National Longitudinal Survey of Youth (NLSY) through the 1993 wave (including HS dropouts)</p> <p>Sample sizes varied by</p>	For AA recipients the economic return to community college is strongly positive and neither significantly higher nor lower for returning adults than it is for continuing students...Estimated returns to non-degree programs are also positive and essentially the same size for returning females as for continuing female students. However, returning males experience an incremental effect of 8% to

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			analyses.	10% in earnings above those of continuing male students. The authors view this result as strengthening the case for public policies that increase access to long term education and training programs for adult workers, which can combat structural unemployment.
Leigh and Gill	2007	Leigh, D. & Gill, A. (2007). <i>Do community colleges respond to local needs? Evidence from California</i> . Kalamazoo, MI: The Upjohn Institute for Employment Research.	Authors cite and summarize various studies.	<p>“Estimates are available from national data, but preferred estimates come from state administrative data matching CC student records with UI wage histories.” [p. 48]</p> <p>“Enrollment in a CC has a positive impact on earnings, with earnings estimates varying substantially across fields of study.” [p. 48]</p> <p>“Using national data, these studies demonstrate that a year’s worth of credits earned at a community college is associated with a 5-8 percent increase in annual earnings, about the same impact as a year’s worth of credits at a four-year college. Evidence is also presented indicating that there is a premium as high as 27 percent for earning an AA degree. Finally, the authors find that even the average community college student who enrolls but does not complete a degree or certificate still earns 6-12 percent more than the average high school graduate.” [p. 49]</p> <p>The literature suggests that, on average, enrolling in a community college does enhance earnings prospects. Nevertheless, positive average earnings effects may disguise quite different effects estimated for different programs.” [p. 49]</p> <p>On pages 49-50 of their book, the authors summarize findings from other studies, many of which are presented elsewhere in this matrix (e.g., Jacobson, LaLonde, and Sullivan, 2005).</p> <p>“...[E]arnings estimates differ substantially by major field of study. For men, large long-term quarterly earnings gains on the order of 14 percent are obtained for academic</p>

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				<p>courses in science and mathematics as well as for more technically oriented occupational skills courses, including courses in health occupations. The gains are larger for women – about 29 percent. For all other community college courses, long-term gains for both males and females are close to zero.” [p. 51]</p> <p>“Other than Jacobson, LaLond, and Sullivan...few studies are available that use matched administrative data sets to estimate returns to alternative community college fields of study. There is clearly a need for studies that examine matched data for states other than Washington and for individuals in addition to dislocated workers.” [p. 51]</p>
Leslie and Brinkman	1988	<p>Leslie, L.L. & Brinkman, P.T. (1988). <i>The economic value of higher education</i>. New York: American Council on Education and Macmillan Publishing Company.</p> <p>This book is part of the American Council on Education /Macmillan Series on Higher Education.</p>	U.S. Bureau of Census, Current Population Reports, various issues	<p>“Although results are somewhat mixed, it appears that the return on less than 4 years of college also is a favorable one. Returns on ‘some college,’ which would include associate degree holders and graduates of vocational-technical programs, as well as dropouts from baccalaureate programs, average about 10 percent, compared to the 11.8 to 13.4 percent mean estimates for the baccalaureate.” [p. 52]</p>
Lewis, Hearn, and Zilbert	1993	Lewis, D.R., Hearn, J.C., & Zilbert, E.E. (1993). Efficiency and equity effects of vocationally focused postsecondary education. <i>Sociology of Education</i> , 66(3), 188-205.	<p>1980, 1982, 1984, and 1986 waves of the High School and Beyond (HS&B) survey of American high-school seniors (class of 1980). Data collected for the National Center for Education Statistics by the National Opinion Research Center (NORC).</p> <p>N = 5,575</p>	<p>“The regression result for earnings suggest that, in the context of controls for several important dimensions of circumstances and respondents' characteristics (including SES), postsecondary vocational education contributed positively and significantly to the earnings of those who did not attend four-year colleges. It appears that participation in a postsecondary vocational program has positive and significant effects on earnings five years out of high school” [p. 195].</p> <p>“Our results generally support traditional human capital theory and suggest that the earnings effects of both participation in and completion of a postsecondary vocational education program are positive and significant, especially for women. That is, for women who enter a postsecondary vocational program, there are highly</p>

