

Annual Assessment Report 2008  
The Graduate School

During the academic year of 2006/07, the Graduate School (GS) established a strategic plan with the overarching aims of improving graduate education and improving the effectiveness and efficiency of the administrative services of the GS. The major goals of that strategic plan became the outcomes for the GS's assessment plan. This report will focus on three of those goals, which for assessment purposes may be stated as guiding questions: (1) To what extent is the GS helping to achieve the university's goal of growing graduate education? (2) To what extent is the GS helping to achieve the university's goal of increasing the diversity of graduate enrollment? (3) To what extent is the GS helping to achieve the university's goal of improving the overall quality of graduate students?

As an administrative unit overseeing graduate education, the GS is limited in its capacity to influence the achievement of university goals directly. But it is important that the GS be able to apply what influence it has to achieve them indirectly. The purpose of GS assessment, therefore, is for those in leadership positions in the GS to make data-driven decisions to determine what actions, if any, they may take to advance university goals. Toward that end, the deans of the GS met on August 14, 2008 and again on October 21, 2008 to consider data related to the three questions, specifically what we learned from the data, what areas of concern we identify, and how we should respond to the areas of concern. The following report of that discussion is organized according to the three questions. It concludes with a section on improving the GS assessment procedure.

**To what extent is the GS helping to achieve the university's goal of growing graduate education?**

*Data:*

- Figure 1 shows the overall applications, admissions, and new enrollment for the past 10 years.
- Figure 2 gives overall enrollment and enrollment for doctoral and master's students for the same period.

*What we learned:*

- There has been a general increase in applications in the past decade. After a dip in 04/05 and 05/06, the number climbed to nearly 10,000 in 07/08, the largest number we have ever received.
- Generally speaking, the number of applications received does not correspond to admissions and enrollment. For example, in 02/03 there was a substantial rise in applications but a drop in admissions and enrollment. The reduction in applications in 04/05 and 05/06 did not create a similar reduction in applicants admitted and enrolled. And the increase in applications by over 2000 in 06/07 and 07/08 led to only modest increases in admissions and enrollment. Whereas the number of applications over the last decade has increased by 81%, admissions and enrollment have increased by 60% and 63% respectively. Clearly, there are other factors that influence admissions and enrollment.
- The numbers of students admitted and enrolled have trended gradually higher and have remained roughly parallel. In fact, the percentage of enrolled to admitted has remained

steady over the last decade, ranging from 63.2% to 67.5%, an average of 65.5%. These data suggest that the number of applicants accepted for admission has a nearly direct relationship with the number enrolled. We may conclude from this relationship that the number of students admitted determines to a large extent the size of new enrollment and thus to encourage growth in new enrollment we should somehow admit more students, perhaps by increasing the overall quality of the applicant pool. However, as the second bullet above suggests, there are other factors that act as a governor on the number of students admitted. If so, we need to address those factors first.

- Overall enrollment from 98/99 to 07/08 has increased 28%, from 5068 to 6509.
- The percentage of doctoral to master's students increased until 05/06 to a high point of 43%, but since then the percentage has decreased somewhat to 41% as the number of master's students has increased. In the 3-year period from 05/06 to 07/08 doctoral enrollment increased by only 27 students.

*Areas of concern:*

- To establish NC State as a major research institution with a larger percentage of graduate to undergraduate students, the university must grow its graduate enrollment to nearly 9745 by 2017. But at the present rate of growth in overall enrollment (an average of 195 students per year over the past 5 years), reaching that target will be a significant challenge. If we project the growth of the last 5 years into the next decade, total enrollment would be about 8463 in fall 2017, 1,282 short of the target. To reach the target we would need to enroll an additional 202 students per year, or a 104% increase over our past 5-year average.
- One of the GS's primary leading indicators for growth in graduate education has been the number of applications; however, the data suggest that applications do not have a strong correlation with eventual enrollment. Thus, simply increasing the number of applicants will not grow graduate education. Other variables apparently limit admissions and enrollment, likely including the number of faculty in departments, the number and amount of stipends (RAs, TAs, and fellowships), and the amount of lab and office space available. Increasing funding for this interlocking array of factors is going to require a broad effort on the part of a variety of people in the university.
- New enrollment seems to be growing too slowly. Over the past decade it grew an average of 102 students per year, but since 03/04 the growth has slowed substantially to only 64 students per year. From this we can draw two implications. First, most of the growth in overall enrollment in the past 5 years has not come from new enrollment, which accounts for only 33% of it. This suggests that growth is mainly a result of students taking longer to complete their degrees, which in itself is not a positive trend (we have no university completion data). The second implication is that if we expect to rely on new enrollment to reach 2017 goals, we must increase it dramatically.
- Also by 2017 the university projects a higher percentage of doctoral students in its graduate enrollment. However, most of the growth in graduate enrollment over the last 3 years has been in master's students. We must find ways to attract substantially more doctoral students to achieve the university goal.

*Actions:*

- To increase new enrollment and overall enrollment, the GS will take advantage of every opportunity to persuade university leaders to expand faculty and facilities and to focus

university development efforts on fellowships for graduate students. The bottom line is clear: growing graduate education requires a significant investment by the university.

- To increase overall enrollment, the GS will also try to decrease graduate student attrition by identifying the programs with the highest attrition levels and working with those programs to implement best practices designed to reduce attrition.
- To increase the percentage of doctoral students, the GS will seek to make doctoral education a top priority in the university's mission, to include the expansion of doctoral education as an important part of enrollment planning, and to continue to remind executive officers and deans of the importance of doctoral education at NC State.

### **To what extent is the Graduate School achieving its goal of increasing diversity in graduate enrollment?**

#### *Data:*

- Figure 3, figure 4, and figure 5 display applications, admissions, and enrollment, respectively, for underrepresented minorities over the last 10 years.
- Figure 6 provides graduation numbers for underrepresented minorities compared to whites.
- Figure 7 gives data for applications, admissions, and enrollment for female students.
- Figure 8 shows graduation numbers for female students as compared to male.

#### *What we learned:*

- Unlike admission statistics for the overall body of graduate students, admissions and enrollment for underrepresented minorities does tend to correlate with applications. This suggests that increasing applications will likely increase enrollment.
- Applications, admissions, and enrollments of Native Americans remain far lower than those for Hispanics, which themselves are far lower than African Americans.
- Over the past decade, new enrollment for African American students increased by 30% (124 to 161, their highest year), for Hispanic students by 116 % (24 to 52, their highest year), and Native American students by 40% (5 to 7, with the highest year at 11). (For comparison, the increase in new enrollment for all graduate students was 62%.) Despite this welcome increase in each of these ethnic groups, their overall percentage of the graduate student population over the same time period has remained roughly the same: the number of African Americans in the graduate population changed from 6.6% to 6.8% (337 to 444), Hispanics from 1.1% to 1.8% (60 to 119), and Native Americans from 0.35% to 0.3% (18 to 20). The increases in new enrollments have made little difference in the overall level of diversity of graduate students.
- Over the past decade, graduation numbers of African American students increased by 61% (67 to 108, with their highest year at 121), Hispanics by 111% (17 to 36, their highest year), and Native Americans by 150 % (2 to 5, with the highest year at 11). Because of the small numbers of Hispanic and Native American graduates, these percentages can be significantly affected by relatively few students in relation to the full population of graduate students; thus, we cannot draw conclusions based on these data.
- In 07/08, 6% of all graduates were African American, 2% Hispanic American, and 0.2% Native American. At the same time, African Americans comprised 6.8% of overall enrollment, Hispanic Americans 1.8%, and Native Americans 0.3%. This rough correlation

between percentage of graduates and percentage of overall population suggests that minority students are progressing toward graduation at a rate that would be expected.

