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ABSTRACT

This is a report analyzing the multiple community college attendance patterns of students from nine colleges in the Los Angeles Community College District (California) from 1990-2000. The assessment utilizes the Multiple College Index (MCI), which is a measure based on the proportion of units a student earns at different colleges. The study collected data on 885,030 students. Of the total, only 540,064 (61%) successfully completed at least one course. Results showed that 14% of the 433,674 students who completed at least 10 units between 1990 and 2000 attended more than one college. Furthermore, 25% of the students who completed 60 or more units and earned an associate degree attended more than one college. The report revealed that no significant patterns existed between multiple college attendance and the age of students. African-American students were the only ethnic group to show an increased tendency to enroll in multiple colleges. Overall, single college attendance is still predominant in most students. The more units a student completes or desires to complete the more likely he or she will attend or need to attend more than one college. (MKF)

# Parameters of Multiple College Attendance





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## Parameters of Multiple College Attendance


### Abstract

This paper analyzes multiple community college attendance patterns using data from the nine colleges in the Los Angeles CCD covering the period 1990 - 2000. The Multiple College Index (MCI), a measure based on the proportion of units a student earns at different colleges, is presented and used to evaluate the importance of multiple college attendance. Demographic and academic outcomes are analyzed in relation to MCI values. The results show that single college attendance predominates although MCI values do increase among students who accumulate more units. No significant associations between demographic categories and multiple college attendance are found.

**The Problem**

The relationship between institutions of higher education and their students was once thought of as a one-to-one relationship not unlike that between an individual and his or her church. The term "alma mater" itself reveals a cultural model in which the individual student identifies her very soul and personal identity to the college or university from which she graduates. Theories of student persistence developed during the 1970s and 1980s similarly stressed the student's integration into the institutional community as determinant of a student's academic success (Tinto 1993; Pascarella 1981).

During the recent past this picture has been questioned. Whereas it has always been the case that students who transfer from community colleges to baccalaureate degree granting colleges and universities have been by definition multiple college attendees, there has been an implicit assumption that one community college has been the institution responsible for generating the transfer student. In fact, state-mandated Student-Right-To-Know and Student Equity reporting requires each community college to be attributed with the transfer of any student. Even so, ever since reporting on transfer rates has become important, there has been an awareness that community college students accumulate course work at more than one college. While the extent of multiple-college attendance has remained unclear, awareness of its potential importance challenges our conceptions of the structure and functions of our institutions much in the way that the conception of the "two" and the "four" year institutions were challenged in the past (c.f., Dillon 1990). Clifford Adelman (1999:38) wrote:

> The increasing complexity of attendance patterns is one of the most significant developments in higher education of our time, one that poses grave challenges to system-wide planning, quality assurance, and student advisement.

In the place of the single- "institution of reference" model, Adelman describes the contemporary post-secondary education scene as a "Post Secondary Shopping Mall" in which it is not surprising " . . . to find students filling their undergraduate portfolios with courses and credentials from a variety of sources, much as we fill our shopping bags at the local mall" (ibid:39).

In the course of developing IPASS[1] interinstitutional research aimed at determining the preparedness of students from our participating community colleges for upper division coursework at our participating colleges it became clear that in many cases it was not possible to account for all of the transfer students' community college coursework on the basis of one college. At the same time, it was totally unclear the extent to which students attended more than one college. Our research agenda shifted to clarify this and in the

[1] The Intersegmental Project to Assure Stutdent Success (IPASS) is a three-year project funded through the CCCCO Collaborative Fund for Student Success (RFA 98-0122). IPASS' primary concern is the student pathways of students who enter higher education with developmental needs in English, math, or both. The project has four objectives: student success, instructional improvement, intersegmental collaboration, and staff development. Three primary activities make up the project's core work: research into outcomes associated with different patterns of academic preparation; the development of data sharing consortia between community colleges and four-year institutions to enable interinstitutional student tracking; and classroom-based action research aimed at identifying student needs and successful teaching practices.

process we became interested in questions concerning service areas and their corresponding relationship to local communities. While the latter concerns may not directly affect CSUs, the issue of service areas is very much a concern for community colleges whose Student Equity reporting is premised on the idea that they do in fact have specific service areas. Furthermore, service area analysis can provide a powerful basis for evaluating students' socio-economic background.