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			Also several subsamples for analyses of equity issues	<p>significant payoffs relative to not entering such a program. What is more, when SES and several other factors are controlled for, earnings effects for all women, as well as for lower-SES women, attending postsecondary vocational education programs were found to be greater than were those for comparable men, a finding in keeping with the equity goals of the public investment in such educational offerings. On the other hand, the returns to attendance at a postsecondary vocational education program for a composite of all fields for men from all SES backgrounds, although positive in direction, were not significant.” [p. 202]</p> <p>“On the basis of our results, it is difficult to deny that the direct earnings effects of postsecondary vocational education for lower-SES male students are less than some would have expected from an efficiency or an equity perspective. For those men whose highest educational accomplishment is attending such a school, and especially for socioeconomically disadvantaged men, it seems that the promised rewards from attendance (at least one to five years out of high school) are smaller than many policymakers have hoped. On the other hand, the results for women are highly positive and more in line with expectations.” [p. 202]</p>
Light and Strayer	2004	Light, A. & Strayer, W. (2004). Who receives the college wage premium? Assessing the labor market returns to degrees and college transfer patterns. <i>Journal of Human Resources</i> , 34(3), 746-773.	<p>1979 National Longitudinal Survey of Youth (NLSY79)</p> <p>Used data for 1979-1996</p> <p>Samples for wage models: 3,397 college-goers 2,858 noncollege-goers</p>	<p>The authors look at combinations of degree attainment (no degree, associate’s, bachelor’s), college type (two-year, four-year), and transfer status. Transfer status, college type, and degree attainment are important determinants of post-college earnings.</p> <p>Ignoring transfer status,individuals who attend college without receiving a degree are predicted to earn 21 percent more than high school graduates...., associate’s degree recipients are predicted to earn 33 percent more, and bachelor’s degree recipients are predicted to earn 62 percent more. [p. 15]</p>

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			Used multiple wages reported by workers after receiving their highest degree; longitudinal approach rather than cross-sectional	<p>The authors observe a further categorization for two-year college students: those working toward a vocational degree and those seeking job training.</p> <p>In terms of post-college wages, transferring does no harm and often proves beneficial.</p> <p>The heterogeneity among college-goers means that there is no single “wage premium.”</p>
Lin and Vogt	1996	Lin, Y. & Vogt, W.P. (1996). Occupational outcomes for students earning two-year college degrees: Income, status, and equity. <i>Journal of Higher Education</i> , 67(4), 446-475.	<p>National Longitudinal Study of the Class of 1972 (NLS-72) - used fifth follow-up as conducted in 1986 (NLS-86)</p> <p>N = 3,709: 1,522 two-year college degree students; 2,167 high school graduates</p>	<p>“...[I]t is important to investigate, not only the two-year colleges’ effects on educational attainment (and thus their indirect effects on occupational attainment). It is also important to investigate two-year colleges’ more direct influences on occupational attainment.” [p. 447]</p> <p>Rather than comparing two-year to four-year, these authors choose “load the dice the other way” (their terminology) and compare occupational outcomes for two-year students with outcomes for high school students who entered the labor market with no postsecondary education.</p> <p>“For individuals who could not afford, or did not want to attend, a four-year college, the two-year college provided access to jobs higher in earnings and/or status than did entering the labor market directly after high school graduation.” [p. 451]</p> <p>“Going to a two-year college in the 1980s – as compared to stopping with high school education – improved individuals’ occupational outcomes. For some groups of individuals, such as men and blacks, the improvement was significant only in job status, but not income. For other groups, such as women, the income benefits were much larger. But members of all groups on average got at least some benefits. This means that a two-year college education culminating in a degree improved individuals’ occupational outcomes and equalized individual opportunity. However, when we look more broadly, at the relationships among groups, we see a different picture.</p>

