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# Analysis of Freshmen Retention: Fall 1998 to Fall 1999

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ANALYSIS OF FRESHMEN RETENTION:  
FALL 1998 TO FALL 1999

(Report 2001-01)

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October, 2001

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## EXECUTIVE SUMMARY

Just over one in five Western freshmen in the entering class of 1998 (21.6%) did not return to enroll in 1999. This study used data from students' Admissions and Registrar's files including course transcripts, a survey of 600 selected at random, and in-depth interviews with 32 of these freshmen to increase our understanding of why these students were not retained at Western. A few, 3.1%, realized almost immediately that Western and/or college was not the right place for them and left during or after fall quarter. However, nearly two-thirds of withdrawals (62.2%) completed spring quarter before leaving. We know from other studies that well over half of these transferred, with the rest leaving college altogether.

College GPA is by far the most powerful influence on retention—at Western as well as in myriad studies of retention elsewhere. In particular, GPAs in the very low range have a huge impact. For example, among students whose first quarter GPA was below 1.5, only 40.7% remained at Western the next fall. If the freshman year GPA is that low, fewer than ten percent return. A few of these were dismissed, but most made the choice to try some other option.

Because GPA is so powerful, we analyzed *what factors influence fall and freshman year GPA*. High school GPA is overwhelmingly the most powerful predictor of college GPA, with SATs and advanced placement work adding to the explanation. Students' reports confirm the quantitative findings. Most students who are performing poorly say they feel under-prepared and that academic expectations were higher than they had anticipated.

In addition, greater student academic engagement leads to higher grades. Social engagement, on the other hand, affects GPA and retention only when it becomes too great and distracts students from the academic side. One factor associated with higher fall GPA—attending Summerstart orientation—appears to predict higher grades partially because students who attend Summerstart are on average more engaged and organized than those who do not, and partially because Summerstart students have much better course access.

Also affecting GPA are factors indicating that the Western academic experience is congruent to students' expectations. For instance, some students enter Western anticipating more personal contact with professors and smaller class experiences than the freshman year actually offers. Survey findings indicate that freshmen who place greatest emphasis on getting to know professors and on having at least one small discussion course earn lower grades than others.

Moreover, survey results indicate that student satisfaction of their courses influence their GPAs, both during the quarter they take those courses and during later quarters of the freshman year. We therefore interpret student satisfaction to indicate a more general adaptation to and appreciation of the courses and instruction at Western. The case of math is special because 22.0% of all student credit hours (SCH) taught during fall quarter are math courses. (English provides 10.2% of SCH; psychology, Languages, and History provide between 6 and 8% of SCH each; and anthropology, chemistry, communication, and philosophy provide between 4 and 6% each. The perceptions by freshmen that they needed more

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instruction and support in math is associated with lower GPA, and a disproportion of qualitative interview comments regarding perceived problems with instructors or problems mastering one subject were made with reference to math.

Finally, the distribution of grades varies across courses and departments, so that freshmen GPAs are affected by which particular GUR departments they enrolled in. Those courses and departments are included in our analysis to prevent errors in inference, but not included in this summary because the particular courses that produce high or low grades could easily change in different years. We assume other factors are more constant over years. **2**

Each of the factors that influence freshman GPA also influence retention, indirectly, because GPA has such a large impact on retention. In addition, some factors have a direct impact on retention, after adjusting for effects of GPA. The most prominent of these is advising, but the nature of these variables is perhaps different from what most of us would assume.

For freshmen, the recognition of need for advisement seems to be one key to understanding retention. Those who say they felt no need for advising, in particular choosing a major, are less often retained. At the other extreme, among the modest number of students who say they needed and sought out assistance with personal issues, retention was exceptionally high—nearly 100%. During qualitative interviews, advising was also a prominent theme, although these student reports included not only the personal failure to seek it out, but also complaints regarding advising quality and, from others, praise for helpful advising that made the transition to Western easier.

Feeling compatibility with Western instruction not only affects retention indirectly, through GPA, but also directly, with an additional impact beyond the indirect effect. Feeling a small GUR discussion course would have improved the fall experience reduced later retention, and feeling that GURs offer “valuable new ideas and insights” produced higher retention.

One measure of fall quarter course access also predicts eventual retention: registering for three or more courses that were “all you could get” rather than desired courses is associated with lower retention. Students apparently can deal with fewer than three such courses, but three or more (for most, all the courses they took) appears to cross a line. This special case is relatively rare, and it may probably indicate a combination of several factors. First, we know that it never happens to students who attend Summerstart; one indirect effect of Summerstart on retention is therefore that it helps students avoid severe course access problems. Second, engagement and personal organization may be particularly low for students who find themselves in this situation. Third, having such a problematic beginning may sour the entire experience.

A small set of open-ended interviews with students with low fall quarter GPAs confirm several findings from the quantitative analysis. Academic preparation is problematic for these students, although they add that they had particular problems understanding the expectations Western courses and professors would place upon them. They felt that neither

Summerstart nor their first quarter professors adequately explained expectations or how courses would differ from high school. These interviews also confirm the importance of academic engagement versus social engagement, with many of these at-risk students enjoying a too-active social life and few feeling they had engaged with the academic life of Western. Student reports concerning why they failed to engage point both to personal choices and motivations, and also to instruction at Western, which many low performing students felt was impersonal and unengaging, with large classes and professors who were distant. Reinforcing the importance of this issue, the one measure that our quantitative analysis showed to have both a significant direct effect on retention and also a significant indirect effect, through freshman year GPA, was the perception that the fall quarter experience would have been improved by having "a small GUR discussion course."

The focus of this report is to expand our understanding of success during the first year and of freshman retention. In addition, we point to a few possible policy implications of these findings. These might address problems of students' expectations regarding academic demands, identifying low performing students early for advising, stimulating more and earlier student academic engagement, and thinking through issues of Western's increasing size, freshman curriculum, and grading practices.

## INTRODUCTION

In fall of 1998, Western enrolled 2199 new freshmen; in the fall of 1999, 1725 of them returned, for a 78.4% retention rate. This study seeks to discover the determinants of freshman retention and also of grade point average, the key indicator of academic adjustment. The orientation of this analysis, like all those performed by the Office of Institutional Research and Resource Planning, is toward policy. We seek to develop knowledge that may help Western serve its students and the public better—in this case by increasing retention and improving academic adjustment.

In particular, we seek to identify early signs of poor adjustment or of likely non-retention. All Western students were admitted because they showed the promise to succeed. Some of those who encounter difficulties early in the adjustment or decide not to return may have learned that college is not the best alternative for them. For most, however, difficulty adjusting and non-retention reflect a failure on the student's part, a failure of the institution to support the student as well as we might have, or both. Our analysis of what influences retention identifies many factors Western cannot change, such as students' high school academic achievement, but our primary goal is to identify policy-relevant factors measured as early in students' experience as possible.

This report is organized into several distinct but related sections, each leading up to the final combined analysis of what explains non-retention among our 1998 freshman class. After brief discussions of research method and of freshmen enrollment patterns, we examine the effect of GPA on retention—well established through previous research as by far the most powerful determinant of retention. We then search for determinants of GPA, important both as our clearest indicator of academic adjustment to Western and also as our strongest predictor of retention. We then seek to identify other factors influencing retention, above and beyond the effects of GPA. Finally, we summarize findings from intensive, open-ended interviews with a small number of students whose first quarter grades placed them in jeopardy of non-retention, and then conclude with a discussion of policy implications.

## DATA

This study combines findings from three sources:

- ◆ Office of Registrar data on all 2199 freshmen who entered in fall of 1998. The Registrar maintains demographic data, high school information, test scores, and records of students' attendance and performance at Western. The Registrar also supplied one year of complete course transcript information.
- ◆ Findings from a survey of new freshmen administered during winter quarter, 1999, conducted by the Office of Survey Research (587 completed surveys received from a random sample of 1,000). This survey tapped students' initial adjustment to Western, as well as highlighted other important issues.
- ◆ In-depth interviews of 32 at-risk freshmen, selected from participants in the "Winter, 1999 Survey of Fall Quarter Freshmen", also conducted by the Office of Survey Research.

Some additional data elements come from the Admissions Office, and some from the Office of New Student Programs. Appendix A contains the correlation coefficients reported for all variables tested against the outcomes of fall GPA, freshman year GPA, and retention. Appendix B contains descriptive statistics for important indicators.

At all stages of data collection, matching, and analysis, formal protocols were in place to ensure confidentiality of all student respondents. The final dataset is available for use by request from OIRRP, and does not include any student identifiers.

## METHOD

After a brief description of enrollment patterns among 1998 freshmen, this report consists of five main sections. The first describes the relationship between GPA and retention; it focuses primarily on fall quarter, the period of most dramatic adjustment to college life. The second section identifies predictors of fall GPA. The third uses fall quarter GPA predictors to describe the first year cumulative (freshmen) GPA. The fourth section identifies predictors of student retention. The final section reports on qualitative, in-depth interviews with students with low fall quarter GPAs.

The second, third and fourth of these sections rely on formal multivariate statistical methods of analysis. For each of the outcomes examined here (GPA and retention), many potential predictors are tested. The data management problem is to test many possible predictors but not to overwhelm the reader with irrelevant detail. The analysis took the following steps to reduce the complexity of the data presented in this report:

- ◆ The predictors were first grouped into smaller sets of related variables. Bivariate correlations were run to determine whether or not there was any statistically significant relationship between each predictor and the outcome. We excluded the predictors with no statistically reliable relationship from further analysis. Such excluded factors are listed in the report so that the reader will know what factors were tested but were not related to the outcome in this sample.<sup>1</sup>
- ◆ In the rare cases of very high correlations between predictors, we determined which variables to exclude as redundant or to combine.
- ◆ We then tested the remaining predictors in a regression model. We display only those variables remaining significant in the multivariate analysis (the “reduced model”).
- ◆ At the end of each section, a combined regression analysis is run including all predictors retained in each of the earlier reduced models.

Because the first outcome, GPA, is a continuous variable, we use Ordinary Least Squares (OLS) regression analysis. Regression results show us how much each predictor affects GPA, after accounting for the effects of all other predictors included in the model. Results are presented graphically, and are explained in detail at their first occurrence in Exhibit 6. The outcome, retention, is dichotomous (a student is either retained or not retained) and skewed, which dictates use of logistic regression. Results are presented as the

effect of each predictor on the odds of retention. Each method is described below, when findings using it are first presented.

## PREFATORY FINDINGS

### Freshman Quarterly Enrollment Patterns

We know that 78.4% of fall '98 freshmen enrolled again in fall '99. To learn how continuous their enrollment was and when those who withdrew left Western, it is useful to examine quarter-by-quarter enrollment patterns during freshman year. Nearly 91% of all fall '98 freshmen completed the entire year. Of those who returned the next fall, nearly all (98.7%) have the expected pattern of finishing fall, winter, and spring quarters of the first year. The other 1.3% took some kind of leave of absence and returned for the second year.

Of the 474 freshmen who did not return in fall '99, 62.2% attended Western the entire year, then failed to return for a second year. The other 37.8% withdrew from Western some time during their first year. Exhibit 1 shows the withdrawal pattern of the 474 non-retained freshmen. Eighteen students withdrew during fall quarter and did not return for any quarter in the 98/99 year or the following fall. Another 50 students finished fall quarter, and then didn't return. By the end of their first quarter, 14.4% of those who would eventually withdraw had already left Western. By the end of the second quarter, 28.2% had left.

Most withdrawals appear to arise from planned decisions. Two-thirds of withdrawal occurs over the summer, when transfer or movement to employment is most easily managed. Most of the remainder of withdrawal occurs between quarters. Just under fifteen percent of withdrawals (3% of the freshman class) withdrew from school during some quarter, rather than between quarters. Leaving in the middle of a quarter may imply special issues, such as health problems, serious adjustment problems, drug or drinking issues, etc.

Exhibit 1: Withdrawal Patterns of Non-Retained Freshmen

<b>When Student Left Western</b>	<b>Count</b>	<b>Percent</b>	<b>Cumulative Percent</b>
During fall	18	3.8	3.8
After fall	50	10.6	14.4
During winter	24	5.1	19.5
After winter	41	8.7	28.2
During spring	27	5.7	33.9
Other pattern	19	3.9	37.8
After spring	295	62.2	100.0
TOTAL	474		

### Completing Freshman Year vs. Withdrawing During the Year

Among the 474 freshmen not returning in fall of 1999, most (62.2%) attended Western all year. An initial look at the data shows no basic differences between non-retained freshmen who stay all year and those who drop out during the year, except for their housing

situation. The timing of withdrawal is significantly related to the student's residence. Of withdrawing students who lived on campus, 70.7% finished the year, compared to only 38.9% of those who lived off campus. It may be that the act of signing a one-year on-campus lease (even though it may be broken without penalty if the student withdraws at the end of a quarter) adds to commitment for the year. Or it may be that engagement with campus life is greater for those living on campus and the decision to leave emerges more clearly for these students after they depart campus in summer.