This presentation will present the findings of research on multiple community college attendance for nine community colleges and focus on its relationship to student outcomes, in particular units earned and transfer to partner CSUs. Insofar as one of the purposes of IPASS is to implement tracking systems that can pro-actively identify and advise students whose behavior indicates an intention to pursue higher levels of post-secondary education. How characteristic is multiple college attendance of community college students? How deep is it? What is the spread of units earned at the different colleges? Does multiple college attendance imply that students really just shop around or are they more highly attached to one college? Who attends multiple colleges? What is the variation by age, sex, ethnicity, or other factors? Can we even explore this question satisfactorily without breaching protocols of institutional research that govern the use of interinstitutional data exchanges? What does it matter? Is there any difference in the student outcomes for those who go to multiple as opposed to single colleges?

**Data and Methodology**

The development of the interinstitutional data sharing relationships between partner community colleges and CSUs has enabled us to assemble a large data base comprising all of the enrollment records and student characteristics for students attending the participating community colleges during the period Fall 1990 – Spring 2000 and the corresponding records for those students from the community colleges who transferred to the CSUs. Although the CSU portions of our data base are not complete and do not contain students who attended and left prior to Fall 1998, the data we do have allows us to look at the questions raised in the previous section with a fine degree of detail.

Our master transcript and student characteristic records for the community colleges tells the well known and woeful story of how many students walk in one door and right out the other. Of how many more might make it to the lobby but apparently find nothing to make them stay and leave without a trace. The master transcript file contains 8,016,006 enrollment records representing a total of 885,030 students who enrolled for at least one course. This figure represents 17,352 (1.9%) fewer than 902,382 students who applied for admission and who are included in the master characteristics file. Of the students who enrolled in at least one course, 757,280 (85.6%) stuck around long enough to at least need to withdraw and receive a "W" grade. This latter group then underwent the well-known first semester slash. Of the total, only 540,064 (61.0%) successfully completed at least one course.

In addition to the community college enrollment and characteristic records we have worked with information concerning students who were credited with having transferred to one of our partner CSUs. Since these databases are neither complete nor equivalent we

have only used the simple fact that they have enrolled at the partner CSUs in the analyses presented in this paper. One of the principal IPASS objectives is to determine how well our community college transfer programs prepare students for successful upper division coursework.

At this stage of our research, our purposes are purely descriptive, intended to shed light on the questions posed earlier.

**Dimensions of Multiple College Attendance**

Without further qualification only 14 percent of the 433,674 students who completed at least 10 units of coursework during the ten years 1990-2000 attended more than one college. However this simple assertion conceals the most significant factors of multiple college attendance, the most important of which is the relationship between number of total units earned and number of colleges attended. Twenty-five percent of those students who earned more than 60 units, the number of units necessary to obtain an associates degree attended 2 or more colleges. In other words, while most students still attend only one community college those who pursue extended educational careers will be increasingly likely to go to more than one college.[i]

Table 1
Total Units Earned and Number of Colleges Attended
Students Earning More than 10 Units

| | Number of CCs Attended | | | | | |
|---|---|---|---|---|---|---|
| Total Units | 1 | 2 | 3 | 4 | 4+ | |
| 10-24 | 144249 | 19219 | 1339 | 52 | 2 | 164861 |
| 24.5-36 | 51189 | 10576 | 1260 | 99 | 6 | 63130 |
| 36.5-48 | 34732 | 7974 | 1115 | 102 | 6 | 43929 |
| 48.5-60 | 26050 | 6585 | 1016 | 121 | 14 | 33786 |
| 60.5-75 | 24997 | 7001 | 1166 | 152 | 16 | 33332 |
| 75.5-90 | 18753 | 5813 | 1181 | 175 | 15 | 25937 |
| 90+ | 44569 | 17933 | 4973 | 1033 | 191 | 68699 |
| N | 344539 | 75101 | 12050 | 1734 | 250 | 433674 |

Souce: IPASS Master Transcript File for Community Colleges.