- Applications, admissions, and enrollment of women generally mirror those of the overall graduate student population. Graduation numbers for female students are roughly parallel those of males.
- In 07/08, 44% of all graduates were female.

*Area of concern:* Despite gains in the numbers in the new enrollment of underrepresented minorities, there is ample need for increasing them further and faster, especially for Hispanics and Native Americans. The problem is that by percentage the graduate student population is not appreciably more diverse now than it was 10 years ago.

*Actions:*

- The GS will continue to make a substantial effort to increase the ethnic diversity of graduate students. It has an assistant dean and 4 other staff members whose responsibilities are all or mostly related to recruiting underrepresented minorities. Much of this work is supported by large NSF NIH grants. In order to gauge the success of this extensive effort, we will continue to monitor the percentage of minorities in the overall population and will generate recruiting yield reports, that is, the number and percentage of applications, admissions, and enrolled students directly attributable to the efforts of the GS. These reports will allow us to determine the impact of GS recruiting efforts in relation to other variables affecting minority recruitment.
- Because enrollment tracks to the number of applications for underrepresented minorities, the primary strategy of the GS to increase enrollment of minorities will be to increase the number and quality of applications. During the last academic year, the GS hired a Graduate Recruiting Coordinator who is a Native American and has had experience recruiting Hispanic undergraduates. We will closely follow the number of applicants in these two categories.

### **To what extent is the Graduate School achieving its goal of improving the overall quality of graduate students?**

*Data:*

- Figure 9 reports the undergraduate GPA for newly enrolled domestic students (since we don't record GPA for international students) over the previous 10 years.
- Figure 10 gives the average GRE scores for admitted master's students, figure 11 for doctoral students.
- Figure 12 presents overall selectivity of graduate programs (percentage of admitted to applied), and figure 13 the overall yield (percentage of enrolled to admitted).

*What we learned:*

- Undergraduate GPA for entering doctoral students has increased steadily from 3.24 to 3.42, and for entering master's students from 3.23 to 3.32. Though these increases are in a relatively narrow range, it does suggest some improvement in the quality of enrolled students (or perhaps the effect of grade inflation).
- GRE quantitative scores for master's students improved from 643-688 while verbal scores remained essentially flat, ranging from 508 to 529. Quantitative scores of doctoral students

rose from 688 to 717. From 00/01 to 07/08 the scores were at or above 700 in the 800-point scale, indicating an impressive level of quality. The verbal scores were, as in master's students, lower and flat, with a range from 524 to 539. Though the verbal scores of doctoral students are similar to those of master's, their quantitative scores were noticeably higher. (The marked difference between quantitative and verbal scores may be found in most other universities. ETS is aware of this testing issue and plans to change its tests and scales next year.)

- The level of selectivity varied over time (the lower the percentage the more selective). Interestingly, the levels of selectivity for doctoral and master's students are roughly parallel, suggesting that there is another variable influencing the findings other than selectivity. Indeed, when these data are compared to the number of applications in figure 1, we see that, generally speaking, the more applications programs receive the more selective they are, which stands to reason. It is perhaps the case, then, that the percentage of accepted to applied doesn't really serve as an indicator of quality of programs but the quantity of applications.
- Yield may be a better measure of quality (the percentage of admitted students who choose to enroll; higher percentages are better). For doctoral students, the highest was 64.2% (99/00) and lowest was 53.9% (06/07). For master's students the highest was 69.9% (03/04) and the lowest was 64.7% (98/99). In every year, a higher percentage of admitted master's students chose to come to NC State than doctoral students.

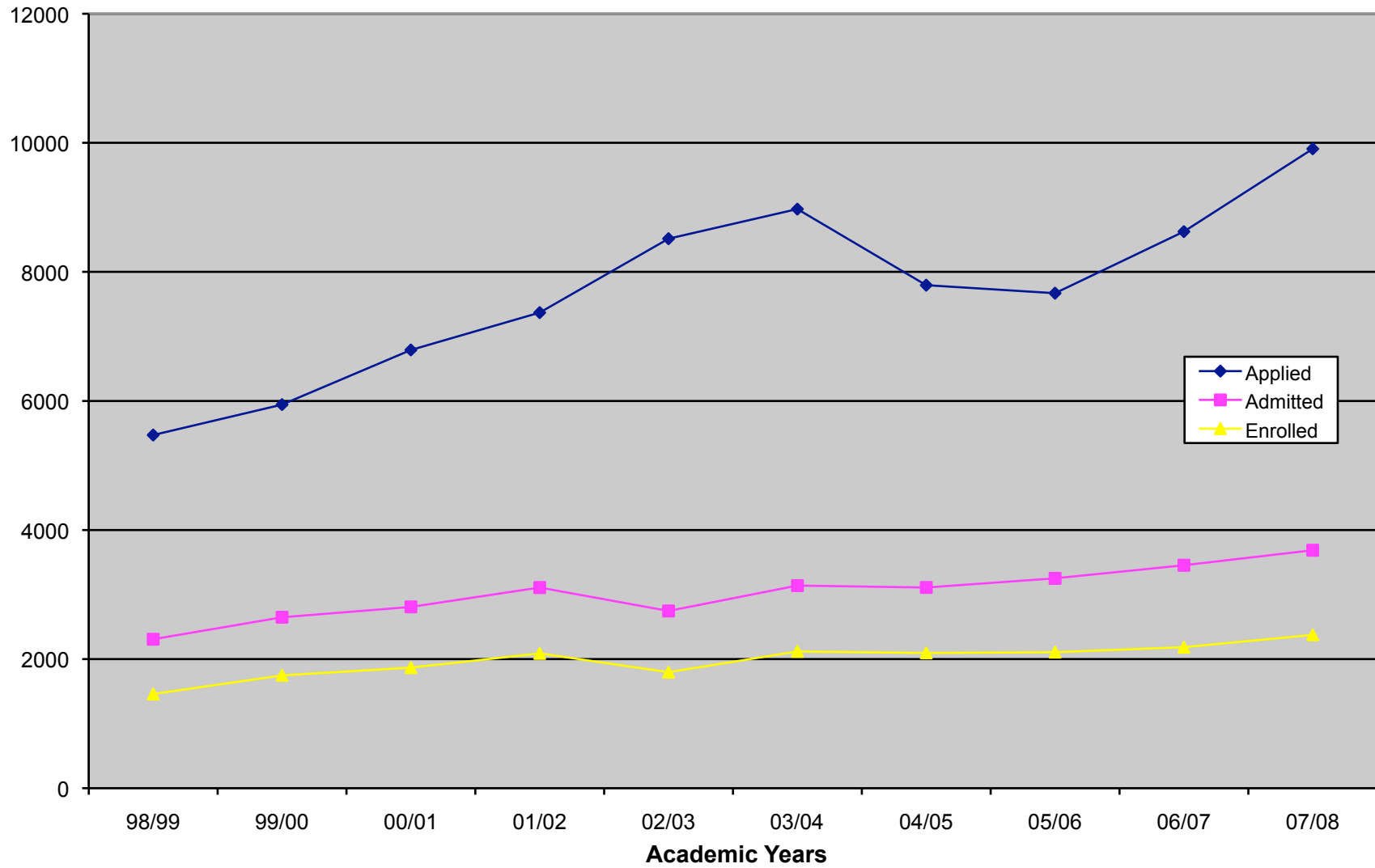
*Area of concern:* The yield data suggest that NC State is not as competitive for doctoral students as it should be.