### Special Case of Students Not Finishing Fall Quarter

A handful of new freshmen never really began their college careers: thirty-two withdrew before the end of their first quarter, fall 1998. For three students, this was only a temporary setback: they returned for winter and spring quarters, and enrolled in fall of 1999, thereby falling into our "retained" category.

The remaining 29 students did not return in fall, 1999. How do these 29 students differ from the other non-retained freshmen? They have an almost 0.2 lower high school GPA, and they are much less likely to live on-campus (38% compared to 76% for other non-retained freshmen). Some additional differences that are marginally reliable statistically are a lower Admissions Index, a lower likelihood of attending Summerstart and a higher likelihood of local residency.

Of these 29, 18 left before their first quarter was over and never returned. The other eleven returned to enroll for winter quarter, but only four of these continued their enrollment to spring quarter and none continued into the next fall. There are two statistically significant differences between these the 18 who never returned and the eleven who returned for another try before withdrawing. Seventeen of the 18, but only one of the eleven, lived off-campus, and none of the 18, but five of the eleven, have local home addresses (Whatcom County, Skagit County, or British Columbia).

## SECTION ONE: EFFECT OF GPA ON RETENTION

Research on college retention universally shows that receiving low grades is a powerful indicator of student withdrawal. Cumulative GPA has a clear association with retention because of imposed academic standards (indeed, students with consistently low GPAs are asked not to return), because of the failure implied by low grades, and because of the various aspects of motivation and academic preparation that influence both GPA and retention. Both because of the importance of GPA to retention and also because GPA is in itself an important indicator of students' academic adjustment, we begin our analysis here.

### Effect of Fall Quarter GPA on Retention

We use GPA from fall quarter as our measure of initial academic adjustment to Western.<sup>2</sup> If we are to use the findings from this analysis to suggest ways Western might identify those most at risk of non-retention, such indicators should be available early in the freshman year, making fall GPA the most valuable to study.

The 2,145 students who finished fall quarter achieved an average GPA of 2.67.<sup>3</sup> The freshman fall quarter grade distribution is quite different for retained students and non-

retained students. As shown in Exhibit 2, fall GPA is 2.78 for retained freshmen, compared with 2.24 for non-retained freshman. In particular, extremely few retained freshmen had fall GPAs in the lowest ranges, whereas considerable numbers of those who eventually withdrew had GPAs in the lowest categories, well below 1.0, a D average.

Exhibit 2: Fall '98 GPA Distributions for Retained & Non-Retained Freshmen

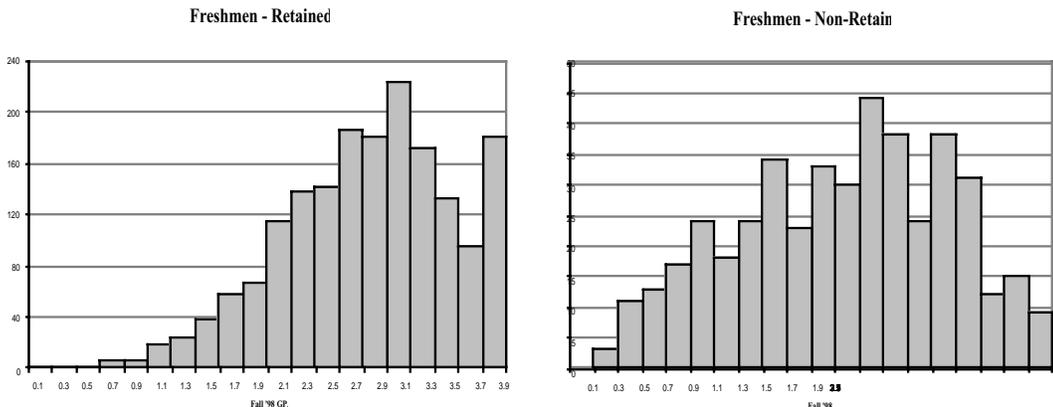
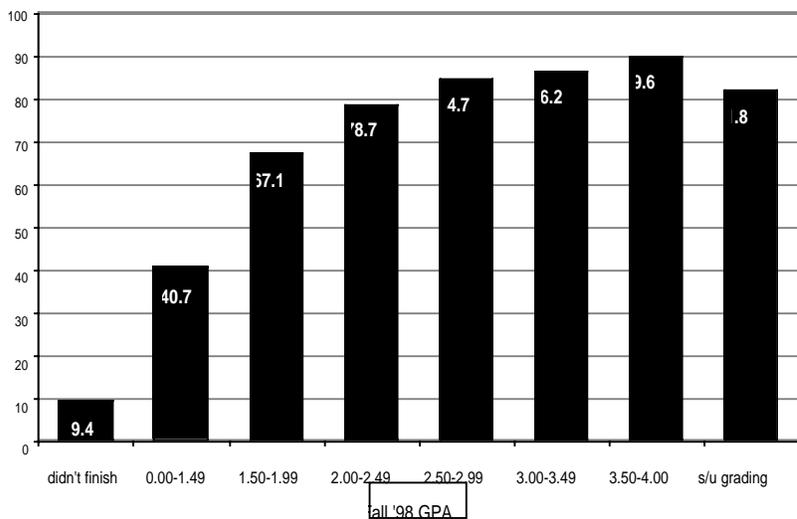


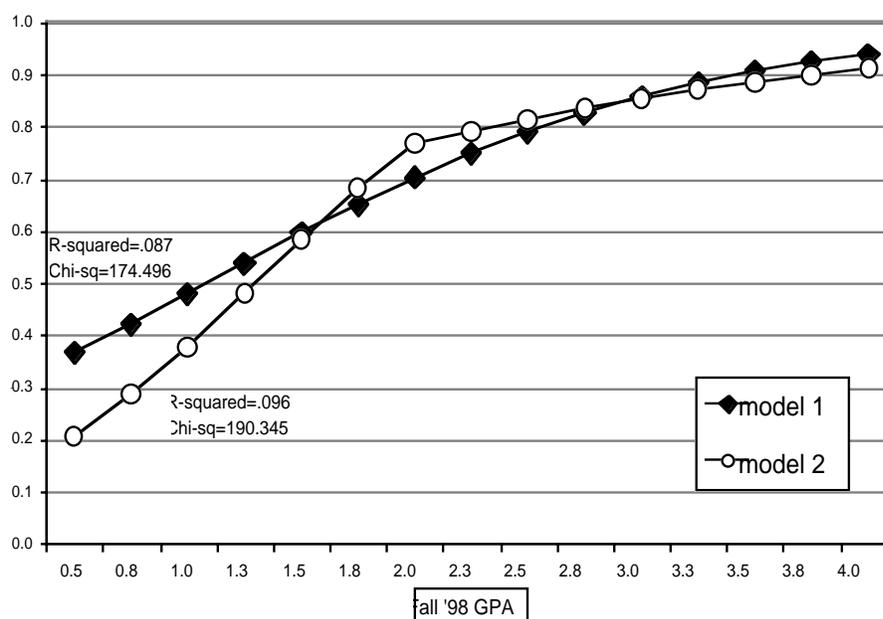
Exhibit 3 clarifies this picture by detailing how much the percent retained increases with level of GPA. About half of all freshmen (1080) fall in the 2.5 to 3.5 GPA range, with an average retention of 85.5 percent. Of the 270 freshmen with a fall 98 GPA of 3.5 or higher, 89.6 percent returned the following fall. Only about half (52.2%) of the freshmen with less than a 2.0 fall GPA are retained. One of the most intriguing observations apparent in Exhibit 3 and confirmed by more formal analysis is that GPA has a non-linear effect, in essence operating as two different variables. The percent retained increases dramatically from the lowest GPA until a GPA of 2.0, and then shows a modest, monotonic increase from 2.0 through 4.0. Thus, one effect on retention is GPA, in its full range, while a second effect might be called “failing GPA,” and this second effect is much stronger.

Exhibit 3: Percent of Freshmen Retained by Fall '98 GPA



To provide a more precise estimate of the impact fall GPA has on freshman retention, two logistic models were run with retention as the dependent variable. The first includes only fall GPA as the independent variable (Model 1). This model tells us that fall GPA explains about 8.7% of the variation in retention, and gives a probability of .82 that a student with the average fall GPA (2.67) will be retained. The second model included an additional variable indicating how far below 2.0 a GPA is (Model 2). Exhibit 4 shows that Model 2 is a significantly better fit than Model 1.<sup>4</sup> Model 2 explains 9.6% of the variation in retention, and shows a dramatic decline in probability of retention as GPA goes from 2.0 down toward zero. It also makes clearer that as long as GPA is above 2.0, it has only a slight impact on retention, moving from an estimated 77% retention with a 2.0 fall GPA to 91% retention with a fall GPA of 4.0. Further analysis shows no significant improvement in fit for models with additional variants on the GPA variable.

Exhibit 4: Effect of Fall GPA on Retention



### Effect of Cumulative GPA on Retention

We now examine the impact of cumulative freshman year GPA on retention, which should be a stronger predictor of retention, if for no other reason than that a consistent low GPA results in academic dismissal. In addition, a single quarter's poor performance can be a warning sign that motivates behavioral change, whereas a consistent pattern of failure sends a less hopeful message.

Of 1998 freshmen who attain a fall and winter GPA of less than 2.0 (n=136), only 41.9% return the next fall. At the other extreme, 1572 achieve GPAs of 2.0 or greater for both fall and winter quarters. Of these, 88.2% were retained in fall 1999. Of students who fail in the fall, (GPA < 2.0) but then receive a winter quarter GPA of 2.0 or above (n=210), 72.4% are retained. Similarly, of students who attain a fall quarter GPA 2.0 or above, then fail in the winter (n=135), 71.9% are retained. In short, students who fail one, but not both, of their

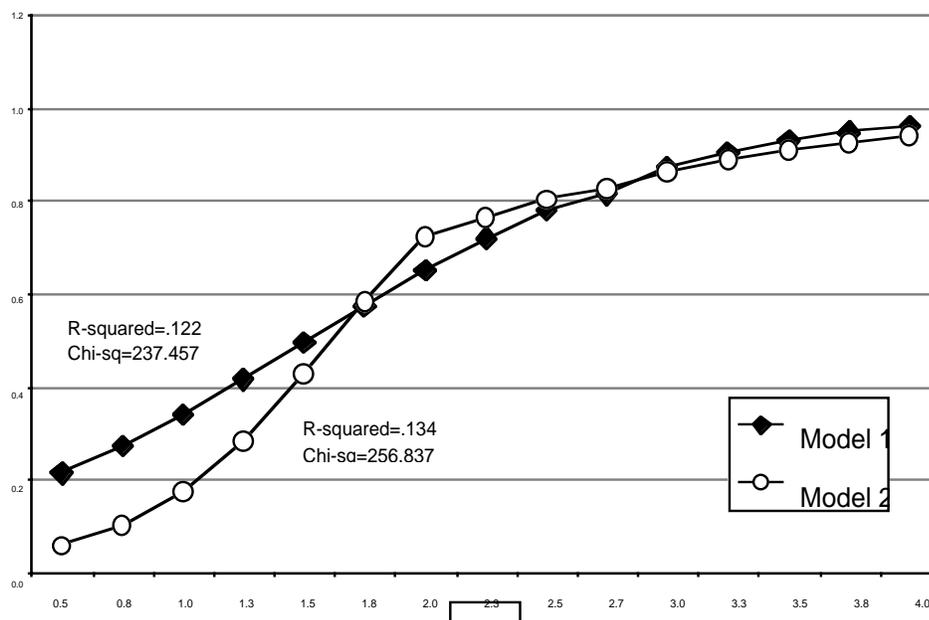
first two quarters have more of a chance of retention than those failing both. However, they are still retained less often than students who received a GPA of 2.0 or greater for each of their first two quarters.<sup>5</sup>

**The Function of Academic Dismissal:** Freshmen are not subject to academic dismissal until they have completed at least three quarters at Western. By the end of their spring quarter, 61 students failed to meet Western’s scholarship requirements and were dismissed. These 61 students represent 12.9% of all non-retained students, and almost 2.8% of all fall ‘98 freshmen. While all other withdrawals had the option to remain, many of them were on probation and at risk of dismissal. That knowledge no doubt influenced many decisions.

