Adjusting College Cost Figures for Non-credit Enrollments

By Richard M. Romano, Rita J. Kirshstein, Mark D'Amico, and Willard Hom,

September 2016

Abstract

Community college practitioners are quick to note that official IPEDS analyses of expenditures and revenues per FTE overstate the amount they spend on each student. This results from the fact that enrollments in their non-credit courses are not included in the FTE count but expenditures for these courses are. While this situation may also occur in four-year colleges, the extent to which it occurs is thought to be less of a problem in determining costs per student. Using data from three states, this is the first study of its kind that examines this measurement issue. With it comes an invitation to readers to participate (crowd sourcing) in the study as joint authors(s) by contributing data and their analysis.

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Introduction

Community college practitioners often point out that their colleges are underfunded and evidence to support this claim is easy to find. The best available national data for any given year shows that both average revenues and average expenditures (costs) per student FTE at public community colleges are lower than in any other sector of higher education. In 2013, for instance, public research universities spent $39,793 per FTE, while public bachelor's and master's colleges spent $20,352 and $19,310, respectively. This contrasts with the $14,090 spent at community colleges [1] (Desrochers & Hurlburt, 2016).

Scholars have been critical of these simple comparisons on at least two levels. First, the FTE expenditures per student for community colleges is inflated because institutions include expenditures for non-credit courses in their IPEDS reporting but not their enrollments. This means that community colleges are actually worse off than commonly reported expenditure data indicate. Second, if we are interested in comparing community college expenditures with those of public four-year colleges, the figures for the latter are inflated because they include what it costs to educate upper- division and graduate students who are more costly to educate than lower-division students. The current study deals with the first of these concerns and only indirectly with the second.

On the first point, scholars and practitioners are in substantial agreement. Spending per FTE student is even lower than official figures show. This may be interpreted as proof that community colleges are more efficient than thought, or, alternatively, that they are even more seriously underfunded than official figures show.

In addition, assuming that the non-credit effort is larger at the community college than in four-year colleges (a common, but unproven, assumption), it would bias the figures used in comparing costs between the sectors. As far as we know, our study is the first attempt to estimate costs, albeit, in an incomplete way, for this factor.

Definition of non-credit

Our definition of non-credit focuses on enrollment in instructional activity that is not reported to IPEDS but whose expenses are included in a college's operating budget and reported as an expenditure on IPEDS. This is not incompatible with more standard definitions of non-credit but it has a different focus (Van Noy, 2008).

The National Center for Education Statistics (NCES) requires all colleges to report on the number of students enrolled in credit courses through its Integrated Postsecondary Education Data System (IPEDS) survey. Using a formula that converts part-time enrollments into equivalent full-time students, results in a full-time equivalent student (FTE) number that researchers typically use.

Enrollments in non-credit courses are not reported to IPEDS. These may be recreational or vocational courses or short-term workforce and contract courses designed for, and often delivered at, specific businesses or local industries. These non-credit courses are the subject of this study. They are courses for which a student must register, and usually pay for, and are often offered by a separate division of the college such as continuing education. Some courses labelled as workforce education or contract training might be offered for credit and, if reported to IPEDS, will not fit our definition of non-credit. In addition, non-credit courses may or may not be supported by state and local tax revenue in the same way that traditional credit courses are.

The American Association of Community Colleges (AACC) estimates that approximately 5 million students enrolled in non-credit courses in Fall 2014 compared to the 7.3 million credit students (AACC fact sheet, 2016). This would mean that nearly 40% of community college enrollments are in non-credit courses, the most frequently cited number with regard to the magnitude of non-credit activity. This, of course, refers to headcounts or registrations. The number of FTEs is unknown but is certainly much less than 40% as many, or most, of these short courses have very few contact hours. The issue of whether a non-credit contact hour is worth the same as a credit contact hour, in terms of learning, is a question outside this study but one which will be mentioned briefly below.

The few studies of non-credit courses that have been done differ in their definition of non-credit. Major differences revolve around the treatment of remedial (developmental) and ESL courses. Colleges frequently consider remedial courses in English, math, and reading as carrying no credit toward the degree but attach credits to them in order to satisfy financial aid rules (they are said to hold institutional credit). This is perfectly allowable under federal guidelines. These enrollments are reported to IPEDS and are included in official FTE numbers. The same holds for most ESL courses.

However, colleges may also offer short-term ESL or remedial-like courses as a lead in to credit courses or to meet certain local industry or citizen needs (sometimes these are referred to as basic skills courses). These courses are not reported to IPEDS. Thus, when Voorhees and Milam (2005) report that in public 2-year colleges, "24% of non-credit enrollment is in remedial studies, 25% is in recreational courses, and 52% is in career and technical training", some of these enrollments may be reported to IPEDS and some not.

Clearly, if we were to include all remedial courses in our definition of non-credit courses, we would find that enrollments at the community college level are vastly understated and therefore that expenditures per FTE are also far lower. Often those noting the inaccuracy of IPEDS data are making an assumption that remedial and ESL enrollments are not counted but this is not the case, as most states include them in official figures.

Previous studies

Practitioners are eager to point out that the non-credit courses which interest us provide practical short-term training, pre-collegiate basic skills, personal enrichment and, for a small proportion of students, a bridge to credit courses, all important parts of the community college mission that go unmeasured and mostly unfunded.

Since non-credit enrollment data are not collected by IPEDs, or any other entity for that matter, no study has ever been done to address the impact of non-credit enrollments on spending. The few studies that have been done on non-credit courses focus on the importance and potential impact of the non-credit side of the house on workforce development. For this reason, they are sometimes referred to

in the literature as "hidden assets" (Business Roundtable. 2009) or the "hidden college" (Voorhees & Milam, 2005).

A recent study from the Community College Research Center (Xu & Ran, 2015) drew attention to these courses and examined the enrollment patterns, student characteristics, and selected outcomes of non-credit courses at nine colleges in one state.