*Action:* All the actions under the first section are also appropriate here for making NC State's doctoral programs more competitive. Essentially, improvement must come from a significant investment in graduate education by the university. In addition, the Graduate School plans to make a sophisticated "business objects" tool for tracking enrollment patterns available to associate deans of research and graduate education and directors of graduate programs. We hope that this tool will increase awareness of the implications of program and college enrollment on overall university enrollment.

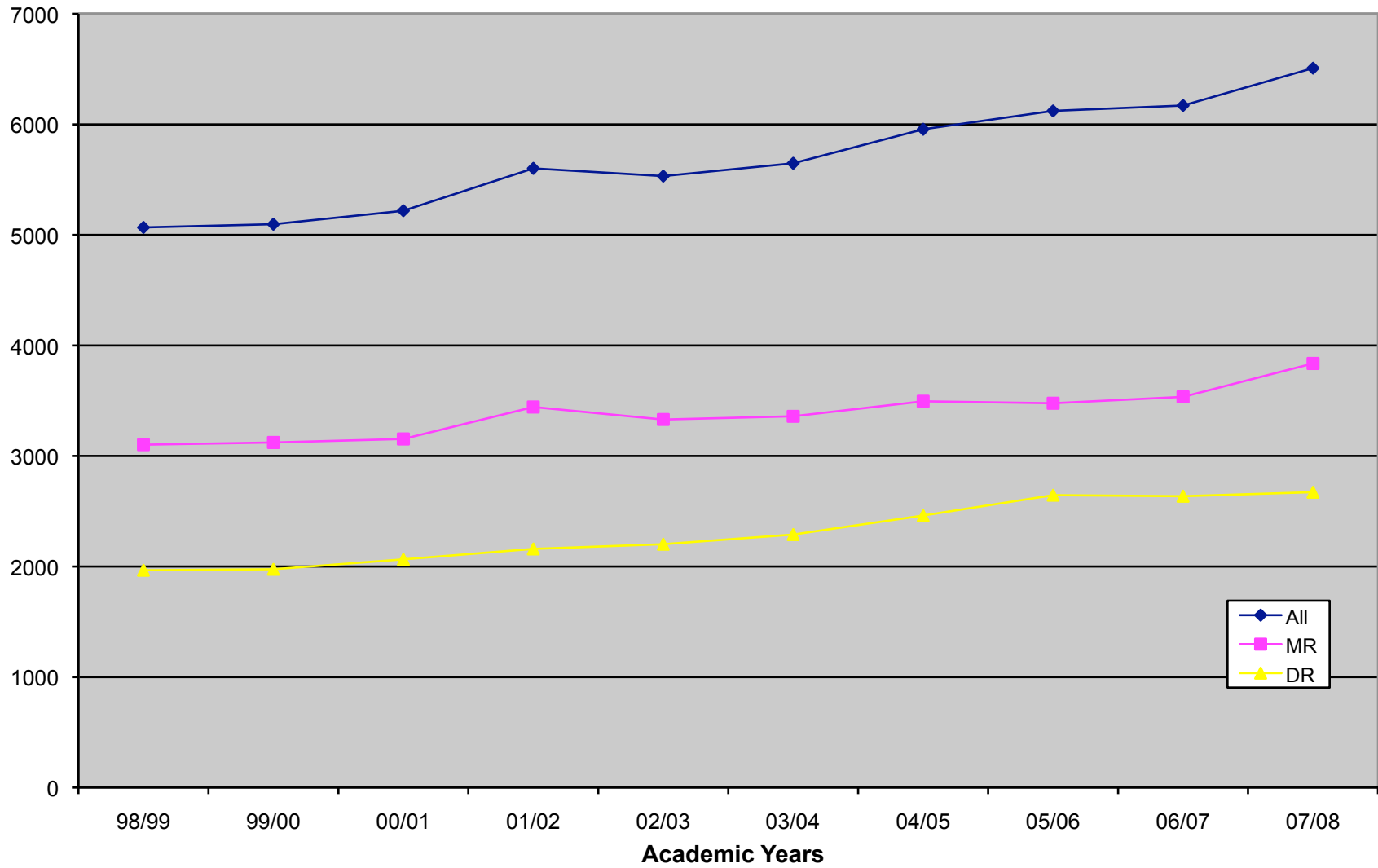
### **Improvements in assessment procedures**

- Additional data would be helpful in answering the guiding questions: (1) enrollment trajectories that would project growth and current levels and growth needed to reach target enrollments over the next decade, (2) percentages of doctoral to master's students and graduate to undergraduate students and projections to meet 2017 targets, (3) comparisons of underrepresented minorities to all students, (4) completion and attrition rates for underrepresented minorities and females, (5) university completion and attrition rates, and (6) yields for GS recruiting efforts.
- At the deans' retreat, the director of GS assessment presented the figures to the deans and asked them to discuss the figures. This procedure could be improved for next year's assessment. The assessment director should do a thorough analysis of the data beforehand and present the analysis along with the figures. This approach will provide the deans a greater depth of understanding of the data than the graphs themselves afford, leading, we hope, to a richer, more informed discussion.

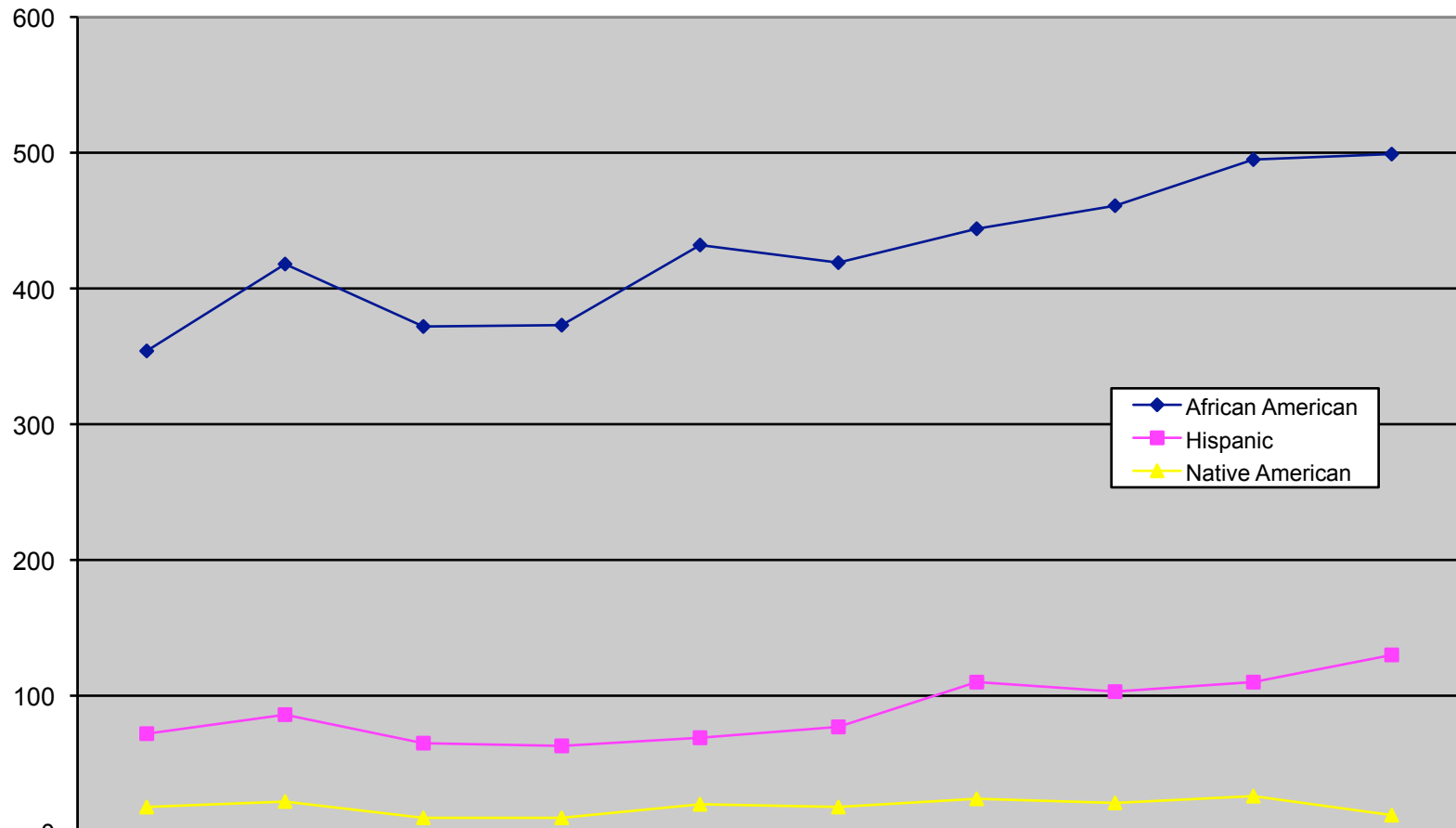
**Figure 1: Overall Applied, Admitted, and Enrolled**



