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AUTHOR	Maack, Stephen C.
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ABSTRACT

This is Rio Hondo College's (California) institutional report on the retention and graduation behavior of the fall 1995 new student cohort. These students were tracked through 2001 using a longitudinal student-tracking database. The report presents information concerning the assorted variables associated with term-to-term persistence and associate degree and certificate attainment. Results of four multivariate logistic regression models that best predict both persistence and failure to persist at four points in time (i.e., second semester, beginning of the second year, beginning of the third year, beginning of the sixth year) are presented. Major findings include: (1) 42% of fall 1995 cohort was lost by spring 1996 after only 1 semester of attendance; (2) in fall 1997, only 28% of the original cohort persisted; and (3) 6 years after starting, only 102 (less than 5%) had obtained a least one associate's degree or certificate. The paper concludes that persistence of students results from a complex interplay of factors that include demographics, student preparation, student goals, matriculation services intervention, student performance, and successful student outcomes. Possible opportunities for intervention to foster persistence are identified. Numerous charts detailing findings are included. (RC)

WHATEVER HAPPENED TO STUDENTS WHO ENTERED IN FALL 1995?

PERSISTENCE AT RIO HONDO COLLEGE

Stephen C. Maack
Director of Institutional Research
Rio Hondo College
June 2002

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EXECUTIVE SUMMARY.

This report concerns the retention and graduation behavior of a **cohort of 2,181 new students** who first enrolled at Rio Hondo College in Fall 1995. These students indicated that they were first-time students who had not attended college previously. **This cohort of students was tracked through Fall 2001.** The analyses presented in the report include **explorations of assorted variables associated with term-to-term persistence**, as well as a look at **Associates degree and Certificate attainment**. **Time to degree** is briefly considered. The report also discusses the **results of four multivariate logistic regression models that best predict both persistence and failure to persist at four points in time: in the second semester (Spring 1996), at the beginning of the second year (Fall 1996), at the beginning of the third year (Fall 1997), and at the beginning of the sixth year (Fall 2001).** The report concludes with a discussion of the complex interactions of persistence factors, the change in importance of various factors to persistence at different points in time, and the possible areas where further interventions might be most appropriate. An overarching conclusion is that further qualitative as well as quantitative research may be needed to understand persistence factors at Rio Hondo College, but that greater attention to persistence during the first year and into the second year might be most appropriate.

Among the key findings are these:

- About **76 percent** of the original Fall 1995 new student cohort of 2,181 students were **high school graduates** and **23 percent** of the cohort had been **out of school for five or more years.**

- The **median age was 19** (18 percent were age 30 or older), and **males made up over half (53 percent) of the cohort**.

- **Nine out of ten were "traditionally under-represented minority" group members** (76 percent Hispanic, 10 percent Asian, 2 percent Black, 3 percent Other Non-White), and **24 percent used a language other than English as their primary language.**

- **About 38 percent had a goal of Transfer, 11 percent a degree or certificate goal, 18 percent a job-related goal, 20 percent undecided (or not stated), and the rest had other specific goals.**

- **Rio Hondo College lost 42 percent of the Fall 1995 cohort by Spring 1996 – after only one semester of attendance. It lost another 18 percent of the cohort between Spring 1996 and Fall 1997, so that by the beginning of the second year only 40 percent of the original cohort were still persisting.**

- **During the second year the cohort lost another 5.5 percent of its members by Spring 1997, and then nearly 8 percent more by the beginning of the third year. In Fall 1997 only 28 percent of the original cohort were still persisting.**

- From the **third year onward the rate of loss slowed, from fall to spring, and from spring to fall.** By Fall 2001, six years out, less than 8 percent of the original cohort was still attending Rio Hondo College.

- **From the second spring onward, the number of students persisting in the spring amounted to 89 to 95 percent of the number there the immediately preceding fall.**

- **By Fall 2001, six years after starting, only 102 students (under 5 percent of the starting Fall 1995 cohort) had obtained at least one Associates degree or Certificate from Rio Hondo College.**

- Although more men than women started College in Fall 1995, **more women than men were persisting in Fall 1997.** The association of being female with greater persistence is hidden during the first two years by the influence of other factors.

- **Younger students persisted at significantly higher rates than older students did, but this fact is again hidden by the influence of other factors.** In particular, **older and younger people often had different educational goals at the outset** – with the older students somewhat more likely to have job related goals, and the younger students to have degree or transfer goals.

- **Being a high school graduate or equivalent accounted for 2.5 to 3 percent of the variation in persistence.** The strength of association in the second fall of attendance (Fall 1996), then got weaker each following spring and fall, and was not a significant factor in summer attendance. **In multivariate analyses, however, other co-varying factors masked the association of high school graduation and persistence.**

- **Those with degree or transfer goals were more often than others to persist in the second fall, but not earlier or later.** Other factors appeared to be more important earlier. **Having already graduated with an Associates degree was a strong contributing factor to the negative association of degree/transfer goals with later (six year) persistence.** Having received a Certificate, however, made no statistically significant difference in persistence.

- While students averaged receipt of 2.6 matriculation services each in their first semester, **around 28 percent of the cohort did not use matriculation services.**

- In their entire time at Rio Hondo College, **23 percent of the cohort went through orientation, 70 percent were assessed for placement in English (69 percent) or in Mathematics (63 percent), or in both subjects (62 percent), 48 percent visited a counselor at least once, and 59 percent received a follow-up service.**

- **Having gone through orientation was weakly associated with greater persistence through Fall 1997, then its strength fluctuated and declined gradually.** When **matched against other factors, orientation remained a statistically significant positive factor in persistence in Fall 1996 and Fall 1997, but not earlier (Spring 1996) or considerably later (Fall 2001).** The influence of orientation therefore appears to be especially effective in encouraging continuing student enrollment a couple semesters after a student starts and in the middle of students' stays at Rio Hondo, but not late in their college careers.

- **Having gone through assessment correlated moderately with continued enrollment in the second semester of attendance (Spring 1996) and at the start of the second year (Fall 1996), after which its influence began weakening.** When considered in relation to the influence of other variables, assessment also held forth as a statistically significant influence on persistence in both Spring and Fall 1996, but was no longer a statistically significant variable by Fall 1997 and later. One speculation is that, over and above its administrative uses, assessment also acts as a "rite of passage" into community college life, and those who go through it may be more seriously interested in pursuing their education than others. Most people who were going to go through the assessment "rite of passage" did so in the first few semesters. Of course, the process also allowed them to then sign up for English and/or Mathematics courses with fewer problems (and so persist).

- **Counseling had a weak association with continuing enrollment in the second semester (Spring 1996), and a moderate association with continued enrollment in the Fall 1996 and Fall 1997 semesters (beginning of the second and third years). After that the strength of the association weakened gradually.** When compared with other variables, counseling weighed in as statistically significant in Spring 1996 and Fall 1996, but not in the later years checked. Early counseling does, then, turn out to be important for early persistence in college, but counseling alone may not be strong enough to overcome the influence of other variables as early as the beginning of the third year of possible attendance.

- **Although about 60 percent of the cohort students eventually received some kind of follow-up services, follow-up did not correlate significantly with persistence until the beginning of the first year after the students started college (i.e., Fall 1996). Even then, the correlation was only weak that Fall and the next.** To some extent this makes sense, since follow-up is usually triggered by negative academic performance, and first contacts (such as academic warnings or probation) do not result in immediate dismissal. The follow-up rather serves as a warning of future trouble that takes a while to develop (if it develops at all...) to the point that students may be removed from the College for academic reasons. Having received follow-up services was, however, never statistically significantly more important than other factors in encouraging persistence.

- **There was only a weak correlation of receiving follow-up services and seeing a counselor by the second semester, but a strong one by the end of the first summer (Summer 1996).** There was also a moderately strong correlation (.402) of counseling and follow-up services by the end of Summer 1997.

- According to the best logistic regression model, the **positive factors significantly associated with persistence in the second semester (Spring 1996)** were (in order of strength of association): **assessment, counseling, number of units completed at Rio Hondo in Fall 1995, Rio Hondo grade point average (GPA) in Fall 1995. Negative influences working against continuation at Rio Hondo were the number of hours worked per week (a small negative), and a constant value (an unexplained negative factor bigger than assessment).** The logistic regression model successfully identified 78 percent of the students who did continue and 77 percent of those who did not continue.

- The most important (significant) **factors associated with persistence in the second fall semester (Fall 1996) were (in order of strength): having been enrolled in the spring and/or summer terms, assessment, having been out of school less than five years, counseling, orientation, Fall 1995 Rio Hondo GPA, number of Rio Hondo units completed in Fall 1995, number of hours worked per week in Fall 1995 (a small negative factor), and a constant value (large, unexplained negative factors).** The logistic regression model correctly identified 79 percent of those who did continue in their second year, and 82 percent of those who did not continue.

- The most important (significant) **positive factors associated with persistence into the beginning of the third year (Fall 1997) were (in order of strength): having enrolled at Rio Hondo in Spring 1997, and/or Summer 1997, and/or Fall 1996, orientation (by Fall 1997), and Fall 1995 Rio Hondo GPA.** A large, negative constant value indicated a fair amount of unexplained variance. **Stating a goal other than "undecided" was important for persistence. Having any goal other than transfer or obtaining an associates degree or certificate was also associated with persistence.** No measures of transfer were considered. The logistic regression equation successfully identified 76 percent of those students who did continue in Fall 1997, and 89 percent of those who did not.

- The most important (significant) factors associated with persistence at the beginning of the sixth year (Fall 2001) were (in order of strength of association): **having been enrolled at Rio Hondo in Summer 2001 and/or Spring 2001 and/or Fall 2000, being female and having completed more Rio Hondo units.** There was a **large negative constant indicated unexplained variance associated with lack of persistence**. Other than that there were two negative factors that perhaps reflected completion of desired student outcomes. **Students who had received an Associates degree at Rio Hondo were less likely to still be enrolled after six years.** Those who had been enrolled three years earlier, in Fall 1997, were also less likely to still be enrolled in Fall 2001.

INTRODUCTION. Dr. Stephen C. Maack, the Director of Institutional Research at Rio Hondo College, initiated this exploratory research after completing studies of English as a Second Language (ESL) and Basic Skills Mathematics for program review purposes. ESL and Basic Skills Math faculty both requested analyses of the progress of students through basic skills courses to transfer level English/Mathematics courses. Faculty asked what proportion of students progressed through the basic skills courses until they were ready to transfer, and how long it took the students to make that progression. Institutional Research (IR) staff determined in both analyses that relatively small proportions of students ever succeeded in climbing the basic skills course ladders from the lowest course level to the transfer course level, and that the higher students started on the basic skills ladder, the more likely they were to reach the transfer course level. The analyses determined further that many students were simply not attempting enough basic skills ESL or Mathematics courses to progress from where they started to the transfer level. The ESL report concluded that for those students who were assessed in English and ESL and who came to Rio Hondo College after assessment, the situation was more one of students attending Rio Hondo and taking ESL, or not attending the College at all (rather than one of students attending Rio Hondo but not taking ESL or English courses).

In focusing on their individual academic disciplines and the basic skills course sequences both faculty and Institutional Research staff had ignored a prior question. That question is: what proportions of students persist at Rio Hondo College from one term to the next? If students were not continuing their studies at Rio Hondo, then naturally they would be unable to climb a basic skills course ladder that could include two to four courses. A primary purpose of this analysis, then, is to provide information concerning expected persistence of students at Rio Hondo College. A secondary purpose is to look at graduation behavior of Rio Hondo students who enter with no college background.

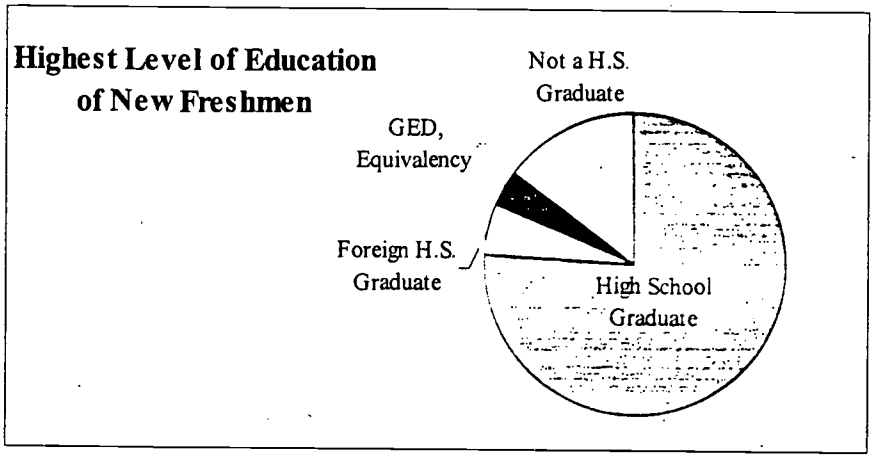
To answer these questions Institutional Research staff began to put together elements of a longitudinal student-tracking database that could track cohorts of students from term to term. Such a longitudinal database could be used for a variety of purposes and studies, including matriculation related research. In fact, in designing the longitudinal student-tracking database Rio Hondo IR staff used the approach described by Brad Phillips in "Design 25: A Guide to Tracking Students for Matriculation Evaluation" and documented in California Community College Chancellor's Office, The Matriculation Local Research Options Committee June 1992 "Matriculation Evaluation: Phase III Local Research Options," pp. 25.1 to 25.6. Using that paper as a guide, Research Coordinator Nedra Root was able to create a seven-file set of data from the Santa Rosa student records file system for the Fall 1995 cohort. Stephen C. Maack, Director of Institutional Research then combined the files in various ways, using SPSS, and performed the analysis.

The resulting Fall 1995 cohort file contains static information for the cohort (e.g., gender of each student, educational goal at entry) as well as variable information from each semester (e.g., semester units attempted and completed, semester Grade Point Average, dates students withdrew from Rio Hondo). The files also include information on whether

the students who had entered in Fall 1995 had completed any degrees or certificates by Fall 2001 (the latest semester for which information was available for this study).

DEMOGRAPHIC CHARACTERISTICS OF THE NEW STUDENT COHORT. The 2,181 students in the Fall 1995 new student cohort all checked the box on the Rio Hondo College admissions form that they were new, first-time college students. About **76 percent were high school graduates**, and another 6 percent were graduates of foreign high schools, 4 percent had GED or Equivalency Certificates, and three students (0.1 percent) had completed a Certificate of High School Proficiency Examination. The **remaining 15 percent were not high school graduates**.

