The General College 2000 Cohort:

Persistence and Graduation Four Years After Entrance

Jennifer Connor, Jennifer Franko and Cathrine Wambach,

University of Minnesota

General College

Office of Research and Evaluation

The General College 2000 Cohort: Persistence and Graduation Four Years After Entrance

In the fall of 2000, General College (GC) of the University of Minnesota (U of M) officially enrolled 930 new high school students. This report describes the gender and ethnicity of students who earned degrees, are still enrolled, or who are no longer enrolled at the U of M. It also describes the relationships between persistence and the students' AAR rankings, ACT test scores, and high school ranks. Finally, differences in the first term GPA and transfer term GPA between students who have graduated, who are still enrolled, and are no longer enrolled were examined.

Information was included for students who were admitted as new high school students despite having earned credits through prior registration in Continuing Education and Extension (CEE) or some other college, and students who attended part time in their first term. We also included students who did not enroll in any courses fall semester 2000 but subsequently enrolled. These students are excluded in some analyses conducted by U of M Institutional Research and Reporting (IRR). Twenty students of the original 930 students never enrolled, providing us with a database of 910 students for analyses.

Using our 910 student cohort we identified 52 (5.7%) who had degree information posted to the U of M data warehouse as of August, 2004, and have categorized these students as "graduates". Another 451 (49.6%) had evidence of continuing enrollment, these students are categorized as "persisters". Evidence of continuing enrollment was defined as enrollment sometime during the 2003-2004 academic year. Using this larger sample and a liberal definition of dropping out suggests a four-year leaver rate of 44.6%. Students who did not register for more than one academic year, and were therefore no longer considered active students were categorized for this analysis as "leavers". However, of the 451 persisters, only 330 registered for

fall 2004 as of August 2004. There are several potential reasons the remaining 121 students had

not registered for Fall 2004. One, fluctuations in past student enrollment histories suggest that

some students drop out for a semester and then return. Two, some students may have registered

in late August or early September. And finally, some students who were categorized as

persisters may have graduated, but their degree information was not posted until after August

2004.

<div align="center">Gender, Ethnicity and Persistence</div>

Gender

Of the 903 students who provided information about their gender at matriculation, 436

were females and 467 were males. The percent of males and females in each retention category

is presented in Table 1. Analysis using Kendall's tau-b for ordinal data found that the

differences in patterns of persistence between male and female students were not statistically

significant ($p = .838$).

Table 1: Leaver, persistence and graduation rates as of summer 2004 for males and females in

the 2000 GC cohort

	Leaver		Persist		Graduate		Total
	N	%	N	%	N	%	N
females	197	45.2	211	48.4	28	6.4	436
males	204	43.7	239	51.2	24	5.1	467
total	401	44.4	450	49.8	52	5.8	903

Ethnicity

The University of Minnesota database contains information regarding five ethnic groups. Students may choose to check what ethnicity they are upon applying to the University. Of the 2000 cohort, 67% of students indicated that they are White, 12% indicated that they are Black, 2.6% indicated that they are Hispanic, 14.4% indicated that they are Asian, .9% indicated that they are Native American, and 3.1% did not declare an ethnicity. An analysis of persistence by ethnicity revealed significant differences in persistence between ethnic groups (tau-b =-2.294, *p* = 022). Students who did not declare an affiliation with an ethnic group, were most likely to graduate in 4 years, with a graduation rate of 18%. Native American and Hispanic students were the most likely to drop out, with a leaver rate of 75% for both groups. However, each of these groups were quite small. Leaver, persistence and graduation rates for all ethnic groups are listed in Table 2. If students could be identified due to low numbers, cells were deleted.