Michelle Van Noy (Van Noy and others, 2008; Van Noy & Jacobs, 2009) and Mark D'Amico (D'Amico, et al, 2014) have done important work on the community colleges involvement in non-credit workforce development. These studies focus almost exclusively on documenting the types of courses offered, who is taking them, and the extent and importance of workforce training in "responding to shifting workforce demands" as well as the nature of public funding for these programs (Van Noy & Jacobs, 2009; also see Cronen & Murphy, 2013).

Over the years, there have been several attempts to determine the number of states that provide state-level noncredit funding (e.g., D'Amico, Morgan, Katsinas, & Adair, 2016; GAO, 2004; Jenkins & Boswell, 2002; Milam, 2005; Oleksiw et al., 2007; Van Noy et al., 2008; Voorhees & Milam, 2005). While findings have not been consistent, many of the studies showed that more than half of states provide at least some noncredit funding.

In an attempt to categorize non-credit activity, D'Amico, Morgan, Robertson, and Houchins (2014) used one state's noncredit data to propose a list of four primary community college noncredit functions: "occupational training (paid for by individuals), sponsored occupational (contract) training, personal interest, and pre-college remediation for those states that use noncredit for ABE, ESL, GED, and developmental studies" (p. 157). The authors included "pre-college remediation" to capture a non-credit course type for states that deliver some aspect of pre-college work through the continuing education function as opposed to delivering developmental studies through credit-based mechanisms.

All of these studies provide important information on the nature and impact of non-credit activity but none of them touches on the measurement issue that we are concerned with. In fact, it is not our purpose to argue for or against the importance of non-credit courses, or whether they deserve a public

subsidy or not. We are concerned solely with the narrow issue of how the exclusion of this activity from official data on college costs might bias that data and thus the assumptions about college costs that are drawn from them.

The NCES has recognized the measurement problem that we are addressing. In 2008, it convened a Technical Review Panel to discuss suggestions on how noncredit activity could be incorporated into IPEDS. One problem highlighted within the finance component of the IPEDS survey was that:

> Institutional revenues and expenses associated with aggregate credit and noncredit activity [are included, but the students are not]. Thus, when calculating indicators such as instructional expenses per full-time equivalent (FTE) enrollment, noncredit activity is included in the numerator but not in the denominator, producing an overestimate (IPEDS, nd, p.2) .

No action was taken on the review panels' recommendation and since then, few researchers even mention this measurement problem. Baum and Kurose (2015) highlight the problem, but do not attempt to solve it, in their important report on community colleges for the Century Foundation. As they state, "a major problem with available data is that the counts of students includes only those registered for credit … [which] biases [community college] revenues and expenditures upward relative to those computed for four-year institutions" (p. 80). More recently, Romano and Palmer (2016a) mention that the exclusion of non-credit activity in official data make per capita community college expenditure figures "look higher than they actually are" (p.41).

Sources of Data

IPEDS

This study uses both IPEDS data and data from individual states and campuses that we were able to obtain. IPEDS data is consistent across all campuses but state-level data is not. Because no uniform method of collecting data on non-credit activity exists, state and campus-level data must be analyzed with caution.

A major source of our data comes from the U.S. Department of Education's Integrated Postsecondary Education Data System (IPEDS) which collects enrollment and finance data from all U.S. colleges. Questions on the surveys have changed somewhat from year to year, and accounting standards have changed over time. For this reason, IPEDS data is not as useful for looking at trends as it is for giving snapshots for a particular year. Fortunately, other groups interested in finance information have made the necessary adjustments to the IPEDS data and repackaged its variables in user-friendly form. Prominent among these organizations are the College Board and the Delta Cost Project (DCP). We have used the DCP data on FTE credit enrollments and college expenditures for our study.

In their own reports ((Desrochers & Hurlburt, 2016) Delta Cost Project data is analyzed by the type of institution and control according to their Carnegie classification. In addition to data on the private sector colleges, DCP data includes expenditure and revenue data from public research universities, public master's, public bachelor's and public associate's. We will use the DCP raw data on public colleges for this study and will keep the state data that we have, organized in the manner aligned with that in the Delta Project. In this way we will have better matched sets of data from the national to the state level.

DCP data has been criticized recently for it its errors in aligning colleges within its Carnegie groupings. This results in minor errors in comparing expenditures and revenues among public 2-year and 4-year colleges (Jaquette & Parra, 2016). We have judged these errors to be very small for the purposes of this study but have corrected for whatever errors might occur by using individual college data published by the DCP online database TCS Online. By using raw data from individual colleges, we are able to create our own grouping of colleges that mirror the colleges in our state-level data on non-credit courses.

We will use DCP data on enrollments in credit courses as a measure of college size and expenditure per FTE figures to measure the cost of educating students enrolled for credit. However, since national figures on both non-credit enrollments, and more importantly, contact hours and/or FTEs , are not available, we have relied on a snapshot of a select sample of state-level and campus data that was available to us. Fortunately we have three states with large community college enrollments-- New York, North Carolina and California.

For each of these three states we provide a very brief description of the data we have from the colleges in that state. This is followed by a statement about the funding of non-credit courses within that state's community colleges. It is not our purpose to review the varying methods of state funding but only

to suggest that differences in funding incentives can have an impact on the extent and nature of non-credit activity. [2]

||||||| WE ARE LOOKING FOR MORE DATA AND COAUTHORS |||| SEE THE CROWD SOURCING PLEA AT THE END

State Data

New York

Data/colleges. New York has two public college systems: The City University of New York (CUNY) with 6 community colleges and the State University of New York (SUNY) with 64 campuses, 30 of which are listed as community colleges. We only have data from SUNY.

SUNY has collected information on non-credit activity at each campus for a number of years to use in statewide budget negotiations. It includes non-credit data for its four Research Universities (specialized doctoral level colleges in six other areas and 2 medical schools are included but are excluded from our analysis); 11 master's level colleges; 9 bachelor's level colleges and 30 community colleges.

Summary data for each college includes the total non-credit instructional activity (NCIA) (the number of courses offered), percent of NCIA offered online, NCIA for business and industry, non-credit registrations, non-credit registrations for business and industry, business and industry as a percent of total, non-credit contact hours, non-credit contact hours for business and industry training, business and industry contact hours as percent of total, non-credit activity taught by full-time faculty and percent taught by full-time faculty. For the most part we have only used the total number of contact hours for this study.