**Figure 2: Overall Fall Enrollment**



**Figure 3: Applications for Underrepresented Minorities**

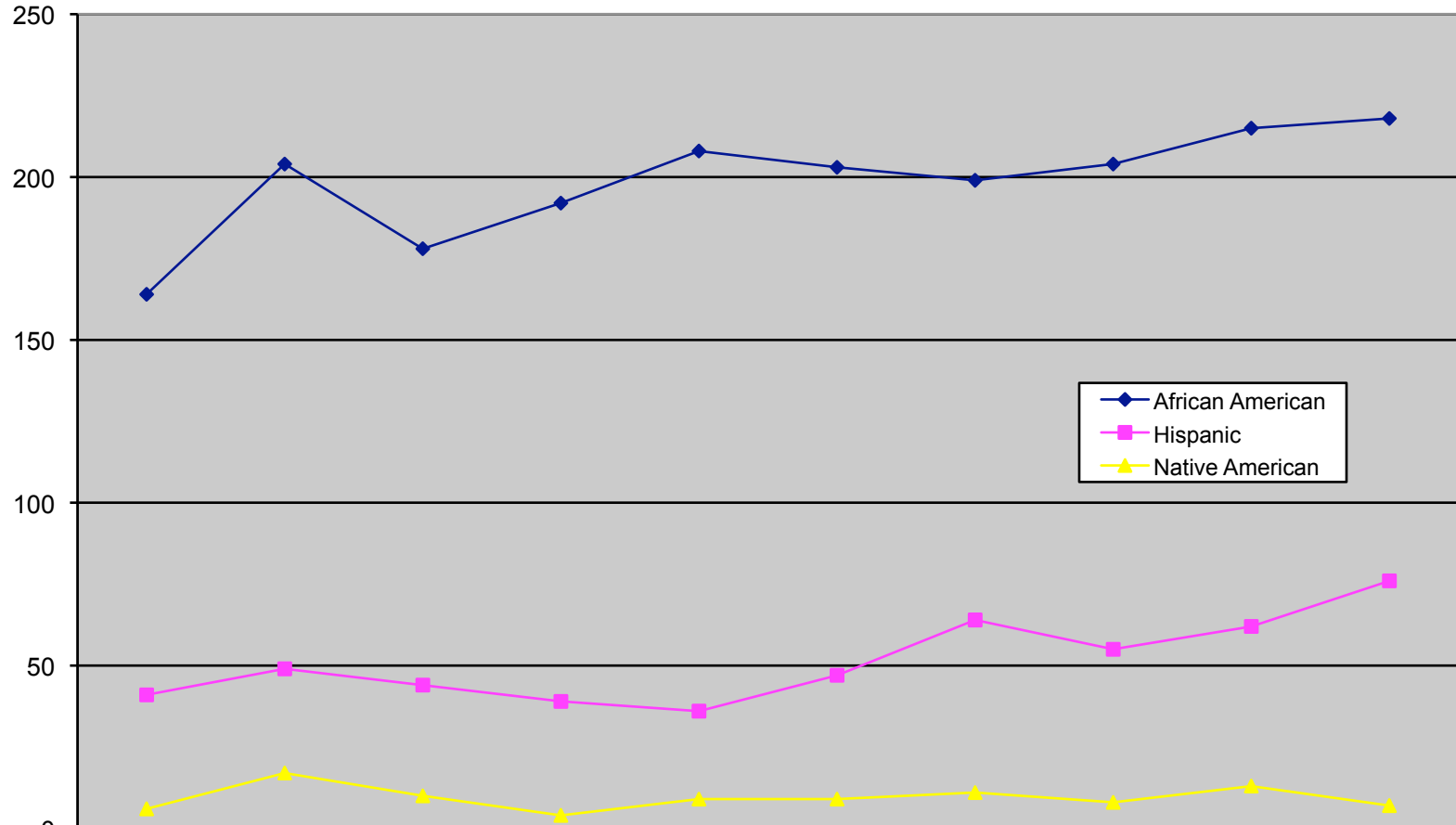


	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08
African American	354	418	372	373	432	419	444	461	495	499
Hispanic	72	86	65	63	69	77	110	103	110	130
Native American	18	22	10	10	20	18	24	21	26	12