Table 2: Leaver, persistence and graduation rates by ethnicity as of summer 2004 for the 2000 GC cohort

	Leaver		Persist		Graduate		Total
	N	%	N	%	N	%	N
White	257	42.3	309	50.8	42	6.9	608
Asian	65	49.6	65	49.6		0.4	132
Black	49	45.0	56	51.4	4	3.7	109
Hispanic		75.0		25.0		0.0	
Native		75.0		25.0		0.0	
Other	10	35.7	13	46.4	5	17.9	28
Total	381	44%	443	51%	51	6%	875

Redefinition of Categories

Because of the small number of graduates in the 2000 cohort, for further analyses the

persisters and the graduates were added together to measure a retention rate. From this point

forward, unless indicated otherwise, retained will include both those who are continuing their

studies and those who have degree information posted. Not retained will include those who did

not enroll in courses during the 2003-2004 academic year.

Gender and Ethnicity

In tables three and four, we included the retained and not retained rates for Whites,

Asians, and Blacks, broken down by gender. For the most part, adding gender to the ethnicity

analysis did not provide new information. Although Asian females are retained at a slightly

higher rate than Asian males, and Black females are retained more frequently than Black males.

Table 3: Retained and not retained rates by ethnicity as of summer 2004 for males in the 2000
GC cohort

	Not Retained		Retained		Total
	N	%	N	%	N
White males	166	47.3	185	52.7	351
Asian males	28	42.4	38	57.6	66
Black males	33	55.0	27	45.0	60

Table 4: Retained and not retained rates by ethnicity as of summer 2004 for females in the 2000 GC cohort

	Not Retained		Retained		Total
	N	%	N	%	N
White females	128	49.8	129	50.2	257
Asian females	31	47.7	34	52.3	65
Black females	23	47.9	25	52.1	48

Retention and Academic Preparation

This section will describe the differences in high school rank, ACT composite scores, and AAR scores of students who were retained or not retained. These scores are used as part of the college admissions process.

High School Rank

Information about high school rank (HSR) was available for 830 students. HSR is missing for students for various reasons such as attending a high school that does not report ranks, graduating from a foreign high school, or earning a GED. The high school ranks of the 2000 cohort ranged from 2 to 99. This is close to the entire possible range of high school rank scores.

Overall, retained students were found to have significantly higher high school ranks than not retained students (F. = 27.031, p <.001 .). The pattern of differences was significant in the female group (F. = 11.25, p = .001) with retained students having higher high school ranks. There were also significant differences for the males (F=16.78, p < .001); the not retained male group had a lower average high school rank than retained male students. The average HSRs

were significantly higher for females than for males (F = 13.92, p = .000). The mean HSRs for

males and females are presented in Table 5.

Table 5: Average HSR for not retained and retained students by gender for the 2000 GC cohort

	Not Retained		Retained		Total	
	N	HSR	N	HSR	N	HSR
females	180	45.73	224	51.25	404	48.79
males	186	40.96	236	47.34	422	44.53
total *	369	43.35	461	49.25	830	46.65

* includes students who did not identify their gender

Due to small sample size, the differences in mean high school rank between retention

groups were only tested for White, Black, and Asian students. Within ethnic groups, there were

significant differences in mean high school rank for Whites (F = 25.55, p < .001) and Asians (F =

6.832, p = .01), but not for Blacks.   For Whites and Asians, retained students ranked higher than

students not retained. Mean HSRs for ethnic groups are presented in Table 6.

Table 6: Mean High School Ranks for retained and not retained students by ethnicity

	Not Retained		Retained		Total	
	N	HSR	N	HSR	N	HSR
White	241	41.76	325	48.00	566	45.34
Asian	59	49.51	61	57.54	120	53.59
Black	40	49.83	55	51.71	95	50.92

ACT Composite Test Scores

ACT composite scores were available for 859 students. ACT scores are not available for students who substitute the SAT, TOEFEL, or MELAB scores for the ACT. This analysis therefore excludes most students who report English as a second language; these students may choose the TOEFL or MELAB as an alternative to the ACT.