The 2012-13 SUNY data also breaks down registrations in non-credit activity into three groups: vocational and professional training (58%); remedial instruction (1.5%); and other, including personal enrichment and community service (40.5%). Because most remedial and ESL courses are offered for institutional credit, they are excluded from this analysis.

SUNY categorizes its colleges according to method of funding rather than their Carnegie classification. In order to produce a set of colleges that matches up best with the Carnegie categories in the DCP dataset we have thus made some modifications to the SUNY college categories.

Two colleges have been moved from the SUNY list of, what they call comprehensive colleges, to bachelor's level colleges. The remaining eleven are left as Master's level colleges. The SUNY list contains four doctoral level colleges. These match up well with our DCP groups. SUNY also lists six "other" research/doctoral level colleges that are special interest institutions that are excluded from this study. These include a specialized ceramics college, two medical centers, a school of forestry, a college of optometry, and several contract colleges at Cornell University.

Cornell, a private Ivy League university, houses New York's land grant colleges which are funded by a combination of public and private money. Cornell's agriculture land grant college has cooperative extension campuses that are spread throughout the state and offer a variety of instructional activities. In 2012-13, for instance, all of the six "other" SUNY doctoral colleges offered 4.3 million contact hours of non-credit courses. Of these, 4.2 million were offered by Cornell cooperative extension. This is more contact hours than all of the community colleges combined in the SUNY system for that year. If we count registrations, Cornell cooperative extension makes up 65% of the total for the entire SUNY system. This may tell us something important about the level of non-credit activity at large land grant colleges in other states.

However, a word of caution is in order when dealing with cooperative extension courses and probably with large research universities in general. These are large institutions with complex budgeting systems and a good deal of external support. This makes comparisons with even large community colleges difficult. It is not clear, for instance that the expenditures per FTE numbers reported for Cornell need to be adjusted (deflated) for non-credit courses. According to the budget office at Cornell, the revenues and expenditures from cooperative extension "are not in the university's general ledger or financial statements and therefore would not be in the IPEDS numbers," which does not rule out the possibility that certain administrative expenses are (personal correspondence 8/3/16). This complication might be important in any comparative cost analysis with community colleges but does not alter any of our results since we have not included the cooperative extension courses in our study (also see note 3 below).

We have also eliminated one of the colleges from the SUNY list of 30 community colleges to get a better match with our DCP data. Most of the SUNY community colleges are in upstate New York, but

one, the Fashion Institute of Technology (FIT), is in New York City and caters to its fashion industry. Two large colleges are also located on Long Island. The SUNY system lists FIT as one of its 30 community colleges because it is funded in the same manner even though it offers bachelors and master's degrees. We have left FIT out of our analysis because it does not fit our set of matched colleges very well. The DCP (IPEDS) data base that we are using, incorrectly categorizes FIT as a master's level college. Accordingly, the results presented for the SUNY system includes only 29 community colleges.

We believe that our adjustments to the SUNY data have left us with a fairly accurate picture of the extent of their non-credit offerings and excludes those remedial and ESL courses that are reported to IPEDS. Data from some of our other states are not quite as clean and complicate any comparative analysis.

Finance/pricing. Non-credit courses in community colleges in the SUNY system are thought to be self-funded programs. That is, colleges can offer a course if course revenues exceed expenses. Typically the costs of instruction and materials is known and to that the college adds some overhead costs to arrive at an offering price. The state does not control this price and the college is allowed to keep all revenues. In some cases courses may get a state subsidy but this is much less common than it was 20 years ago. Interviews with continuing or community education directors at three different SUNY community colleges indicate that they can show that in any given year revenues exceed expenditures and the net is considered profit. Thus, it is often said that "we make a profit on non-credit courses" (remarks of one of the three community college presidents). Actually this is not true.

An examination of the budgets of three colleges that provided the needed data and that offered both open enrollment and contract courses, indicates that the salaries of the office staff and program director(s) are not covered by the estimated overhead cost. In some cases an expenditure running upwards of several hundred thousand dollars must be covered by the college budget to subsidize these programs. We are not questioning the decision to provide these subsidies but only suggesting that at least in our small sample, non-credit courses are not an additional source of revenue but are in fact a drain on the college budget that must be justified by some offsetting benefits.

Within the SUNY system, the decision to offer non-credit courses is left to each campus and is not part of the state budgeting process, at least directly. The community colleges in the SUNY system do not have a mandate to offer high school level courses and little, if any, mention can be found in college promotional material of high school equivalency diplomas, GEDs, adult basic and secondary education (ABE) and other such connections to pre-collegiate level study and credentials. As a consequence state

funding does not support this level of study. State grants for specialized workforce training are another issue. Colleges may compete for these and they do appear to cover all costs, thus generating excess revenue. However, even when considering workforce grants, the divisions in our study still lost money when administrative costs were included.

In New York, at least we can say that there appears to be no state constraint on the offering of non-credit courses. If all costs were required to be covered, however, some prices for open enrollment courses would more than double and enrollments and courses offerings would decline significantly, as "customers" are believed to be quite price sensitive. While the state does not restrict the number and nature of non-credit offerings, neither does it subsidize them. Compared to a state like North Carolina, New York appears to do less to subsidize non-credit workforce training and basic skills at the community college level.

California

Data/colleges. Our data from California is less comprehensive than that from New York because it includes only community colleges. However, it does give a detailed breakdown of both credit and non-credit enrollments and FTEs. When merged with data from DCP, it allows us to estimate an expenditure per FTE that is corrected for non-credit courses.

California has 113 community colleges and enrolls approximately 20 percent of all community college students nationally. This means that California IPEDS data has a major impact on national averages. Whether this would be true of non-credit enrollments as well is an open question. The DCP data only contains matching enrollment and expenditure data for 96 of the 113 community colleges, so our findings are based on these 96 colleges.

Information on the California non-credit activity is included in the statewide Data Mart from the California Community Colleges Chancellor's Office. It includes non-credit FTEs for each term for all courses offered. As our finding below will show, non-credit activity is concentrated in the basic skills area, including ESL.