Highest Level of Education Completed at Entry		
High School Graduate	1,653	76%
Foreign H.S. Graduate	123	6%
GED, Equivalency	83	4%
Not a H.S. Graduate	322	15%

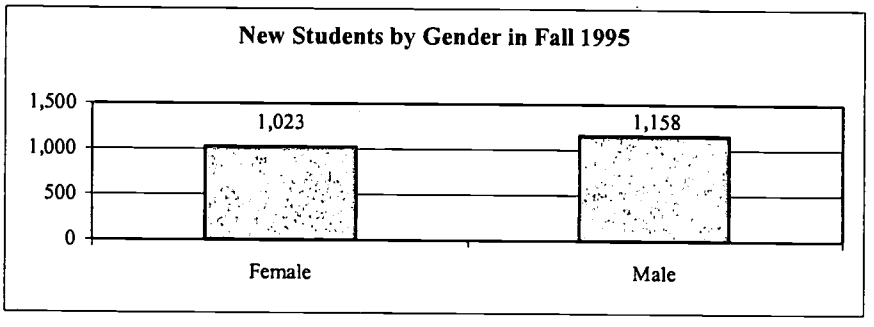


Almost one-quarter (23.4 percent) of the students had been out of school for five or more years, but three-quarters of the new students were attending college within five years of previously having attended school. For the most part these students appeared to be attempting college level courses for the first time in their lives. Nearly all of the students (99.4 percent) had no college level (or advanced placement) units to transfer into Rio Hondo College. The thirteen students who did transfer in units were among the better students, since 10 of these thirteen had transfer course grade point averages of 3.000 or higher.

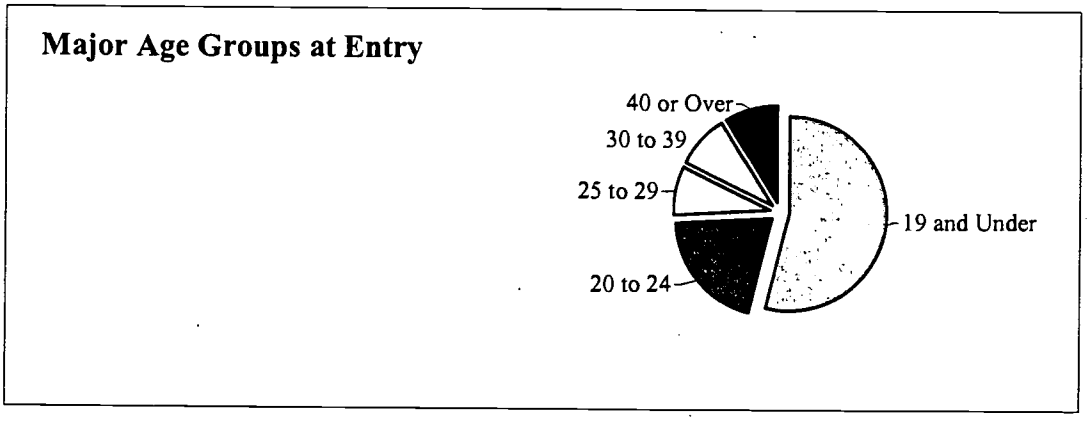
Out of School 5 or More Years?		
No	1,608	74%
Yes	511	23%
Don't Know	62	3%

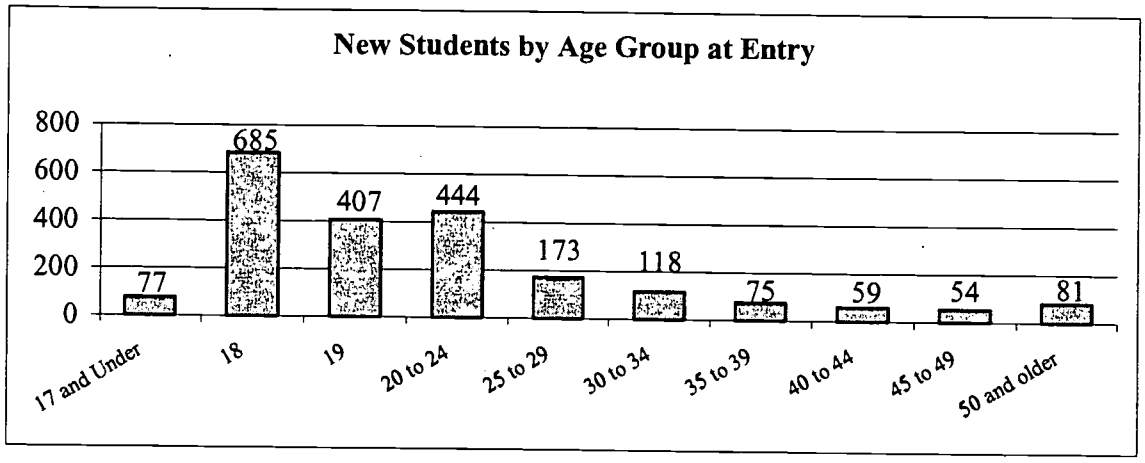
More than half of the new students (53 percent) were males.

Female	1,023	47%
Male	1,158	53%
TOTAL	2,181	100%



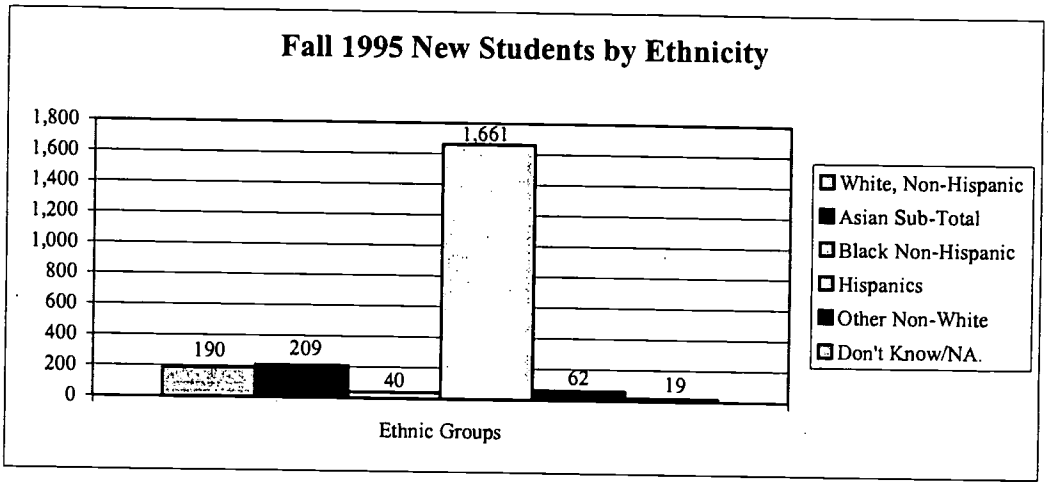
The average age at entry was 23.9 (as of December 1995), with one-half age 19 or below and one-half age 19 or above. Clearly older, adult students come to Rio Hondo College, as well as those under age 20 who have recently left high school. **One in five students were age 20 to 24 at entry, 8 percent age 25 to 29, 9 percent age 30 to 39, and another 9 percent age 40 or over.**





Age as of December 31, 1995	23.9 avg.	19 median
17 and Under	77	4%
18	685	32%
19	407	19%
20 to 24	444	20%
25 to 29	173	8%
30 to 34	118	5%
35 to 39	75	3%
40 to 44	59	3%
45 to 49	54	2%
50 and older	81	4%
Known Age Sub-Total	2,173	100%
Not Known	8	

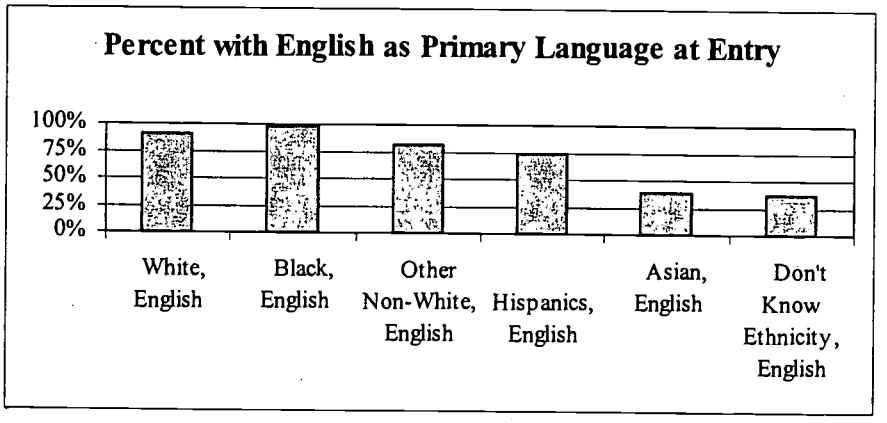
About nine out of every ten new students were members of traditionally under-represented minority groups: Hispanics 76 percent, Non-Hispanic Blacks two percent, Other Non-Whites (notably Filipinos and Pacific Islanders) three percent. By far the **largest single ethnic group identified themselves as Mexican-Americans (64 percent).** One in ten new students were Asians, with about half of those Chinese. Fewer than one in ten new students were Non-Hispanic Whites (9 percent), and one percent of all students did not identify their ethnicity.



Ethnic Groups of New Students

White, Non-Hispanic	190	9%
Chinese	112	5%
Vietnamese	50	2%
Japanese	14	1%
Korean	14	1%
Laotian	6	0%
Cambodian	3	0%
Asian Indian	1	0%
Other Asian	9	0%
Asian Sub-Total	209	10%
Black Non-Hispanic	40	2%
Mexican-American	1,405	64%
Central American	96	4%
South American	35	2%
Other Hispanic	125	6%
Hispanics	1,661	76%
American Indian	6	0%
Filipino	27	1%
Samoan	4	0%
Hawaiian	2	0%
Other Pacific Islander	1	0%
Other Ethnicity (Non-White)	22	1%
Other Non-White	62	3%
Don't Know	11	1%
Not Marked	8	0%
Don't Know/NA.	19	1%

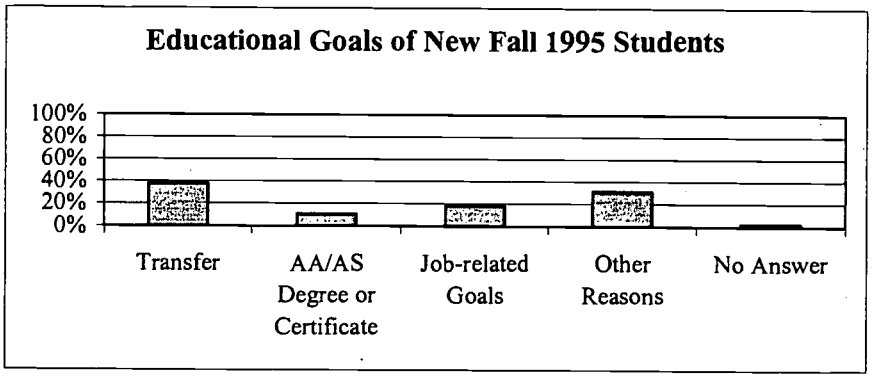
Rio Hondo College uses English as the primary language of instruction, and **almost three-quarters of the students (73 percent) indicated that English was their primary language at entry. Nearly one-quarter of the students (24 percent), however, used another language as their primary language.** English language facility would appear to be a likely educational issue for some ethnic groups more than for others. **Blacks (98 percent) and Whites (92 percent) mostly entered Rio Hondo with English as their first language. This also tended to be true of Hispanics (74 percent) and Other Non-Whites (82 percent), such as Filipinos. Less than half of the Asian new students (40 percent) and of those who did not indicate their ethnicity (37 percent) had English as their primary language at entry.**



Primary Language at Entry		
English (all students)	1,591	73%
Another Language (all students)	522	24%
Unspecified (all students)	68	3%
White, English	174	92%
Black, English	39	98%
Other Non-White, English	51	82%
Hispanics, English	1,237	74%
Asian, English	83	40%
Don't Know Ethnicity, English	7	37%

Rio Hondo students entered the College with a variety of educational goals (before receiving matriculation counseling services). **The largest group (38 percent) intended to transfer to a four-year college or university, usually after receiving an A.A. or A.S. degree (30 percent). About one in ten (11 percent) wanted to obtain an A.A. or A.S. degree (either vocational or non-vocational), or (less often) a vocational Certificate, but did not intend to transfer. Almost one in five (18 percent) had job-related goals.** But nearly one in three (31 percent) specified other reasons for attending

College – including **18 percent who were undecided about their goals,** and five percent who wanted to improve their basic skills in English, reading, or mathematics.



Educational Goals of New Students		
BA/BS after AA/AS	646	30%
BA/BS no AA/AS	177	8%
Transfer	823	38%
Non-Voc AA/AS, no transfer	79	4%
Vocational AA/AS, no transfer	117	5%
Voc Certificate, no transfer	37	2%
AA/AS Degree or Certificate	233	11%
Prepare for a New Career	178	8%
Advance in Current Job/Career	138	6%
Maintain Certificate/License	80	4%
Job-related Goals	396	18%
Discover Career Interest, plans	53	2%
Educational Development	79	4%
Improve Basic Skills	116	5%
Credits for a HS Diploma/GED	34	2%
Undecided on Goal	398	18%
Other Reasons	680	31%
No Answer	49	2%

Only about six percent of the new Fall 1995 students had a matriculation goal recorded. Usually that goal was recorded as a B.A./B.S. degree with no A.A./A.S. degree (i.e., transfer without a Rio Hondo Associates degree). About two percent of all students had a matriculation goal of an A.A. or A.S. degree, or a vocational certificate without transfer.

The new students identified a large number of potential majors, but **almost one in six (16 percent) provided no information about their potential major and nearly one in four (23 percent) chose General Education, No Degree as their major.** Those two categories plus the following ten majors accounted for more than two-thirds (67.6 percent) of the choices of the new students. **The ten most frequently chosen specific majors were:**

- **Administration of Justice (5.0 percent)**
- **Nursing (A.S. Degree – 3.6 percent)**
- **Fire Science (3.3 percent), Auto Tech (2.9 percent)**
- **Data Processing (2.6 percent)**
- **General Education, Transfer (2.5 percent)**
- **General Business (2.2 percent)**
- **Accounting (2.2 percent)**
- **Business Administration (2.0 percent)**
- **Early Childhood Education (2.0 percent)**

Many majors identified by students are not even offered at Rio Hondo College, but may indicate ultimate four-year college or university majors that students hope to seek.