The ACT scores for the given 859 students ranged from 10 to 32 out of a possible range of 0 to 36. The average score was 20.23 (sd = 3.54). There was not a significant difference between groups on ACT composite scores, although there was a trend for students who were retained to earn higher scores (F = 3.586, *p* = .059). There were significant differences between groups for the male students (F =8.94, *p* = .003) but not for the female groups. For men, the retained students had higher scores than the students who were not retained. ACT composite test scores for all men in this cohort were significantly higher than those of all females (F = 17.392, *p* < 001).

Table 7: Average ACT composite for retained and not retained students by gender for the 2000 GC cohort

	Not Retained		Retained		Total	
	N	ACT	N	ACT	N	ACT
females	192	19.85	232	19.63	424	19.73
males	184	20.13	248	21.18	432	20.73
total *	379	19.97	480	20.43	859	20.23

* includes students who did not identify their gender

There were no significant differences in ACT scores between the retained students and not retained students when broken down by ethnic groups. For most groups, the power to test differences was too low and therefore only those groups with adequate statistical power are reported.

Table 8: Mean ACT Composite score for retained and not retained by ethnicity

	Not Retained		Retained		Total	
	N	ACT	N	ACT	N	ACT
White	242	20.67	342	21.11	584	20.93
Asian	62	18.73	65	18.58	127	18.65
Black	43	17.98	51	18.16	94	18.07

AAR Scores

University of Minnesota admissions are informed by AAR scores, which is the students' high school percentile rank plus two times the students ACT composite test score. AAR scores are not available for students who do not have a high school rank or an ACT score.

For the 2000 cohort, an AAR score was available for 801 students. The average AAR score was 87.14 (sd = 16.23). Overall, there was a significant difference in AAR scores between retention groups, with the retained group having higher average AAR scores than the not retained group (F=32.709, $p < .001$). For women, there was a significant difference in AAR scores between the groups (F = 8.153, $p = .005$), and for men there was also a significant difference between groups (F = 28.92, $p < .000$).

Table 9: Average AAR for retained and not retained by Gender for the 2000 GC Cohort

	Not Retained		Retained		Total	
	N	AAR	N	AAR	N	AAR
females	178	85.29	194	90.08	398	87.93
males	171	81.63	229	89.92	400	86.37
total *	352	83.51	449	89.99	801	87.14

* includes students who did not identify their gender

There was a significant difference in AAR scores between groups for White students ($F=24.93$, $p < .001$), and Asian students ($F = 7.41$, $p = .007$) with the retained students scoring significantly higher than the not retained group. AAR scores did not differ between groups for Black students. Hispanic, Native American, and undeclared ethnic groups had small numbers in each group, and therefore statistical tests were not run for these groups. Table 10 lists the average AAR for the groups by ethnicity.

Table 10: *AARs* for retained and not retained students by ethnicity

	Not Retained		Retained		Total	
	N	AAR	N	AAR	N	AAR
White	230	83.85	320	90.30	550	87.60
Asian	57	86.93	62	94.90	119	91.08
Black	36	82.89	48	86.31	84	84.85