The California data includes information by term for course enrollments, section counts, and section FTEs, among other variables. Since parallel information on credit courses is also provided, we can separate credit from non-credit activity, especially in the areas of remedial education and ESL. This, in turn, helps us in separating the FTEs reported to IPEDS from those that were not.

One difficulty in comparing non-credit enrollments, and therefore FTEs, over time and among colleges within the state, is that colleges have some flexibility in their classification of a given course as credit or non-credit. Both are eligible for funding from the state but the non-credits have historically been funded at a lower rate (see Table below).

In the California community college system (CCC), non-credit activity comes under greater central administrative (therefore political) control than in New York (SUNY). For instance, the state education code lays out specific steps for the approval and tracking of non-credit courses and outcomes and specifies instructor qualifications for these courses (which are less restrictive than those for credit courses). As a result, non-credit activity in the CCC has been more extensively studied than it has in the other states in this study and is woven deeply into the history of the system and resulting legislation (political battles over funding).

The California education code lists nine non-credit course areas eligible for state funding: elementary and secondary basic skills; English as a second language; immigrant education (citizenship and workforce preparation); adults with disabilities; short-term technical education; parenting; programs for older adults; health and safety; and home economics.

In the political battles over funding which followed the great recession of 2007-09, the relatively wealthy Santa Barbara City College tried to convert some of its non-credit programs for older adults (offered at no fee), such as painting and ceramics, to credit courses (with a fee) to make them eligible for a higher level of state funding. According to a report in Inside Higher Ed (Fain, 2012) these free courses (60 sections) had "become a treasured right." The "free ceramics for seniors" group was upset, ran a slate of candidates for the (elected) college's board and helped to force the ouster of the college president.

As this example shows, the CCC non-credit program has been an important part of the political battles over budgets in the state and reflects its origins within the K-12 system. In 1990 the state legislature passed a bill which expanded the CCC role in adult education by adding adult education and community service to their mission. This put them in direct competition with local high schools who had historically been the deliverers of adult education. Many felt that this resulted in a duplication of effort, so in 2013 a new bill required the K-12 and CCCs to coordinate their efforts. A subsequent court decision overturned this process, and now the K-12 system is a major competitor in offering many non-credit courses.

The distribution of non-credit efforts is uneven across the state. Currently about 80 percent of the enrollments is generated by 10 CCC districts. In some districts, historical ties, established when the CCC and K-12 were part of the same system, grant the offering of non-credit courses to the K-12 system. In 2014-15, five CCC districts did not offer any non-credit courses, seven others offered only one course, and six offered only two courses (California Community Colleges Chancellor's Office, 2015, p.10-12).

Finance/mission. The most distinctive financial feature of non-credit courses in California is that they are offered at a zero price. Historically, they have also received a lower level of funding than credit courses. This funding gap has been reversed somewhat in recent years as colleges have successfully argued that these courses are important gateways to regular college courses and fulfill a state responsibility for workforce preparation and citizenship skills.

In 1978 the passage of Proposition 13 limited state funding for community college instruction such that non-credit budgeting was tied to the lower level of reimbursement that existed for adult education in the K-12 system. A concerted push for increased funding for non-credit instruction came with legislation in 2006 (Senate Bill 361), to create an "enhanced funding" rate through the implementation of a program known as Career Development and College Preparation (CDCP). But the CDCP's enhanced rates only applied to enrollments in courses that colleges documented as part of a course sequence that led either to transfer or to workforce preparation. A large segment of non-credit courses was thus unaffected by CDCP.

The Table below, adapted from the recent report by the California Community Colleges Chancellor's Office, shows the shrinkage of the funding gap.

Table 1. Three Year Comparison of State Funding for Non-credit, Enhanced Non-credit, and Credit Courses per FTE

Rate Type	2006-07	2014-15	2015-16
Regular Non-credit Rate	$2,626	$2,788	$2,840
Enhanced Non-credit Rate	$3,254	$3,283	$4,724
Credit Rate	$4,367	$4,646	$4,724

* Source: California Community Colleges Chancellor's Office. (2015). *Preparing students for careers and college through noncredit enhanced funding. Fiscal Year 2014-15.*

The increase in state funding for enhanced non-credit courses provided an incentive to offer more of them and enrollments increased. "From 2006/07 to 2007/08, CDCP FTE numbers grew by 17.1 percent compared to overall non-credit FTEs of 5.2 per-cent…In 2009/10, because of the budget crisis and an overall reduction in all courses and FTEs, there was a significant reduction in both CDCP and overall noncredit FTEs representing 14.1 percent and 16.2 percent declines, respectively, for the two areas. In 2010/11 there was a slight increase in the CDCP FTEs of 1.1percent but a continued drop in overall non-credit FTEs by 5.6 percent. Both categories continued to decline for the next two fiscal years of 2011/12 and 2012/13 until 2013/14 when both increased by 2.5 percent and 6.3 percent respectively." (California Community Colleges Chancellor's Office, 2015, p. 11).

As Table 1 shows, lower levels of state funding still exist for many non-credit courses. Colleges have some incentive to offer them because they fulfill a mission and because they can offer them at a lower instructional cost than credit courses. However, courses with lower levels of state funding are more vulnerable. During the last economic downturn the number of non-credit sections declined at a faster rate than the number of credit sections (35 percent decline compared to 14 percent, respectively, from fall 2008 to fall 2011). In this period over half of the non-credit sections that were cut, were those serving older adults – those with lower state funding (Bohn, et al, 2013, p. 15). While these are system-wide numbers, the actions of colleges differ. In the end, the mix of credit and non-credit courses that a particular college offers is dependent not only on the funding provided but also on the needs, historical ties (and sometimes political power) of the local community.

North Carolina

Data/colleges. North Carolina has 58 colleges serving 100 counties, ranking third among states in terms of the number of public two-year colleges in the United States (NCES, 2015). Institutions in the North Carolina Community College System (NCCCS) represent great diversity in enrollment size by

serving large metropolitan areas such as Charlotte and Raleigh as well as small rural areas across the state. While there is great diversity in institutional size within the state, North Carolina represents a smaller average FTE enrollment than other states in this study. Among the 58 colleges, only 3 have an FTE count of over 10,000 and 26 have fewer than 2,000 FTEs. The median 2012-2013 FTE count is 2,032. This compares with a median FTE count of 4,816 in New York, and 7,190 in California (TCS Online). The result is that North Carolina's community colleges are in close proximity to residents; currently, all individuals in the state live within 30 miles of a community college (Ralls, 2014).