The effect of the cumulative freshman year GPA on retention is displayed in Exhibit 5, which reports two logistic regression models predicting probability of retention. One model uses fall GPA as the independent variable, while the other uses the full year cumulative GPA. Both models pose GPA in its non-linear form, including an additional impact of distance below 2.0.

Exhibit 5 shows that the full year cumulative GPA has more than twice the explanatory value of fall GPA, explaining 20% of the variation in retention. It also shows that the pattern of the effect is the same for both, except that it is much more extreme in the case of cumulative GPA. As cumulative GPA drops from 2.0 toward 1.0, the probability of retention drops very rapidly, reaching a level below ten percent if cumulative GPA is below 1.3.

Exhibit 5: Effect of Fall & Winter GPA on Retention



### The Effect of GPA on the Timing of Withdrawal

Analysis showed very little impact of GPA on quarter of withdrawal. There appears to be a slight trend for students with a higher fall GPA to be more likely to finish out the year before withdrawing, but the relationship is not statistically significant. Thus, the decision

to withdraw is profoundly affected by GPA, especially low GPA, but the timing of the decision—during or after freshman year—is affected little if at all by GPA. One implication of this finding is the potential value of locating students who fail their first quarter and helping them bring up their grades in subsequent quarters. Even students with extremely low GPAs are as likely to finish the year—to attempt additional quarters—before withdrawing as those with marginally failing GPAs.

## SECTION TWO: FACTORS INFLUENCING FALL GPA

As shown above, GPA explains 10-20% of variation in freshman retention. Although GPA is by far the most powerful effect, a great deal of non-retention remains unexplained, and we have many other variables to consider. These variables may influence retention directly, or indirectly by having an effect on GPA, which in turn affects retention. Before we attempt to find other factors influencing retention, we will identify some factors that influence GPA. This analysis also gives us a look into influences on a primary indicator of successful academic adjustment to college. GPA is a blunt, summary measure, but is nonetheless the outcome most clearly indicating academic adjustment.

We first examine the factors influencing fall GPA. Of our two GPA measures, fall quarter GPA is the weaker predictor of retention, but serves as an excellent early indicator of academic adjustment. It is also the most useful focus if we are to recommend interventions, since 85% of all who eventually leave before their second year at Western are still with us during winter quarter. Waiting any longer than the end of fall quarter to identify at-risk students would essentially doom the effort. Indeed, to the extent that we can identify risk factors known to us before the end of fall quarter, intervention efforts have even more opportunity to be effective.

### Characteristics and Experiences Prior to Arrival at Western

To a great degree, GPA is determined by what a student brings to Western. We test the effect of several student characteristics that are determined before the student arrives at Western. Appendix A lists the bivariate correlations between fall GPA and all of the variables we are testing for possible effects.

**Demographic Factors:** The correlations between fall 98 GPA and various demographic background variables are small, indicating only small possible effects on fall GPA. Women receive somewhat higher fall GPAs. The 311 minority students in our data have somewhat lower fall 98 GPAs. The data include 116 students from Whatcom County; they have slightly higher fall GPAs. Nearby students from Skagit, Island, and San Juan counties and from British Columbia, Canada also have slightly higher GPAs. Of the ethnicity variables, only “white-non-Hispanic” shows a positive relationship with fall GPA, with each minority group’s average GPA lower than that for whites. The modest numbers of minority students in the analysis makes precise estimates difficult to achieve, but GPA for two minority groups are modestly, but reliably lower than for all others: African-Americans and Asian-Americans.<sup>6</sup>

**High School and Pre-College Test Performance:** Our dataset supplies several indicators of pre-college performance. Previous research has routinely shown high school GPA to be

the strongest single predictor of college GPA. SAT scores, both math and verbal, are also strong predictors of college performance. 'High School Percentile' is another important indicator of high school performance, and is reported for 1861 freshmen.<sup>7</sup> Appendix A shows fall 98 GPA correlations with each of these pre-college indicators and confirms the same relationships found repeatedly in the research literature.

*Running Start, 'College in the High School,' Advanced Placement Credits:* Many high schools now offer ways to earn college credit while attending high school, and students can also earn credit through advanced placement tests. More than one-third of new freshmen began their Western career with transfer college credits. Of the 808 students entering with college credit, one-third have five or fewer credits and half have ten or fewer credits. Forty-two students (2% of new freshmen) have already earned 90 college credits, and effectively enter Western as juniors. Two hundred fifty students earned credits through the 'Running Start' program (average credits = 30.4), 266 earned credits through advanced placement (average credits = 10.8), and 292 earned credits through the 'College in the High School' program (average credits = 17.5). Appendix A shows correlations with variables related to transfer credits. Overall, students with transfer credit from any source tend to achieve a higher fall 98 GPA. Also, the higher the number of transfer credits a student has, the higher their fall 98 GPA tends to be. This tendency is weak for Running Start students, and particularly strong for Advanced Placement students.

#### Characteristics and Experiences Prior to Arrival at WWU: A Multivariate Analysis

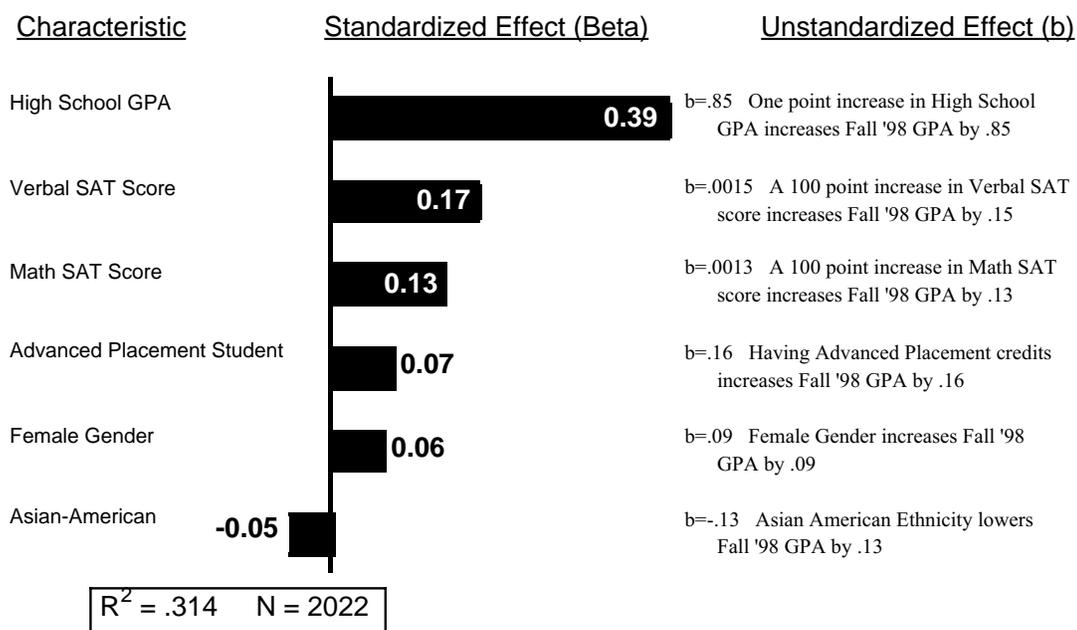
The several 'student characteristic' variables that have been found statistically related to fall quarter GPA are now moved to the next stage of analysis. Because many of these variables overlap with each other, some may be associated with GPA without actually influencing it. Multivariate analysis eliminates that overlap, separating and estimating the unique effect each variable is likely to have on the outcome, in this case, GPA. The Key Predictors thus identified are the ones our research finds most likely to actually influence the level of GPA each student achieves.

Exhibit 6 is a graphic display of this multiple regression analysis. It includes only those factors that emerged from the multivariate analysis estimated to have significant effects on GPA. The bar chart on the left shows the relative magnitude of each variable's effect in the model. That is, it is accurate to say that the effect of high school GPA (.39) is much "greater than" the effect of Verbal SAT (.17), which is greater than the effect of Math SAT (.13), and so forth. The unstandardized slope (b) value is a literal indication of the size of the impact (how much change in GPA is caused by a change in the predictor, expressed in terms of the original metric of each measure). The text to the right of Exhibit 6 verbally explains the impact of the predictor on GPA by translating the regression slope (b) into words. We present both types of findings because the standardized (graphed) findings are easier to "see" and compare, but they are subject to possible misinterpretation.<sup>8</sup> Reading both will give the reader a fuller understanding of the magnitude and nature of each effect on fall GPA.

The total model presented in Exhibit 6 explains 31.4% of the variation in fall GPA among new freshmen. We expected high school GPA to be the most important predictor of fall GPA, based on previous research. As indicated by the bars in Exhibit 6, high school GPA indeed has,

by far, the strongest effect on fall quarter GPA. Verbal SAT score is also important, independent of high school GPA, but much of the apparent (bivariate) effect of SATs, especially in math, is due to the fact that those students who achieved a high math SAT score also have higher high school GPAs. The effect of being African-American disappears when controlling for high school GPA, but the Asian-American ethnic group is still associated with slightly lower GPA. The effect of being female is reduced but remains positively associated with fall GPA, over and above women’s higher high school GPA. Being an advanced placement student also lifts freshman GPA, even though highly correlated with GPA and SATs, suggesting that it may be a proxy for motivation or academic maturity.

### Exhibit 6: Effects of Student Characteristics on Fall '98 GPA



Fall '98 to Fall '99 Freshmen Retention, WWU Office of Institutional Research & Resource Planning

It is an interesting side note that this set of “student characteristics” has its greatest impact on academic adjustment in fall quarter. While these variables explain 31.4% of the variation in fall GPA, they explain only 25.8% of the variation in winter quarter GPA. By winter quarter, the only indicators of GPA are the performance variables, with high school GPA having the strongest effect, followed by verbal SAT scores and, finally, math SAT scores.

#### Experiences Since Arriving at WWU

GPA is, of course, strongly affected by students’ personal characteristics such as ability and determination, but it can also be affected by factors that are determined only after arriving at Western. Choices such as living arrangements, the number of credits taken, or even the particular courses taken can influence GPA or can act as indicators of students’ orientations and motivations which, in turn affect GPA. A student’s experience with Western’s orientation programs, services, departments, and advising, and general adjustment to campus life may have a direct effect on GPA.

**New Student Programs:** Western offers a variety of new student orientation programs. New freshmen are strongly encouraged to attend the Summerstart program, offered during August of each year. This one-day program provides freshmen with information about General University Requirements (GURs), majors and major requirements, and information about Western's many programs and services. One of the primary activities at Summerstart is student registration. Attendance at Summerstart allows students to register early, assuring better access to first choice courses. Almost 89% of new freshmen attended the 1998 Summerstart program and pre-registered for fall courses. Analysis of student satisfaction with course access indicates no difference depending on which Summerstart day the student attends. For the purpose of this analysis, we therefore focus only on whether or not a student participated in Summerstart, not which day they attended.

Students who attend Summerstart have slightly higher fall GPA. There are, however, several possibilities for this relationship. First, it could be that Summerstart provides freshmen with some crucial information, aiding their transition and academic success. Second, it could be that students attain higher academic performance when they are able to register for the courses they want or need. A third theory—that students who attend Summerstart are more organized, dedicated, engaged or academically prepared—seems especially logical. However, we find that after controlling for high school performance, Summerstart remains a reliable predictor of fall GPA.

**Housing:** It is possible that different housing situations effect academic success. Freshmen are generally encouraged to live on campus their first year, in hopes that that they may enjoy an easier integration into college life, which may translate to greater academic success. However, even in campus housing designated as alcohol free and quiet, such close-quarter living may also cause social stress and distractions. Appendix A contains bivariate correlations between housing variables and fall '98 GPA.

Fifteen percent (340) of new freshmen lived off campus their first year. These students earned the same fall quarter GPA as their class as a whole. The remainder of new freshmen lived on campus in one of the sixteen residence halls. The hall with the largest number of freshmen is Fairhaven, housing nearly 20% (368) of the on campus new freshmen. The average fall GPA for these students is 2.54 compared to 2.67 for freshmen as a whole. This difference is slight but statistically significant. Nash Hall and Mathes Hall each house about 14% (261 and 257 respectively) of on-campus new freshmen. Those freshmen living in Nash Hall have an average fall quarter GPA of 2.82—slightly higher than average. No other residence hall has a freshman average GPA that is statistically different from average. The 13 freshmen living in Edens Hall South have a fall quarter average GPA of 3.15—a much higher average than the group, but a difference that could have occurred by chance, given the small number of students involved.