College Major Sought At Entry by New Students	Students	Percent	Cumulative Percent
999900 GEN ED, NO DEGREE	510	23.4	23.4
999999 DEFAULT/NO INFO	348	16.0	39.3
8400 ADM JUSTICE	109	5.0	44.3
9700 NURS AS DEGREE	79	3.6	48.0
7400 FIRE SCIENCE	73	3.3	51.3
6400 AUTO TECH	63	2.9	54.2
6500 DATA PROCESS	57	2.6	56.8
21600 GEN ED, TRANSFER	54	2.5	59.3
40000 GENERAL BUSINESS	48	2.2	61.5
6100 ACCOUNTING	47	2.2	63.6
900 BUSINESS ADM	43	2.0	65.6
12300 EARLY CHILD ED	43	2.0	67.6
21500 BUSINESS ADM	40	1.8	69.4
9900 BUS MGT	37	1.7	71.1
4800 PSYCHOLOGY	33	1.5	72.6
6900 ARCH DRAFTIN	31	1.4	74.0
12800 PARALEGAL ED	30	1.4	75.4
20400 PRE-MEDICAL	29	1.3	76.8
1700 ENGLISH	28	1.3	78.0

College Major Sought At Entry by New Students	Students	Percent	Cumulative Percent
60000 GENERAL HEALTH OCC.	28	1.3	79.3
90000 GEN PUBLIC SERV	26	1.2	80.5
3600 PRE-NURSING	24	1.1	81.6
10800 COR & SOC SE	24	1.1	82.7
20100 COMPUTER SCI	24	1.1	83.8
1600 ENGINEERING	22	1.0	84.8
10900 CHILD DEV	22	1.0	85.8
13300 VOC NURSING	19	0.9	86.7
22200 TECH DESIGN - AS	18	0.8	87.5
4200 PHYS ED	14	0.6	88.2
9600 WELDING TECH	14	0.6	88.8
0 NO MAJOR	11	0.5	89.3
700 BIOLOGY	11	0.5	89.8
11500 MED TECH	11	0.5	90.3
21900 MASS COMM - AS	11	0.5	90.8
300 ARCHITECTURE	10	0.5	91.3
400 ART	10	0.5	91.7
2800 LIBERAL STUD	10	0.5	92.2
7700 PHOTOGRAPHY	9	0.4	92.6
12100 AUTO RPR TEC	9	0.4	93.0
13100 MUSIC – AA	9	0.4	93.4
13400 APPRENTICE	9	0.4	93.9
10300 COMMUNICAT	8	0.4	94.2
22100 ART – AS	8	0.4	94.6
3900 RADIO-TV	7	0.3	94.9
4700 POLI SCIENCE	7	0.3	95.2
5500 SOCIOLOGY	7	0.3	95.6
11900 VET SCIENCE	7	0.3	95.9
80000 GENERAL TECHNOLOGY	7	0.3	96.2
2200 HISTORY	6	0.3	96.5
2500 JOURNALISM	6	0.3	96.7
21800 ENVIR TECH - AS	6	0.3	97.0
6300 ART COMM	5	0.2	97.2
13200 THEATRE ARTS	5	0.2	97.5
21700 LIBERAL STDS	5	0.2	97.7
3500 MUSIC	4	0.2	97.9
11100 ENGIN TECH	4	0.2	98.1
1400 ECONOMICS	3	0.1	98.2
1800 LANGUAGES	3	0.1	98.3

College Major Sought At Entry by New Students	Students	Percent	Cumulative Percent
3000 MATHEMATICS	3	0.1	98.5
3700 OCCUPATIONAL THERAPY	3	0.1	98.6
4100 PHILOSOPHY	3	0.1	98.8
20500 PRE-OPTOMETRY	3	0.1	98.9
22000 REAL ESTATE - AS	3	0.1	99.0
2300 INDUST ARTS	2	0.1	99.1
4000 PRE-PHARMACY	2	0.1	99.2
11200 FORESTRY	2	0.1	99.3
12000 WILDLIFE	2	0.1	99.4
12200 BIL/BICUL ED	2	0.1	99.5
20000 CHIROPRACTIC	2	0.1	99.6
20200 HUMAN SERV	2	0.1	99.7
200 ANTHROPOLOGY	1	0.0	99.7
5600 THEATRE ARTS	1	0.0	99.8
10700 SPEECH	1	0.0	99.8
11300 HOME ECON	1	0.0	99.9
11400 INTERIOR DES	1	0.0	99.9
11600 PHYS THERAPY	1	0.0	100.0
129800	1	0.0	100.0
Total	**2,181**	**100.0**	

CORRELATIONS WITH EDUCATIONAL STATUS AT ENTRY. Age and educational status at entry were moderately correlated with one another (Pearson's $R = -.415$, $p < .001$, Eta = .468 with highest level of education completed dependent). **The older the student on entry, the less likely that he or she graduated from high school here or abroad or met one of the equivalency standards** (Pearson Chi-Square $p < .001$, Kendall's tau-b = -.342, $p < .001$ for the five age categories detailed earlier in this report, and collapsing "high school graduate," "GED or Equivalency Certificate," "Certificate of High School Proficiency Exam," and "Foreign High School Graduate" into one category).

Primary Language and Citizenship were weakly correlated with educational status at entry. Students who entered with a language other than English as their primary language were less likely to be high school graduates (Pearson Chi-Square < .001, Cramer's V = .243, $p < .001$). While 90 percent of those who used English as their primary language, and 85 percent of those who did not indicate their primary language said they were high school graduates (or had completed equivalents of that status), only 70 percent of those who used another language as their primary language were high school graduates. Students who were resident aliens or refugees/asylees on entry in Fall 1995 were also weakly less likely to be high school graduates (Pearson Chi-Square <

.001, Cramer's V = .265, p < .001). While 89 to 100 percent of all other citizenship groups had graduated from high school, just 73 percent of the 11 refugees/asylees and 68 percent of 486 resident aliens had done so.

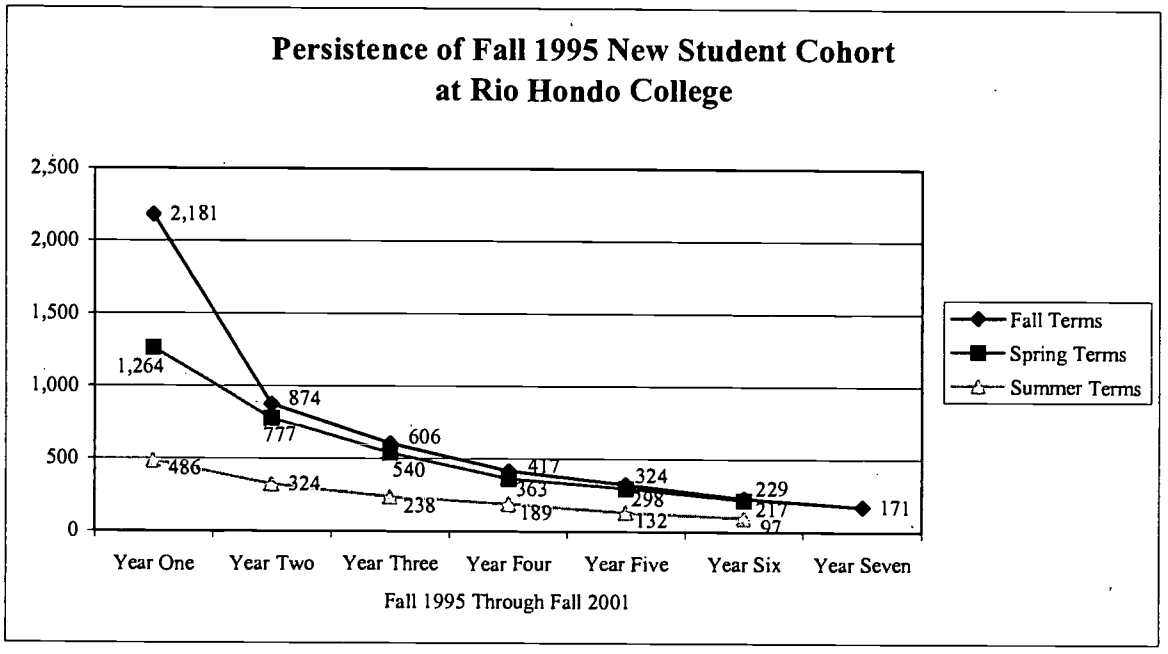
Educational status on entry in turn correlated moderately with educational goal on entry (Pearson Chi-Square p < .001, Cramer's V = .370, p < .001). **In particular, 91 to 95 percent of those with transfer related or Associates degree goals, and 89 percent of those with vocational certificate goals were high school graduates. On the other hand, 79 to 86 percent of those with job related goals were high school graduates.** Finally, while 91 percent of those who sought to "discover/formulate a career interest, plans, goals were high school graduates, only 54 percent of those seeking "educational development," 52 percent of those seeking to "improve basic skills (English, Reading, Math) had graduated from high school. Interestingly, 32 percent of the 34 people whose goal was credits for a high school diploma or GED claimed already to be high school graduates, 9 percent to be foreign high school graduates, and 3 percent to already have a GED or equivalency certificate.

We will return to consideration of these correlations when looking at multivariate factors that may affect persistence. First, however, let us explore overall persistence rates.

PERSISTENCE OF NEW FALL 1995 STUDENTS. As is true of many Colleges and Universities, **Rio Hondo lost the largest proportion of its new first-time freshmen students during the first year. By Spring 1996 only 58 percent of the 2,181 starting students were still attending the College. By Fall 1996, one year after starting, only four of 10 new students were still attending Rio Hondo. Fall to Spring semester persistence, however, leveled out after the first year to 87 to 95 percent.** In fact, by the fifth and sixth year of attendance the 15 percent (or less) of continuing students appeared to be more determined than ever to gain an education, based on Fall to Spring semester persistence. No more than 22.3 percent of the original cohort ever attended Rio Hondo during the Summer terms, but the proportion of students (compared to the immediately preceding Spring) attending during the Summer increased through the fourth year. Especially noticeable is that between the fourth and the fifth years, the size of Summer term enrollment from this cohort was more than half the size of the enrollment of the immediately preceding Spring.

To put the Rio Hondo data in perspective, for the first-time cohorts of Fall 1995, 60.4 percent of the students persisted into the second semester (Spring 1996), 42.0 percent into the next fall (Fall 1996), and 27.8 percent into the second fall semester (Fall 1997) (source: http://www.palomar.edu/factbook/Sec13/13.3a.htm as available on June 20, 2002). In the Rancho Santiago Community College District (i.e., Santa Ana College and Santiago Canyon College combined), the Fall 1995 persistence rates were 61 percent for one semester, 47 percent in Fall 1996, and 33 percent in Fall 1997. Results for later cohorts at the Rancho Santiago District were somewhat lower, but never fell below 53 percent in the first semester (Rancho Santiago Community College District Research Department August 2001 Pathways of Student Persistence and Performance at Santa Ana

College, Table 1, p. 5). **The Rio Hondo Fall 1995 cohort one-semester (Spring 1996) persistence rate of 58.0 percent is below these colleges, as is the Fall 1996 persistence rate of 40.1 percent and the Fall 1997 rate of 27.8 percent.**



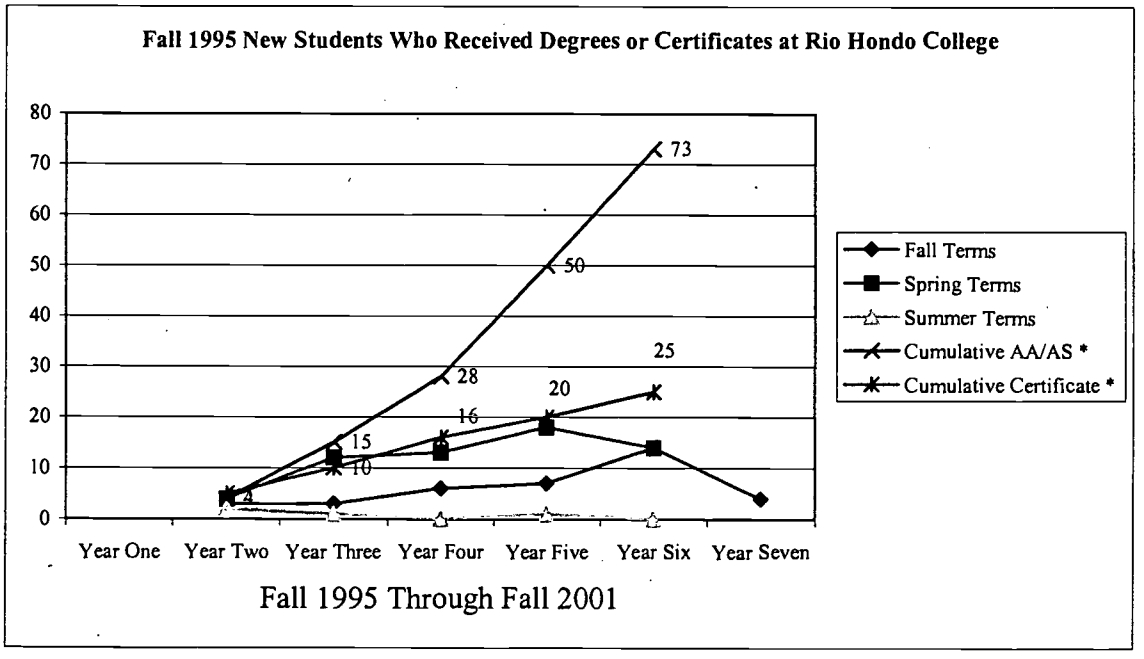
Starting Cohort Size 2,181	Year One	Year Two	Year Three	Year Four	Year Five	Year Six	Year Seven
Fall Terms	**F 1995**	**F 1996**	**F 1997**	**F 1998**	**F 1999**	**F 2000**	**F 2001**
N Enrolled	2,181	874	606	417	324	229	171
Percent of Cohort Enrolled	100.0%	40.1%	27.8%	19.1%	14.9%	10.5%	7.8%
Percent of Previous Spring		69.1%	78.0%	77.2%	89.3%	76.8%	78.8%

Spring Terms	**Sp 1996**	**Sp 1997**	**Sp 1998**	**Sp 1999**	**Sp 2000**	**Sp 2001**
N Enrolled	1,264	777	540	363	298	217
Percent of Cohort Enrolled	58.0%	35.6%	24.8%	16.6%	13.7%	9.9%
Percent of Previous Fall	58.0%	88.9%	89.1%	87.1%	92.0%	94.8%

Summer Terms	**Su 1996**	**Su 1997**	**Su 1998**	**Su 1999**	**Su 2000**	**Su 2001**
N Enrolled	486	324	238	189	132	97
Percent of Cohort Enrolled	22.3%	14.9%	10.9%	8.7%	6.1%	4.4%
Percent of Previous Spring	38.4%	41.7%	44.1%	52.1%	44.3%	44.7%

For a further look at where Rio Hondo persistence might fall in relation to that of other California community colleges, we turn to slightly later data. The Research and Planning Group, Center for Student Success has recently made available Fall 1996 to Spring 1997 Fall to Spring persistence rates for freshmen cohorts from 39 of 40 California community colleges participating in its MIS Data Analysis Group project. The data (http://www.rpgroup.org/cssweb/research/css_mis_reports/cis_mis_fall_to_spring_persist.xls as available on June 20, 2002) indicates that one of the 40 colleges did not report persistence for that cohort, one had a 46.5 percent Fall to Spring retention rate, and the other 38 had Fall to Spring persistence rates ranging from 61.1 percent to 83.7 percent for the Fall 1996 cohort. **Since persistence rates can fluctuate from year to year, the comparison to the Rio Hondo chart above is not precise, but Rio Hondo persistence appears to be towards the lower end of persistence rates of the Colleges that have participated in the Center for Student Success project.**

DEGREES AND CERTIFICATES. Of course some students left Rio Hondo College because they had obtained a degree or certificate, or because they had transferred to a four-year College or University. This study was not able to track transfer behavior for the Fall 1995 cohort, but did look at the proportion of Fall 1995 cohort students who obtained degrees or certificates, and when they obtained those awards. Although some students obtained multiple Certificates or Associate degrees, the date of the first one was used to avoid counting students twice, and to give an idea of minimum time to degree for this cohort. The results are shown below term by term through Fall 2001, along with cumulative degrees and certificates at the end of each academic year.