Data for this study were provided by the North Carolina System Office and included continuing education (non-credit) full-time equivalent (FTE) enrollment by institution, course type, and state funding support for all 58 colleges for the 2012-2013 academic year. When we ran enrollment and cost data from the TCP Online dataset (IPEDS), we received data on 59 colleges. We eliminated Carolinas College of Health Sciences with its 183 FTEs in 2012-13, to ensure appropriate matching for the analysis. Overall, the data show that credit courses delivered through associate, certificate, diploma, and developmental education comprise 78.4% of all NCCCS FTEs, while non-credit continuing education which may or may not be state funded comprises 21.6% of FTEs. A detailed breakdown of NCCCS credit and non-credit enrollment is provided in the section on findings.

While the North Carolina state statutes governing the NCCCS acknowledge the comprehensive community college mission (consistent with the explanation in Cohen, Brawer, and Kisker, 2014), the following excerpt clearly identifies key system priorities:

> The major purpose … shall be and shall continue to be the offering of vocational and technical education and training, and of basic, high school level, academic education needed in order to profit from vocational and technical education, for students who are high school graduates or who are beyond the compulsory age limit of the public school system and who have left the public schools … (N.C.G.S. § 115D-1).

When the NCCCS founding legislation was passed in 1963, the system included 20 "industrial education centers," along with six "community colleges," and five "extension centers" (NCCCS, 2016). While all 58 institutions are comprehensive community colleges today, the names of many of the colleges retain the "technical" name, reflecting the industrial education origins of many colleges. Unlike the colleges in New York, the NCCCS has a clear mandate to offer high school level courses and credentials.

Finance. The priorities of technical education and basic education through statute and history remain drivers for non-credit delivery to meet the needs of local service areas. These priorities are further demonstrated through the NCCCS funding model, which employs a tiered funding system that ensures higher levels of funding for credit and some non-credit education that supports workforce development. The following is the description from the *FY 2012-13 State Aid Allocations and Budget Policies*:

> Tier 1 includes curriculum budget FTE in high cost areas of health care, technical education, lab-based science, and college level math courses. Tier 2 includes a) all other curriculum budget FTE, b) all Basic Skills budget FTE, and c) budget FTE associated with continuing education (OE) courses that are scheduled for 96 hours or more and are mapped to a third-party credential, certification, or industry-designed curriculum. Tier 3 includes all other continuing education (OE) budget FTE … This weighted allocation model is designed to provide a 15% funding differential between each tier. (North Carolina State Board of Community Colleges Division of Business and Finance, 2012, p. 15)

Methods

Drawing on IPEDS data for 2012-13 for the three states in this study, we find that community college expenditures (costs) per FTE are $12,495 for New York, $12,811 for California and $14,726 for North Carolina. To measure the impact of non-credit courses on expenditures per student, we adjust the FTE figure for non-credit open enrollment and workforce development activity as measured by the number of contact hours involved in such activity, as in the case of New York, or use FTEs directly if it is calculated, as in the case of California and North Carolina. Since some workforce training and basic skills is offered for credit and thus reported to IPEDS, we have attempted to cull these from the data we are using. The calculation of non-credit FTEs follows that method used for credit courses.

For credit courses, calculating the cost per student, as measured by the expenditures per FTE, is seemingly a simple matter. The national average expenditure figures cited in the first paragraph of this study are derived from individual campus figures and are calculated by dividing a given college's total expenditures by the annual student FTEs generated by the credit programs.

Total operating expenditures for a state per Carnegie classification, is equal to the mean expenditure per FTE times the number of colleges included in that group. These figures are calculated using the TCS Online data set. The calculation of FTEs varies somewhat among the states but the

purpose of the calculation is always the same: merge all of the credit hours taken by both full-time and part-time students into a single number that reflects full-time equivalent enrollment.

One FTE, for instance, might be based on the assumption that a student will take 15 credits per semester for two semesters. If the student takes 5 courses per semester, each of which meets 3 times a week for one hour for 15 weeks, then 450 contact hours or 30 credits equals one FTE on an annualized basis (45x2x5=450). Lab courses and the like, which require more contact hours, are accommodated within the official formula. New York and North Carolina calculate FTE figures in this way but in California the semester is based on 17.5 weeks so the calculation is 15x 17.5x 2= 525 contact hours. [3] The differing methods used in calculating an FTE will not concern us, since all are reported to IPEDs in a uniform way; and the methods used to convert non-credit contact hours will incorporate whatever definition is used by that particular state.

Finding data for this study was a challenge. We canvased existing studies looking for clues about state data sets that might include information on contact hours. Few states publish such data. We looked at campus websites for information and found that unless states required non-credit hours to be reported, like New Jersey, it was not generally reported or was reported in a way that combined credit with non-credit offerings, as in the case of remedial education. In some case we know that the data exists but were not able to gain access to it. In the end our best source of state data was found among researchers who knew a particular state well and who had access to data sets that were not openly available. The multiple authors for this paper and the crowd sourcing plea for more, attest to this method.

Our findings for the states we have follows. The supporting tables are not necessarily consistent across our sample of states. This is partly by design as we have sought to highlight some of the more interesting aspects of a particular states non-credit offerings. We learn something new from each state. Some of the inconsistency in the tables is also due to the data provided by each state, since there is no standard format used among the states. The one consistent table is the calculation that shows how the IPEDS reported expenditure per FTE is adjusted when you count the non-credit FTEs that are not reported to IPEDS. That after all is the major purpose of this study.

Findings

New York

Tables 2 and 3 show the summary results from the SUNY colleges for 2012-13.