Grade Point Average

Differences between retained students and not retained students on first term and transfer term GPAs were examined. First term GPA is the GPA each student earned during their first semester of enrollment at the University of Minnesota. The cumulative GPA that each individual student earned the semester prior to their transfer into another college was used as an indicator of their transfer GPA. Figure one, two, five, and six are box plot graphs depicting the first term and transfer term GPAs for each group. Box plots are provided that break down the groups into retained and not retained groups, which were used for statistical analyses. We also included a box plot that displayed leaver, persister, and graduate groups. These graphs include the median, as well as the range in scores. Six students in the retained group were dropped from the analysis because their scores were outliers.
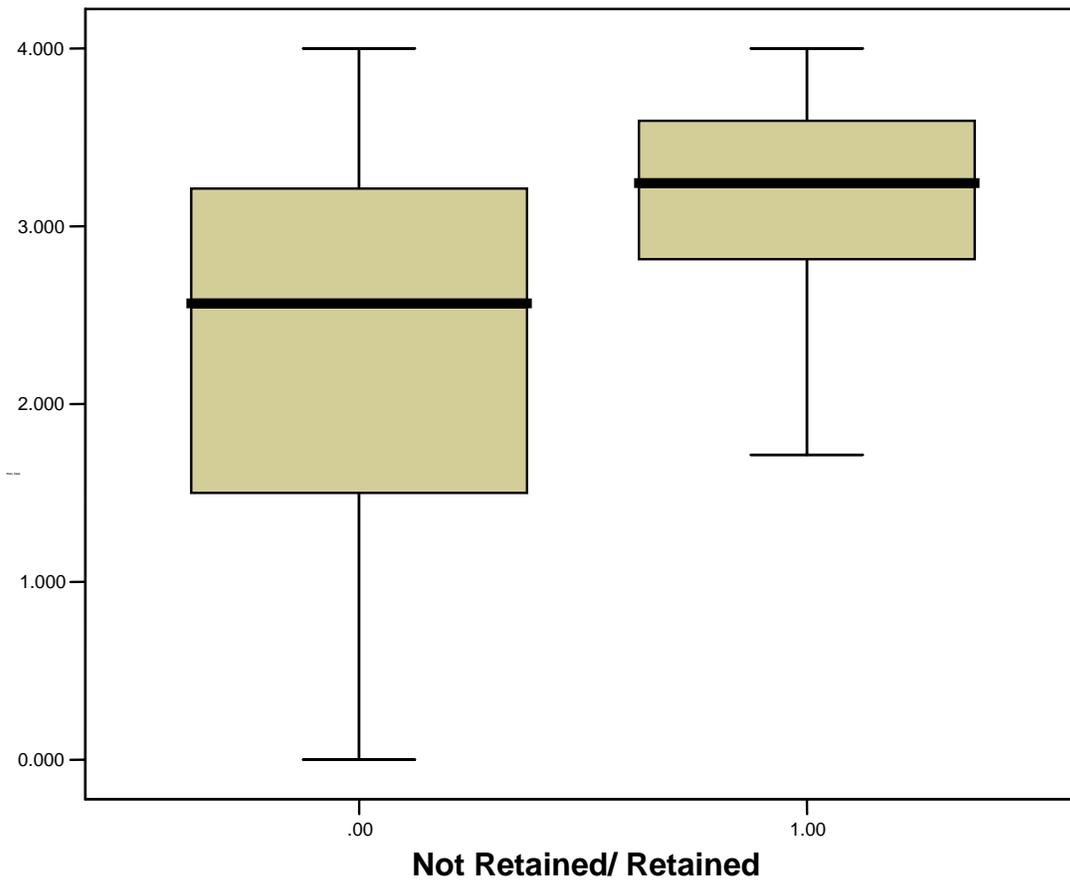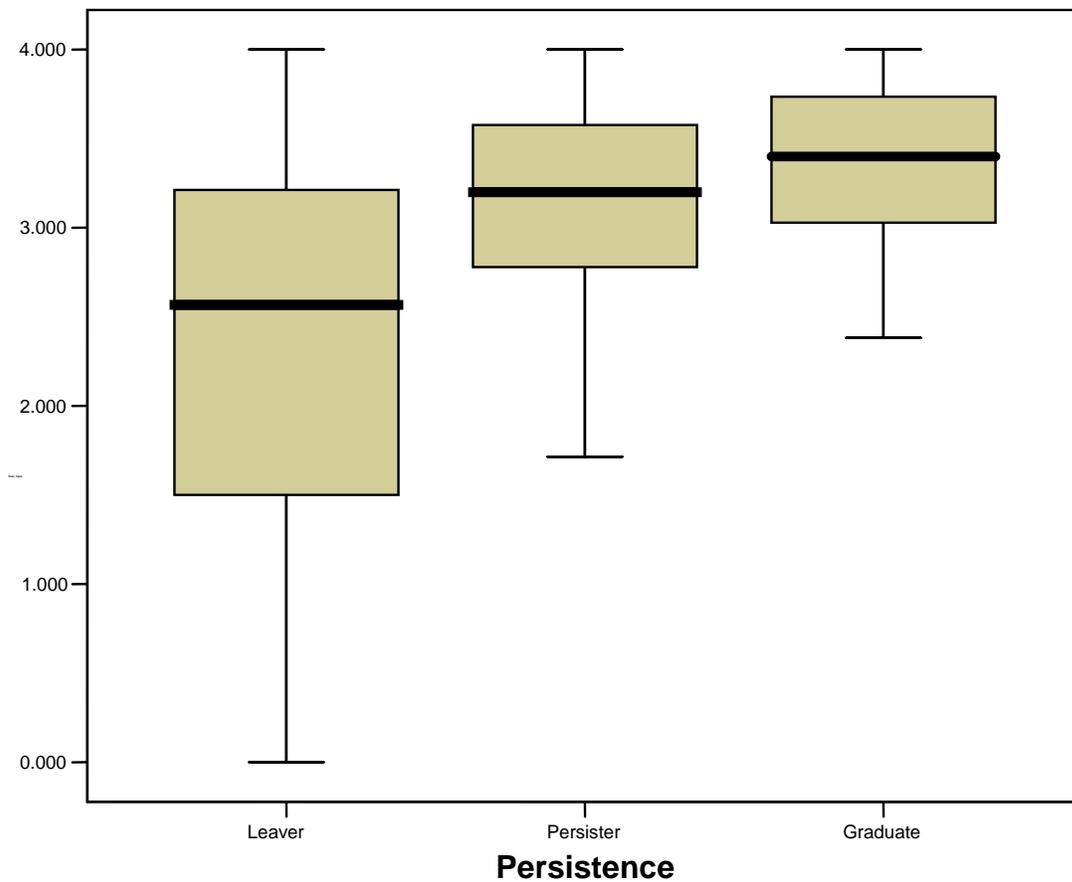
Figure 1: First term GPA by retention group