**Academic Years**



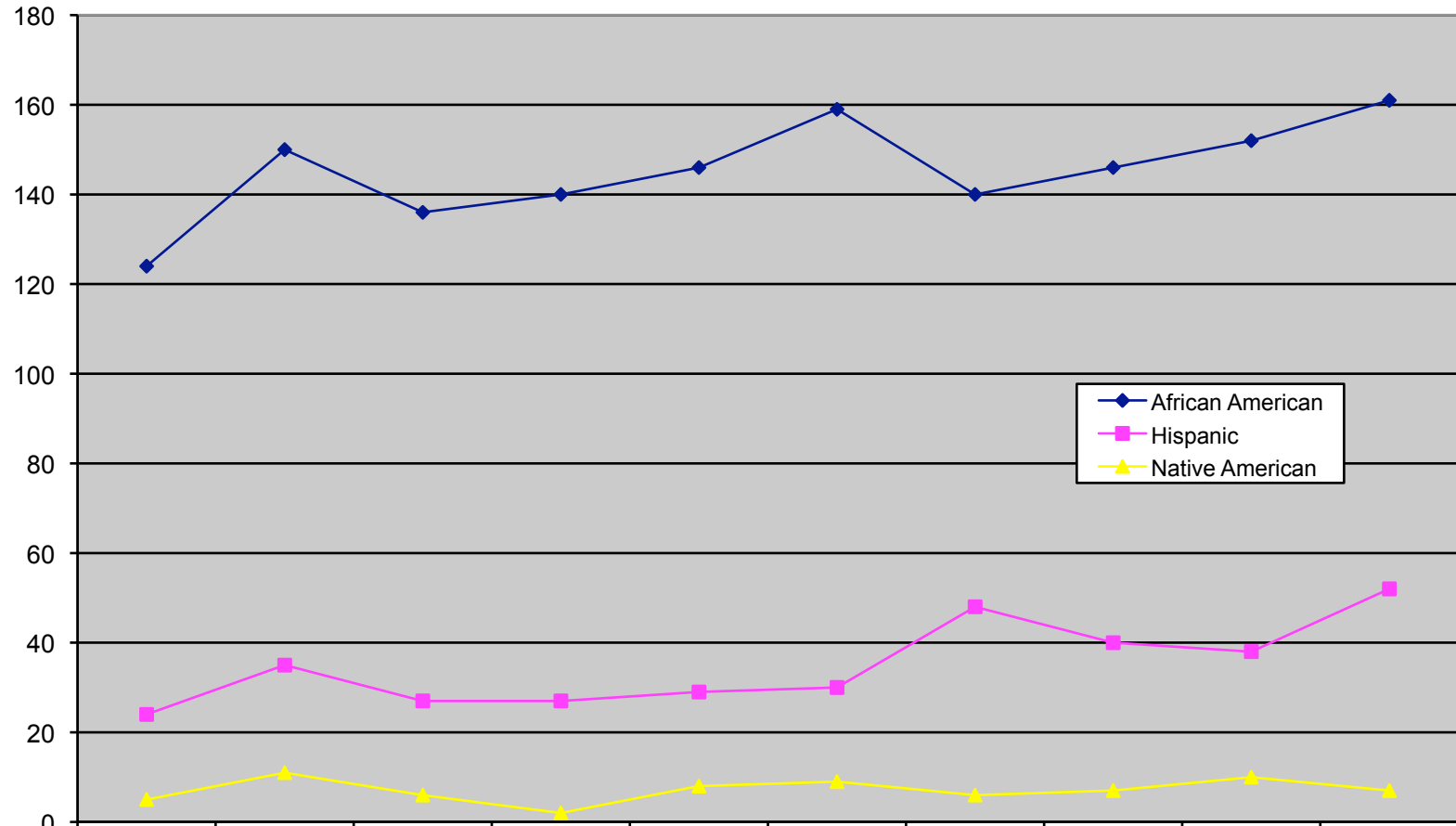
**Figure 4: Admissions for Underrepresented Minorities**



	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08
African American	164	204	178	192	208	203	199	204	215	218
Hispanic	41	49	44	39	36	47	64	55	62	76
Native American	6	17	10	4	9	9	11	8	13	7

**Academic Years**

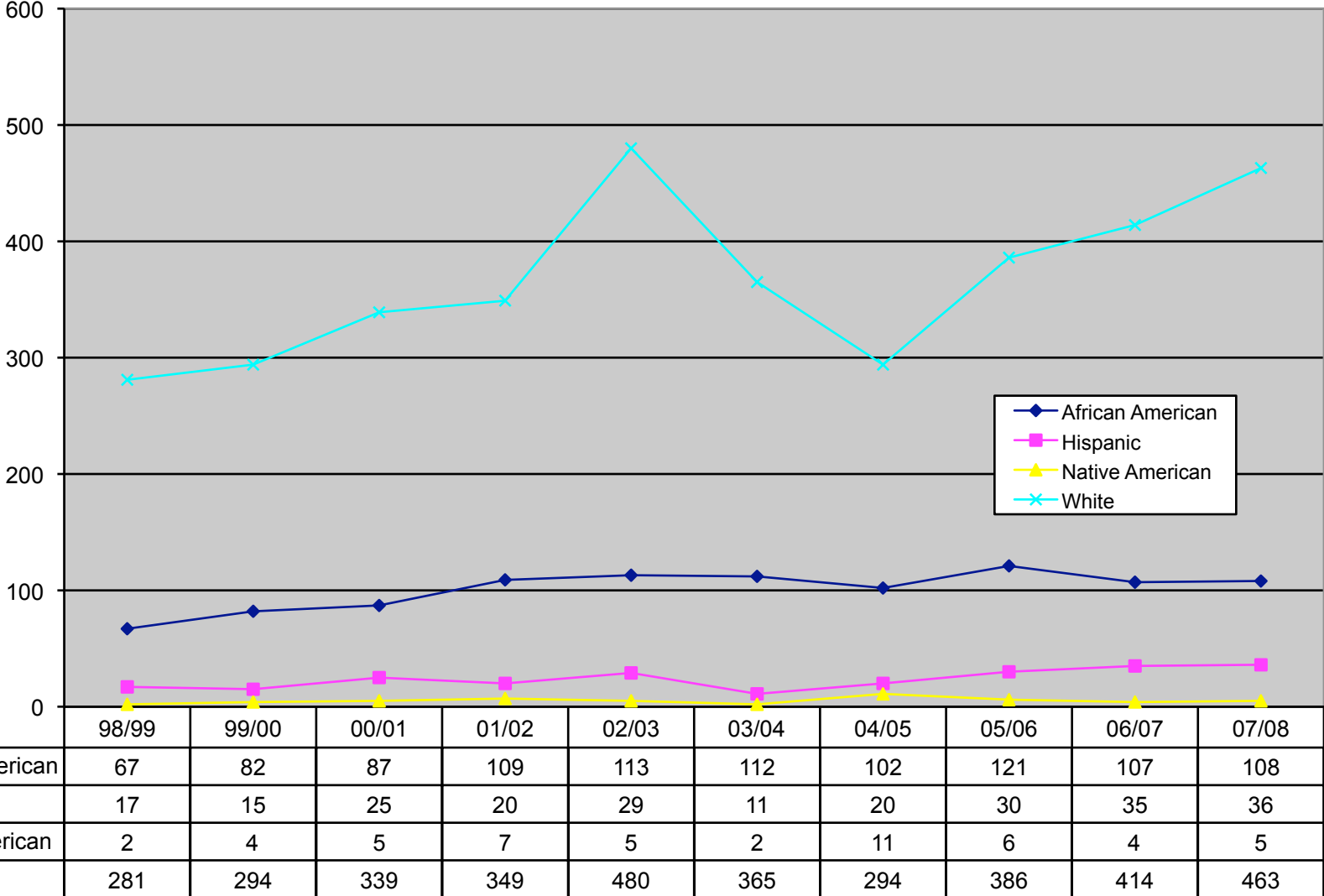
**Figure 5: New Enrollment for Underrepresented Minorities**



	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08
African American	124	150	136	140	146	159	140	146	152	161
Hispanic	24	35	27	27	29	30	48	40	38	52
Native American	5	11	6	2	8	9	6	7	10	7