Table 2 Summary of non-credit activity at SUNY colleges 2012-13

	Enrollments	Business & Industry as % of total	Contact Hours	FTEs
Public Research (4)	266,118	58.2	3,263,210	7,252
Master's Colleges (11)	38,531	22.3	227,797	506
Bachelor's Colleges (9)	23,581	25.8	1,130655	2,513
Community Colleges (29)	186,643	31.2	2,991,053	6,647

Using the Carnegie classification, the SUNY colleges include 4 public research universities, 11 public master's colleges, 9 public bachelor's colleges and 29 community colleges. Adjustments to arrive at these groupings were explained above. Perhaps the most surprising findings are the high percentage of non-credit enrollments in the research universities and the low numbers in the master's level colleges. Community colleges are certainly not the leaders in offering non-credit activity.

As Table 2 shows, the research universities offered a higher percentage of courses directed at business and industry than the community colleges (58.2% vs. 31.2%). Looking at data from other years, we find that this is the typical pattern. On the other hand, the SUNY community colleges seem to offer more recreational courses than the other SUNY colleges.

The origin of the unexpectedly large number of contact hours offered by the research universities can be traced to the statement found in the FAQ attached to the internal document we have obtained. It states that instruction and registrations at any campus that result from the following non-credit activity should be included: grant activities, professional conferences and faculty consulting in the community. Thus, a public lecture that participants don't register for, will not count but a two-day conference on Middle East studies will. On the surface one might question whether conference registrations, for instance, should be counted but, upon reflection, this simply reflects the role of the universities in providing professional development activities to their natural constituents.

Colleges in larger urban areas have more registrations in non-credit courses, but they are larger operations. To account for the size of the institution we have divided the non-credit FTEs by the credit FTEs. This percentage is shown in Table 3 and reflects the relative importance of non-credit activity within each group. This same method has been used for the three states in this study and will become an important point of comparison among them.

Table 3 Impact of non-credit enrollments on expenditures per FTE at SUNY colleges (2012-13)

	Mean Exp/FTE (IPEDS)	Non-credit FTEs as % of credit FTEs	Mean Adjusted Exp/FTE	Difference
Public Research (4)	$52,207	9.6%	$47,634	($4,573)
Master's Colleges (11)	$22,136	0.7%	$21,913	($223)
Bachelor's Colleges (9)	$24,235	8.1%	$22,419	($1,816
Community Colleges (29)	$12,495	4.1%	$12,008	($486)

Table 3 shows that non-credit activities as a percentage of credit FTEs are larger at the research campuses than at the community colleges. The community colleges, in fact, trail the bachelor's colleges in this measure. For this group of SUNY colleges, however, special circumstances apply. Six out of the nine are former two-year technical and agricultural colleges that date back to the early 1900's. All relatively small, (average FTEs-- 3400), residential and located in rural areas, they may be the only centers of cultural and educational activities for the local communities. They have also provided support for local agricultural businesses and have robust non-credit online programs. The largest of these colleges (6200 FTEs) is on Long Island, and accounts for over half of the non-credit contact hours for this group. These former agricultural colleges have recently been converted to bachelor's colleges and have been reclassified as such under the Carnegie system. Their role is unlikely to be duplicated in other states except perhaps, by rural community colleges.

Table 3 also provides a tentative answer to the main object of this study. Does the inclusion of non-credit courses in cost per FTE figures show that the community college is less well funded than data from IPEDS indicates? The answer to this question is –Yes. But it is also true for all of the other public colleges in the state, with the largest difference in both percentage and dollar terms at the research universities and the smallest at the master's level colleges, whom the community college is most frequently compared with in college cost studies. (Romano and Palmer, 2016a).

California

State regulations prohibit student fees for non-credit courses. But, as we have shown above, these courses, on average, receive a lower level of funding than do credit courses. Clearly students have an incentive to take these courses but colleges have an incentive not to offer them. Community college

advocates have argued that colleges have an incentive for offering credit over non-credit courses in remedial education, for instance, where in many cases the need for non-credit courses is more urgent. Given the demographics of the California population and the fact that non-credit courses in critical areas are free, one would expect to find a high percentage of these courses relative to credit courses, assuming adequate funding is provided and it fits the mission of a particular college.

The table below provides a summary of some of the non-credit activity for the California community colleges.

Table 4. Summary of selected non-credit data for California community colleges and adjusted cost per FTE (2012-13)

	Enrollments	**FTES (%)**	**Expenditure/FTE (IPEDS)**	**Adjusted Expenditure/FTE**	**Difference**
Total	1,255,079 (100%)	65,431 (100%)	$12,811	$11,870	($1,031)
Basic skills	825,521 (66%)	46,733 (71%)			
Other	429,558 (34%)	18,698 (29%)			

The first thing that we notice is that the California enrollment numbers are quite large compared to other states and, as expected, the high number of non-credit courses is concentrated in what they call basic skills which includes remedial reading, English, math and ESL.

In addition to the enrollments reflected in Table 4, a large number of credit courses carry institutional credit and are reported to IPEDS. These total to 77,954 FTEs for 2012-13. These are in addition to the 65,431 FTEs shown above, which are non-credit courses not reported to IPEDS. Of this group, 66% of enrollments are in basic skills, representing 71% of all non-credit FTEs.

The total expenditures per California community college FTE for 2012-13 are $12,811. When we add the FTEs that are not reported to IPEDS, that number reduces to $11,780.

The large number of remedial and ESL courses, both reported and not reported to IPEDS reflects the needs of the local populations. Taken as a whole the ratio of non-credit to credit FTEs is 6.1%, which puts it above New York (4.1%). However, the mix of non-credit courses is quite different, with New York (SUNY) offering virtually no non-credit remedial and ESL courses. The variation among the non-credits in California can also be great. In the Los Angeles community college district, for instance, 83% of the non-credit FTEs are in basic skills and ESL while in Santa Barbara only 49% are. Again, the mission (need) affects the mix.

North Carolina

Among the states in this study, North Carolina has the greatest percentage of FTE non-credit enrollment as compared with credit FTEs (27.6%) (see Table 5) by more than fourfold (the next closest state is California at 6.1 %). The high proportion is likely due to the NCCCS mission described above, largely around the key responsibilities to deliver technical training and adult high school in North Carolina.