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				Concerning the inequality between groups as we move from one education level to the next, we find that increasing education by the same amount (from high school graduation to a two-year degree) most often reduced social equity. In brief, the two-year college enhanced individuals' opportunities but left patterns of intergroup inequality at best unchanged." [p. 469]
Marcotte	2006	<p>Marcotte, D. E. (2006). The earnings effect of education at community colleges. <i>IZA Discussion Paper No. 2334</i>. Bonn, Germany: The Institute for the Study of Labor. http://ftp.iza.org/dp2334.pdf</p> <p>This paper builds on the study by Marcotte, Bailey, Borkoski, and Kienzl (2005) described below.</p>	<p>National Education Longitudinal Study, 2000 follow-up</p> <p>By the 2000 follow-up, data were collected from 11,559 of the original sample of 25,000 students.</p> <p>Used additional data from the post-secondary transcripts of the NELS cohort to identify the total number of credit hours completed by students and estimate the value of credit hours on earning and employment. Also determined the proportion of credit hours taken in vocational versus academic courses, to examine advantages of taking vocational courses.</p>	<p>"...the substantial correlation between academic and occupational credits earned makes it difficult to identify whether enrollment in one type of course or the other is particularly advantageous....[p. 24]</p>

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Marcotte, Bailey, Borkoski, and Kienzl	2005	Marcotte, D.E., Bailey, T., Borkoski, C., & Kienzl, G.S. (2005). The returns of a community college education: Evidence from the National Education Longitudinal Survey. <i>Educational Evaluation and Policy Analysis</i> , 27(2), 157-175	<p>National Education Longitudinal Study, 2000 follow-up</p> <p>Data from students who were in eighth grade in 1988</p> <p>By 2000, NELS had collected data from 11,559 members of the original sample</p>	<p>Average wages and salaries for students who enroll in CCs and those who earn CC degrees are higher than for their peers who completed only high school. Earnings were larger for annual salaries than for hourly wages, suggesting that the earnings advantage may be due to more hours worked among those who attended CCs. Results held, even when adjusted for family, school, and individual characteristics.</p> <p>The most substantial earnings benefits of CC education accrue to women. This may be due to gender differences in choosing programs of study, or it may be due to the manner in which men and women elect to participate in higher education and work after entering the labor market.</p> <p>Earnings effects occurred for both those who earned associate degrees and those who failed to earn a credential. The effects of certificate achievement on earnings were less consistent.</p> <p>Young men enrolled in CC or technical college earned about 6% more annually for each year of FTE coursework completed, even when they did not obtain a degree.</p> <p>In terms of both hourly wages and annual earnings, young men who obtained an associate degree earned substantially more than those who attended a CC for two full-year equivalents.</p> <p>In general, young women experienced higher returns from CC enrollment and CC degrees than did young men. Women earned about 11.1% more annually for each year of FTE coursework completed, even when they did not obtain a degree.</p> <p>Women with associate degrees earned about 47.6% more annually than their peers with high school education. Men with associate degrees earned about 14.7% more annually than their peers with high school education.</p>

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				<p>The return associated with a certificate for women exceeded the return related to an associate degree for men.</p> <p>For both men and women a major part of the earnings effect of CC education was an increase in work hours.</p> <p>The authors posit alternative explanations for these gender differences.</p>
Miller	2007	<p>Miller, D.W., III (2007). <i>Isolating the causal impact of community college enrollment on educational attainment and labor market outcomes in Texas</i> (Stanford Institute for Economic Policy Research Discussion Paper No. 06-33). Stanford, CA: Stanford University.</p> <p>http://siepr.stanford.edu/publicationsprofile/153</p>	<p>Micro-level administrative data housed at the Texas Higher Education Coordinating Board (THECB) in Austin, TX.</p> <p>Researcher combined data from multiple sources to create comprehensive, unitary records for Texas public high school graduates for the years 1994-1996 and 1998-1999.</p>	<p>“In an attempt to fully control for selection into community college, Model IV uses the distance to the nearest two- and four-year colleges to instrument for initial college choice. To address concerns that our distance instrument might be correlated with local labor market conditions that have a causal impact upon earnings, we include controls for region, metro status and median earnings at the county level.” [p. 27]</p>
Molitor and Leigh	2005	<p>Molitor, C.J. & Leigh, D.E. (2005). In-school work experience and the returns to two-year and four-year colleges. <i>Economics of Education Review</i>, 24(4), 459-68.</p>	<p>National Longitudinal Survey of Youth (NLSY) data for male respondents</p> <p>N = 2,149</p>	<p>“...[E]stimated returns to all educational categories are sensitive to the inclusion of in-school work experience, regardless of control variables.... the non-degree educational categories appear to be especially sensitive. [p.465]</p> <p>“Regardless of controls for family background and ability, returns to community college attendance and A.A. degree appear to be more sensitive to controlling for in-school work experience than are returns to four-year college and B.A. degree.” [p. 465]</p> <p>“... [W]ork experience gained while attending a</p>