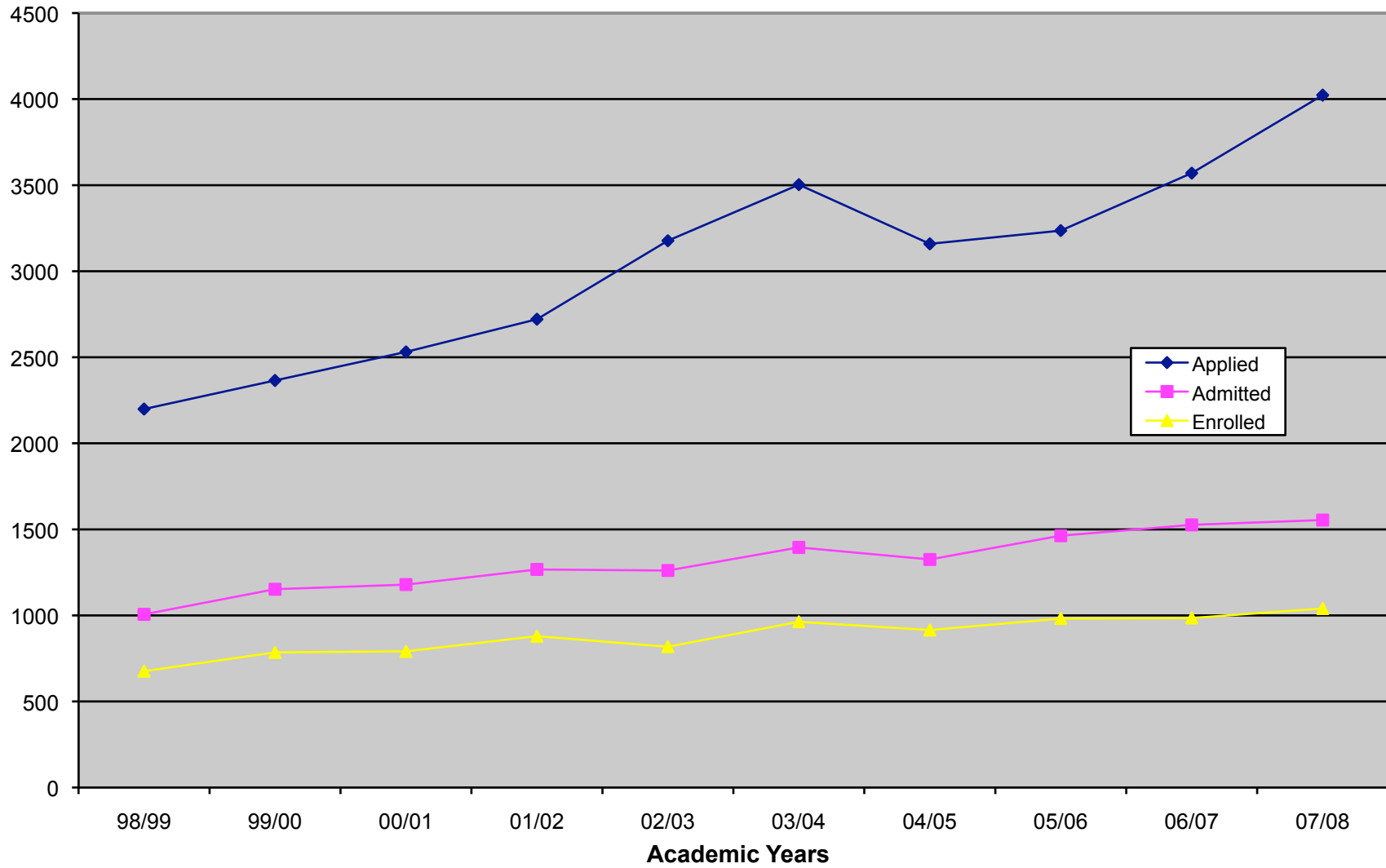
**Academic Years**

**Figure 6: Graduation of Underrepresented Minorities & Whites**

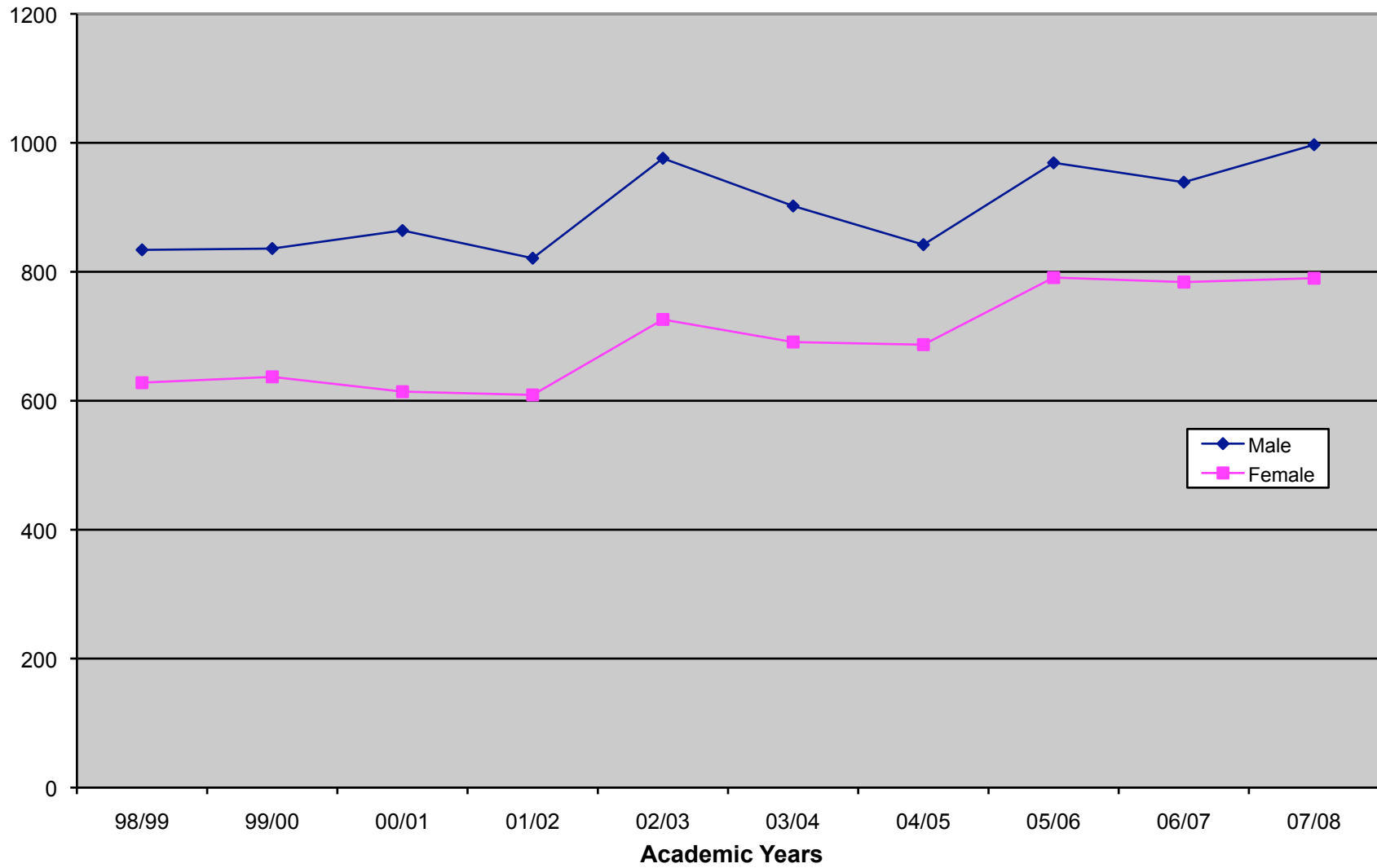