Starting Cohort Size 2,181 Done in Fall Terms	Year One F 1995	Year Two F 1996	Year Three F 1997	Year Four F 1998	Year Five F 1999	Year Six F 2000	Year Seven F 2001
AA/AS Done in Term *		0	2	2	7	10	2
Certificate Done in Term *		3	1	4	0	4	2
Total Awards in Term *		3	3	6	7	14	4
Cumulative AA/AS *		0	6	17	35	60	75
Cumulative Certificate *		3	6	14	16	24	27
Cumulative Awards *		3	12	31	51	84	102
Percent with Awards		0.1%	0.6%	1.4%	2.3%	3.9%	4.7%

Starting Cohort Size 2,181 Done in Spring Terms	Year One Sp 1996	Year Two Sp 1997	Year Three Sp 1998	Year Four Sp 1999	Year Five Sp 2000	Year Six Sp 2001	Year Seven
AA/AS Done in Term *		4	9	11	15	13	
Certificate Done in Term *		0	3	2	3	1	
Total Awards in Term *		4	12	13	18	14	
Cumulative AA/AS *		4	15	28	50	73	
Cumulative Certificate *		3	9	16	19	25	
Cumulative Awards *		7	24	44	69	98	
Percent with Awards		0.3%	1.1%	2.0%	3.2%	4.5%	

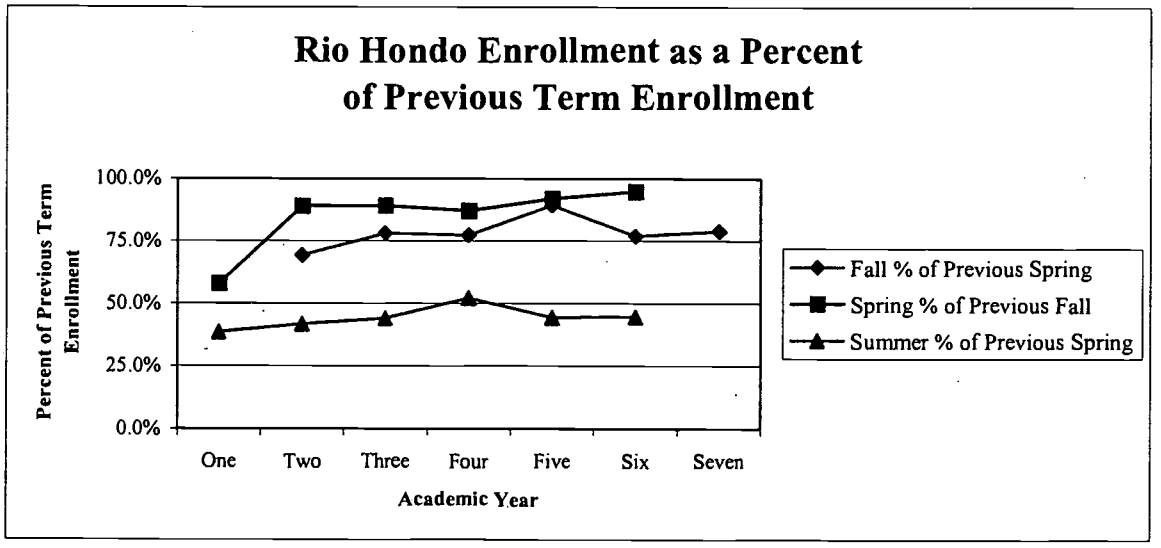
Summer Terms	Su 1996	Su 1997	Su 1998	Su 1999	Su 2000	Su 2001
AA/AS Done in Term *		0	0	0	0	0
Certificate Done in Term *		2	1	0	1	0
Total Awards in Term *		2	1	0	1	0
Cumulative AA/AS *		4	15	28	50	73
Cumulative Certificate *		5	10	16	20	25
Cumulative Awards *		9	25	44	70	98
Percent with Awards		0.4%	1.1%	2.0%	3.2%	4.5%

* An "Award" is an AA or AS degree, or a certificate. Some students obtained multiple degrees or certificates. Only the first award is counted here. The methodology used favors counting certificates as first awarded if a certificate and an AA/AS degree were awarded in the first term. This method undercounts the total number of degrees and certificates awarded, but gives an unduplicated count of the number of students who received one or more degrees or certificates in this time period.

As can be seen from the table above, **fewer than 5 percent of the starting cohort obtained any degree or certificate from Rio Hondo during the six years between Fall 1995 and Fall 2001. Virtually none of the important first and second year student attrition can be attributed to students leaving Rio Hondo because they had completed a degree or certificate.** Not surprisingly, most of the Associates degrees and certificates were awarded during (at the end of) Spring semesters, but from the fourth through the sixth years an increasing number were awarded during the Fall semesters. **The most students (28) from the cohort received their awards during the sixth year, and the second most students (26) during the fifth year after they started.** One might speculate that the relative size of the Summer term enrollments through the fourth year (in relation to Spring term enrollments) and especially that in the summer between the fourth and fifth years after starting might have something to do with students attempting to get enough units to wrap up their degrees at the end of the summer or during the following year. Further research would be needed to determine this.

Associate in Arts degrees at Rio Hondo College require a minimum of 62 units (2.0 grade point average or better) and are considered to be achievable as a "two-year college curriculum," and Associate of Arts or Associate of Science degrees require a major (with some A.S. degrees requiring more units, depending on the major). Certificate programs generally require one to two years of work, depending on the program. **More than 90 percent of the 102 students from the Fall 1995 cohort who got at least one Rio Hondo award by Fall 2001 nevertheless took three or more years to complete their work, and most took two and a half to three times the minimum expected time to obtain an Associates degree.**

FACTORS CORRELATED WITH PERSISTENCE AT RIO HONDO COLLEGE. In order to better understand factors correlated with persistence at Rio Hondo College, we will first examine several factors one at a time, looking for patterns in persistence.



The first thing of note is that **after the precipitous drop of fall to spring enrollment during the first year, fall to spring persistence stabilizes and, in years five and six even increases.** That is, the number of students enrolled in the spring is a relatively stable proportion of the number enrolled in the fall. On the other hand, **fall student enrollments as a percentage of students enrolled the previous spring varied more – increasing from the second through the fifth year, and then decreasing in the sixth and seventh year.** One interpretation of this findings would be that after the first year, the same students may be continuing from fall to spring and then spring to fall until such point as some actually do begin to graduate or transfer. **The attrition during the first year occurs especially between the fall and the spring term. In succeeding years, however, more attrition from a variety of causes (including, but not limited to, poor academic performance) tends to occur between the spring and the following fall.**

Summer term enrollments are lower overall, ranging between about 40 and about 52 percent of the enrollments in the immediately preceding Spring semester. The pattern of Summer term attendance, however, parallels that of attendance in the following Fall, when both are expressed as a proportion of the immediately preceding Spring semester. This can be visualized by imagining the Summer graph line moved one year to the right and then compared to the Fall Semester graph line (because Summer is attached to the previous academic year in this report). **The greatest proportional Summer term attendance occurs in the fourth academic year after starting, just as the greatest proportional Fall attendance occurs in the immediately following fifth academic year Fall semester. Both Summer and Fall attendance proportions then drop.**

<u>Demographic Characteristics: Gender, Ethnicity, Disability and Persistence.</u> In educational research gender, ethnicity, and disability are frequently examined as "risk factors," on the assumption that women, "traditionally under-represented minority" students, and those with a certified physical or learning disability may be more at risk in higher education. This certainly has been true historically. Special intervention services are frequently devised to overcome the risk factors (e.g., Educational Opportunity Program Services – EOPS, Disabled Students Programs and Services -- DSPS, and other programs at Rio Hondo College). What is the current situation for such students at Rio Hondo College?

For the cohort of new Fall 1995 Rio Hondo students women were less numerous than men, but in no term were they less likely to persist than men were. **In the first few terms there was no statistically significant difference in enrollment. Later there was a statistical significant difference but no important correlation with gender (and the direction of the correlation always favored women** continuing their educations slightly more often than men). **Gender was not an important risk factor for this cohort.**

Rio Hondo College is a Hispanic-serving institution with a "majority minority" student body. For statistical testing purposes the many ethnic categories shown earlier were collapsed into six groups: Non-Hispanic White, Asian, Black Non-Hispanic, Hispanic, Other Non-White, and Don't Know/No Answer. **In most terms there was no statistically significant correlation between ethnicity and persistence at Rio Hondo,**

and in the other terms there was a statistically significant difference, but the correlation was not statistically important (accounting for less than one percent of the variation in persistence rates among the different ethnic groups). Ethnicity was not generally a risk factor in persistence for this cohort of new students.

It may be **worth noting, however, that none of the following small groups of new students (starting numbers shown in parentheses) ever received an AA or AS degree or a certificate between Fall 1995 and Fall 2001: Koreans (14), Laotians (6), Cambodians (3), Asian Indian (1), American Indians (6), Other Pacific Islander (1), Hawaiians (2), Samoans (4) Other Non-Whites (22).** The numbers of students from these ethnic groups are so small that qualitative rather than quantitative analysis would be a better method for determining why none of these students received a Rio Hondo award.

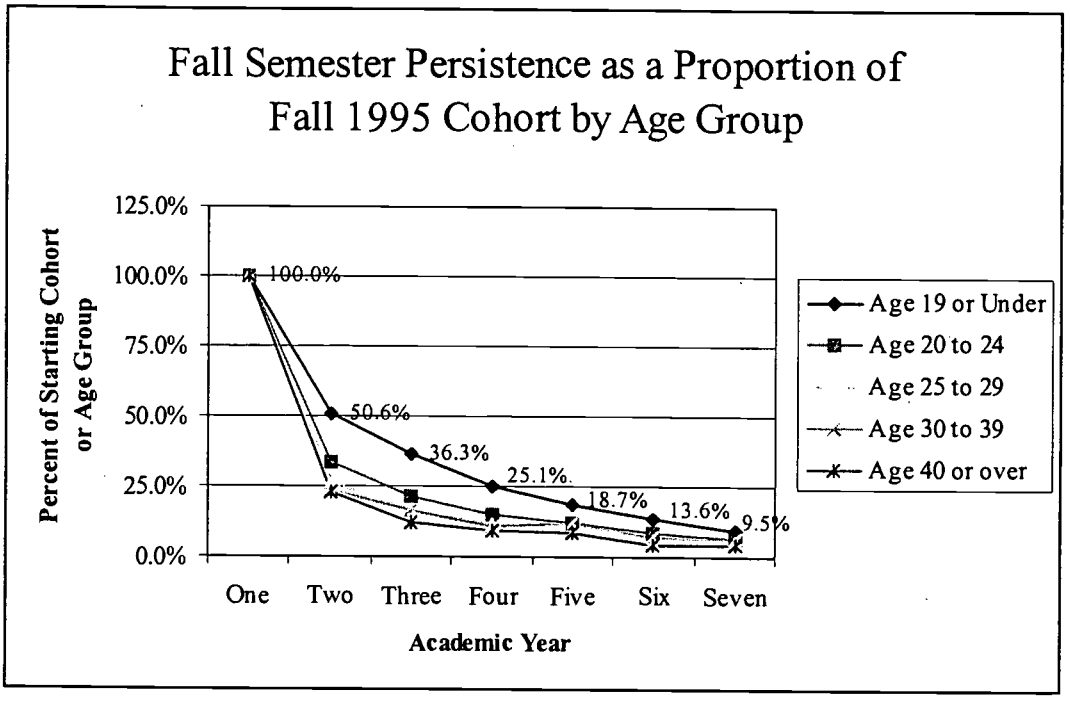
Similarly, the 48 students identified as disabled by DSPS persisted in ways that were not statistically significantly different than students without disabilities. None of those students, however, had received any certificates or Associate degrees by Fall 2001.

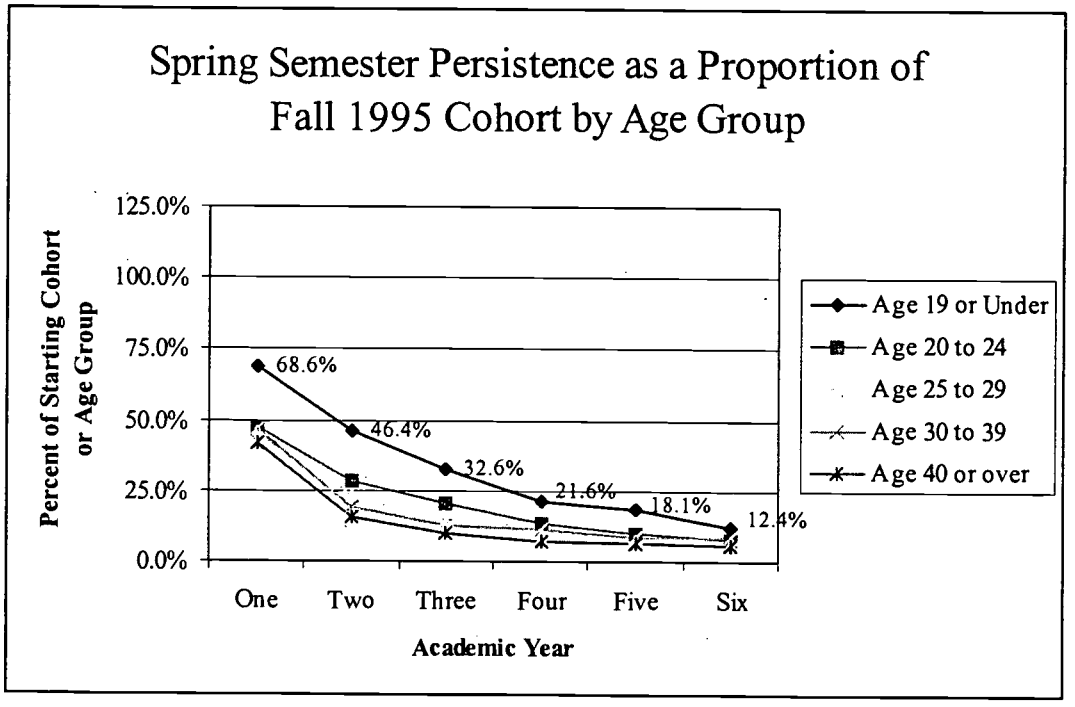
Demographic Characteristics: Primary Language. Those who stated that their primary language was not English persisted, and received Associates degrees and certificates, at rates nearly equivalent to those who stated that their primary language was English. Each term generally had statistically significant but not important differences in persistence because those who did not specify what their primary language persisted at lower rates.