Another issue must be taken into consideration when discussing multiple college attendance: the difference between students who earn most of their units at one and only a small percentage of their total course work at other colleges and those students who have clearly used multiple institutions in the same way that one uses multiple retail stores

when shopping. Such a distinction is not given when we look at the number of institutions attended alone.

We developed a simple measure, *MCI*, to evaluate the relative importance of a student's multiple college attendance.

$$MCI = \sum_{i=1}^{n} \frac{uc_i}{up}$$

where : MCI = Multiple College Attendance Index
$uc_i$ = Units earned at college *I*
$up$ = Units earned at primary college

This measure produces intuitively satisfying values. For those students who attended only one college, MCI has the value of 1 since $uc_i = up$. For students who attend two or more colleges, the value of MCI grows larger to the degree that the units accumulated at the primary college decrease as a percentage of the total units. In those cases where the units accumulated at two or more colleges are equal and the units earned at each is greater than the units earned at any other single college, the value of MCI will be larger than 2. If there are exactly two colleges and the same number of units was earned at each, the value will be 2. This basic relation continues for any N colleges.

We can therefore distinguish all values of MCI between 1 and 2 as corresponding to a situation in which the student attended one primary college and one or more additional colleges at which fewer courses were taken. However, since we have seen that the vast majority of students who do attend multiple community colleges, attend only two, we would still like to have a better picture of how important the second college is. To better illustrate this we will use the following ranges to categorize those students who have one primary college and only occasional coursework at other colleges from those whose multiple college coursework is more significant.

| | |
|---|---|
| 1.0 | Single College Attendance |
| 1.0 < MCI < 1.5 | Primary College/Some Coursework Elsewhere |
| 1.5 ≤ *MCI* <2.0 | Primary College/Significant Coursework Elsewhere |
| 2.0 ≤ *MCI* | Two or more colleges/No primary college. |

Students in the 1.0 < MCI < 1.5 range will have taken at least 2/3 of their total coursework at one college. Students in the 1.5 ≤ *MCI* <2.0 range will have taken between 1/3 and just less than one-half their coursework in one or more colleges other than the one where they accumulated the majority of their units. Admittedly this is an arbitrary division but we feel that it serves the purposes at hand insofar as it helps to illustrate the magnitude and depth of enrollments at more than one college.

Table 2 shows the relationship between total units earned and intensity of multiple community college attendance. Two primary conclusions can be drawn on the basis of this information.

Table 2
Multiple College Attendance and Total Units Earned
Students Earning at Least 10 Units

| | MCI | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Total Units | Single | | Primary | | Significant Multiple Colleges | | Multiple: No Primary | | N |
| | N | % | N | % | N | % | N | % | |
| 10-24 | 144202 | 87.22% | 12800 | 7.99% | 7392 | 4.50% | 467 | 0.29% | 164861 |
| 24.5-36 | 51166 | 81.05% | 7931 | 12.56% | 3678 | 5.83% | 355 | 0.56% | 63130 |
| 36.5-48 | 34718 | 79.04% | 6655 | 15.14% | 2297 | 5.23% | 259 | 0.59% | 43929 |
| 48.5-60 | 26040 | 77.07% | 5819 | 17.22% | 1711 | 5.06% | 216 | 0.64% | 33786 |
| 60.5-75 | 24989 | 74.98% | 6591 | 19.77% | 1560 | 4.68% | 192 | 0.58% | 33332 |
| 75.5-90 | 18749 | 72.28% | 5691 | 21.94% | 1331 | 5.13% | 166 | 0.64% | 25937 |
| 90+ | 44567 | 64.91% | 19574 | 28.46% | 3967 | 5.77% | 591 | 0.86% | 68699 |
| N | 344431 | 79.11% | 65061 | 15.28% | 21936 | 5.08% | 2246 | 0.53% | 433674 |

Source: IPASS Master Transcript File for Community Colleges

1. Although a little more than 20% of the students attended two or more colleges, only 5.61 percent earned more than 1/3 of their units at multiple colleges. This finding would tend to contradict the notion that multiple college attendance is vitally important for understanding student enrollment behavior.