**Academic Years**

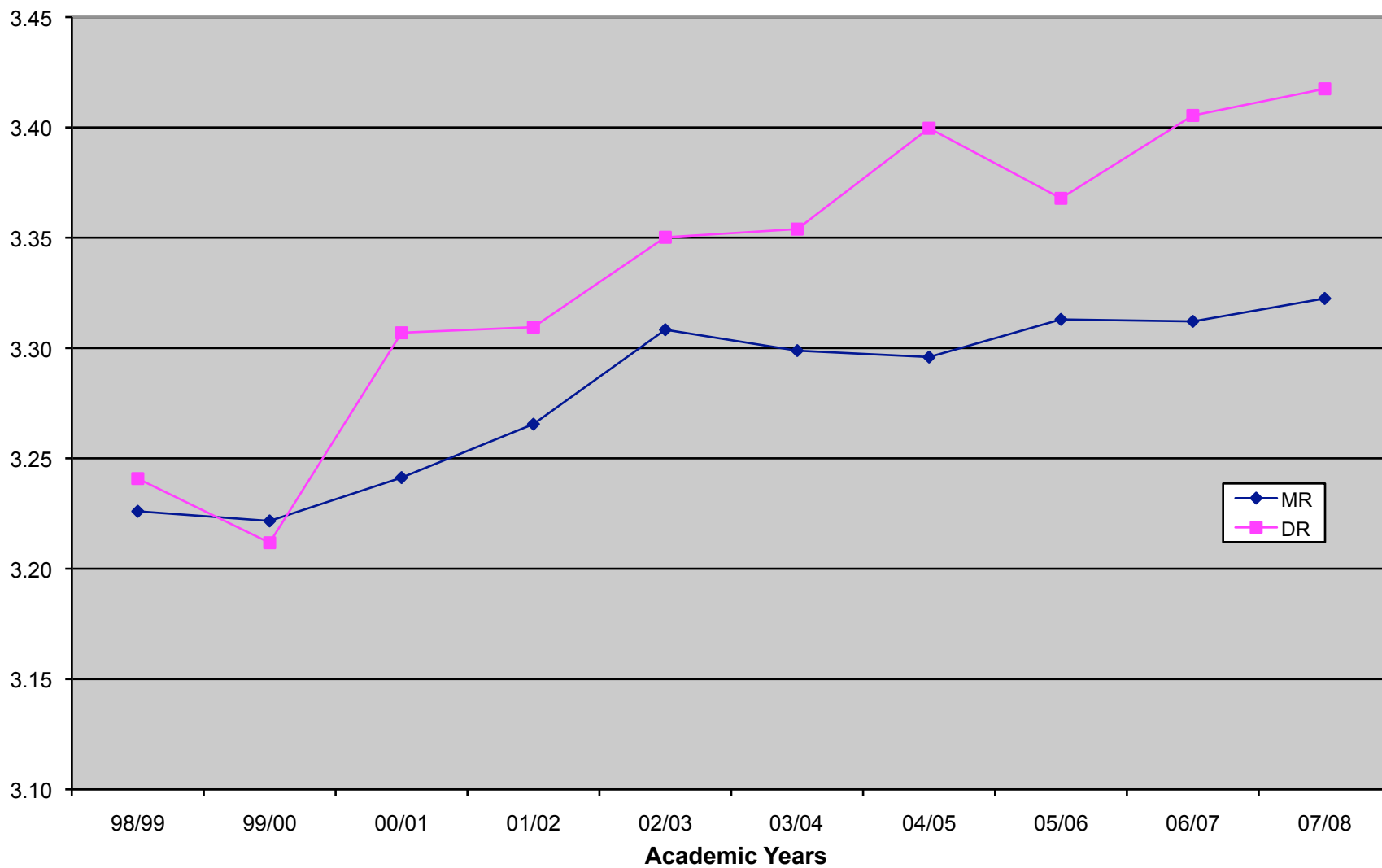
**Figure 7: Apply/Admit/Enroll for Female Students**



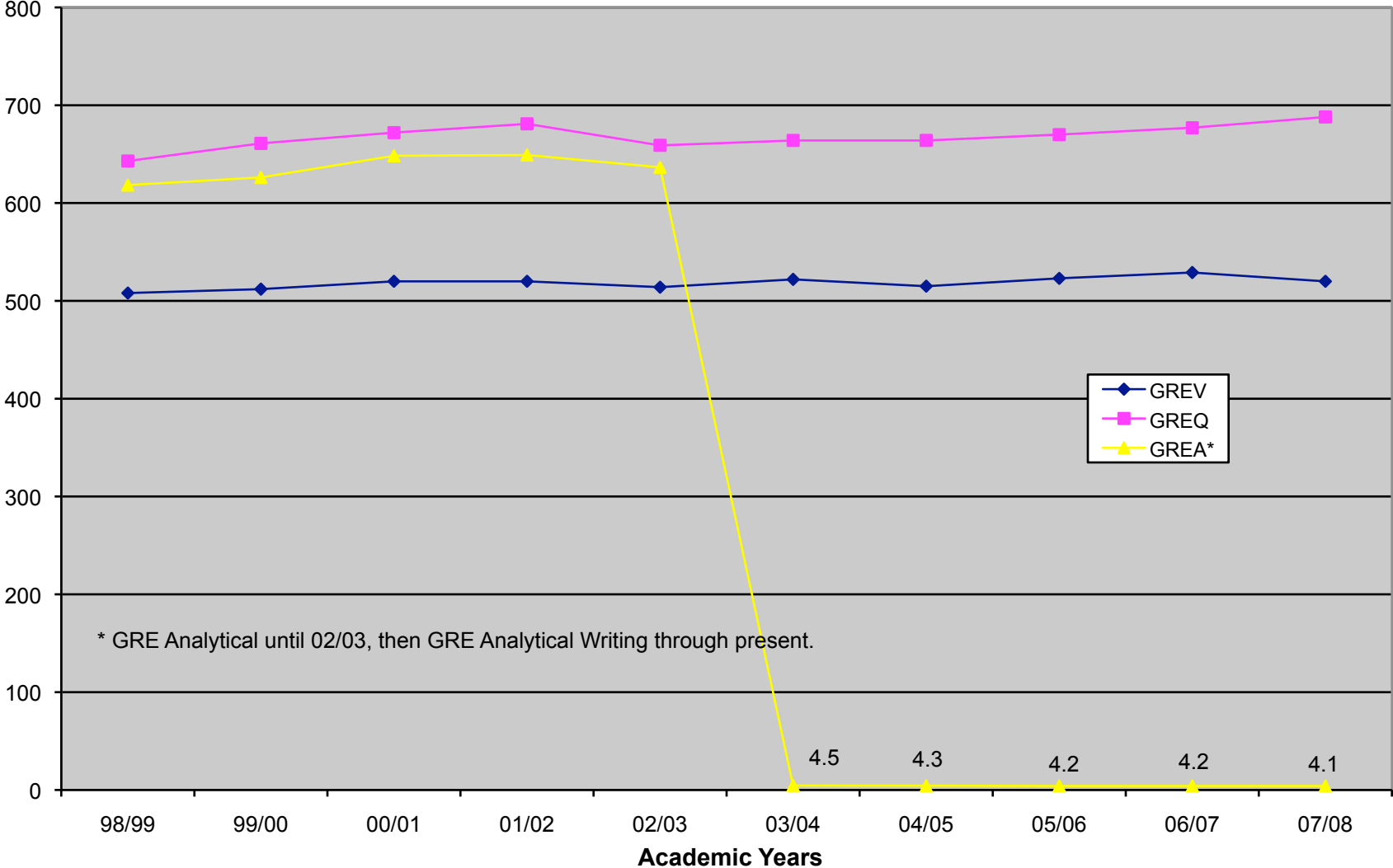
**Figure 8: Graduation of Male & Female Students**