However, the observed differences among residence halls turned out be the result of student selection. That is, students with better high school preparation for some reason requested particular residences. Therefore, what appeared to be an effect of living in one residence hall over another is, in fact, a pattern of students with some similar characteristics choosing particular residence halls. We also tested whether residence halls with a greater majority of freshmen suffer from a general environment that is less conducive to produc-

tive study. However, analysis indicates that there is no association between the percent of students in each hall who are freshmen and GPA.

We also tested whether those residence halls that are substance free have higher GPAs. Of Western's sixteen residence halls, eight have at least some substance free floors. Ridgeway Alpha is the only hall that is entirely substance free. Higher average freshman GPA is associated with those residence halls with at least some substance free floors. However, this trend is not statistically significant. Of the eight that have some substance free floors, six house students with higher than average GPA, and two with lower than average GPA. Of the eight non-substance free halls, the opposite is true: two house students with higher than average GPA, and six with lower than average GPA. However, differences are not large enough to be reliable. A more precise analysis of substance free living would require floor-by-floor data, which is beyond the scope of this analysis.

In summary, although based on limited data, we find that fall GPA is not determined by a student's selection of residence halls. None of the residence variables tested proves to be an important indicator of fall GPA. Nor does living on or off campus influence GPA.

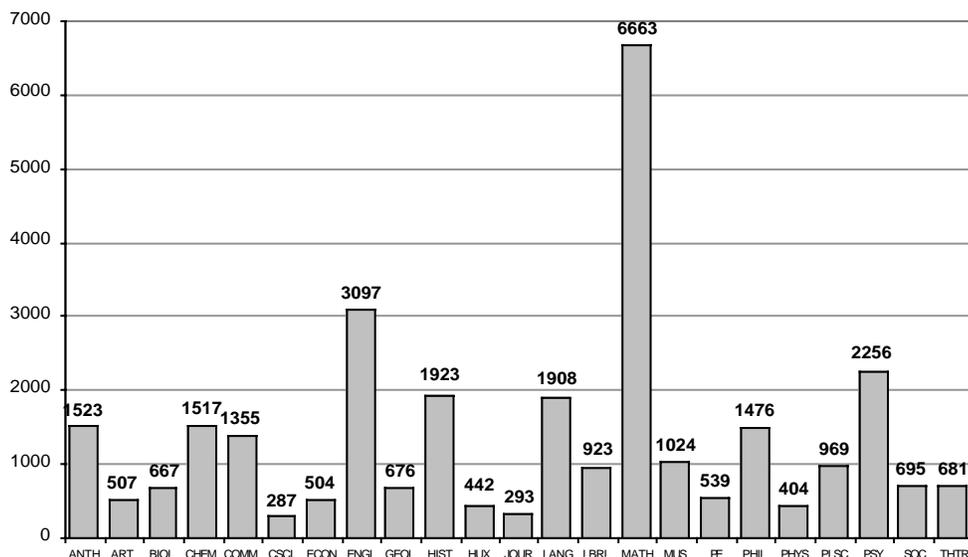
**Course Information:** A student's GPA may be affected by the particular courses he/she takes. A student enrolling in more difficult courses or courses that, for whatever reasons, award a less favorable distribution of grades may receive an overall lower GPA. Similarly, courses that hold greater interest for many freshmen or that are particularly engaging may generate higher GPAs among enrolled students. We seek to determine whether there is an effect by subject or course that is independent of apparent student ability, as measured by high school achievement. Fall quarter freshmen took an average of 3.9 courses each, and those receiving grades achieved an average grade of 2.72. Average grade does not include course withdrawals, incompletes, or s/u grading. Those receiving a grade of F and Z are included with a 0.0 grade.

The fall quarter distribution of grades is not atypical for universities, although perhaps lower than many selective institutions, with a grade of B the most common, followed by fairly even numbers of A's and C's. Specifically, 24.5% of grades given to freshmen are in the A range (A to A-), 39.2% in the B range (B- to B+), 25.4% in the C range, 7.2% in the D range, and 3.9% failures. This distribution of grades is apparently significantly lower than freshmen receive at the University of Washington, but we have no statistics adjusting for differences in background, etc.

Exhibit 7 shows each department's share of fall '98 courses taken by new freshmen.<sup>9</sup> Almost all courses taken by new freshmen are 100 or 200 level courses (97.5%), with most of those in the 100 level. In fall quarter, new freshmen enrolled in between 3 and 29 credits with an average of 14.6 credits. Almost all students (97.2%) enrolled for between 12 and 17 credits, with 54.4% enrolling in 14 or 15 credits.

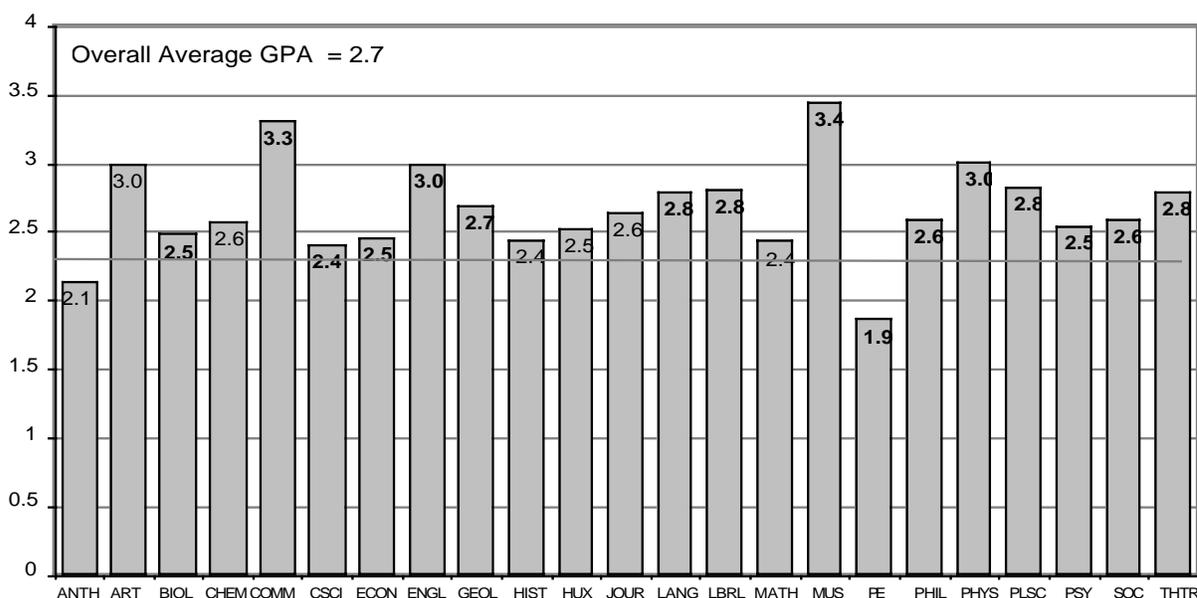
In fall quarter, new freshmen enrolled in 1371 Math courses – by far the largest share of freshman enrollment, accounting for 20.8% of freshman Student Credit Hours (SCH). English courses accounted for 9.1% of total freshman SCH, followed by Psychology (7.0%), History (6.0%), and Modern & Classical Languages (6.0%).

Exhibit 7: Fall '98 Freshman Student Credit Hours (SCH) by Department/Program



Average grades given by department vary considerably. Exhibit 8 displays the average grade given by each academic department that generated at least 250 fall freshman SCH (i.e. more than 50 freshmen enrolled in courses in that department). GPAs in bold type indicate those averages that are statistically higher or lower than the overall mean. Other differences are small enough or are based on small enough numbers of students that they could easily have occurred by chance. (See Exhibit 8.)

Exhibit 8: Fall '98 Average Freshman Grade by Department/Program



Readers may combine data in Exhibits 7 and 8 to estimate the impact of grading differences, one showing the average grade by department and the other showing the number of credits that contribute to the average. For example, the high average grades in Music, Communication and Art apply to 1024, 1355, and 507 SCH respectively, while the lower than average grades in PEHR, Anthropology, Math, History and Computer Science apply to 539, 1523, 6663, 1923, and 287 credit hours, respectively. While the average for Math is less extreme than in some cases, its impact on the freshman class is much greater because of the number of students involved.

The distribution of grades received by students results from an interplay of students' achievement and professors' grading culture. For example, Western and the University of Washington enroll students with very similar high school records, but the average fall quarter 1998 GPA of UW freshmen is .39 higher than that for Western students (3.06 vs. 2.67). If we asked how much impact on GPA is produced by choice of school, over and above that predicted on the basis of high school GPA, we would conclude that freshmen are advantaged by a bit over one-third grade point by attending UW. Without much more detailed study, we would not, however, know whether the difference came from greater student engagement and motivation, or differences in professors' average grading tendencies.

If particular departments have different cultures concerning the distribution of grades or have different average abilities to engage students' interest and motivation, then students' grades will depend on which departments they take their courses in. On the other hand, students with stronger academic backgrounds may take courses from particular departments, in which case average grade differences are likely accounted for by differences in student preparation rather than by differences in grading cultures. In that case, differences shown above in Exhibit 8 would indicate differences in the strength of the students who take the courses, rather than differences in grading patterns. This distinction is addressed more systematically in the multivariate analysis below (see Exhibit 12).

Perusing Exhibit 8, we can see that the distribution of grades is quite similar across departments within Western, but that some assign grades that are reliably higher or lower than the average. Exhibit 12 presents our best estimate of which differences cannot be explained by differences in student background. For the most part, grading conventions and success at engaging student effort in the first quarter are quite equal across all Western departments.

We know from unpublished analysis done earlier by the Provost's Accountability Work Group that dropping courses is a major factor in students' graduation efficiency and that both failing grades and dropped courses contribute to non-retention. Examining the issue, we find considerable differences by department.

Listed in Exhibit 9 are the academic departments with fall quarter freshman SCH of 250 or more. The next column lists the number of students served. The third column is the percent of students who received a grade of D, F or U (for S/U grading), and the fourth is the percent of students who drop a course or receive a grade of Z (failure due to discontinued attendance). Twenty-four percent of freshmen who take a course in Anthropology receive a D, an F, or a U for the course, and 3.5% discontinue their attendance either by legitimate withdrawal or with-

out formally withdrawing from the class. Indeed, as shown in Exhibit 8 above, the average grade assigned to freshmen by the Anthropology department is 2.14. The average fall Math grade is closer to the overall average, but 6.4% of freshmen (88 students) either dropped a Math class or discontinued attendance without withdrawal. While Physics/Astronomy generates a below average proportion of low grades, it shows the highest drop rate, at 8.8%. Overall, the variation across departments in the percent of students who drop classes is considerably smaller than the variation in grade distributions.

Exhibit 9: Number of Students Failing or Dropping by Department

Department	Number Students	Percent D,F or U	Percent Drop or Z
Anthropology	314	23.9	3.5
Computer Science	81	21.0	1.2
Math	1371	15.2	6.4
Journalism	81	14.8	2.5
Biology	166	14.5	0.6
Chemistry	309	13.9	2.9
Psychology	468	13.2	4.1
Business	149	12.8	6.0
Sociology	139	12.2	0.7
Philosophy	492	11.2	4.9
History	476	9.5	2.7
Languages	426	8.9	7.0
Geology	164	7.9	0.0
Art	169	7.7	2.4
Environmental Stud.	88	6.8	2.3
Physics/Astronomy	114	6.1	8.8
Theater	234	5.1	4.7
Liberal Studies	198	5.1	3.5
Political Science	195	3.6	4.1
Music	474	3.0	4.0
Communications	338	2.1	2.1
PE/Health/Rec	435	1.8	1.8
English	719	1.5	1.7
Fairhaven	110	0.0	5.5

Looking more closely at the sources of variations in grading, it is likely that grades are awarded differently, or engagement achieved differentially, in particular courses. This issue is of some importance in the case of freshmen, where so many take large courses, offered as large lectures or in multiple sections. Indeed, average differences across departments may be produced by particular courses taken by most freshmen. To address this issue, we move to examine individual courses rather than departments, testing for possible effects on fall GPA. To examine the courses that can potentially affect the greatest number of freshmen, we limit the list of courses examined to those with 100 or more freshman enrollment.