Not Retained/ Retained

Figure 2: First term GPA by three leaver, persister, and graduate groups

Persistence

       The retained group earned an average GPA of 3.17 during their first term, and the not retained group had a GPA average of 2.30 during their first term. One-way ANOVA tests indicated that there was a statistically significant difference in mean first term GPA between the retained group and the not retained group ($F=219.71$, $p < .001$). Table 11 displays the mean first term GPAs for retention groups.

Table 11: First term GPA by retention group

	N	GPA	Std Dev
Not Retained	405	2.30	.058
Retained	497	3.17	.536
Total	902	2.78	.032

Tables 12 and 13 indicate the frequency of students in GPA brackets. By examining these tables, it is evident that a small percentage of the not retained students earned higher than a 3.4 (14.71%), and that many are bunched under 2.5 (46.32%). This is in contrast to the retained students. Few of these students scored below a 2.5 (16.9%), and many earned high GPAs above a 3.4 (37.63%).

Table 12: First Term GPA for Not Retained Students

GPA	Number of Students	% of Students
0 – 0.4	44	10.78%
.4 - .8	23	5.64%
1.0 – 1.4	34	8.33%
1.5 – 1.8	30	7.35%
1.9 – 2.0	16	3.92%
2.1 – 2.2	15	3.68%
2.3 – 2.4	27	6.62%
2.5 – 2.6	28	6.86%
2.7 – 2.8	22	5.39%
2.9 – 3.0	37	9.07%
3.1 – 3.2	35	8.58%
3.3 – 3.4	37	9.07%
3.5 – 3.6	19	4.66%
3.7 – 3.8	24	5.88%
3.9 – 4.0	17	4.17%