2. While multiple college attendance is not very significant globally it is clear that students who pursue more than 24 units will be more likely to use other colleges in addition to their primary one. This proportion increases directly with the number of total units earned. Only 12.78 percent of the students who earned between 10 and 24 units attended more than a single college while 35.09 percent of those who earned more than 90 units attended multiple institutions. This increase, however, does not occur as an even spread of units between the different institutions attended. The percentage of students whose multiple college attendance fell in the range $1.5 \leq MCI < 2.0$ did not increase between the lowest and highest levels of units earned but stayed stable at around 5 to 6 percent whether the student earned only 10 or more than 90 units. The increase occurs primarily in the occasional category indicated by the $1.0 < MCI < 1.5$ range.

**Demographic Parameters of Multiple College Attendance**

The "swirl" index illustrates the overall character of multiple college attendance in the partner community colleges. Our next set of questions concerns whether multiple college attendance is more characteristic of specific groups. At this stage of our research we are limited to an evaluation of the student characteristics readily available from the student records files themselves, i.e., age, ethnicity, and gender. Tables 3-5 present this information.

We have found that there is no association of any of the standard demographic categories used for state reporting and the tendency to attend more than one college with some very minor exceptions.

The age at which at student first enrolled in the community college shows the greatest variation. Students in the 20 – 35 year age range are represented among those who pursue coursework in multiple institutions to a greater degree than other age groups and made up 23.85 percent of the 20-24 age group and 24.07 of the 25-34 age group. This contrasts to younger students, of whom less than 20 percent earned units at different colleges, as well as the older students although they were closer to the pattern found for the 20-34 age group. The differences are quite small are nonetheless significant given the but the size of the groups themselves.

Table 3
Multiple College Attendance and Age at First Enrollment

| Age Group | Single College | | Primary College | | Significant Multiple Colleges | | Multiple: No Primary | | Total |
|---|---|---|---|---|---|---|---|---|---|
| | N | % | N | % | N | % | N | % | |
| Under 18 | 22095 | 80.92 | 3999 | 14.65 | 1142 | 4.18 | 68 | 0.25 | 27304 |
| 18-19 | 83071 | 83.85 | 11865 | 11.98 | 3851 | 3.89 | 280 | 0.28 | 99067 |
| 20-24 | 83982 | 76.15 | 18987 | 17.22 | 6606 | 5.99 | 703 | 0.64 | 110278 |
| 25-34 | 78463 | 75.93 | 17977 | 17.40 | 6139 | 5.94 | 761 | 0.74 | 103340 |
| 35-44 | 38719 | 78.32 | 7931 | 16.04 | 2510 | 5.08 | 277 | 0.56 | 49437 |
| 45-54 | 14912 | 79.48 | 2856 | 15.22 | 901 | 4.80 | 92 | 0.49 | 18761 |
| Over 55 | 6114 | 85.21 | 768 | 10.70 | 258 | 3.60 | 35 | 0.49 | 7175 |
| Missing | 6018 | 98.69 | 67 | 1.10 | 12 | 0.20 | 1 | 0.02 | 6098 |
| | 333374 | 79.10 | 64450 | 15.29 | 21419 | 5.08 | 2217 | 0.53 | 421460 |

Source: IPASS Transcript and Student Characteristic Files

One significant variation emerges when multiple attendance patterns are examined in relation to the standard ethnic categories. Afro-American students show a much stronger tendency to use more than one community college than do any of the other groups. Asian, Hispanic and White students all attend a single college in 80 percent of the cases with a variation of little more than 1 percent between them as compared to 70 percent of the Afro-American students. This variation is pronounced in the $1.5 \leq MCI < 2.0$ and the MCI>2.0 range. An adequate interpretation of this finding is not immediately apparent but will perhaps be clarified when we undertake a systematic GIS analysis student location and college service area from which we can impute socio-economic parameters that are absent in student information databases.