Table 5
FTE Enrollments by Course Type in North Carolina Community Colleges: Credit and Noncredit (2012-13)

	Credit (In IPEDS Reporting)	Noncredit (Not In IPEDS Reporting)	State Supported
Credit Courses (78.4% of FTE)			
Total	189,345		Yes
Noncredit Continuing Education (21.6% of FTE)			
Basic Skills		19,665	Yes
Occupational Training (State Supported)		29,104	Yes
Continuing Education (Not State Supported)		3,409	No

The large proportion of non-credit FTEs in the NCCCS results in a dramatic difference in the IPEDS FTE expenditure figure and the FTE expenditure figure when adjusting for non-credit enrollments. In the case of North Carolina, the per FTE expenditure is adjusted from $14,726 to $11,016 (difference of $3,710) as seen in Table 6.

Table 6
Impact of Noncredit Enrollments on Expenditures per FTE in North Carolina Community Colleges (2012-13)

	Mean Exp/FTE (IPEDS)	Noncredit FTEs as % of Credit FTEs	Mean Adjusted Exp/FTE	$ Difference
Community Colleges (58)	$14,726	27.6%	$11,016	($3,710)

The high percentage of non-credit FTEs is supported and encouraged in the state budgeting process which is much more centralized than that found in New York, for instance. As explained above, the NCCCS has a clear mandate for high school level basic skills and technical training. All colleges are GED testing sites and all have business development centers.

The system budget includes a block grant for basic skills and separate allocations for customized training for each college. Funds for these items are not allowed to be shifted to other purposes. Colleges also have active business development centers and, on top of base allocations, the system provided a small bonus to these centers for performance which amounted to about 12 percent of the budget allocation for 2012-13. The performance is based on input measures such as the number of seminars delivered and clients served rather than any real outcomes measures.

Fees for most of these courses are set by the state. Basic skills courses are tuition free but allow a small fee for GED testing. The low cost and easy geographic access no doubt leads to a high demand and adequate funding allows that demand to be satisfied. Fees for open enrollment courses are more flexible but are generally based on the length of the courses ($65-175, for 2012-13).

Conclusions and Additional Considerations

In an age obsessed with measuring college outcomes, it can still be argued that inputs also matter and that poor funding can lead to poor results. The connection between funding and outputs and/or quality is a complex one but one in which community colleges can easily argue that their students have the greatest need for additional academic and social support services yet they have the least to spend of any college type.

This study adds to the literature on college costs and funding by showing that the community college is even worse off than official IPEDS figures on expenditures per FTE show because enrollments in their non-credit courses are not counted but expenditures are. Documenting the extent of this measurement problem for the three states for which we were able to obtain data has been our major focus. The three questions that emerge from our study are:

1. To what extent does the inclusion of noncredit enrollments deflate the expenditure per FTE student for community colleges?
2. Is the measurement problem more or less severe for public 4-year colleges?
3. Do our results change any of the conclusions about the relative cost of educating students in public 2-year vs public 4-year colleges?

With comprehensive data from only one state, New York, we do not have sufficient information to answer the second and third questions; the comparison of 2-year and 4-year public colleges. On the second question, however, data from New York indicates that the community colleges in the State University of New York system of 29 colleges are less active in offering non-credit courses than the community colleges in North Carolina and California, and that, in fact, the four research universities in New York produce more non-credit FTEs than the 2-year colleges. Generalizing this result to other states would be mere conjecture but the suggestion is interesting and important enough to encourage further research. In addition, we have uncovered the possibility that non-credit instructional activity at land grant colleges may be significant. In the case of New York, that activity, at one research university, produced more FTEs than the non-credit FTEs of all community colleges combined.

The question regarding the relative cost of educating students in public 2- vs 4-year colleges leads to a comparison of 2-year and master's level colleges because their admission requirements tend to similar and master's colleges are more likely to be an alternative choice for community college students than research universities. In addition, master's level colleges accept most of the transfer students leaving community colleges.

Data from New York indicates that the non-credit activity from master's level colleges is quite a bit lower than at the community colleges. If that were found to hold true, on average, throughout the states it might alter the conclusion reached by Romano and Palmer (2016a) that educating lower-division students is cheaper at master's level colleges or alternatively that community colleges have an even greater advantage over theses 4-year public institutions than official IPEDS figures indicate. [4]

While this study provides insight into issues posed by questions two and three it does not provide any conclusive answers. We are hopeful that new authors will contribute data and analysis that can help answer these questions. Our findings suggest, however, that the extent of non-credit activity in community colleges does indeed lower the amount spent on students in community colleges. We argue that these students tend to be those with the greatest academic needs yet even less is spent to educate them than commonly believed. Table 7 summarizes these results.

Table 7 Summary of community college noncredit activity for 3 states and the impact on expenditures per FTE (2012-13)

	Mean Exp/FTE (IPEDS)	Non-credit FTEs as % of credit FTEs	Mean Adjusted Exp/FTE	Difference
New York	$12,495	4.1%	$12,008	($487)
California	$12,811	6.1%	$11,780	($1,031)
North Carolina	$14,726	27.6%	$11,016	($3,710)

The large adjustment necessary for North Carolina reflects the mission of the community colleges in that state. They have a clear mandate to offer non-credit basic skills courses in reading, writing math and ESL and to fund them at a level where they can be offered at a zero price. The colleges in New York have no such mandate and mostly offer "self-financed" non-credit courses. California seems to operate under a mandate similar to North Carolina and also offers pre-collegiate non-credit courses at no cost. The difference is the lack of funding in California and the historical sharing of adult education with the K-12 system. With the demographics in California and adequate funding we might find that the ratio of non-credit to credit offerings would approach or exceed that of North Carolina. The pent-up demand for non-credit basic skills courses in California contributes to the well- known problem of the large number of students placed on waiting lists for courses in that state (see Romano and Palmer, 2016a for a review of this problem).

The low level of non-credit activity for the SUNY community colleges may not mean much in terms of their service to the local community. The high number of non-credit ESL classes in North Carolina and California reflects the needs of the local communities. Within mostly upstate SUNY community colleges, the need for ESL, for instance, is less pronounced and other agencies in the community also contribute (e.g. local public schools. literacy volunteers, etc). One cannot conclude from our data that the SUNY community colleges are neglecting the needs of their local communities.