Table 13: First Term GPA for Retained Students

GPA	Number of Students	% of Students
1.7	2	0.40%
1.8 – 1.9	5	1.01%
2.0 – 2.1	11	2.21%
2.2 – 2.3	26	5.23%
2.4 – 2.5	40	8.05%
2.6 – 2.7	36	7.24%
2.8 – 2.9	51	10.26%
3.0 – 3.1	67	13.48%
3.2 – 3.3	72	14.49%
3.4 – 3.5	65	13.08%
3.6 – 3.7	58	11.67%
3.8 – 3.9	41	8.25%
4	23	4.63%

Figure Five: Transfer GPA by retention group
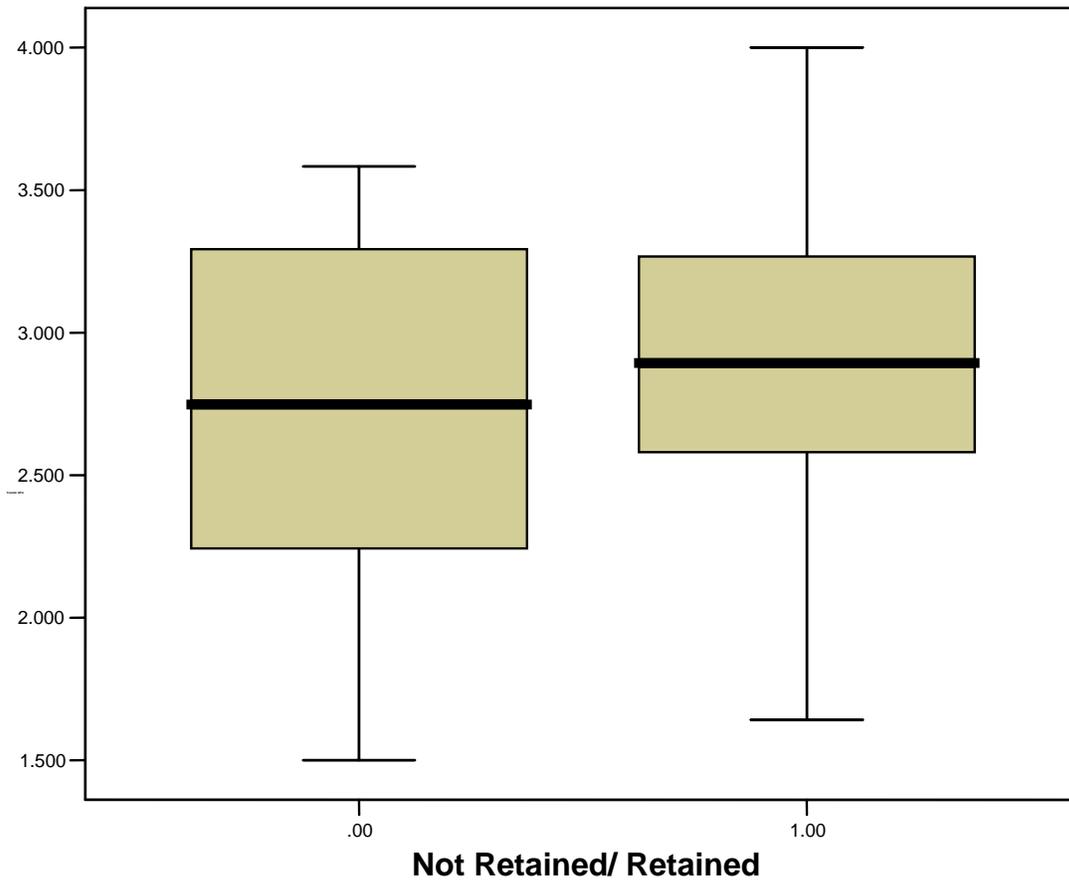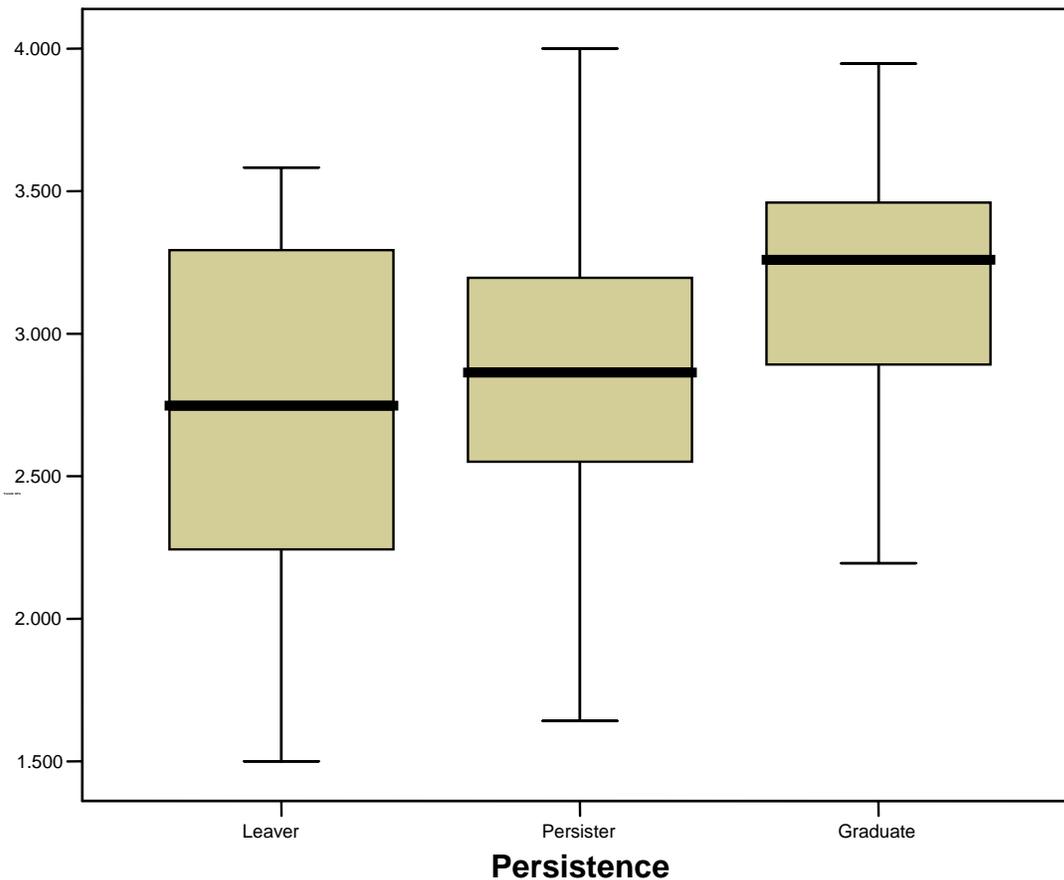