Table 4
Multiple College Attendance and Ethnic Category

| ethnic | Single College | | Primary College | | Significant Multiple Colleges | | Multiple: No Primary | | Total |
|---|---|---|---|---|---|---|---|---|---|
| | N | % | N | % | N | % | N | % | Total |
| Asian | 35250 | 79.55 | 6753 | 15.24 | 2106 | 4.75 | 202 | 0.46 | 44311 |
| Afro-American | 54739 | 70.14 | 16192 | 20.75 | 6299 | 8.07 | 817 | 1.05 | 78047 |
| Filipino | 10546 | 77.47 | 2273 | 16.70 | 714 | 5.24 | 80 | 0.59 | 13613 |
| Hispanic | 122983 | 81.46 | 20751 | 13.74 | 6647 | 4.40 | 594 | 0.39 | 150975 |
| White | 76617 | 80.91 | 13668 | 14.43 | 4066 | 4.29 | 344 | 0.36 | 94695 |
| Decline/Unknown | 6031 | 87.17 | 672 | 9.71 | 196 | 2.83 | 20 | 0.29 | 6919 |
| Missing | 11986 | 94.44 | 493 | 3.88 | 201 | 1.58 | 11 | 0.09 | 12691 |
| Total | 333374 | 79.10 | 64450 | 15.29 | 21419 | 5.08 | 2217 | 0.53 | 421460 |

Source: IPASS Transcript and Student Characteristic Files

As is the case with age at first enrollment and ethnic category, there is little variation in multiple college attendance associated with gender. Female students are slightly more prone to go to more than one college with 22.89 percent multiple college attendees as compared to 20.91 percent of the male students. Similarly, this difference is confined to the use of additional colleges for coursework that supplements what is taken at a primary one. The difference in the $1.5 \leq MCI < 2.0$ range are only 0.11 percent and only 0.03 percent in the $MCI > 2.0$ range which would indicate a strong similarity in general.

Table
Multiple College Attendance and Gender

| | Single College | | Primary College | | Significant Multiple Colleges | | Multiple: No Primary | | Total |
|---|---|---|---|---|---|---|---|---|---|
| Gender | N | | N | | N | | N | | |
| Female | 157612 | 77.11 | 34601 | 16.93 | 10983 | 5.37 | 1210 | 0.59 | 204406 |
| Male | 126396 | 79.09 | 23842 | 14.92 | 8684 | 5.43 | 900 | 0.56 | 159822 |
| Missing | 49366 | 86.26 | 6007 | 10.50 | 1752 | 3.06 | 107 | 0.19 | 57232 |
| | 333374 | 79.10 | 64450 | 15.29 | 21419 | 5.08 | 2217 | 0.53 | 421460 |

Source: IPASS Transcript and Student Characteristic Files

In conclusion there appears to be little if any association between the basic student characteristics and multiple college attendance. If anything the data shows that there is a common pattern in which a student either attends only one community college or attends one primary institution taking additional coursework at any others he or she attends.

**Outcomes and Multiple College Attendance: GPA and Transfer**

As was shown in the initial analyses, higher levels of total earned units are positively associated with an increase in multiple college attendance. Approximately one-fourth of all students earning sufficient units to be awarded an associates degree will have attended more than one college. The coursework undertaken in the secondary colleges represents less than one-third of the total units earned in 75 percent of the cases. Three other primary outcome indicators concern us here: overall GPA, preparation for transfer, and transfer itself. Tables 7 and 8 summarize our analyses of these parameters.

GPA was calculated for all courses in which a grade was awarded with the exception of credit/no credit. Courses graded under that system were folded into the GPA received on other coursework. Table 7 shows an apparent relation between lower GPA and a lower MCI. We believe that this is due to the fact that a lower GPA strongly related to lower levels of total units earned as is shown in Table 8. As we have seen throughout our analysis, lower levels of total units earned are related to lower values of the multiple attendance index, higher levels of total units to higher levels of the index. The association of low gpa with low index levels reflects this underlying association which has a more likely explanatory basis in consideration of the other factors associated with higher levels of total earned community college units; e.g., low average units per semester, 4 or more years to completion of such extensive coursework, geographical mobility in the young adults who are the primary members of these groups, etc.