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				<p>community college appears to have the largest return, followed in decreasing order of magnitude by work experience gained while attending a four-year college, gained while attending high school, and gained while attending an unclassified postsecondary educational institution.” [p. 465]</p> <p>“...[T]hese calculations suggest that in the absence of substantial work experience gained while in school, the effect of attending a two-year college is not distinguishable from that of obtaining a terminal high school degree.” [p. 466]</p> <p>“...[F]ailure to take in-school work experience into account is likely to result in returns to schooling that are upwardly biased. Our analysis suggests that this is especially likely to be the case for categories of education, such as attending a two-year college, that do not involve the awarding of a degree.” [p. 467]</p> <p>“The relatively large effect of community college work experience supports the hypothesis that schooling and work are more complementary for community colleges than four-year colleges. This result raises the possibility that substantial estimates of the return to attending a community college shown in Kane and Rouse (1995) may, at least in part, be the result of productive work experience acquired while attending a two-year college.” [p. 467]</p>
Sanchez and Laanan	1997	<p>Sanchez, J.R. & Laanan, F.S. (1997, November). <i>What is it worth? The economic value of obtaining a certificate or associate degree from California community colleges</i>. Paper presented at the annual conference of the California Association for Institutional Research, San Francisco, CA. (ERIC Document Reproduction Service No. ED413941)</p> <p><i>This study won CAIR’s “Best Paper” award in 1997-98.</i></p>	<p>California Employment Development Department Unemployment Insurance Wage Record Data; Student Record Files in COMIS (leavers and</p>	<p>Wage record data available for 60% to 70% of students, 1 to 3 years after leaving college.</p> <p>Wage gains were greatest for certificate completers (15% gain from first year out of college to third year out), then AA/AS degree completers (11% gain). Those completing CC units without earning a vocational degree or certificate also had wage gains, but not to the extent of vocational degree/certificate completers.</p>

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		http://www.eric.ed.gov/ERICWebPortal/detail?accno=ED413941	completers in 1991-92 academic year) Data for 841,952 students enrolled in 103 of 106 CCCs	Students under 25 experienced greater wage gains than students 25 and older. However, the older students were already making more money than those under 25, so their wage gains were relatively smaller. Overall, vocational majors experienced a 14% gain from first year out to third year out. The authors also report wage gain information broken out by units taken, race/ ethnicity, gender, and age, and for economically disadvantaged students.
Sanchez and Laanan	1998	Sanchez, J.R. & Laanan, F.S. (1998, May). <i>Assessing the post-college earnings of students: Benefits of attending California community colleges – methods, analysis, and implications</i> . Paper presented at the annual forum of the Association for Institutional Research, Minneapolis, MN. (ERIC Document Reproduction Service No. ED422822) This paper repeats the findings in Sanchez and Laanan's 1997 paper. http://www.eric.ed.gov/ERICWebPortal/detail?accno=ED422822	California Employment Development Department Unemployment Insurance Wage Record Data; Student Record Files in COMIS (leavers and completers in 1991-92 academic year)	From the abstract: "For all students, the greatest gains (15 percent) went to certificate completers, followed by those completing an associate degree (11 percent). When data were analyzed by age group, younger vocational students (age 18 to 24) has higher gains (+19 percent) for first to third years out of college; older students (ages 25-34 and over 35) experienced 12 percent gains. Completing a certificate or associate degree with a major program area also has a positive impact on post-college earnings... [M]en had higher earnings than women across the 3-year time period measured."
Sanchez, Laanan, and Wiseley	1999	Sanchez, J.R. & Laanan, F.S., & Wiseley, W.C. (1999). Postcollege earnings of former students of California community colleges: Methods, analysis, and implications. <i>Research in Higher Education</i> , 40(1), 87-113.	California Employment Development Department Unemployment Insurance Wage Record Data; Student Record Files in COMIS (leavers and completers in 1992-93 academic year)	UI wage record data were available for 64% of students in their last year in college; of those, 61% matched first year out of college, and over 56% of former students were in the UI wage data three years out of college. There exists a positive relationship between formal education and earnings. Students completing more education tend to experience greater gains in postcollege earnings. "For all students, the greatest gains were among certificate