Demographic Characteristics: Single-Parent Status and Persistence. Single parents were statistically as likely as those who were not single parents to earn Associates degrees or certificates. There was, however, **a statistically significant but very weak correlation (accounting for one to two percent of the variance) with persistence on the single parent variable for all terms except for Summer 1996. The correlation was notably due to those who did not specify their status on this variable persisting at somewhat lower rates**, compared to those who specified that they were or were not single parents. The group who did not specify whether or not they were single parents accounted for 71 percent of the new students, compared to 24 percent who indicated that they were not single parents, and 5 percent who checked that they were single parents.

The pattern over time also suggests that single parents may follow a slightly different College going pattern than other students, but further quantitative or qualitative research and analysis would be needed to verify this. Single parents persisted at five to 10 percent lower rates than those who said they were not single parents during the first four springs and falls, but persisted at equal or greater rates during the summers from Summer 1997 through Summer 2001. Speculation suggests that single parents, given extra stresses on their time from child care responsibilities, may be attempting a "slow but steady" approach to gaining a college education, including taking advantage of summer course offerings.

Demographic Characteristics: Age and Persistence. **Age correlates significantly and weakly with persistence for the first five years,** after which the correlation becomes very weak and eventually not significant.





The primary drivers for the correlations are the higher persistence rates of the youngest age group, those 19 or under at entry (by December 1995), and the second youngest age group, those age 20 to 24 at entry. **Older students persist at lower rates than younger ones do.** Although the correlation is weak, the older the age group, the less likely that students from that group will persist over time. The differences become minute the longer the time period (notably in years six and seven).

Preparation Factors and Persistence. Alexander Astin suggests an academic assessment model that looks at input and environment factors in relations to outcomes. In addition to demographic factors such as age, gender, ethnicity, and disability status, input factors include those that may be under the control of the individual. These include prior preparation and starting goals.

Prior Preparation: High School Graduation and Persistence. Although the Fall 1995 new student sample was deliberately limited to exclude students who were in K-12 or adult school, those who were college graduates (Associates degree or higher), and those who had attended college elsewhere, it included students who had both completed and not completed high school.

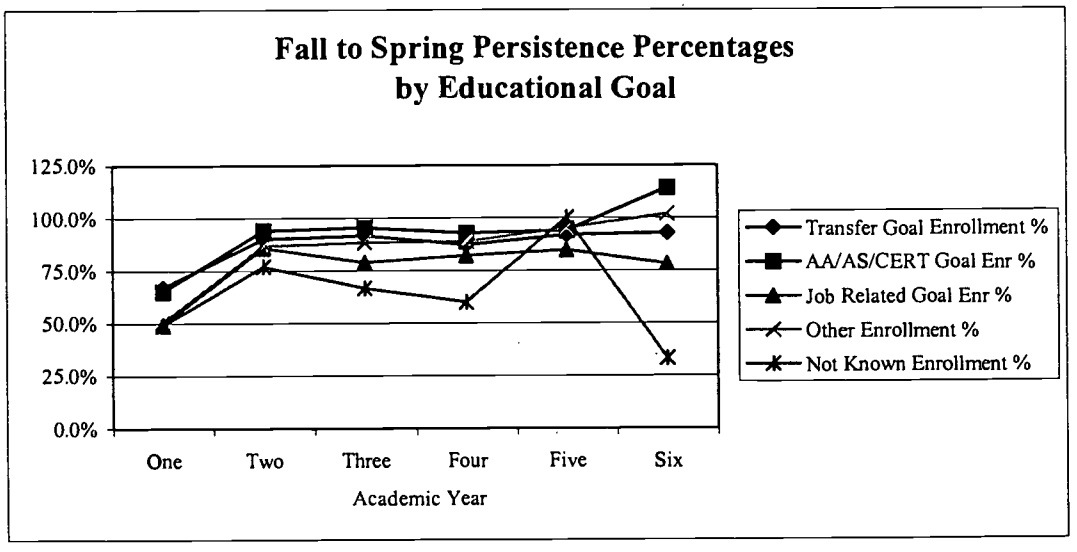
Being a high school graduate (or equivalent) correlated statistically significantly at the .001 level with persistence, but the correlation never accounted for more than 2.5 to 3 percent of the variation in persistence. The correlation was strongest in Spring 1996, the first spring semester, when 62 percent of those who had graduated from high school, 52 percent of those with GED or equivalency or foreign high school graduation, and 39 percent of those who were not high school graduates persisted (Pearson Chi-Square $p < .001$, Cramer's $V = .173$, $p < .001$). However, **the correlation got progressively weaker in following Fall and Spring semesters, and fell to an unimportant level (below one percent of variance) every Summer term.** Being a high school graduate was also statistically significant at the .05 level but unimportant in correlating with attainment of an Associates degree.

Similarly, **high school grades correlated significantly at the .001 level or better with persistence, but the correlation never accounted for more than about three and a half percent of the variation in persistence.** The correlation started out very weak in the first spring semester, Spring 1996 (Pearson Chi-Square $p < .001$, Cramer's $V = .124$, $p < .001$), gradually gained strength to a peak two years later in Spring 1998 (Pearson Chi-Square $p < .001$, Cramer's $V = .186$, $p < .001$), which level it also nearly equaled in Spring 1999, after which it waned again in strength. This pattern would be consistent with a speculation that students who were weaker in high school gradually dropped out during the second, third, and fourth years, to leave students who were stronger in high school, along with those who bloomed academically at Rio Hondo in later years.

Both measures of academic preparation were, however, less strong than one might expect from national literature that often finds moderate to strong correlations between high school grades and persistence. Perhaps a part of the difference is that community

colleges such as Rio Hondo take all comers and work hard to "level the playing field" for those who were not as well-prepared in high school for College work.

Educational Goals and Persistence. While it might be preferable to look at informed matriculation goals in relation to persistence, for this cohort only six percent of the students had matriculation goals noted in the Santa Rosa student records system. Furthermore, for all but 14 students the matriculation goals were all baccalaureate or associate degree goals. It is possible that primarily that kind of goal was recorded after counseling sessions, possibly biasing exploration of the total possible set of matriculation goals in relation to persistence. On the other hand, 80 percent of the Fall 1995 cohort students checked a specific educational goal on the admissions form, 18 percent were "undecided" on their goal, and two percent did not respond to the question.



Since we have seen that Fall to Spring enrollment proportion were the most stable after the first year, the first look will be at Fall to Spring enrollment proportions by educational goal. This is shown in the chart above. **At first students with the goals in the degree/certificate or transfer categories clearly lead the pack in Fall to Spring semester persistence. The correlation of educational goal with persistence never exceeded 3.3 percent, but was strongest in the second and first spring semesters** (for Spring 1996, Pearson Chi-Square $p < .001$, Cramer's $V = .170$, $p < .001$; for Spring 1997, Pearson Chi-Square $p < .001$, Cramer's $V = .181$, $p < .001$). **Those with "Other" enrollment goals caught up in persistence percentages from Fall to Spring semesters by the third academic year, and then exceeded those with transfer intentions by the sixth year** (perhaps because some students actually did transfer?). In the sixth year those seeking AA/AS degrees (or certificates) were persisting in such numbers that the numbers enrolled in the Spring exceeded the numbers of that sub-group who had enrolled in the Fall term just before – bringing the persistence percentage above 100 percent compared to the previous term, and indicating that some students had returned to Rio Hondo after stopping out for one or more semesters.

Starting Cohort Size 2,181	Year One	Year Two	Year Three	Year Four	Year Five	Year Six	Year Seven
Fall Terms	**F 1995**	**F 1996**	**F 1997**	**F 1998**	**F 1999**	**F 2000**	**F 2001**
N Enrolled	2,181	874	606	417	324	229	171
Percent of Cohort Enrolled	100.0%	40.1%	27.8%	19.1%	14.9%	10.5%	7.8%
Ed Goal Transfer	823	414	297	217	161	110	85
Percent of Sub-Group	100.0%	50.3%	36.1%	26.4%	19.6%	13.4%	10.3%
Ed Goal AA/AS/Certificate	233	101	66	42	33	28	18
Percent of Sub-Group	100.0%	43.3%	28.3%	18.0%	14.2%	12.0%	7.7%
Ed Goal Job Related	396	120	90	56	46	32	23
Percent of Sub-Group	100.0%	30.3%	22.7%	14.1%	11.6%	8.1%	5.8%
Ed Goal Other/Undecided	680	226	147	97	81	56	42
Percent of Sub-Group	100.0%	33.2%	21.6%	14.3%	11.9%	8.2%	6.2%
Ed Goal Not Known	49	13	6	5	3	3	3
Percent of Sub-Group	100.0%	26.5%	12.2%	10.2%	6.1%	6.1%	6.1%
Fall % of Previous Spring		69.1%	78.0%	77.2%	89.3%	76.8%	78.8%
Transfer Goal Enrollment %		75.1%	79.6%	79.8%	85.2%	74.3%	83.3%
AA/AS/CERT Goal Enr %		66.4%	69.5%	66.7%	84.6%	90.3%	56.3%
Job Related Goal Enr %		61.5%	87.4%	78.9%	100.0%	82.1%	92.0%
Other Enrollment %		66.1%	75.0%	74.6%	94.2%	72.7%	73.7%
Not Known Enrollment %		54.2%	60.0%	125.0%	100.0%	100.0%	---

Spring Terms	**Sp 1996**	**Sp 1997**	**Sp 1998**	**Sp 1999**	**Sp 2000**	**Sp 2001**
N Enrolled	1,264	777	540	363	298	217
Percent of Cohort Enrolled	58.0%	35.6%	24.8%	16.6%	13.7%	9.9%
Ed Goal Transfer	551	373	272	189	148	102
Percent of Sub-Group	67.0%	45.3%	33.0%	23.0%	18.0%	12.4%
Ed Goal AA/AS/Certificate	152	95	63	39	31	32
Percent of Sub-Group	65.2%	40.8%	27.0%	16.7%	13.3%	13.7%
Ed Goal Job Related	195	103	71	46	39	25
Percent of Sub-Group	49.2%	26.0%	17.9%	11.6%	9.8%	6.3%
Ed Goal Other/Undecided	342	196	130	86	77	57
Percent of Sub-Group	50.3%	28.8%	19.1%	12.6%	11.3%	8.4%
Ed Goal Not Known	24	10	4	3	3	1
Percent of Sub-Group	49.0%	20.4%	8.2%	6.1%	6.1%	2.0%

Spring Terms	Sp 1996	Sp 1997	Sp 1998	Sp 1999	Sp 2000	Sp 2001
Spring % of Previous Fall	58.0%	88.9%	89.1%	87.1%	92.0%	94.8%
Transfer Goal Enrollment %	67.0%	90.1%	91.6%	87.1%	91.9%	92.7%
AA/AS/CERT Goal Enr %	65.2%	94.1%	95.5%	92.9%	93.9%	114.3%
Job Related Goal Enr %	49.2%	85.8%	78.9%	82.1%	84.8%	78.1%
Other Enrollment %	50.3%	86.7%	88.4%	88.7%	95.1%	101.8%
Not Known Enrollment %	49.0%	76.9%	66.7%	60.0%	100.0%	33.3%

Summer Terms	Su 1996	Su 1997	Su 1998	Su 1999	Su 2000	Su 2001
N Enrolled	486	324	238	189	132	97
Percent of Cohort Enrolled	22.3%	14.9%	10.9%	8.7%	6.1%	4.4%
Ed Goal Transfer	235	187	136	97	73	49
Percent of Sub-Group	28.6%	22.7%	16.5%	11.8%	8.9%	6.0%
Ed Goal AA/AS/Certificate	54	31	25	17	11	15
Percent of Sub-Group	23.2%	13.3%	10.7%	7.3%	4.7%	6.4%
Ed Goal Job Related	57	37	28	29	10	12
Percent of Sub-Group	14.4%	9.3%	7.1%	7.3%	2.5%	3.0%
Ed Goal Other/Undecided	125	69	48	43	36	21
Percent of Sub-Group	18.4%	10.1%	7.1%	6.3%	5.3%	3.1%
Ed Goal Not Known	15	0	1	3	2	0
Percent of Sub-Group	30.6%	0.0%	2.0%	6.1%	4.1%	0.0%
Summer % of Previous Spring	38.4%	41.7%	44.1%	52.1%	44.3%	44.7%
Transfer Goal Enrollment %	42.6%	50.1%	50.0%	51.3%	49.3%	48.0%
AA/AS/CERT Goal Enr %	35.5%	32.6%	39.7%	43.6%	35.5%	46.9%
Job Related Goal Enr %	29.2%	35.9%	39.4%	63.0%	25.6%	48.0%
Other Enrollment %	36.5%	35.2%	36.9%	50.0%	46.8%	36.8%
Not Known Enrollment %	62.5%	0.0%	25.0%	100.0%	66.7%	0.0%

Students with job related enrollment goals persisted from Fall to Spring terms at lower rates, but the two percent with unrecorded, unknown goals at admission fluctuated quite a bit in Fall to Spring enrollment proportions.

Matriculation Services and Persistence. Given the costs and legal importance, an important consideration for Rio Hondo College is whether matriculation services offered (orientation, English and Mathematics assessment for course placement, counseling, and follow-up) make a difference in persistence and eventual attainment of Certificates or Associate degrees. Matriculation interventions are environmental factors – what the College does to attempt to impact student behavior and outcomes.

New Fall 1995 students received matriculation services unevenly:

- About 28 percent of the students received no matriculation services at all in their first semester;
- The 72 percent who did receive matriculation services in their first semester received one to six such services, averaging 2.63 services each;
- During their entire enrollment at Rio Hondo College, 20 percent of the students received no matriculation services at all;
- The 80 percent who did receive some matriculation services at some point in their enrollment received 1 to 37 services, averaging 6.26 each;
- About 23 percent of the new students participated in orientation at some point;
- About 70 percent were assessed in English or Mathematics or both subjects;
  About 69 percent were assessed in English;
  Almost 63 percent were assessed in Mathematics;
  Nearly 62 percent were assessed in both English and Mathematics;
- Just over 48 percent visited a counselor at some point;
- About 59 percent received follow-up services (including but not limited to academic warning and probation letters).

Which of these services made a difference in persistence or in obtaining degrees or certificates?

Orientation and Persistence. Less than one-fourth of all new Fall 1995 students participated in orientation at any point, and just 20 percent had done so by Spring 1996. **Having gone through orientation before or in Spring 1996 correlated very weakly** (Phi = .134, $p < .001$), **with persistence in Spring 1996**, accounting for about 1.7 percent of the variation. **By Fall 1996 the correlation of orientation with enrollment was marginally stronger** (Phi = .166, $p < .001$). By Fall 1996, about 64 percent of those who had not gone through orientation were not enrolled, but 56 percent of those who had gone through orientation by then still enrolled. **The still weak correlation peaked in Fall 1997** (Phi = .195, $p < .001$), **by which time over three-fourths (77 percent) of those who had never been through orientation at Rio Hondo were no longer enrolled, and 44 percent of those who were oriented by Fall 1997 were still enrolled.** After that point of time the strength of the correlation fluctuated and waned gradually. **The impact of orientation, then, appears to occur early in a student's college career, but as a lagged effect (i.e., its influence might not become apparent immediately).** Orientation cannot be counted on to have a lasting effect after the third year of attendance.