Exhibit 10 shows the nineteen courses in which one hundred or more new freshmen were enrolled during fall of 1998, along with descriptive data characterizing grading patterns. These courses account for 57% of the total new freshman SCH. Courses are sorted in order of enrollment levels. At the left, Exhibit 10 displays the number of students enrolled and the percent of all new freshman SCH generated by each course. Not surprisingly, Math 102 and English 101, each with over 600 new freshmen enrolled during fall, head this list. Other courses enrolling more than 250 new freshmen are Psychology 201, Math 114, Communications 101, and Chemistry 121.

Exhibit 10: Fall '98 Courses with 100+ Freshman Enrollment

Course	Frosh Enroll	% Frosh SCH	% A	% B	% C	% D	% F	% Drop	Average Grade	Impact on fall GPA
Math 102	619	9.7	11.5	28.9	32.3	15.3	7.6	4.4	2.2	Yes
Engl 101	610	7.6	17.4	62.1	17.5	1.1	0.7	1.1	3.0	No
Psych 201	379	5.9	15.6	30.3	34.3	10.8	3.7	5.3	2.5	Yes
Math 114	368	5.7	9.8	35.1	34.0	9.8	3.8	7.6	2.4	No
Comm 101	272	3.4	58.1	36.4	3.7	0.4	0.7	0.7	3.4	No
Chem 121	271	4.2	17.0	37.3	28.0	8.9	6.3	2.6	2.5	Yes
Hist 103	199	2.5	5.5	40.7	42.2	7.0	1.5	3.0	2.4	Yes
Hist 104	196	2.4	10.7	42.9	34.2	6.1	4.6	1.5	2.5	Yes
Biol 101	161	2.0	17.4	36.0	30.4	9.3	5.6	1.2	2.5	No
Geol 101	141	1.8	17.7	43.3	30.5	7.1	1.4	0.0	2.7	No
Phil 102	141	1.3	32.6	19.9	19.1	10.6	10.6	7.1	2.5	No
Phil 112	128	1.2	7.8	39.1	39.1	7.0	0.8	6.3	2.5	No
Anth 102	119	1.9	5.0	19.3	31.9	26.1	13.4	4.2	1.7	Yes
Econ 206	118	1.5	16.1	33.1	35.6	6.8	5.9	2.5	2.4	No
Thtr 201	110	1.0	3.6	57.3	27.3	2.7	1.8	7.3	2.6	No
Anth 201	109	1.7	7.4	20.2	43.1	18.3	5.5	5.5	2.0	Yes
Art 109	108	1.0	26.9	37.0	25.0	8.3	1.9	0.9	2.8	No
Math 156	106	1.3	29.2	26.4	20.8	2.8	9.4	11.3	2.7	No
Phil 114	100	0.9	13.0	48.0	29.0	4.0	3.0	3.0	2.6	No

Exhibit 10 also displays the distributions of grades and grade average in these courses, along with the percent of students who drop each course. Scanning Exhibit 10 demonstrates the marked variety of grading patterns across courses/instructors. The percent of A grades awarded, for example, varies from 58.1% to 5.0%. At the other extreme, the percentage of D and F grades varies from 39.5 to 1.4, and the proportion who drop each course varies from 11.3% to 0.0%. The result is that the average grades of all freshmen taking the course varies from 1.7 to 3.4. While some of these variations are no doubt accounted for by differences in student ability, these differences are far too great for those differences to be the primary explanation. Student engagement and professor grading patterns vary widely, as is presumably typical at any university, given our decentralized and individualized understanding of instruction.

In addition, some of these courses also enroll a considerable number of upperclassmen, which may have an impact on the grades received by the freshmen enrolling in them. Unfortunately, a test of that possibility will have to wait for another analysis, as the necessary data are not available at this point.

One final analysis is conducted on high-enrollment GUR courses. It is also possible—and is particularly distressing to students if it occurs to any serious degree—that different sections of the same course will generate significantly different grade distributions. We explore this possibility for the nine courses that offered five or more sections. Exhibit 11 lists these, with the number of sections for each and the results of an Analysis of Variance test that identifies whether or not the average grades across all the sections differ to a degree that is statistically reliable. That is the case for six of the nine courses. Differences are modest in three of the six cases, however. Although the differences are great enough that occurring by chance would be very rare, they are too small to have a substantial impact on overall GPA or to be noticeable to the students taking the course. (See Exhibit 11.)

Exhibit 11: Fall '98 Courses with 100+ Freshmen Enrollment  
(ANOVA Between Sections for Courses With More Than Five Sections)

Course	Number of Sections	Sections Reliably Different	ANOVA 'F'	Significance
Communications	5	Yes	9.29	0.000
Economics 206	8	No	1.22	0.296
English 101	27	No	1.47	0.065
History 103	5	Yes	14.22	0.000
History 104	7	Yes	5.60	0.000
Math 102	13	Yes	9.45	0.000
Math 114	11	No	1.52	0.133
Philosophy 112	5	Yes	5.66	0.000
Philosophy 114	5	Yes	4.82	0.001

The ANOVA 'F' statistic is a measure of how 'different' the sections are. The higher the 'F', the greater the variation in grading between sections.

The three cases where average grades differ substantially are Communications 101, History 103 and Math 102. It is useful to examine these three cases in greater detail. In particular, we ask whether differences in the readiness or engagement of students might explain the differences across sections. In two cases, that is correct.

Fewer than ten percent of students failed to attend the Summerstart Orientation. These students are, on average, slightly less well prepared for college as judged on the basis of high school grades. More importantly, for many of these students, failure to attend Summerstart indicates a relative lack of engagement, planning, or organization. In addition, new freshmen who bypass the opportunity to register early end up experiencing great difficulty finding courses they want. For all these reasons, it seems likely, and it is in fact the case, that students who enter courses at the last moment (just before or during the first week of school) will be less successful than others. By the same token, if particular sections of courses are made available to these late registering students and are therefore filled at the last moment, the average grades in these sections should be lower.

We tested whether the differences in average grades across sections are accounted for by the proportion of students who registered late—during the week before or first week of classes. In the cases of Communications 101 and History 103, that is the case. While 89% of all students attended Summerstart, only 69% of students taking History 103 or Psychology 201 attended Summerstart. For each course, one or two sections remained open late in the registration process, and therefore contained many late registering students. These were the same sections that produced especially low grades. We have no way of assessing how much this occurred because these students were poorly organized or lacked engagement, and how much because many students were not motivated to take these courses and did so because they were all that remained available.

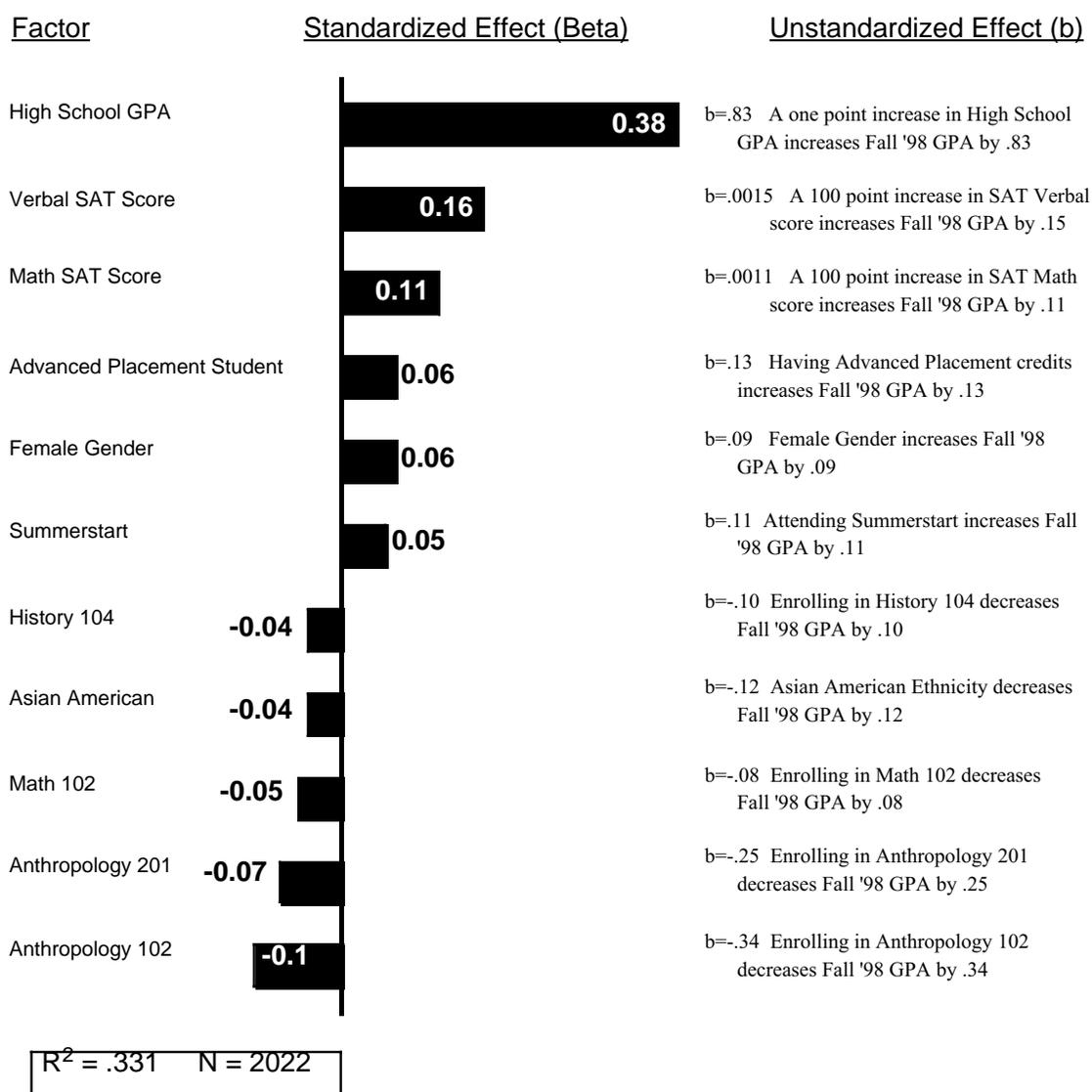
In the case of Math 102, differences across sections were not explained by the timing of registration nor by measures of academic preparation—math SATs, Math Placement Exam and high school GPA. Instead, we found that sections offered at 8:00 am or at 4:30 pm, all taught by Teaching Assistants, generated substantially lower grades than those taught by faculty at more popular hours. This finding conditions the finding shown in Exhibit 10. On average, Math 102 produces lower grades than other courses and reliably lowers students' fall GPA. However, that effect is produced by only about half of Math 102 sections. The half taught by faculty produce grades at the university average, whereas the half taught at less desirable hours by Teaching Assistants produced extremely low grades, with section averages ranging from 1.4 to 2.0, compared with an average over all courses of 2.67.

### All Student Information Systems (SIS) Factors

We now produce a model predicting GPA that includes all of the data elements discussed above, collected from the Admissions Office, the Office of the Registrar, and New Student Programs. This model, shown in Exhibit 12, has slightly more explanatory power than the student characteristics model shown in Exhibit 6, explaining 32.6% of the variance in fall quarter GPA. The addition of variables such as Summerstart and course information are interesting, but their impact is modest. (See Exhibit 12 on next page.)

High school performance remains the strongest indicator of fall quarter GPA, with high school GPA and SAT scores dominating the model. Attending Summerstart is also significant, predicting a 0.15 higher fall quarter GPA for those who attend. That difference occurs after taking into account the stronger high school preparation of those attending Summerstart. Summerstart attendance may indicate either a difference in motivation and engagement or a difference produced by the advising and early registration available at Summerstart. Women and students who entered Western with advanced placement credits also earn higher grades, over and above the effects of other factors. Four courses remain in the model as having a negative effect on fall GPA, and one has a positive effect. That is, enrolling in these courses affects fall GPA after adjusting for the other factors in the model, academic preparation in particular. The two Anthropology courses have the strongest effect, decreasing fall GPA by as much as 0.33 (Anthropology 102).

## Exhibit 12: Effects of 'Student Information Systems' Factors on Fall '98 GPA



Fall '98 to Fall '99 Freshmen Retention, WWU Office of Institutional Research & Resource Planning

### Measures from the Winter 1999 Survey of Fall 1998 Freshmen

Fall quarter GPA should also be affected by more subtle issues related to a student's initial adjustment to campus life at Western. Has the student adjusted well academically and socially? Did the student feel prepared for college? Has the student received advising? Has the student had difficulty registering for desired courses? Did the student enjoy his/her courses? During winter quarter of 1999, Western Washington University's Office of Survey Research conducted a survey of fall 98 new freshmen. This survey was administered to freshmen after only one full quarter of study, and attempted to obtain students' impressions of their initial experience at Western. A copy of the survey is given in Appendix C at the end of this report.