Table 6
Multiple College Attendance and GPA

| | Single College | | Primary College | | Significant Multiple College | | Multiple: No Primary | | Total |
|---|---|---|---|---|---|---|---|---|---|
| GPA | N | % | N | % | N | % | N | % | |
| Below 1.0 | 67060 | 86.47 | 6315 | 8.14 | 3873 | 4.99 | 309 | 0.40 | 77557 |
| 1.0-1.99 | 55722 | 77.63 | 11274 | 15.71 | 4293 | 5.98 | 488 | 0.68 | 71777 |
| 2.0-2.99 | 109717 | 75.67 | 26913 | 18.56 | 7524 | 5.19 | 849 | 0.59 | 145003 |
| 3.0-4.0 | 100875 | 79.35 | 19948 | 15.69 | 5729 | 4.51 | 571 | 0.45 | 127123 |
| Total | 333374 | 79.10 | 64450 | 15.29 | 21419 | 5.08 | 2217 | 0.53 | 421460 |

Source: IPASS Transcript and Student Characteristic Files

Table 7
Total Units Earned and GPA

| | GPA | | | | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|
| | Below 1.0 | | 1.0-1.99 | | 2.0-2.99 | | 3.0-4.0 | | |
| Total Units | N | % | N | % | N | % | N | % | |
| 10-24 | 53972 | 35.36 | 19801 | 12.97 | 32883 | 21.54 | 45991 | 30.13 | 152647 |
| 24.5-36 | 11767 | 18.64 | 12515 | 19.82 | 19371 | 30.68 | 19477 | 30.85 | 63130 |
| 36.5-48 | 5435 | 12.37 | 9619 | 21.90 | 15432 | 35.13 | 13443 | 30.60 | 43929 |
| 48.5-60 | 2847 | 8.43 | 7480 | 22.14 | 13329 | 39.45 | 10130 | 29.98 | 33786 |
| 60.5-75 | 1666 | 5.00 | 6918 | 20.75 | 14215 | 42.65 | 10533 | 31.60 | 33332 |
| 75.5-90 | 898 | 3.46 | 4801 | 18.51 | 12023 | 46.35 | 8215 | 31.67 | 25937 |
| 90+ | 972 | 1.41 | 10643 | 15.49 | 37750 | 54.95 | 19334 | 28.14 | 68699 |
| Totals | 77557 | 18.40 | 71777 | 17.03 | 145003 | 34.40 | 127123 | 30.16 | 421460 |

Source: IPASS Transcript and Student Characteristic Files

Table 8 explores the relationship between total CSU General Education (CSU-GE) transfer requirements, actual transfer to one of our partner CSUs and multiple college attendance patterns. As would be expected, the basic association between greater total earned units and higher values of the multiple attendance index are strongly reflected here as well.

Table 8
Transfer Preparedness, Transfer and Multiple Attendance Patterns:

| | | Single College | | Primary College | | Significant Multiple College | | Multiple: No Primary | | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| CSU_GE Units | Transfer | N | % | N | % | N | % | N | % | |
| Below 3 | No | 167942 | 85.01 | 19309 | 9.77 | 9559 | 4.84 | 748 | 0.38 | 197558 |
| | Yes | 334 | 73.73 | 78 | 17.22 | 35 | 7.73 | 6 | 1.32 | 453 |
| Subtotal | | 168276 | 84.98 | 19387 | 9.79 | 9594 | 4.85 | 754 | 0.38 | 198011 |
| 3.5-12.0 | No | 71857 | 78.17 | 13958 | 15.18 | 5505 | 5.99 | 606 | 0.66 | 91926 |
| | Yes | 758 | 69.86 | 232 | 21.38 | 82 | 7.56 | 13 | 1.20 | 1085 |
| Subtotal | | 72615 | 78.07 | 14190 | 15.26 | 5587 | 6.01 | 619 | 0.67 | 93011 |
| 12.5-24.0 | No | 39001 | 74.04 | 10508 | 19.95 | 2779 | 5.28 | 385 | 0.73 | 52673 |
| | Yes | 1277 | 68.66 | 464 | 24.95 | 109 | 5.86 | 10 | 0.54 | 1860 |
| Subtotal | | 40278 | 73.86 | 10972 | 20.12 | 2888 | 5.30 | 395 | 0.72 | 54533 |
| 24.5-36.0 | No | 19925 | 70.70 | 6674 | 23.68 | 1392 | 4.94 | 191 | 0.68 | 28182 |
| | Yes | 1846 | 65.60 | 801 | 28.46 | 151 | 5.37 | 16 | 0.57 | 2814 |
| Subtotal | | 21771 | 70.24 | 7475 | 24.12 | 1543 | 4.98 | 207 | 0.67 | 30996 |
| 36.5-48.0 | No | 12703 | 68.64 | 4896 | 26.46 | 795 | 4.30 | 112 | 0.61 | 18506 |
| | Yes | 2893 | 65.33 | 1311 | 29.61 | 199 | 4.49 | 25 | 0.56 | 4428 |
| Subtotal | | 15596 | 68.00 | 6207 | 27.06 | 994 | 4.33 | 137 | 0.60 | 22934 |
| 48.5-60.0 | No | 7486 | 69.75 | 2803 | 26.12 | 392 | 3.65 | 51 | 0.48 | 10732 |
| | Yes | 2674 | 66.07 | 1209 | 29.87 | 141 | 3.48 | 23 | 0.57 | 4047 |
| Subtotal | | 10160 | 68.75 | 4012 | 27.15 | 533 | 3.61 | 74 | 0.50 | 14779 |
| 60.5-75 | No | 2630 | 66.92 | 1127 | 28.68 | 156 | 3.97 | 17 | 0.43 | 3930 |
| | Yes | 1179 | 62.88 | 619 | 33.01 | 70 | 3.73 | 7 | 0.37 | 1875 |
| Subtotal | | 3809 | 65.62 | 1746 | 30.08 | 226 | 3.89 | 24 | 0.41 | 5805 |
| 75.5-90.0 | No | 479 | 65.44 | 222 | 30.33 | 25 | 3.42 | 6 | 0.82 | 732 |
| | Yes | 243 | 61.83 | 137 | 34.86 | 13 | 3.31 | | 0.00 | 393 |
| Subtotal | | 722 | 64.18 | 359 | 31.91 | 38 | 3.38 | 6 | 0.53 | 1125 |
| Above 90.0 | No | 103 | 55.68 | 70 | 37.84 | 11 | 5.95 | 1 | 0.54 | 185 |
| | Yes | 44 | 54.32 | 32 | 39.51 | 5 | 6.17 | | 0.00 | 81 |
| Subtotal | | 147 | 55.26 | 102 | 38.35 | 16 | 6.02 | 1 | 0.38 | 266 |
| Grand Total | | 333374 | 79.10 | 64450 | 15.29 | 21419 | 5.08 | 2217 | 0.53 | 421460 |

The accumulation of CSU_GE units was obtained through an application of STARSystem tracking to the entire master transcript file. The cases included in Table 8 still reflect only those students who earned more than 10 units at the community colleges. However unlike Tables 1 and 2 the rows in Table 8 reflect the number of units earned that satisfy CSU_GE breadth requirements. We have found this to be a very stable indicator of a student's intention to transfer unlike the simple accumulation of units that

are classified as potentially transferable to UC or CSU and so flagged on the CCC MIS. Many students, especially in the arts and music programs accumulate high levels of theoretically transferable units without ever fulfilling any but a small number of the breadth requirements.