Assessment and Persistence. About seven of every ten (70 percent) of the new students were eventually assessed in English or Mathematics, or both subjects and about two-thirds (67.1 percent) had completed at least one assessment by or during Spring 1996. **Having been assessed before or in Spring 1996 correlated moderately (Phi = .367, p < .001) with persistence that term. Nearly seven of every ten students (68 percent) who had not been assessed by the Spring 1996 were no longer attending Rio Hondo College after just one semester, but 71 percent of those who had been assessed were still attending.** This one correlation accounted for about 13 percent of the variance in persistence for more than one semester. Speculation suggests several reasons why this might be the case. **Assessment can be viewed as a rite of passage into college.** Going through the assessment process early may indicate that a student is seriously interested in pursuing his or her education, and the act of taking assessment tests is concrete evidence of that commitment. The process also gives students some contact with administrators, counselors, or faculty who might offer encouragement or advice about surviving College academic work – or simply demonstrate a personal interest in the students.

Correlation results for assessment and persistence were similar (Phi = .360, p < .001) **in Fall 1996, one year after the cohort started, but by then 85 percent of those not assessed were not continuing, while over half (52 percent) of those who had been assessed were still attending Rio Hondo College. By Fall 1997 the correlation had weakened somewhat** (Phi = .299, p < .001), **with 92 percent of those not assessed no longer at the College, but only 37 percent of those who had been assessed still attending by then.** Clearly **assessment for placement in appropriate English and Mathematics courses was important for early persistence, but over time other factors also apparently influenced whether a student would persist or not.** Among other things, of course, if they are to advance in college, students must attempt and eventually pass English and Mathematics courses – not only those in which they are placed, but often other more difficult ones. Success and retention rates in English as a Second Language and in Basic Skills Mathematics over the last five years were analyzed earlier in 2002 by Institutional Research staff in support of program reviews.

Counseling and Persistence. Under half (48 percent) of the Fall 1995 cohort new students ever eventually saw a counselor by Fall 2001, according to the Santa Rosa system computer records. Just over one-fourth (27 percent) of the new students had seen a counselor by or during Fall 1995, over one-third (36 percent) by the end of Summer 1996, and 44 percent by the end of Summer 1997. **Having seen a counselor before or during Fall 1995 did, however, make a weak difference** (Phi = .238, p < .001) **in persistence into the following Spring 1996 semester. About three-quarters (77 percent) of those who did see a counselor by Fall 1995 continued their education at Rio Hondo in Spring 1996, but only about half (51 percent) of those who did not see a counselor continued. By Fall 1996, however, as more people saw counselors the correlation reached moderate strength** (Phi = .349, p < .001). A year after the cohort started, about 63 percent of those who had seen a counselor before or in Summer 1996 were still at Rio Hondo College, while only about one-quarter (27 percent) of those who had never seen a counselor were still in school here. **The second fall (Fall 1997) after the cohort started the correlation had gained slightly in strength** (Phi = .361, p <

.001), with 46 percent of those who had been counseled before or during Summer 1997 still at Rio Hondo, compared to just 14 percent of those who had not been counseled.

After that point the strength of the correlation began weakening, at first gradually, and then more rapidly. With so many of those who had not received counseling before Fall 1997 already gone, most of those who left the College after that point had already received counseling. There are limits to what counselors can do to help students persist. It is worth noting, however, that **there is a rather weak correlation between receiving counseling and obtaining an Associates degree** (Phi = .145, $p < .001$ for students who had been counseled before or during the summer of 1996; Phi = .187, $p < .001$ for students who had been counseled before or during the summer of 1997). No important correlation existed between counseling and receipt of certificates from Rio Hondo.

Follow-up and Persistence. Nearly six out of every ten new Fall 1995 students (59 percent) eventually received some kind of follow-up services – often an academic warning, sometimes being placed on probation, sometimes some other follow-up. Almost one-third of the new students (33 percent) received a first follow-up in Fall 1995, 14 percent in Spring 1996, almost six percent in Fall 1996, three percent in Spring 1997, and 0.3 to 0.9 percent received first follow-ups in subsequent semesters. By the end of Summer 1996 almost half (47 percent) of the new students received a follow-up, and a year later 55 percent had experienced at least one such contact. Some students, of course, received multiple follow-ups in different semesters. Whether a student was contacted only once or many times, this kind of contact affected many students in the cohort.

There was no statistically significant impact on persistence into Spring 1996 of follow-ups that took place in Fall 1995. In fact, 62 percent of those who did receive a follow-up continued their education at Rio Hondo in Spring 1996, compared to 56 percent who received no follow-up. A plausible speculation is that academic warnings or placing a student on probation put him or her on notice of potential difficulty, but do not discourage the student from still trying to succeed at college. Students are given a chance and do take it.

Not much of that persistence can be attributed to students actually seeing a counselor in that first fall term, however, since **there was only a weak correlation** (Phi = .144, $p <$ .001) **between receiving a follow-up service and seeing a counselor in Fall 1995.** Perhaps this was to the detriment of the students, as many counselors would contend, or perhaps the students who persisted simply were the wiser ones who did see their counselors "early and often." In any event, **the correlation between follow-up and having seen a counselor increased in strength by the end of Summer 1996** (Phi = .279, $p < .001$), **and reached moderate strength by the end of Summer 1997** (Phi = .402, $p < .001$). Students usually see a counselor only when continuing their education, and do not receive follow-up services if they do not continue. So it should be the persistent students who receive follow-ups and see their counselors.

One year after they started (i.e., in Fall 1996) about one-half (49 percent) of those who had received a follow-up in the previous Fall or Spring were still at Rio Hondo,

compared with about one-third (32 percent) of those who had not received a follow-up. This resulted in **a weak, statistically significant correlation** (Phi = .177, $p < .001$) suggesting that follow-up services may encourage persistence. **By Fall 1997 the correlation was still weak** (Phi = .233, $p < .001$), and in the same direction: 16 percent of those who had not received a follow-up contact persisted, but 37 percent of those who had received a follow-up contact persisted. One can only speculate on what is behind these correlations. Perhaps the combination of receiving a follow-up (which could be interpreted as a sign that the College is concerned about student progress) works in conjunction with counselor visits to encourage students who need follow-up to keep trying, and some do well enough to continue their education at Rio Hondo. Or perhaps the better students – those not in need of follow-up – leave Rio Hondo for other reasons (including, but not limited to, meeting their goals or transferring once they learn that they can handle College, and family reasons). Additional qualitative research might be useful to account for the observed correlation.

PUTTING IT ALL TOGETHER: PERSISTENCE MODELS FOR THE FALL 1995 COHORT. Having explored the correlations of various factors with persistence one at a time, we now turn to a multivariate analysis, to see if we can model out the interactions with one another and relative importance of these factors on persistence. The appropriate statistical technique to use is binary logistic regression, with continuation in any particular term as the dependent variable. Since we have seen that most loss of students occurs between the first and the second semester, and then in the second year, we will look at models for persistence at four points in time: Spring 1996 (persistence into the second semester); Fall 1996 (persistence one year after starting); Fall 1997 (persistence two years after starting), and Fall 2001 (the last term for which data was available for this report).

Factors Associated with Persistence into the Second Semester (Fall 1995 to Spring 1996). Analysis using a binary logistic regression resulted in a statistically significant model that successfully predicted what would happen with 77 percent of the students. The model correctly identified 78 percent of students who did not continue the second semester, and 76 percent of those who did continue.

Being assessed by Spring 1996 contributed 1.059 to the association with persistence, while **being counseled had an impact less than half as strong** (contributing .424 to the association with persistence). **Those who completed more units in their first term were also more likely to persist**, but the contribution of that factor to the association was less than that of being counseled. **Those who received higher grade point averages did persist at higher rates**, but the contribution to the association with persistence was only about half the contribution of taking more units. **The number of hours of work per week had a very small, negative impact on persistence** (i.e., working more hours per week for pay was associated with lower persistence into the next semester and/or working fewer hours per week was associated with higher persistence into the next semester – but not by much). **No other variables in the set examined had a significant impact on the final persistence-into-the-second-semester model.** In particular, gender,

ethnicity, language, age, high school graduation, and educational goals had no statistically significant impact on continuing into the second semester.

The data were entered in four blocks as indicated on the next page, with significant models created after each block of data was entered, but the final model was the best overall. While other models predicted better those who actually did persist, they also predicted much more frequently (and falsely) that those who did not persist would persist.

The probability of any individual student persisting from the first to the second term can be calculated as $e^{\text{logit(persisted)}} / (1 + e^{\text{logit(persisted)}})$ where

Logit(persisted) = 1.059(assessed before or in Spring 1996?)
+ .424(counseled before or in Fall 1995?) + .305(Fall 1995 units completed)
+ .154(Fall 1995 RHC GPA) - .008(Fall 1995 hours worked per week)
+ .099(gender) - .070(White?) + .107(Mexican-American?) - .232(Asian?)
- .578(African-American?) - .134(English Primary Language?)
+ .004(Age as of December 31, 1995) - .024(High School Graduate/equivalent?)
- .073(Out of School Five or More Years?) + .145(Goal of Degree or Transfer?)
- .307(Goal of Job?) + .001(Goal Other or Unstated?) + .003(Oriented by Spring 1996?)
- .019(Follow-up Services in Fall 1995?)
– 1.300

where variables with question marks above all take on values of "0" for "No" and "1" for "Yes," except that "Out of School Five or More Years?" takes on values of "0" for "Yes" and "1" for "No," and Gender takes on values of "0" for "Male" and "1" for Female. Variables that are statistically significantly associated with Spring 1996 persistence are shaded. All variables in the formula after Fall 1995 hours worked per week, except for the constant, are not statistically significant contributors to persistence.

PERSISTENCE FROM FALL 1995 TO SPRING 1996
LOGISTIC REGRESSION MODEL

Variable Description and Coding	Coefficient(B)	Standard Error	Wald statistic Significance	Exp(B)
Block One				
Gender of the Student (0 = Male, 1 = Female)	0.099	0.122	0.418	1.104
Non-Hispanic White? (0 = No, 1 = Yes)	-0.070	0.263	0.789	0.932
Mexican-American? (0 = No, 1 = Yes)	0.107	0.173	0.536	1.113
Asian? (0 = No, 1 = Yes)	-0.232	0.259	0.371	0.793
African-American? (0 = No, 1 = Yes)	-0.578	0.455	0.204	0.561
Primary Language is English? (0 = No, 1 = Yes)	-0.134	0.164	0.415	0.875
Age at entry (as of December 31, 1995) in years	0.004	0.008	0.663	1.004
Block Two				
High School Graduate or equivalent? (0 = No, 1 = Yes)	-0.024	0.190	0.899	0.976
Out of School Five or more Years? (0 = Yes, 1 = No)	-0.073	0.181	0.687	0.930
Goal is an Associate Degree, Certificate, or Transfer? (0 = No, 1 = Yes)	0.145	0.202	0.472	1.156
Goal is Job Related? (0 = No, 1 = Yes)	-0.307	0.221	0.164	0.735
Goal is Undecided or No Answer (0 = No, 1 = Yes)	0.001	0.213	0.995	1.001
Block Three				
Orientation by Spring 1996? (0 = No, 1 = Yes)	0.003	0.160	0.983	1.003
Assessed by Spring 1996 (0 = No, 1 = Yes) *	1.059	0.146	0.000	2.883
Counseled before or during Fall 1995 (0 = No, 1 = Yes) *	0.424	0.155	0.006	1.529
Follow-Up Service during Fall 1995 (0 = No, 1 = Yes)	-0.019	0.134	0.889	0.981
Block Four				
Hours Worked per Week in Fall 1995 (self-reported) *	-0.008	0.003	0.022	0.992
Rio Hondo Units Completed in Fall 1995 *	0.305	0.029	0.000	1.357
Rio Hondo Grade Point Average in Fall 1995 *	0.154	0.063	0.015	1.167
Constant value calculated during model analysis *	-1.300	0.443	0.003	0.273

* Significant variables (.05 level or better) included in the final model.

Factors Associated with Persistence in the Second Year (Fall 1996). Analysis using a binary logistic regression resulted in a statistically significant model that successfully predicted what would happen with 81 percent of the students. The model correctly identified 82 percent of students who did not continue at the beginning of the second year, and 79 percent of those who did continue.

Some different variables came into play in association with second year persistence:

- The strongest impacts came from simply **attending college at Rio Hondo in the Spring semester (coefficient 2.143) or in the Summer term (coefficient 1.755).**
- In comparison, **assessment (by Fall 1996) contributed .792 and counseling (by Summer 1996) contributed .489 to the association with persistence.**

- Unlike previously, **those who had participated in orientation (by Fall 1996) were now statistically more likely to be among the students who persisted (coefficient .451).**

- However, **having been out of school less than five years was even more strongly associated (coefficient .496) with persisting** into the second year.

- Those who **completed more units in their first term (Fall 1995) were still more likely to persist into their second year (coefficient .043), but higher grade point averages that first term now had more impact (coefficient .155) than the number of units completed.**

- In contrast, those who had received follow-up services (which are usually for poor academic performance) by Summer 1996 were less likely to be among the persisting students, but not significantly less likely (coefficient -.285, p = .052).

- **The number of hours per week in the first semester of attendance still had a small, significant, negative association (coefficient -.010) with persistence.**

- **Although a negative constant factor was statistically significant, no other variables in the set examined had a significant impact.**

The probability of any individual student persisting from the first to the second Fall semester can be calculated as $e^{\text{logit(persisted)}} / (1 + e^{\text{logit(persisted)}})$ where

Logit(persisted) = 2.143(attended RHC in Spring 1996?)
+ 1.755(attended RHC in Summer 1996?) + .792(assessed before or in Fall 1996?)
+ .496(Out of School Five or More Years? with "1" = "No")
+ .489(counseled before or in Summer 1996?) + .451(orientation done by Fall 1996?)
+ .155(Fall 1995 RHC GPA) + .043(Fall 1995 units completed)
- .010(Fall 1995 hours worked per week)
- .127(gender) - .001(White?) + .357(Mexican-American?) + .166(Asian?)
- .561(African-American?) - .054(English Primary Language?)
+ .001(Age as of December 31, 1995) + .007(High School Graduate/equivalent?)
- .285(Follow-up Services by Summer 1996?) - .367(Goal of Job?)
- .246(Goal of Degree or Transfer?) -.180(Goal Other or Unstated?)
- 3.467

where variables with question marks above all take on values of "0" for "No" and "1" for "Yes," except that "Out of School Five or More Years?" takes on values of "0" for "Yes" and "1" for "No," and Gender takes on values of "0" for "Male" and "1" for Female. Variables that are statistically significantly associated with Fall 1996 persistence are shaded. All variables in the formula after Fall 1995 hours worked per week, except for the constant, are NOT statistically significant contributors to persistence.