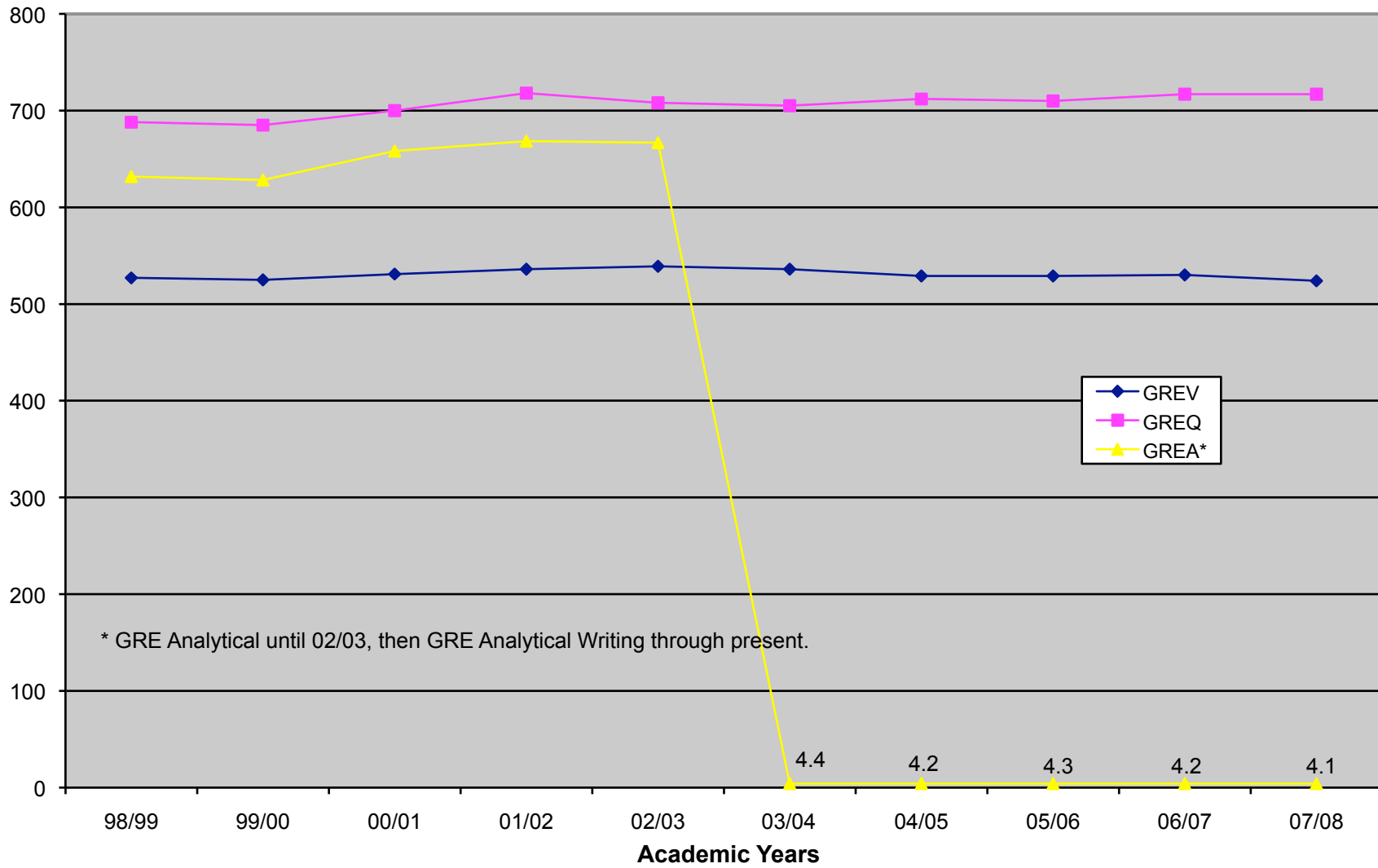
**Figure 9: Undergrad GPA of Newly-Enrolled Students**



**Figure 10: Average GRE of Admitted Students (MR)**

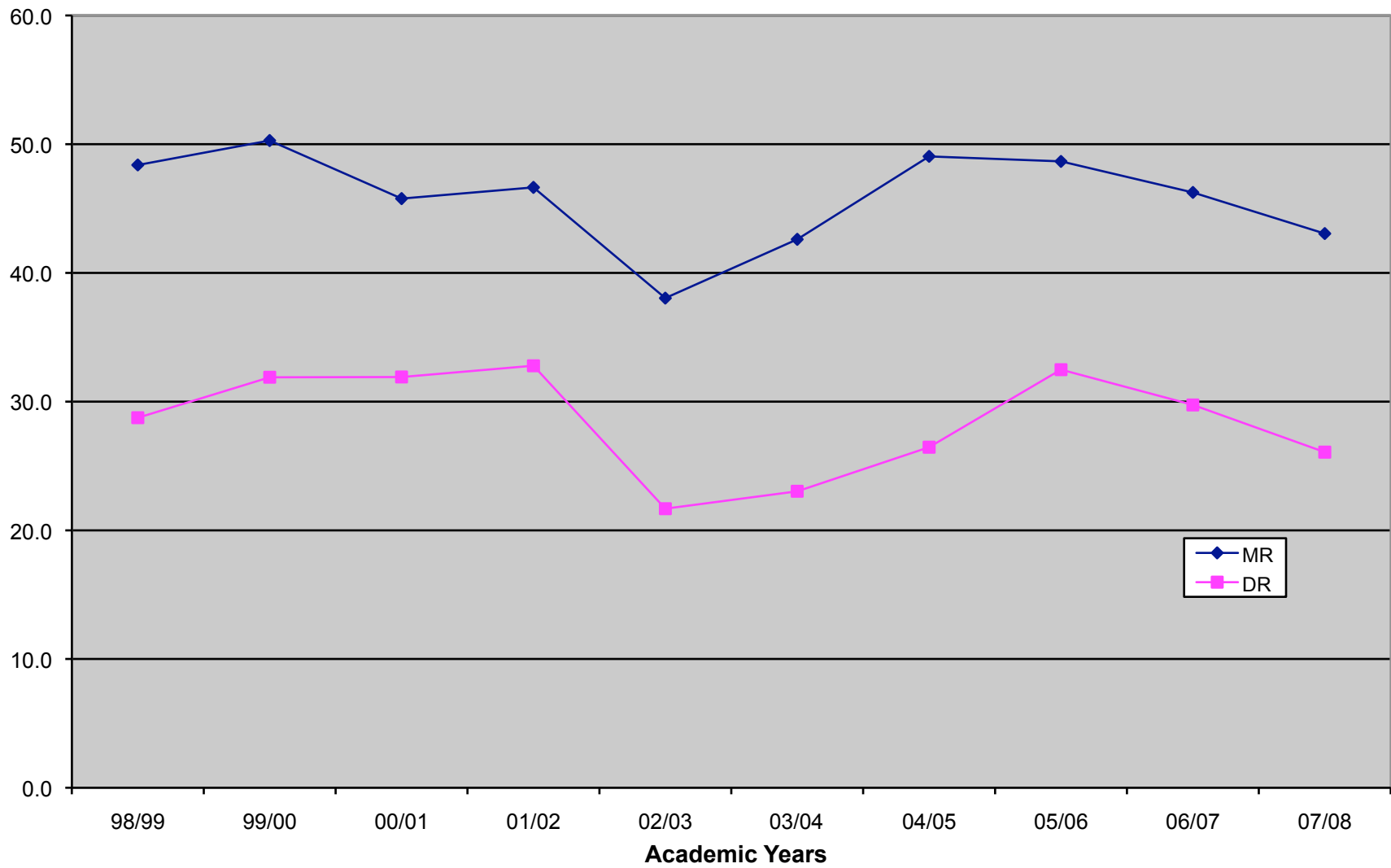


**Figure 11: Average GRE of Admitted Students (DR)**





**Figure 12: Selectivity (% Accepted to Applied)**



**Figure 13: Yield (% Enrolled to Accepted)**