This further clarification reveals an even more pronounced tendency to multiple college attendance. In the first place, 198,011 of the 421,460 students who earned more than 10 units overall earned only 3 or fewer units creditable toward the CSU_GE. At the lowest levels, 21.83 of the students who earned 3.5-12.0 and 26.14 percent those who earned between 12.5 and 24.0 units of CSU_GE requirements attended more than one college. In contrast, the percentage of students who earned between 10 and 24 units overall and attended more than one college was only 12.78. The strong association between greater multiple college attendance and higher levels of total CSU_GE units continues at each level. 31.26 percent of the students earning between 36.5 and 48.0 CSU_GE units, the range of units needed for completion of the breadth requirements, had attended more than one college. At the highest category of 90 units of CSU-GE or more, , 44.32 of the students attended more than one college.

What is most of note is the relative stability of the $1.5 \leq MCI < 2.0$ range. This varies only 2.71 percent between the extremes of CSU-GE units earned in contrast to the 23 percent variation found in single community college attendance between extremes. The variation appears to occur in the degree to which students use other community colleges as accessory institutions to their primary college. This pattern has predominated throughout the analyses presented here and is clearly one of the most significant findings. Thus we could expect that higher levels of completion of transfer requirements will tend to be associated with the use of multiple community colleges while maintaining one as the primary institution of reference.

Subsetting the levels of CSU_GE units earned according to those who did and did not transfer to our partner CSUs we find that (a) the patterns of multiple college attendance are similar to those as students who did not transfer or for whose transfer we have no information but the multi-college attendance is even slightly more pronounced. This is clearly the case at the lowest levels but here it might well reflect the utilization of community colleges not to prepare for transfer so much as to remediate specific deficiencies in the student's high school preparation. A more detailed transcript analysis could clarify this but it isn't clear that such an exercise would be worth the effort at this time. (b) At the levels of CSU_GE units earned that correspond to completion of the breadth requirements, we find the differences in multi-college attendance between those who we know to have transferred and those who didn't drop to between 2 and 3 percent.

**Conclusions**

As stated at the outset of this paper, our purpose has been primarily descriptive at this point in the research. On the basis of the preceding analysis of the parameters of multiple community college attendance we can make the following statements:

- Single college attendance is still the predominant mode of attendance in the community colleges we have studied.
- As students earn more units it is more likely that they will go to more than one college.
- Students who transfer and those who clearly pursue a CSU_GE, transfer-oriented curriculum are more likely to attend multiple colleges than other students earning equivalent levels of non-transfer oriented curriculum.
- When multiple colleges are attended, one of them is still primary and students earn more than 2/3 of their total units at that college. This is true for all students whether or not they are pursuing transfer-oriented curriculum.
- There are no associations between multiple college attendance and the basic student characteristics of gender, age at first enrollment, and ethnicity with the exception of African Americans who show an increased tendency to enroll in multiple colleges that also is reflected in a pattern in which a primary college is less significant.

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[i] The global values for multi-institution attendance are basically lower than those that Adelman found on the basis of his comparison of the HS&B/So cohorts (ibid:41). This is true even when add an additional institution to the calculations of those students who we know transferred to one of our partner CSUs. A probably interpretation would be that the increase he found in multi-institutional attendance as compared with the NLS-72 cohort was in itself a historically conditioned phenomena and that during the period 1993-2000 a reverse tendency has come into play and that students are increasingly returning to attend one institution alone. Or perhaps the level of aggregation inherent in the national sample he used shows its limitations for the interpretation of the more local phenomena that we normally deal with in the practice of institutional research. This only highlights the inherent danger of proclaiming historical trends on the basis of quantitative empirical data of any kind: how long a period do we need before we can determine whether what we see is in fact evidence of a structural of the institutions that we are studying? Without specifying the transformation of structural relationships (e.g., individual geographic mobility), I do not believe we can ever pretend to that level of generalization on the mere basis of the measurement of numeric indicators with however sophisticated statistical procedures. On the other hand, the identification of changes in structural relationships, regardless of their relative magnitude can speak clearly to processes of historical change that must forever remain hidden to studies that would pretend to find structure in numbers alone.

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