PERSISTENCE OF FALL 1995 IN FALL 1996
LOGISTIC REGRESSION MODEL
VARIABLES IN THE EQUATION

Variable Description and Coding	Coefficient(B)	Standard Error	Wald statistic Significance	Exp(B)
Block One				
Gender of the Student (0 = Male, 1 = Female)	-0.127	0.135	0.346	0.881
Non-Hispanic White? (0 = No, 1 = Yes)	-0.001	0.286	0.999	0.999
Mexican-American? (0 = No, 1 = Yes)	0.357	0.192	0.063	1.429
Asian? (0 = No, 1 = Yes)	0.166	0.287	0.563	1.181
African-American? (0 = No, 1 = Yes)	-0.561	0.603	0.352	0.570
Primary Language is English? (0 = No, 1 = Yes)	-0.054	0.182	0.768	0.948
Age at entry (as of December 31, 1995) in years	0.001	0.011	0.890	1.001
Block Two				
High School Graduate or equivalent? (0 = No, 1 = Yes)	0.007	0.237	0.976	1.007
Out of School Five or more Years? (0 = Yes, 1 = No)	0.496	0.225	0.027	1.642
Goal is an Associate Degree, Certificate, or Transfer? (0 = No, 1 = Yes)	-0.246	0.239	0.304	0.782
Goal is Job Related? (0 = No, 1 = Yes)	-0.367	0.264	0.162	0.693
Goal is Undecided or No Answer (0 = No, 1 = Yes)	-0.180	0.255	0.479	0.835
Block Three				
Orientation by Spring 1996? (0 = No, 1 = Yes) *	0.451	0.160	0.005	1.569
Assessed by Fall 1996? (0 = No, 1 = Yes) *	0.792	0.187	0.000	2.207
Counseled before or during Summer 1996? (0 = No, 1 = Yes) *	0.489	0.145	0.001	1.630
Follow-Up Service by Summer 1996? (0 = No, 1 = Yes)	-0.285	0.147	0.052	0.752
Block Four				
Hours Worked per Week in Fall 1995 (self-reported) *	-0.010	0.004	0.011	0.990
Rio Hondo Units Completed in Fall 1995 *	0.043	0.021	0.043	1.044
Rio Hondo Grade Point Average in Fall 1995 *	0.155	0.062	0.013	1.167
At Rio Hondo in Spring 1996? (0 = no, 1 = Yes) *	2.143	0.174	0.000	8.526
At Rio Hondo in Summer 1996? (0 = no, 1 = Yes) *	1.755	0.171	0.000	5.782
constant value calculated during model analysis *	-3.467	0.571	0.000	0.031

* Significant variables (.05 level or better) included in the final model.

Factors Associated with Persistence in the Third Year (Fall 1997). Analysis using a binary logistic regression resulted in a statistically significant model that successfully predicted what would happen with 85 percent of the students. The model correctly identified 89 percent of students who did not continue at the beginning of the third year, and 76 percent of those who did continue.

Some different variables came into play in association with third year persistence.

- The strongest positive impacts came from simply **attending college at Rio Hondo in the immediately preceding Spring semester (coefficient 2.115) or in the Summer term (coefficient 1.617), or in the Fall semester a year earlier (coefficient .942).**

- **Those who had participated in orientation (by Fall 1997) were statistically more likely to be among the students who persisted (coefficient .342).** However, having gone through assessment (before or during Fall 1997), or having been counseled, or having received follow-up services (before or during Summer 1997) were NOT statistically significantly associated any more with persistence.

- **Gender – being female** – weighed in as significantly associated with persistence (coefficient .378) for the first time in the analyses.

- Those with **higher grade point averages in their first term (Fall 1995) were still associated with greater persistence (coefficient .171).**

- Having an educational goal of "undecided" (or no stated goal) had a negative association (-0.832) with persistence. That is **those who had stated some goal besides "undecided" were more likely to be present, while those who were undecided or who had not stated any goal at admission were less likely to be present at the beginning of the third year.**

- **Having an educational goal of a degree or transfer also had a negative association (-0.624) with persistence at the beginning of the third year.** That is those who DID intend to transfer or get a degree were LESS likely to be present, and those who did NOT intend to transfer or get a degree were MORE likely to be present.

- **Although a constant factor was statistically significant, no other variables in the set examined had a significant impact.** In particular, ethnicity, language, age, high school graduation, and re-entering school after five or more years had no statistically significant impact on persistence into the second year.

The negative association of the transfer or degree/certificate goal with persistence is puzzling until one remembers that the model includes no factor indicator that a student has, in fact, transferred. One speculation might be that the students who had a transfer goal and who were NOT present had already met the goal by leaving Rio Hondo College to transfer. It would take further research to verify that conclusion rather than alternative speculations such as: students with a transfer goal had left in frustration about not progressing quickly enough toward the goal (or because they thought they would have a better chance of transferring from another community college). **Leaving because students had obtained a degree can be logically ruled out as an important factor at this point in time, since only four students in the original cohort had received an AA or an AS degree by Summer 1997 (and two more received one during Fall 1997), and only five had received a certificate by Summer 1997 (with one more receiving a certificate during Fall 1997).** So that factor was not even checked at this time point.

The correlation of enrollment at Rio Hondo during one or more of the most recent three terms with persistence in Fall 1997 – and the lack of correlation of Spring 1996 or

Summer 1996 enrollment at Rio Hondo with Fall 1997 persistence deserves further discussion. One speculation is that the lack of association of the earlier terms of enrollment with Fall 1997 enrollment might simply indicate that most students do not stop out in an earlier term and then return (i.e., when students leave Rio Hondo, most might be unlikely to come back at all). Another comment is that there was a strong negative correlation (-.448) between enrollment in Fall 1996 and enrollment in Spring 1997. The Spring 1997 enrollments may simply "take up" or suppress the impact of Fall 1996 enrollments on persistence in Fall 1997 – suggesting that some students do stop out and return, but in a consistent pattern of "Fall attendees" or "Spring attendees". Finally one notes a negative correlation (-.207) between Summer 1996 and Summer 1997 attendance, indicating that students might skip one summer but enroll at Rio Hondo in a later summer – but it is the most recent summer enrollment that is a better positive predictor of attendance the immediately following Fall semester.

The probability of any individual student persisting from the first to the start of the third year can be calculated as $e^{\text{logit(persisted)}} / (1 + e^{\text{logit(persisted)}})$ where

Logit(persisted) = 2.115(attended RHC in Spring 1997?)
+ 1.617(attended RHC in Summer 1997?) + .942(attended RHC in Fall 1996?)
+ .378(Gender) + .342(orientation done by Fall 1997?) + .171(Fall 1995 RHC GPA)
- .832(Goal Undecided or Not Stated?) - .624(Goal of Degree or Transfer?)
+ .523(White?) + .159(Mexican-American?) + .116(Asian?)
+ .259(African-American?) - .068(English Primary Language?)
- .012(Age as of December 31, 1995) - .272(High School Graduate/equivalent?)
+ .284(Out of School Five or More Years? with "1" = "No") - .381(Goal of Job?)
+ .383(Assessed before or in Fall 1997?) - .090(Counseled before or in Summer 1997?)
- .084(Follow-up Services by Summer 1997?) + .013(Fall 1995 units completed)
+ .004(Fall 1995 hours worked per week) + .298(attended in Spring 1996)
- .256(attended in Summer 1996)
- 3.071

where variables with question marks above all take on values of "0" for "No" and "1" for "Yes," except that "Out of School Five or More Years?" takes on values of "0" for "Yes" and "1" for "No," and Gender takes on values of "0" for "Male" and "1" for Female. Variables that are statistically significantly associated with Fall 1997 persistence are shaded. All variables in the formula after Fall 1995 hours worked per week, except for the constant, are NOT statistically significant contributors to persistence.

PERSISTENCE OF FALL 1995 COHORT IN FALL 1997
LOGISTIC REGRESSION MODEL
VARIABLES IN THE EQUATION

Variable Description and Coding	Coefficient(B)	Standard Error	Wald statistic Significance	Exp(B)
Block One				
Gender of the Student (0 = Male, 1 = Female) *	0.378	0.152	0.013	1.459
Non-Hispanic White? (0 = No, 1 = Yes)	0.523	0.324	0.107	1.686
Mexican-American? (0 = No, 1 = Yes)	0.159	0.215	0.462	1.172
Asian? (0 = No, 1 = Yes)	0.116	0.308	0.706	1.123
African-American? (0 = No, 1 = Yes)	0.259	0.689	0.707	1.296
Primary Language is English? (0 = No, 1 = Yes)	-0.068	0.206	0.742	0.934
Age at entry (as of December 31, 1995) in years	-0.012	0.014	0.404	0.988
Block Two				
High School Graduate or equivalent? (0 = No, 1 = Yes)	-0.272	0.279	0.329	0.761
Out of School Five or more Years? (0 = Yes, 1 = No)	0.284	0.272	0.297	1.328
Goal is an Associate Degree, Certificate, or Transfer? (0 = No, 1 = Yes) *	-0.624	0.264	0.018	0.536
Goal is Job Related? (0 = No, 1 = Yes)	-0.381	0.293	0.193	0.683
Goal is Undecided or No Answer (0 = No, 1 = Yes) *	-0.832	0.292	0.004	0.435
Block Three				
Orientation by Fall 1997 (0 = No, 1 = Yes) *	0.342	0.172	0.047	1.408
Assessed by Fall 1997? (0 = No, 1 = Yes)	0.383	0.251	0.127	1.467
Counseled before or during Summer 1997? (0 = No, 1 = Yes)	-0.090	0.181	0.618	0.914
Follow-Up Service by Summer 1997? (0 = No, 1 = Yes)	-0.084	0.188	0.656	0.920
Block Four				
Hours Worked per Week in Fall 1995 (self-reported)	0.004	0.005	0.447	1.004
Rio Hondo Units Completed in Fall 1995	0.013	0.022	0.558	1.013
Rio Hondo Grade Point Average in Fall 1995 *	0.171	0.068	0.012	1.186
At Rio Hondo in Spring 1996? (0 = no, 1 = Yes)	0.298	0.222	0.180	1.347
At Rio Hondo in Summer 1996? (0 = no, 1 = Yes)	-0.256	0.179	0.154	0.774
At Rio Hondo in Fall 1996? (0 = no, 1 = Yes) *	0.942	0.221	0.000	2.565
At Rio Hondo in Spring 1997? (0 = no, 1 = Yes) *	2.115	0.209	0.000	8.293
At Rio Hondo in Summer 1997? (0 = no, 1 = Yes) *	1.617	0.210	0.000	5.038
constant value calculated during model analysis *	-3.071	0.696	0.000	0.046

* Significant variables (.05 level or better) included in the final model.

Factors Associated with Persistence in the Sixth Year (Fall 1995 to Fall 2001).
Analysis using a binary logistic regression resulted in a statistically significant model that successfully predicted what would happen with 95 percent of the students. The model, however, correctly identified 98 percent of students who did not continue the second semester, and just 55 percent of those who did continue. A speculative reason for the relatively poor modeling of those who did continue may be the lack of an adequate transfer variable.

Variables that were significantly associated with sixth year persistence are somewhat similar to those associated with third year persistence, but newly considered variables also weigh into the significant associations.

- **The strongest specific impact, a negative one, came from having received an Associates degree by Fall 2001 (coefficient –3.106).** Although a few students in the cohort did obtain multiple Associates degrees, **those who got degrees usually only got one – and then apparently left Rio Hondo (a positive outcome for the student and the College).** Note, however, that having received a certificate by Fall 2001 did not associate significantly with enrollment in Fall 2001.

- Similar to the case with third year persistence, **attending college at Rio Hondo in the immediately preceding Spring semester (coefficient 1.925) or in the Summer term (coefficient 2.299), or in the Fall semester a year earlier (coefficient .825) was significantly associated with attendance in the Fall 2001.** Speculation suggests that the importance of Summer attendance might be an indicator that these long-attending students might be making a final push to complete their studies using all available terms to do so.

- **Having enrolled at Rio Hondo in Fall 1997, the beginning of the third year, had a fairly strong negative association (coefficient -.818) with persistence in the sixth year.** No other terms, other than the three mentioned above, weighed significantly into the long-term persistence model. Speculation is that the association may indicate that the third Fall is a turning point in persistence. People who persisted into the third fall might complete Associates degrees and leave (correlations of obtaining Associates degrees and enrollment decline every term after Fall 1997), or transfer, or otherwise meet their goals and leave before the sixth year arrives.

- **Gender continues to be significantly associated with persistence in the sixth fall (coefficient .465). Women are the ones more likely to persist that long.** The reasons for this are not apparent from the data, but speculation suggests one reason that further quantitative (and qualitative) research might explore: are women more likely to take fewer units per term, perhaps because of more outside obligations?

- The cumulative number of Rio Hondo College units is positively (but not very strongly) associated with persistence in the sixth fall (coefficient .017). **Those still attending in Fall 2001 tended to have more Rio Hondo units than those no longer attending.** To a certain extent this is logical, since the students may have had more semesters and summer terms in which to earn units. It could also indicate, however, that the students left in Fall 2001 may have had more basic skills units to complete before advancing into college level courses. Further research might be able to answer that question.

- **Having gone through orientation, assessment, counseling, or receiving follow-up services were NOT statistically significantly associated any more with this long a term of persistence.** This is not to say that those still persisting had not received the benefit of such services – only that they had not been exposed to such services any more than others who were no longer attending Rio Hondo. The finding, however, might also serve as a reminder that no matter what the College does to help, it is ultimately up to the individual students to enroll and persist – especially so many years later.

- **None of the educational goals were associated with persistence in the sixth fall, even though one or more type of educational goal had shown up in earlier models.** It is perhaps a more eclectic group of students who persisted into the sixth fall.

- **The constant factor had a strong negative, statistically significant association with persistence (-5.641).** This particular model left a lot unexplained about how those who left before Fall 2001 differed significantly from those who stayed in Fall 2001. This is again a possible indication that students who persisted this long may be an eclectic group not easily identified using factors that did well at predicting those who stayed shorter periods of time.

All variables considered in the Fall 2001 persistence model are shown on the next page.

FURTHER DISCUSSION OF THE FOUR LOGISTIC REGRESSION MODELS. In developing each of the four logistic regression models **an exploratory research approach was taken of entering the variable data in blocks – first entering demographic variables (gender, ethnicity, age, primary language), then prior preparation (high school graduation or equivalent) and goal indicators (plus re-entry to school after five or more years), then Rio Hondo environmental factors – possible College matriculation interventions (orientation, assessment, counseling, follow-up), then student performance related factors (units completed, grade point average, hours worked for pay), and after the third year student outcomes factors were introduced at the end (completion of degrees or certificates).** After each block was entered the logistic regression always came up with some statistically significant model. However, the model sought was the best one that explained both persistence and lack of persistence, and that best model was always the one that appeared after the last block was entered. **Demographics, prior preparation, goals, matriculation interventions, student performance, and student outcomes combined provided the best predictors of both persistence and lack of persistence.** But one can nevertheless gain some insights by examining the results of the intermediate logistic regression models developed after each block of factors was entered into consideration.