From a national perspective, when looking at IPEDS data on expenditures per FTE student, we find that community colleges spent $14,090 in 2013. This study has shown that this figure is too high once enrollment in non-credit courses are counted. But, how much of an adjustment is necessary to get a more accurate national figure? In North Carolina the IPEDS expenditure figure is 25.2% higher than the adjusted figure. In New York it is only 3.9% higher. Adjusting the national figure by 25 % would make a huge difference in the assumptions made about community college expenditures (costs).

Once we add more states to the analysis the expenditure spread per FTE between the states after adjusting for non-credit enrollments is likely to narrow. In our sample of three states, the difference between the highest and lowest state average was $3,777 before adjusting for non-credit enrollments. This difference narrowed to $1,972 after adjustment. Again, contributions to this study by other authors will give us a better estimate.

……

Admittedly, this is a limited sample of the non-credit activity of the nation's community colleges, and the results cannot be generalized. However, as the first study of its kind on this issue, it provides a start in building our base of knowledge and hopefully will encourage others to add to that base. In addition, it does provide some insights into how that research might proceed and we encourage others to join us in the way specified on the last page.[5]

Notes:

1. Figures reported are total operating expenditures divided by FTE students.

2. Much has been written about the variety of ways that states fund higher education (Cheslock & Hughes, 2011 is a good recent review). None of this explains how non-credit activity, as we define it, is funded. Studies done before the great recession of 2007-09, indicated that perhaps one half of the states provided some funding for non-credit courses (D'Amico, et al, 2014). But as funding patterns for credit courses have been disrupted by the recent economic downturn, and the weakness in the economy that followed, it is likely that the same has occurred within the non-credit area. For credit course enrollments vary with the business cycle. When unemployment goes up, enrollments go up, especially at the community college (Romano & Palmer, 2016b). Once the economy picks up, enrollments level off or fall. One might speculate that the opposite is true for non-credit enrollments. During economic downturns, employers cut back on training contracts and as local incomes stagnate, the demand for recreational courses falls. In states like California "free" non-credit courses are negatively impacted by falling state appropriations during recessions. We do not have the data necessary to test for the impact of the business cycle on non-credit enrollments but in states where non-credit courses are "self-funded," like New York, a glance at the raw enrollment data suggests that they might move in the opposite direction of credit enrollments during recessions.

3. The calculation of noncredit FTEs is presented as merely a numerical conversion of the number of contact hours for each noncredit activity into FTEs as if they were equivalent to the contact hours found in traditional credit courses. For our purposes this is necessary and sufficient but when viewed from a learning perspective this may not be true for all, or any, noncredit courses.

   Most noncredit recreational courses, for instance, would not have any assessment of learning built into the courses. These courses are not meant to be demanding academic exercises. On the other hand students who enroll and pay for such courses are assumed to be highly motivated to undertake that activity and may in fact get more out of the limited contact hours than they would out of the same number of contact hours in a required credit course. For courses that are vocational in nature the payoff may also be high. These questions are beyond this study but additional research into the link between noncredit activity and learning and labor market outcomes would be valuable.

4. For 2013, public research universities spent $39,793 per FTE while public master's colleges spent $19,310 and community colleges, $14,090. Adjusting public four year data for the higher cost of upper-division and graduate students results in a more accurate cost figure for lower division undergraduates. The resulting cost per FTE is then more comparable to the level of instruction at public two year colleges.
   Making these adjustments Romano and Palmer (2016a) argue that the costs of educating lower division undergraduates are lower at the public master's level than at the community colleges while Rouse (1998), using earlier data, argues that they are probably lower at the community college. However, it is clear that a number of factors can affect this comparison. For instance, some degree programs at the two-year level are more expensive to run than upper division courses and, in some cases, some entire degree programs at public four-year colleges. In calculating per student and degree costs, if students were to shift enrollment between 2 and 4-year colleges, it is clear that the average costs would change depending upon how students distribute themselves among programs at both the two and the four year college (see Romano & Palmer, 2016a on this issue).

5. Results from a forth state—New Jersey—arrived too late to be included in this study. Preliminary findings indicate that the 19 community colleges in that state had a ratio of 9.1% of non-credit to credit FTEs. Once its IPEDS expenditure per FTE of $10,949 is adjusted for non-credit courses the deflated figure is $10,036. This leaves New Jersey with the least to spend per student of the states in this study. Michelle Van Noy (Rutgers) is now working to verify this finding and include it as part of the study.

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Crowd Sourcing for Additional Data and Authors: Suggestions for Adding Additional Data to This (your) Study.

We are looking for additional data from other states or large districts and will be happy to add your name to the list of authors. If you have access to non-credit data that would enhance this study or you have a suggestion on how we can improve on what we have done, please write to me at rmr46@cornell.edu (Richard Romano).

To see what we are looking for, look at the analysis in this Working Paper. We must be able to convert the non-credit data that you obtain into FTEs so that we can correct the Expenditure per FTE figures found in IPEDS (provide either contact hours or FTEs). Beyond that, in your description and analysis, we are interested in aspects that help us understand the nature of the non-credit courses in your state or large district. There is no standard format for reporting and describing the data you will be providing (2-3 pages should do it). We will make sure that your contribution fits in with what we have already done and we will send it to you for editing before we post it and add your name to the list of authors.

Here is a rough outline of what your state might look like. We are focusing mainly on community colleges and are working with 2012-13 data but will consider whatever you have.

Your State(s)

Description and Data
(Make comparisons with New York, California, and/or North Carolina where appropriate)

a. Very brief description of state community college system
b. Description of data and modifications made, if any
c. Methods of financing (are such courses expected to be self-funded, etc.)

Findings

Use Table(s) and make comparisons with states in this study, where possible.

Let us help you. Questions to Dick Romano rmr46@cornell.edu

Together we can make a contribution to the college cost literature. A Final version with your name on it will be submitted to a journal for publication.

Richard M. Romano
Rita J. Kirshstein