Not Retained/ Retained

Figure Six: Transfer GPA by leaver, persister, and graduate groups

Of the 910 students who matriculated to GC, 518 had transferred to another college by summer 2004. Ninety percent (N = 465) of these students were retained.

One-way ANOVA tests indicated that not retained and retained students differed statistically in their transfer GPAs (F=4.51, p = .034). Table 12 displays the mean transfer term GPAs for each group. The actual difference between the groups, although statistically significant, is small. The average GPA for the not retained group was 2.77, and the average GPA for the retained group was 2.92.

Table 12: Transfer term GPA by retention group

	N	GPA	Std Dev
Not Retained	53	2.77	.568
Retained	465	2.92	.455
Total	518	2.90	.478

Because first term GPA is a strong predictor of retention, we examined the value of high school rank and composite ACT scores in predicting first term GPA. Both variables were significant predictors, as demonstrated in Table 13. Together, high school rank and composite ACT scores predicted about 10% of the variance in first term GPA (adjusted R squared = .098). High school rank was a stronger predictor than composite ACT scores.

Table 13: Relationships between high school rank, composite ACT, and first term GPA

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t-value	p-value
Constant	1.024	.235		4.358	.000
Composite ACT	.043	.010	.153	4.458	.000
High School Rank	.019	.002	.308	8.982	.000

Discussion

In this report we have examined the characteristics of students from the fall 2000 cohort, as they relate to their persistence in and graduation from their studies at the University of Minnesota. We found that as of spring 2004, 5.6% of students had degree information posted. Almost half of the students (48.6%) were continuing their studies, i.e., they had been enrolled at

sometime during the 2003-2004 academic year. The 43.5% of the cohort remaining had not been enrolled in over a year.

Gender and Ethnicity

In our previous report on the fall 1999 cohort, we found that gender partially determined the probability of a student graduating by spring 2004 (Wambach, Franko, and Connor, 2004). Women were more likely to have graduated in five years than men. In the present analyses, no gender differences were found in the four year graduation rate. Ethnic groups rarely differed in statistical analyses in the four year graduation rate for the fall 2000 cohort. The group that did not declare an ethnic categorization did have a higher graduation rate than the other groups, however this information has limited usefulness as we can not determine who specifically is in this group. The Hispanic and Native American groups had a high leaver rate, and no one from these groups graduated by spring 2004. The groups are too small to run meaningful statistical tests to determine if they had a higher leaver rate than other ethnicities.

Academic Preparation

AAR scores did differentiate who would be retained or not retained in four years. These differences were found in both genders, and for the White and Asian groups. High school rank also differed between students who were retained and not retained for both males and females, as in the fall 1999 cohort. High school rank was a statistical predictor in determining retention for White and Asian students, however it was not useful for any other ethnic group. ACT scores differentiated the groups for men, but not for women. Additionally, ACT scores were not useful when students were categorized according to ethnic group.

First term GPA differed for those students who were not retained compared to students who were retained, with those students who were not retained earning a lower GPA. Students

who were retained, on average, transferred to another college with a higher GPA than those students who eventually left (not retained). However, these differences were quite small. These analyses indicate that first term GPA is a stronger indicator than transfer GPA in predicting retention, possibly because students who do leave the institution usually leave before transferring. Therefore, the students with the lowest GPAs will usually leave before transfer occurs. Additionally, transfer GPA may prove to be a stronger predictor when there is a larger graduate group, making it possible to break the cohort into three groups that differentiate graduates from persisters. At this point, the graduate group is too small to do these analyses.

Limitations

The small sample sizes in certain groups limited the analyses that could be performed. In particular, many ethnic groups had a small number of students. And the graduate group for this cohort was small, which forced a combination of those students who were persisters and those who were graduates.

Another limitation is the lack of data on achievement tests other than the ACT. Because the AAR is calculated using the ACT, students using another test are not included in the academic preparation portion of this study. It is likely that many English as a second language students were not included in determining how accurately these measures predict college retention.

Conclusion

Compared to the 1999 cohort report, we had a small number of graduates, indicating that the many students graduate after their fourth year of study. In this study, high school rank, AAR scores, and first term GPA were all useful predictors of retention. ACT scores were also useful predictors for male students. In the 1999 cohort, AAR scores were not predictive for either

gender, and high school rank was only predictive for females. It could be that these indicators

are better indicators for four year retention rates, but not a five year graduation rate. Overall,

first term GPA appears to be the most consistent predictor of retention and graduation.

References

Wambach, C., Franko, J. & Connor, J. (2004). The General College 1999 Cohort:

Persistence and Graduation Five Years After Entrance. General College: University Of

Minnesota.