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			Data for up to 700,564 students	<p>completers (~14%), followed by A.A. or A.S. degree holders (~13%).” [p. 108] (Note: Percentages are median annual earnings gains from first to third year out of college.)</p> <p>“When examining the data by age (under 25 or 25 and over), younger students who completed a certificate experienced a 29% gain compared with students over 25 (9%).” [p.108]</p> <p>“When the data were analyzed by age group among vocational students, younger students (18 to 24) were more likely to have higher percent gains from first year out of college to third year out (~30%), compared with older students. Students between 25 and 34 years old had a 14% gain compared with 9% for students 35 and older three years out.” [p.108]</p> <p>“An important finding is that during their last year in college, certificate and associate-degree completers had lower earnings compared with leavers. Given this finding, the results suggest that vocational students identified as completers increased their earnings the first year out and three years out. This finding suggests that students who complete a vocational program area and earn a certificate have an edge in the workforce. By possessing the credentials that provide a basis for employers to evaluate prospective employees, these individuals will likely start at higher levels in their positions and in salary schedules. This finding supports Grubb’s (1996) assertion that the chance of obtaining a job that requires technical skills is highly increased with an associate degree or vocational certificate and the likelihood of becoming a laborer or having an unskilled position is reduced.” [p.109]</p> <p>“The results from this study provide empirical evidence that for students who are economically disadvantaged, completing more education is positively related to higher percent gains and actual earnings.” [p.109]</p>

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				<p>“The findings show that men were more likely to have higher earnings across the three time periods... However, a significant finding is that the earnings gap is narrowed when women complete the certificate or associate degree. In other words, completing some units will not have a substantial effect on their marketability in the labor market. However, when they complete the certificate or A.A. or A.S. degree, not only will they possess a credential or meet the certification hypothesis, but they will also experience higher earnings. This finding suggests that women are most likely going to benefit in terms of future earnings if they are encouraged to complete formalized programs and obtain the academic awards.” [pp.109-110]</p>
Surette	1997	<p>Surette, B.J. (1997). The effects of two-year college on the labor market and schooling experiences of young men. <i>Board of Governors of the Federal Reserve System Finance and Econ. Disc. Series</i> 97-44. Available at SSRN: http://ssrn.com/abstract=60928</p>	<p>National Longitudinal Survey of Youth - First 12 waves (self-report): Males only, schooling and employment outcomes 1978-1989; final file has data for 3,202 individuals</p>	<p>Labor market effects of two-year colleges are much larger than previously reported and are realized early in careers for men.</p> <p>Two-year college attendance is estimated to raise wages and expected annual income, even for students who do not complete an Associate’s degree.</p> <p>The model estimates that a student with one year of credits from a two-year institution will earn 7.5% more in annual income than an otherwise similar high school graduate at age 25.</p> <p>Possession of an Associate’s degree results in a 17.1% increase in annual income over a similar high school graduate.</p> <p>Also, each year of two-year credits raises the probability of four-year attendance (transfer).</p> <p>Surette states that the discrete factor random effects model used in this analysis controls for the bias that unobserved heterogeneity may introduce into estimates of the value of two-year college attendance. Thus, his study addresses the shortcoming of similar studies.</p>

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Turner and Monk-Turner	2001	Turner, C.G. & Monk-Turner, E. (2001). The returns to education and degrees. <i>Educational Research Quarterly</i> , 26(3), 45-56	<p>National Longitudinal Survey of Youth (NLSY) – 1979 to 1990</p> <p>Sample includes all individuals who graduated from high school and were working full-time (35 or more hours per week) in 1988.</p> <p>Original NLSY sample included 12,686 students.</p>	<p>Only bachelor's degree recipients experienced an economic advantage on completion of the degree (10%). Associate and vocational degree holders did not significantly benefit from degree achievement.</p> <p>Using a model that includes interaction terms (for sex and race by years of education and degree), the authors conclude that the economic return on each additional year of education increases the hourly wage by 1.9%. Without these interaction terms in the wage model, the economic return to each additional year of education is 2.7%.</p> <p>“...Given the number of students whose point of first entry in the higher educational system is the community college and the number who acquire the two-year Associate's degree, these results are sobering. If the economic pay-off of this particular type of education/and degree is not realized then individuals should be more cognizant of this effect especially as they consider college choices.” [p. 51]</p>