PERSISTENCE OF FALL 1995 COHORT IN FALL 2001
LOGISTIC REGRESSION MODEL

Variable Description and Coding	Coefficient(B)	Standard Error	Wald statistic Significance	Exp(B)
Block One				
Gender of the Student (0 = Male, 1 = Female) *	0.465	0.236	0.049	1.592
Non-Hispanic White? (0 = No, 1 = Yes)	-0.086	0.528	0.871	0.918
Mexican-American? (0 = No, 1 = Yes)	0.269	0.351	0.443	1.309
Asian? (0 = No, 1 = Yes)	-0.130	0.561	0.817	0.878
African-American? (0 = No, 1 = Yes)	-0.289	1.263	0.819	0.749
Primary Language is English? (0 = No, 1 = Yes)	0.635	0.342	0.063	1.888
Age at entry (as of December 31, 1995) in years	-0.001	0.021	0.956	0.999
Block Two				
High School Graduate or equivalent? (0 = No, 1 = Yes)	-0.044	0.470	0.926	0.957
Out of School Five or more Years? (0 = Yes, 1 = No)	-0.076	0.376	0.841	0.927
Goal is an Associate Degree, Certificate, or Transfer? (0 = No, 1 = Yes) *	0.006	0.438	0.989	1.006
Goal is Job Related? (0 = No, 1 = Yes)	0.197	0.492	0.689	1.218
Goal is Undecided or No Answer (0 = No, 1 = Yes) *	0.129	0.480	0.787	1.138
Block Three				
Ever Oriented? (0 = No, 1 = Yes) *	0.045	0.255	0.860	1.046
Ever Assessed? (0 = No, 1 = Yes)	-0.206	0.451	0.648	0.814
Ever Counseled? (0 = No, 1 = Yes)	0.508	0.336	0.130	1.662
Ever received Follow-up Services? (0 = No, 1 = Yes)	0.142	0.327	0.664	1.153
Block Four				
At Rio Hondo in Spring 1996? (0 = no, 1 = Yes)	0.610	0.344	0.076	1.841
At Rio Hondo in Summer 1996? (0 = no, 1 = Yes)	-0.254	0.288	0.378	0.776
At Rio Hondo in Fall 1996? (0 = no, 1 = Yes) *	-0.282	0.391	0.470	0.754
At Rio Hondo in Spring 1997? (0 = no, 1 = Yes) *	0.300	0.406	0.461	1.349
At Rio Hondo in Summer 1997? (0 = no, 1 = Yes) *	-0.297	0.320	0.354	0.743
At Rio Hondo in Fall 1997? (0 = no, 1 = Yes) *	-0.818	0.385	0.033	0.441
At Rio Hondo in Spring 1998? (0 = no, 1 = Yes) *	0.286	0.384	0.457	1.331
At Rio Hondo in Summer 1998? (0 = no, 1 = Yes) *	0.367	0.316	0.246	1.443
At Rio Hondo in Fall 1998? (0 = no, 1 = Yes) *	-0.042	0.405	0.918	0.959
At Rio Hondo in Spring 1999? (0 = no, 1 = Yes) *	-0.139	0.397	0.726	0.870
At Rio Hondo in Summer 1999? (0 = no, 1 = Yes) *	-0.234	0.334	0.484	0.792
At Rio Hondo in Fall 1999? (0 = no, 1 = Yes) *	0.519	0.385	0.178	1.680
At Rio Hondo in Spring 2000? (0 = no, 1 = Yes) *	0.497	0.364	0.172	1.644
At Rio Hondo in Summer 2000? (0 = no, 1 = Yes) *	-0.364	0.355	0.305	0.695
At Rio Hondo in Fall 2000? (0 = no, 1 = Yes) *	0.825	0.339	0.015	2.282
At Rio Hondo in Spring 2001? (0 = no, 1 = Yes) *	1.925	0.301	0.000	6.856
At Rio Hondo in Summer 2001? (0 = no, 1 = Yes) *	2.299	0.340	0.000	9.964
Cumulative Rio Hondo Units Completed	0.017	0.007	0.021	1.017
Overall Cumulative Grade Point Average	0.148	0.119	0.214	1.160
Received an AA/AS Degree (by Fall 2001)	-3.106	0.547	0.000	0.045
Received a Certificate (by Fall 2001)	0.212	0.719	0.768	1.236
constant value calculated during model analysis *	-5.641	1.117	0.000	0.004

* Significant variables (.05 level or better) included in the final model.

Demographic Variables Only Models. When only the demographic variables were considered against one another as the first block was entered, age and gender always came out as statistically significantly associated with persistence in each of the four time periods examined. The nature of the association was always the same: women were more likely to persist than men, and younger students were more likely to persist than older students. Yet when other variables were included in the final models, age disappeared as a significant factor associated with persistence for all four time periods.

This suggests that **other variables with which age is correlated are "suppressing" or countering the association of age with persistence. Other variables correlated with gender also probably "suppressed" the association of being female with persistence until Fall 1997**, the first term in which women moved from being under one-half of the enrolled cohort students to over one-half of the enrolled students from the cohort. In every term thereafter women were one-half or more of those persisting, and the final persistence models reflected the association of gender with persistence.

A model based on looking at demographic variables alone was excellent at predicting persistence into Spring 1996 (90 percent prediction success rate), but poor (21 percent success rate) at predicting those who would drop out or stop out after just one term. In other words, men and older students tended to continue that second term at rates greater than those predicted by the demographic model. Interventions to encourage first year persistence that targeted subgroups of students based on these demographic factors alone might result in efficiencies in service delivery because they would tend to target students who might persist in any case. In every other time period examined (Fall 1996, Fall 1997, and Fall 2001) the demographics-only models became increasingly good at matching the data, but reversed the errors in predictions of persisting/not persisting. **Demographics-only models moved from 85 percent (for Fall 1996) to 100 percent success (for Fall 2001) in predicting which students would NOT persist, but got progressively worse in predicting which students WOULD persist.** The demographics-only model had just a 28 percent success rate in predicting the students who would actually continue in Fall 1996, and failed completely in predicting which students from the cohort would be attending Rio Hondo College in Fall 2001. In order to design appropriate interventions to encourage persistence from the second Fall forward in students' college careers, looking at demographics alone would also not fill the bill. Those planning the interventions would run the risk of thinking that more students would not persist than actually might persist, and so might fail to offer services when warranted to those who could benefit from them.

Demographic/Preparation/Goals Models. So what happened when student preparatory background (high school graduation or equivalent) and goals were considered along with demographic variables? **Age and gender continued to be statistically significant in the resulting models for every time period until Fall 2001, when only gender remained significant. The direction of association for the demographic variables remained the same (favoring persistence of women and younger students). In Spring 1996 and Fall 1996 the goals of degree or transfer appears as a statistically significant factor associated with greater persistence.** We saw earlier in the discussion of bivariate

correlations that older students were less likely to have a degree or transfer goal than younger students were. Yet the degree/transfer goal variable does not reach significance in the final model until Fall 1997. **Some other factor that may be correlated with both age and degree/transfer goals may be suppressing the impact of both in the final model.** Alternatively, degree/transfer goal may not emerge as a significant factor in the final models until Fall 1997 because it is not until then that those with degree/transfer goals form the majority of the persisting students. We note that this factor disappeared again as a significant factor in the final model of Fall 2001 persistence. We speculated that the reason might be a positive one: some students stayed at Rio Hondo long enough for them to actually get their degrees and/or transfer, and then left before Fall 2001.

An interesting aspect of the demographic/preparation/goals models is that being a re-entry student (out of school for five or more years) was not statistically significant as a factor in persistence in Spring 1996 (one term persistence) or in Fall 2001 (the beginning of the sixth year since the cohort started), but was statistically significant as a factor in Fall 1996 (beginning of second year) and Fall 1997 (beginning of third year) persistence. **In Fall 1996 (but not in Fall 1997) the re-entry variable achieved significant status in the final model as well as the demographic/preparation/goals model. The coefficient was positive and moderately strong (.568 and .581) in the demographic/preparation/goals models during those years in which the variable was statistically significant – but the meaning was negative for students who go to College after being away from school for five or more years.** This is because the value of "1" is given to students who continued their education at Rio Hondo within five years of leaving school, so the positive coefficient means that **it was those students who went on fairly quickly who were most likely to persist at Rio Hondo.** Note also that there was a correlation between being older and having stayed out of school for five or more years, so both the age variable and the re-entry variable directions were in fact pointed in the same direction: greater likelihood of not continuing at Rio Hondo. The association of the re-entry variable with persistence did reach statistical significance in the final model of Fall 1996 persistence, but not in other terms. Speculation suggests that if there were to be any special interventions with students who had been out of school for five or more years when they came to Rio Hondo, it might be most effective if those occurred during the first year of attendance. The following fall is apparently already too late to help these students persist.

As with the demographics only models, **the demographic/preparation/goals models were relatively good (86 percent successful) at predicting persistence into the second semester, but not very good (33 percent successful) at predicting those who would not persist.** As with the demographics only models, **the demographic/preparation/goals models flip-flopped in their prediction success in later years.** They had a success level of 77 percent in predicting who would NOT continue in Fall 1996, but only a 42 percent success level in predicting who WOULD persist in the fall of the second year. By Fall 2001 these models had a 100 percent success in predicting who would NOT persist, but no success at all in predicting who would persist. These multivariate models are, in the end, no better than the demographics only models at predicting both persistence and lack of persistence.

Demographic/Preparation/Goals/Matriculation Services Models. With the addition of matriculation services (delivered before or at the beginning of the persistence term) to the demographic/preparation/goals variables, the picture of significant persistence factors changes again. **Gender only appeared as a significant factor in the third and sixth falls.** Perhaps matriculation services help level the early negative impacts on persistence of being male? **In these models one ethnic variable – being Asian – appeared as a factor significantly associated with persistence in the third fall (Fall 1997), but at no other point in time. Age was no longer significantly associated with persistence. Other variables were perhaps accounting for the variance previously claimed by age. On the other hand, receipt of assessment and/or counseling services came into the equation as positive factors for persistence in all four periods examined.** This might be an indication that people of different ages used, or were encouraged to use, different matriculation services.

Participation in orientation during the first year associated significantly with persistence in the second and third fall semesters, but not with first spring semester persistence. By Fall 2001, however, having participated in orientation was a statistically insignificant factor in persistence. **The impact of orientation on persistence had a delayed effect in these models. Orientation was overshadowed by other factors related to persistence into the second semester, was important for students persisting in the middle of their college careers, and then faded in importance for long-term persisting students.**

Having an early degree or transfer goal associated significantly with persistence into the second semester, but not into the second fall or later. However, having been undecided or not stating a goal at admission associated negatively with persistence into the second fall. Those without early goals of any sort might have tended to drop out or stop out by then more often than those with goals. **By Fall 2001, however, the lack of early goals was not significantly associated with persistence. Having received follow-up services (e.g., early academic warnings, academic warnings, and probation letters) was not significantly correlation with persistence in the first spring or the second fall. However, having received follow-up correlated positively with persistence in the third fall and in the sixth fall.** This could be an indication that at least some of the students who continued in the third and sixth falls were among those who may have had (or still had) academic problems, but who were hanging in there academically well enough to continue their enrollment at Rio Hondo. However, it took such students longer than others to get done with their stays at the College.

Despite the availability of matriculation services, those who came to Rio Hondo College five or more years after leaving school were less likely to be continuing in the second Fall term. After that, re-entry status did not correlate significantly with persistence in the demographic/preparation/goals/matriculation services models. It appears that if matriculation services were to help re-entering students, this would need to happen during the first year (and for some reason was not happening as often as one might like).

Again one finds that the demographic/preparation/goals/matriculation services models were good at successfully predicting persistence in the second semester (84 percent success), but did less well in predicting second fall persistence (58 percent success), third fall persistence (44 percent success) and sixth fall persistence (no success at all). They did not do too well in predicting second semester lack of persistence (53 percent success), but got better at predicting lack of persistence in the second fall (80 percent success), third fall (87 percent success) and sixth fall (100 percent success). Although these models indicated some improvement in prediction in both directions over previous models (except in Fall 2001), they still were not acceptably successful in predicting BOTH persistence and lack of persistence.

Final Models. As we have discussed earlier, the final models included demographic/preparation/goals/matriculation services/student performance and eventually (for Fall 2001) student outcomes measures. **It is this entire combination of factors that best predicted both student persistence and student lack of persistence in each of the semesters examined. Leave out any factor and the predictive power of the model suffers in one direction or another.** As we have discussed, the Fall 2001 model perhaps did not do as well as it might for lack of an additional positive outcomes measure: a transfer variable.

CONCLUSIONS. Persistence of students at Rio Hondo College results from a complex interplay of factors that include demographic, student preparation, student goals, matriculation services interventions, student performance, and eventually successful student outcomes. Different factors appear to come into play at different points in time, as evidenced by the early and then fading influences of assessment, counseling, and orientation on persistence.

In the final models demographics – notably age, but also gender – appear to be less important in relation to persistence than bivariate correlations and demographics-only models might suggest. This is likely due to covariations of the demographic variables with other variables that do enter the models in significant ways (and "suppress" or hide the demographic influences). Nevertheless, gender – being female – does turn out to be associated significantly with longer-term persistence (in the third and sixth falls). It is positive that women, once traditionally underrepresented in higher education, were persisting more than men (even though men started out in the majority of the cohort), but perhaps problematic that some women were taking so long to complete their college experiences. On the other hand, where is the discussion about why the men are not persisting? Ethnicity turns out to be not a statistically significant factor in persistence at Rio Hondo in any term when all the other factors are included. Ethnicity only appears as a significant factor in one term, the third fall, only for Asians, and only when early student performance is not taken into account.

Students have to perform, to do their part, in order to persist at any college, and Rio Hondo is no exception. Completing more units in the first term and having a better grade point average in the first term both translate into longer persistence, up to and including the fall semester of the third year. The inclusion of more cumulative Rio Hondo units as

a positive, significant factor in the sixth year indicates that those students still trying had been trying for a long time to finish. Perhaps they started from a lower ability level?

Finally, persistence begets persistence. Recent enrollment – in the immediately preceding summer, spring or fall terms – was associated with enrollment in the second, third, and sixth springs. And eventually some students have successful outcomes, notably receiving Associates degrees, leave the College and do not return soon.

This report has identified several possible opportunities for interventions to foster persistence, but suggests that this be done in a nuanced way. Interventions that might lead to greater first year persistence would be especially important for reducing the heavy attrition of Rio Hondo students. Attention to persistence during the second year would also possibly contribute positively to enrollment management, but a portion of the second year loss of students appears to be due to attrition from poor student performance. Before mounting any intervention programs, further qualitative research might be appropriate.

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