One thousand surveys were sent out, and 587 were returned. The findings reported in the following section are more useful than those in the first section because of the wider range of factors we could examine using survey data. However, they are more limited in that they are based on 587 students rather than on the entire freshman class. It is for that reason more than any other that we present the findings in a separate section.

The survey experienced typical response bias. Surveys tend to elicit a higher response rate from women and from stronger students. Although our population gender distribution is about 58% female and 42% male, respondents were 70% female and 30% male. A small but significant tendency was also noted for respondents to have higher high school GPAs. Diagnostics were run to ensure that the findings presented below were not biased by these differential response rates.

A range of survey measures were tested for impact on fall GPA. Appendix A lists these variables and shows their correlations with fall quarter GPA. Most of the measures listed there are not associated with fall GPA. Some of the measures with strongest correlations had to be omitted from analysis of fall GPA. Measures referring to student's fall quarter academic performance had to be omitted because the causal sequence is unclear. By the time of the survey, these students had already received their fall quarter grades. Their answers are therefore likely to have been colored by the grades they actually received. Asked to evaluate her academic transition to Western, a student may think, "Well, I got Cs, and I expected Bs, so I guess I had a difficult transition." Variables that we feel are biased by students' knowledge of their fall academic performance are not included in regression analysis. These measures are included in models testing whole-year GPA and retention.

Despite this difficulty, it is worth noting the strong association between particular perceptions of academic adjustment and fall quarter GPA. These include: ease of coping with academic demands, ease of learning what professors expect, how well students feel high school prepared them for Western courses, and the perception that more instruction/tutoring in math and in writing would have improved their first year experience. These measures were omitted from the analysis of fall GPA on grounds that students who had, for example, taken math and done poorly would be most likely to report that more math tutoring would have helped. At the same time, the reports of need for greater support in these two key skill areas should not be ignored. While they cannot be part of our multivariate model, students are telling us that these skills are important to their adjustment difficulties, and three-fourths of students say more math instruction/tutoring would have improved their experience at least a little.

Students report that their academic transitions were moderately easy, although the expected differences occur by fall GPA. One-fourth say their high school preparation for their fall Western courses was "excellent," with another 41.2% saying "good." On the other hand, 26.8% say their preparation was only "fair" and another 7.9% rate it "poor." Ratings of high school preparation are much lower than average among those whose fall GPA was below 2.0, about average for grades between 2.0 and 3.0, and higher than average for those about a 3.0. The distribution of responses was similar for reported transition ease with regard to "coping with academic demands of courses" (54.2% say the transition was mostly or very easy) and "learning you're your professors expect" (55.6% say mostly or very easy).

Those survey measures that are associated with fall GPA and are not tainted by problems of retrospective reporting were tested in a multivariate model. Once again, we report only the reduced model—those effects that proved to be reliable statistically. (See Exhibit 13.) The following paragraphs provide some descriptive information regarding each of these measures.

***“How easy or difficult has your transition to Western been in regard to making friends and feeling comfortable socially?”*** Seventy-eight percent of respondents say they have had a very easy or mostly easy time making friends during their transition to Western. Twenty percent indicate somewhat difficult, and 2% had a very difficult transition with respect to making friends. These percentages reflect highly positive social adjustment experiences at Western. While the general research literature on retention highlights lack of social adjustment as one cause of non-retention, that problem occurs seldom at Western. On the other hand, Western students experience the reverse effect: that the more difficult it is for a freshman to make friends and be comfortable socially, the higher his/her fall GPA. Upon closer inspection, we notice that this entire relationship is caused by one group. The 30% who say they had a “very easy” social transition suffer a 0.2 lower GPA than all others. That is, the students most fully integrated socially get lower grades than others, even after accounting for the effects of high school academic preparation. Presumably, they tend to socialize more and study less than other students—an impression reinforced by qualitative interviews, reviewed at the close of this report. This form of the variable (“very easy” versus all others) was carried forward for multivariate tests.

***“Did you attend one of the summer orientations on campus?”*** Eighty-nine percent of respondents say they attended a summer orientation event. A response of yes to this question is associated with a higher GPA.<sup>13</sup>

***“How much, if at all, would being in a small one-credit discussion course on a topic connected to your GURs have improved your experience at Western so far?”*** Seventy-five percent of respondents say that this type of course would have improved their first quarter experience at Western at least “a little.” Nearly one in five (18.8%) say it would have improved their experience “a lot.” The more a student feels that this type of course would have improved their experience, the lower their fall GPA.

***Agreement with the statement: “I enjoy courses more and am more motivated to study when I get to know the professor informally.”*** Sixty-nine percent of respondents agree or strongly agree with this statement. Twenty-five percent are undecided, and the remaining 6% disagree. The more a student agrees with this statement, the higher the fall GPA.<sup>13</sup>

***“If first-choice courses were unavailable to you, please indicate the reason(s) why.”*** Only one of the listed reasons for lack of course availability was an important predictor of fall GPA: “The scheduled time conflicted with your work or activity schedule.” The relationship between giving this reason and fall GPA is significant in spite of the small number of students responding this way (15). Since these students appear to be placing school at a lower priority than other activities, their engagement with school may be low or work demands may be especially great.

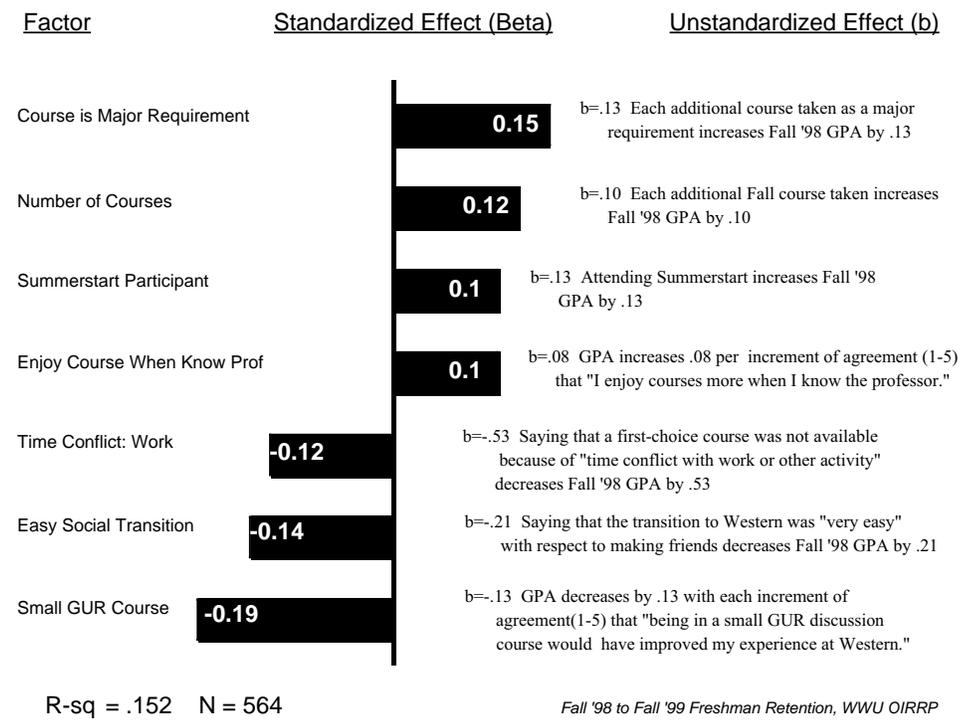
***“How many courses did you take as a requirement for the major?”*** Thirty-four percent of respondents took at least one course relating to a major field of study. The relationship between number of courses in major field and GPA is quite linear and positive. Taking courses relating to a major is associated with higher GPA.

***“How many courses did you take?”*** The course load for the freshmen in the survey ranges between three and eight, with an average number of 3.9 courses at fall peak enrollment. A heavier course load is associated with a higher GPA. This finding in itself could indicate that better prepared students take more credits or that more committed, engaged students do so. Later analysis (see Exhibit 14) shows that academic preparation is only partially at issue, however. Further analysis shows that number of courses is also highest among those who most often report getting “first choice” courses and not having difficulty getting the courses they wanted. It appears, therefore, that number of courses (and of credits) taken is a proxy for student engagement, access to the courses most desired, and, to an extent, academic preparation.

### Analysis of Survey Measures

The model illustrated in Exhibit 13 explains 15.2% of the variation in GPA among the 564 survey respondents with valid responses on all variables. The graph shows the relative magnitude of the explanatory value of each variable. The largest bars, whether on the positive or negative side, are the variables with the most explanatory power. The text at the right of each bar gives greater specificity by reporting the non-standardized nature of each effect.

Exhibit 13: Effects of Factors from Survey Results on Fall GPA



The measure with the strongest explanatory value in this model is students' report that "your experience would have improved" if they had been "...in a small one-credit discussion course (for freshmen, fall quarter) on a topic connected to your GURs." Some of that power could stem from the case of students who had no small classes and received low grades, but Exhibit 14 demonstrates that the estimate remains robust even after controls for academic preparation. One hint about the source of this factor's power is its correlation with the statement that GURs are offering "valuable new ideas and insights." This perception is linked to GPA and retention in this study and in others conducted previously at WWU. In the model shown in Exhibit 13, the power of this factor—showing positive engagement with GURS—is carried by the measure concerning the value of a small GUR-related discussion course.

Each additional course that a student takes as a requirement for their major increases their GPA by 0.13. As assessment surveys have found consistently at Western, students have more interest, motivation and engagement regarding the major than GURs.

A student who has had a "very easy" transition with respect to making friends has a 0.21 lower GPA according to this model. This variable has relatively strong explanatory value and a substantial impact on GPA. As described earlier, it is not true that the more friends you have, the lower your fall GPA. Rather, it may be that those students who make friends very easily tend to focus much of their attention on social activities at the expense of their academic success.

Exhibit 13 also shows a very large decrease in GPA (0.53) for those students who say they had course conflicts due to work or other activities. The effect is very strong, although very few students (15) report this problem.

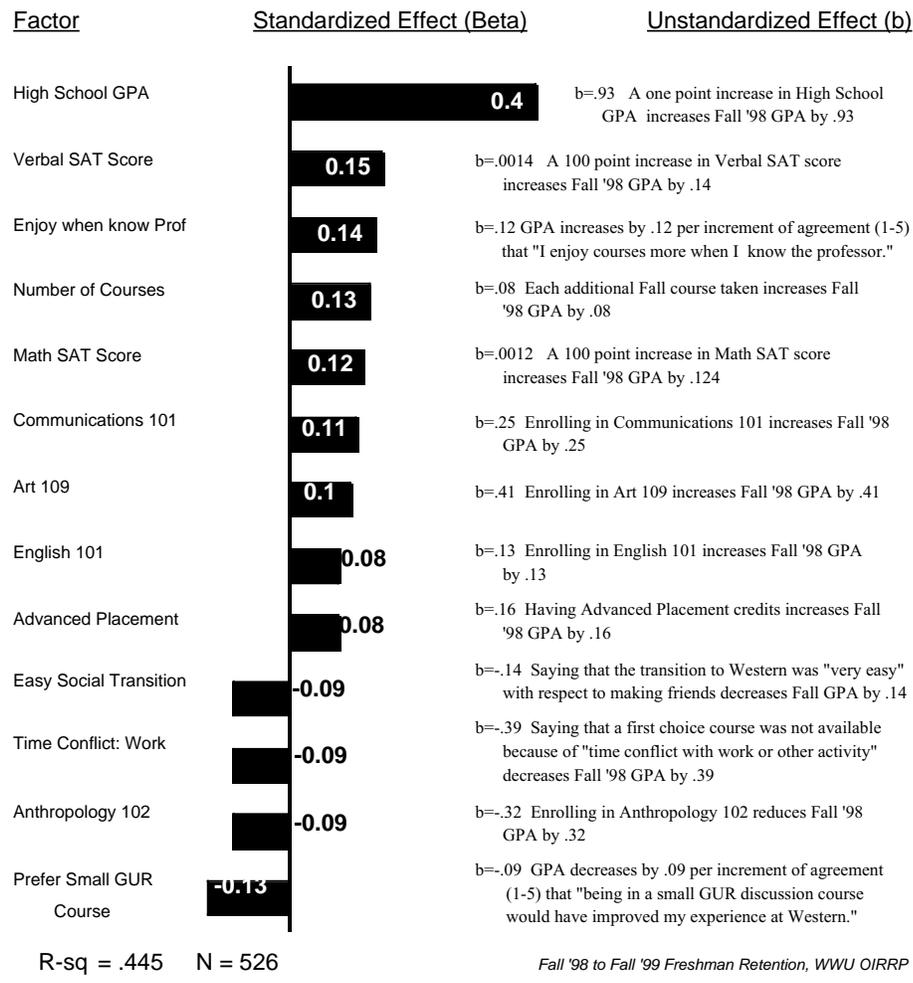
Agreeing that courses are more enjoyable when the student knows the professor has a positive effect, predicting a slight increase in fall GPA. This factor presumably also taps student engagement, which emerges via several indicators in this model as a key ingredient in GPA.

### Combined Analysis of Survey and Student Information Data

We now combine the variables from the student information systems with the survey data, to create a more complete explanation of fall quarter GPA. The inclusion of the survey variables limits this analysis to only those 587 students who completed the survey, roughly one-fourth of the freshman class. For those students, however, this analysis is the most complete we can offer. It embraces tests of all the factors listed in Appendix A, reporting the "key predictors" that prove to have statistically reliable effects independent of each other. While other factors obviously influence fall GPA, these are the strongest among the factors we were able to test. And together, they explain a substantial portion, over 40%, of all variation in fall GPA.

The results of this analysis are illustrated in Exhibit 14. The basic pattern of findings is very similar to those already presented in earlier exhibits. Our ability to explain the variation in GPA rises to 44.5% of variance when SIS, survey and course information is combined.

Exhibit 14: Factors Influencing Fall GPA (Combined Analysis)



High school GPA remains, by far, the dominant predictor of fall quarter GPA. A one-point increase in high school GPA corresponds to an increase in fall quarter GPA of 0.92. That is, the relative differences in high school GPA are almost fully reproduced during the first quarter at Western. Verbal SAT has an important but moderate effect, raising fall GPA by 0.14 for each 100 point increase in SAT score. Math SAT, however, drops out of the equation, despite the fact that far more fall freshmen take classes from the math department than from any other.

A joint indicator of academic preparation and motivation, having advanced placement credits, also joins these final key predictors. Advanced placement students average GPAs .16 higher than non-advanced placement students, over and above the impact of correlated factors—high school GPA and SATs.

Another measure that is likely indicative of motivation and engagement level, as well as of the availability of “first choice” courses, is the total number of courses taken during fall quarter. Each additional course taken raises GPA by .08, an effect over and above the effect of academic preparation, which is also higher for these students.

Several survey reports also emerge as key predictors.

- ◆ This model predicts a 0.09 lower fall GPA for someone who says that “being in a small GUR course would have improved my experience... a lot” compared to those who say it would have improved their experience “somewhat,” .18 lower than those who say “a little,” and .27 lower than those who say “not at all.”
- ◆ Students who “strongly agree” that “I enjoy courses more and am more motivated to study when I get to know the professor informally” achieve a 0.12 higher GPA than those who merely “agree” and a 0.24 higher GPA than those who are “undecided,” and .36 higher than those who “disagree.”
- ◆ Those students responding that they had trouble scheduling courses due to conflicts with work or other activities suffer a 0.39 lower fall GPA than those not responding this way. Few students make this statement, but the effect is large on those few.
- ◆ Finding the social transition to Western “very easy” is also a key predictor of a lower GPA, lowering it by .14.

Finally, enrollment in some specific courses enter this final reduced model of key predictors. The model shows modest negative effects on GPA of taking Math 102 or Anthropology 102. The fact that these two courses remain in the model indicates that freshmen receive particularly low grades on average in these courses, even after accounting for student ability and attitudes. In addition, enrolling in two courses, Communications 101 and Art 109, raises fall GPA. The finding for Anthropology 102, Math 102 and Communications 101 are easily interpreted: the distribution of grades in these courses is low enough to lower the overall GPA of students taking these courses. The finding for Art 109 is confusing, however. Art 109 grades are precisely at the average for all classes, and students who enroll in that class are no better prepared academically than others. We retain this factor in the report because it emerged as one of the key predictors of fall GPA, but we are not able to identify any clear reason in the available data. Students who enroll in that class also do something else that is associated with a strong GPA, but we cannot say what that something is.

## SECTION THREE: FACTORS INFLUENCING FRESHMEN CUMULATIVE GPA

The analysis of fall quarter GPA has been presented in some detail, partly to introduce measures and partly because it enriches our understanding of some freshman transition issues. We now shift our focus from fall quarter GPA to the full year freshman GPA. The full year GPA is, of course, a more powerful indicator of retention than is the fall quarter GPA only. Most university withdrawal occurs at the end of the first full year. Some students know at that point that they are failing and will be (or have already been) asked to leave. Others see a cumulative pattern of GPA that is unsatisfactory to them, that keeps them from entering desired major fields, etc.

The pattern of findings concerning academic preparation and personal background (Student Information System variables) is very similar for full year GPA as for fall GPA. We therefore omit reporting such repetitive findings, moving instead to identify survey mea-

asures than can be included in an analysis of year long GPA. Of course, the same survey measures as applied to fall GPA can also be applied to year GPA. In addition, some factors that were reciprocally influenced by fall grades and had to be omitted from the fall analysis can be included when we analyze year GPA.<sup>10</sup> In the section that follows, we identify some survey measures that this section adds to the analysis of year long GPA. We then move on to report our tests of these factors and then of these in combination with SIS information.

### Additional Measures from the Survey of Fall 1998 Freshmen

The survey questions that are found important to cumulative GPA and not previously discussed are listed here. Again, Appendix C contains the full survey, and Appendix A shows the correlation coefficients between the survey variables and the full year GPA. The variables that were excluded from the fall analysis are included here. Each of these refers to academic experiences and transition during the fall quarter. In the case of the "transition" questions, students may also have been including the first few weeks of Winter quarter in their responses, but the survey was completed well before course grading. The brief descriptions of measures below also includes the nature of the bivariate association shown in Appendix A.

*"How easy or difficult has your transition to Western" been in regard to "coping with academic demands?"* Most respondents reported the middle two responses, "Mostly Easy" (46.5%) or "Somewhat Difficult," (40.5%), with 7.7% saying "very easy" and 5.3% saying "very difficult". Each higher level of reported ease of transition corresponds to a higher year cumulative GPA.

*"How easy or difficult" has "your transition, overall" to Western been?* Ten percent report a "very easy" overall transition with another seventy percent reporting a "mostly easy" overall transition. Eighteen percent report a "somewhat difficult" transition and fewer than 2% say "very difficult." Appendix A shows that a student's reported ease of transition corresponds to a higher cumulative GPA.

*"How much, if at all, would [having more math instruction and tutoring available] have improved your experience at Western so far?"* There is a fairly even split among the four responses to this question, with approximately one-fourth giving each response. In all, 52.8% say it would have improved their experience "a lot" or "somewhat." Students who say that increased math instruction and tutoring would have improved their experience "a lot" have a lower than average cumulative GPA, and the opposite is true of those who said it would have made "no difference."

*"How much, if at all, would [being able to register in Fall for the entire year for courses with Fall-Winter-Spring sequences] have improved your experience at Western so far?"* Respondents tend to exhibit strong feelings about this subject, with most responses at the ends of the scale. Almost 31% say their experience would not have been improved at all, and 26.6% say it would have improved their experience "a lot." This factor affects cumulative GPA only slightly, but those who say that this type of registration option would have improved their experience achieve a lower year GPA.

*"For each fall 98 course completed, please indicate your overall evaluation of each course."* On average, students took 4 courses during fall quarter. The number of "Excellent"

courses ranges from zero to five, with an average of 1.05 excellent courses per student. Over 70% of respondents say they had zero or one course that they evaluated as excellent. The cumulative GPA of these students is lowest, and increases for each additional course the student rates as excellent. The number of "Poor" courses ranges from zero to three, with 73% indicating that they had zero poor courses. The average number of poor courses per student is 0.29, or fewer than one poor course for every three students.

NOTE: The following three questions refer to Winter Quarter registration.

*"You added or dropped [a course] after classes began."* The reason was: *"you went to class and it was too hard."* Only 33 respondents (5.6%) gave this response; their cumulative GPA is lower than those not responding this way.

*"You added or dropped [a course] after classes began."* The reason was: *"you wanted more or fewer credits."* Just over 9% (54) of respondents answered this way, and achieved a lower cumulative GPA.

*"How many, if any, of your courses this quarter did you get into by getting add codes from faculty or departments?"* Responses range from zero to seven courses requiring add codes. Over half (52%) of respondents say they used no add codes, and 20.4% used one add code during winter registration. Using add codes is associated with higher cumulative GPA.

### Analysis of Survey Measures

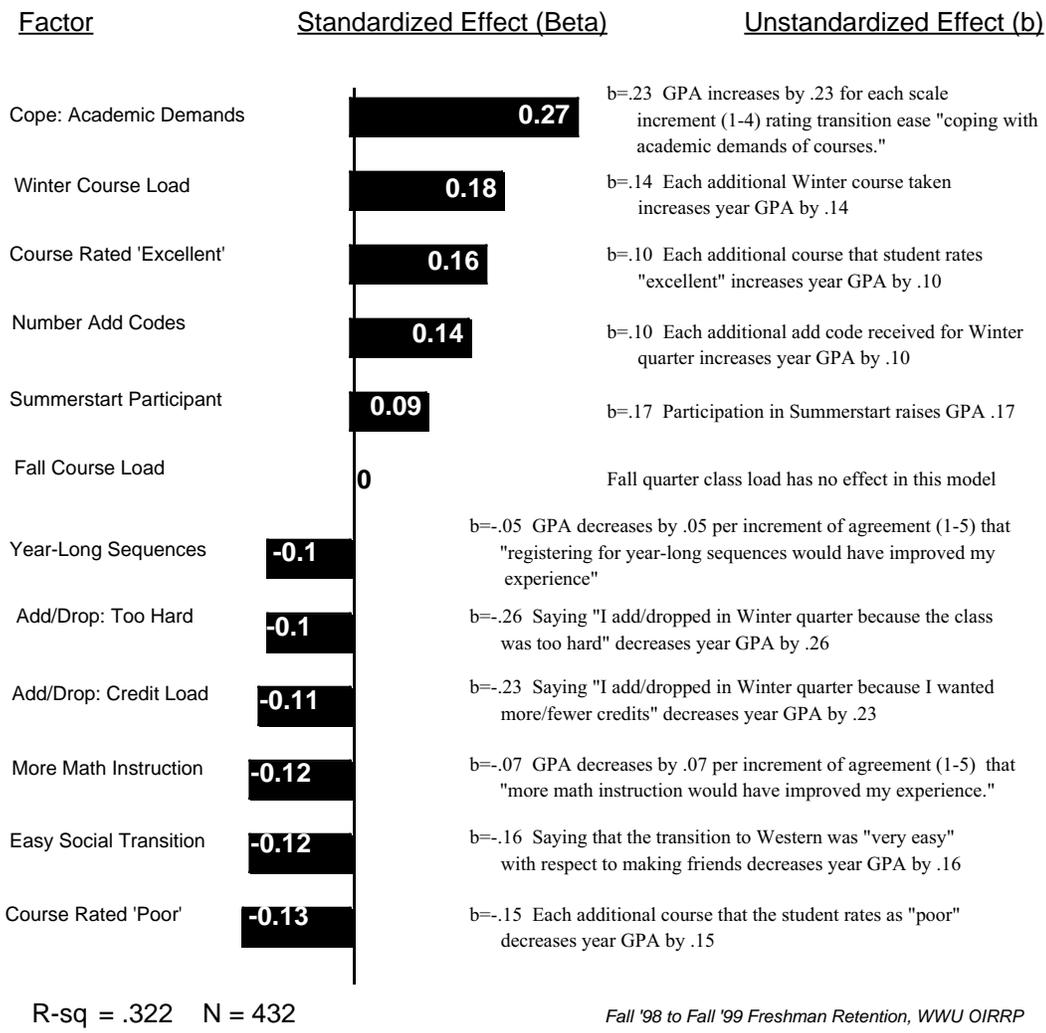
Exhibit 15 displays the multivariate analysis of freshman year GPA, testing only survey measures. The model presented here has more than twice the power to explain year GPA than survey items could explain of fall GPA. The reason, however, is primarily that this model can include students' perceptions and evaluations of their fall academic experiences, which the fall GPA model could not include because data were gathered in Winter.

The most powerful factor is one of students' global self-ratings with regard to academic adjustment: their assessment after one quarter of their "transition to Western" with regard to "coping with academic demands of courses." Most students gave the two intermediate responses: a "mostly easy" or "somewhat difficult" transition. Those reporting a "mostly easy" transition with respect to coping with academic demands have cumulative GPAs averaging 0.23 higher than those reporting a "somewhat difficult" transition. Those at the extremes ("very easy" or "very difficult") are another .23 higher or lower in year-long GPA. If we repeat this analysis using only winter and spring GPA, rather than full year GPA, the estimated effect of this variable is slightly reduced, but remains the strongest in the model. That is, after we avoid the problem of retrospective bias, students' self-report of their initial success at coping with academic demands remains a strong predictor of GPA. This means that student self-reports, at least after one quarter of experience at Western, are a useful guide to their likely success at Western.

In addition, regardless of their reported transitional ability to cope with academic demands, students who say they used add/drop in the first weeks of Winter quarter because they went to class and it was too hard show a year GPA .26 lower than those who did

not do so. Thus, for example, a student who reports a “very difficult” transition with regard to coping with academic demands during fall quarter and then drops a course as too difficult during Winter quarter would, cumulatively, have a year-long GPA .70 lower than one who reports a “mostly easy” transition and does not drop any courses as too difficult.

**Exhibit 15: Effects of Factors from Survey Results on Year GPA**



Also related to self-confidence regarding ability to perform well is students’ agreement that “Having more math instruction and tutoring available” would have improved their experience during fall quarter. This report indicating need for academic support during fall quarter carries through to predict year-long GPA.<sup>11</sup>

Students’ evaluations of their fall courses also predict year-long GPA. Those rating more fall quarter courses “excellent” increase their cumulative GPA .10 per course so rated. Likewise, students who rate their fall quarter courses as poor decrease their cumulative GPA by .15 per course so rated. Taken together, these ratings cumulate to a powerful effect

on freshman year GPA. When only winter-spring GPA is analyzed, the impact of these course ratings decreases somewhat, but remains statistically reliable. That is, students' enthusiasm about and engagement in their education is critical enough that their satisfaction with fall quarter courses influences their GPA for all three quarters of the year. One implication is that students who place more value on their education and enjoy it more thrive better. The other side of the coin is that the ability of Western's professors to engage new students during their first quarter with us is critical to their continued success.

Attendance at a summer orientation program is important in this model, as it is in the fall GPA analysis, increasing year-long GPA by 0.17. This finding is especially important because it helps us distinguish among alternative interpretations of Summerstart attendance. The finding of impact on fall GPA could mean that Summerstart attendance indicates a students' organization and engagement, a greater ability to enroll in courses of choice, an increase in advisement-based knowledge that aided the transition, or a combination of factors that helped students "get started on the right foot." Enrollment preference and initial advising should affect fall GPA but not winter or spring GPA. Since the effect of Summerstart is as great on year-long GPA as on fall GPA, we are left with the other two interpretations—that Summerstart attendance indicates student engagement and/or gets them started well in a number of mutually reinforcing ways.<sup>12</sup>

Another indicator of engagement as well as successful course access—the number of courses registered for—also influences year-long GPA. In this model, the winter course load shows a modest impact on GPA, with each additional course increasing year-long GPA by .13. Course load in fall no longer has any predictive value when winter load is included in the model, suggesting that the winter level represents a more mature and consistent indicator of engagement throughout the year.

Related to that, dropping or adding courses because a student wants more or fewer credits is also associated with lower cumulative GPA. Presumably, that finding indicates that most reported use of drop/add is for purposes of dropping, and that the engagement and confidence of success implied by dropping courses or not doing so are predictive of GPA both in the current quarter and year-long.

Both the total number of courses taken and whether or not students dropped courses touch on course access issues. In addition, several other findings in the model reported in Exhibit 15 suggest some impact of course access issues. First, the number of add codes used during registration has a positive effect on cumulative GPA, increasing it by 0.10 for each additional add code. Add codes represent one way in which students circumvent the standard course registration procedure, getting into the courses they most want, and students tend to perform better in courses they want or need. Arguably related, students who agree that their academic experience would have been improved by the ability to register in fall for year-long course sequences have lower year-long GPAs. At least in their perception, inability to register for desired courses, or perhaps simply the tension of not knowing what will be available detracts from their experience.

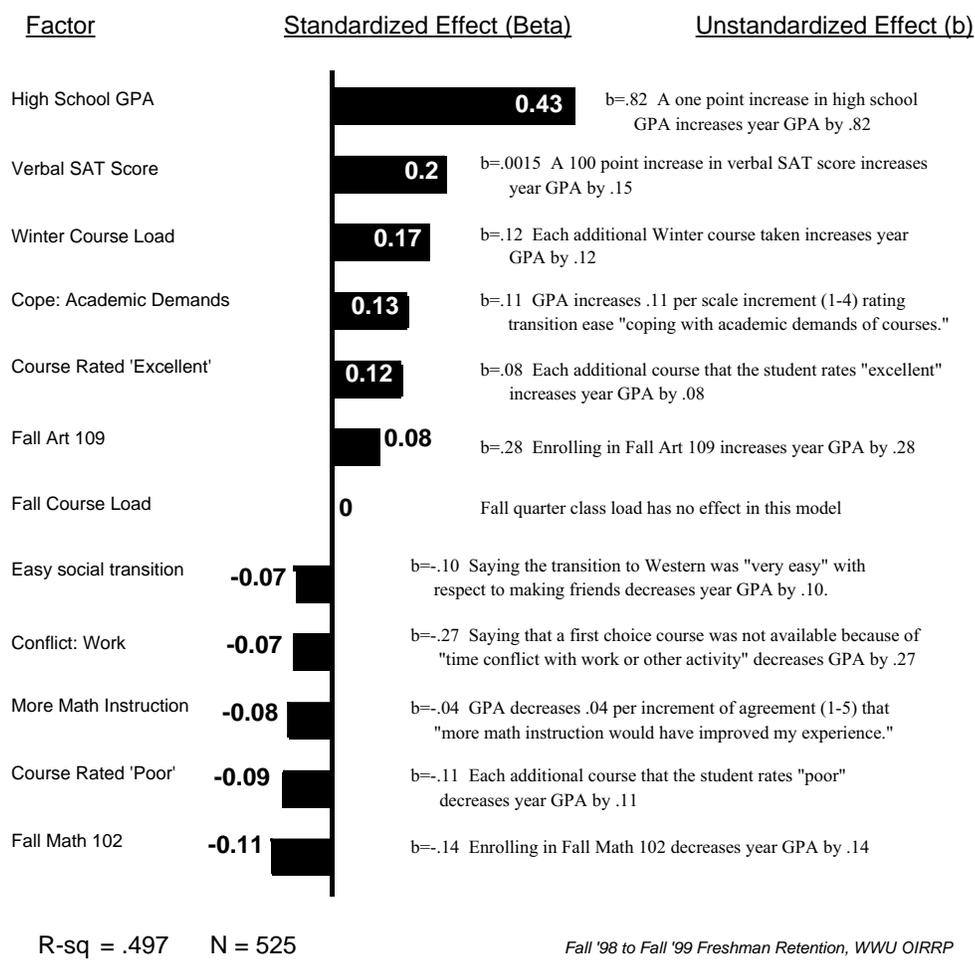
Finally, as with the fall, reporting a transition to Western in which making friends and feeling comfortable socially was "very easy" has a negative effect on GPA. According to this

model, these students achieve a 0.16 lower freshman year GPA. Apparently, then, the ease of social transition represents not only a temptation to devote too much time socially during fall quarter, as part of a new student's adjustments, but also an ongoing personal tendency.

### Combined Analysis of Survey and Student Information Data

When we combine survey data and Student Information System data into one analysis of freshman year GPA, most of the findings run parallel to the findings just described above, with the exception that the estimated effects of survey variables related to academic performance all decrease, absorbed into the continuing strong effect of high school GPA and Verbal SAT scores. That pattern indicates that prior academic preparation is partially, but not wholly, responsible for the various perceptions of academic performance and to a small degree responsible for course evaluations. That is, stronger students perceive themselves to be coping better academically and also like their courses more. The points below emphasize ways in which this final model of freshman year GPA (presented as Exhibit 16) differs from, and adds information to, the model of survey data alone, presented as Exhibit 15. Patterns not mentioned are essentially unchanged from those in Exhibit 15.

Exhibit 16: Factors Influencing Year GPA (Combined Analysis)



Including measures of pre-college academic preparation and success adds a good deal to the explanation of freshman year GPA, as would be expected. The model presented in Exhibit 16 explains just over half (.503) the variance in freshman GPA. In addition, with high school GPA and Verbal SAT in the model, the perception of how easy the transition to Western was with regard to “coping with academic demands of courses” becomes much less powerful than in the model without direct measures of academic preparation. This simply means that students’ perceptions are largely accurate, if judged by external measures of achievement, and that these external measures are stronger predictors of college success than the more subjective perceptions.

It remains the case, however, that over and above these pre-college measures of academic preparation, students’ reports of fall academic transition ease retains a substantial effect on year-long GPA. The related report that more math instruction would have improved the experience is slightly weaker in the model including academic preparation, but remains significant and changes less than the academic transition indicator.

Similarly, course evaluations as excellent or as poor continue to show an effect in the combined model, but those estimated effects are somewhat weaker than in the model excluding academic preparation. Stronger students evaluate courses more positively and get better grades. In addition, adjusting for academic strength, students who like their courses more gain an additional increment of college success.

Another measure of engagement—number of courses enrolled in—shows no change from the previous model except that the effect divides between winter load and fall load. That change is due simply to marginal changes in covariance’s and does not bear substantive interpretation as a change. The point is that greater engagement, even if it creates more work, produces higher GPA, even after adjustments for academic preparation are made. Similarly, students who indicate a “very easy” social adjustment to college continue to perform less well academically throughout the year, as in fall quarter.

Finally, two course enrollments in fall—Art 109 and Math 102—retain the effects on year-long GPA that they had on fall GPA. This finding is intriguing and a bit confusing. We noted earlier that the grade distribution in Art 109 is at the university average. Further, the deficit suffered from taking Math 102 in fall is not great enough to explain the estimated year-long reduction in GPA. That means that having taken these courses signals or begins some other set of events or tendencies which, in turn, generate higher or lower GPA. The data set used for this analysis offers no further information regarding what those events or tendencies might be.

## SECTION FOUR: PREDICTORS OF STUDENT RETENTION

The overall probability of retention is the percent retained, or 0.79. Probability of non-retention is, of course, 0.21. We have seen that GPA has a strong effect on the probability of retention. Probability of retention with a freshman year GPA below 1.0 drops to barely above zero, whereas probability of retention with a freshman year GPA above 3.5 is about 0.92. Both at Western and across the nation, GPA is by far the most powerful predictor of retention.

The analysis reported above has identified factors that effect retention indirectly, by having an effect on GPA. That is, any measure that predicts GPA has at least some impact also on retention simply by virtue of partially determining where each student stands on the factor that in turn has the most powerful impact on retention: GPA. It is therefore fair to begin our discussion of factors that explain retention / withdrawal by saying that all the factors shown to influence GPA also have at least some influence on retention. The best interpretation of that influence, however, is that it is indirect, having its impact through affecting GPA rather than somehow directly influencing the decision to return or not.

We now look for other factors that have a direct influence on the probability of retention. These are factors that affect retention above and beyond the impact of GPA. Accurate tests of these factors must be in multivariate models that adjust simultaneously for the impact of GPA. These are presented below, following some preliminary analysis.

There is also a policy interest for Western to be able to identify likely non-retentions before they have been at Western long enough to generate a GPA. Early intervention is, of course, far more effective than after-the-fact identification. While most of the factors we can test in this way have their impact on retention indirectly, by affecting Western GPA, it is nonetheless useful to examine how well these factors predict retention, were we to use them to identify "at risk" students. We therefore begin with student characteristics that are determined before the student arrives at Western and then examine survey measures of fall quarter experiences.

### Experiences and Characteristics Prior to Arrival at Western

#### *Demographic Factors*

We tested age, gender, residency, and ethnicity for any relationships with retention. We found no effects of age. In fact, only 2.1% of Western freshmen are below 18 or above 19, making age essentially a constant. Among minority groups, we found two groups that are slightly and reliably different from average in retention. Native Americans, who constitute two percent of the incoming new freshmen were retained at a slightly lower than average rate, and the "white" group is retained slightly but reliably more often than all other ethnic groups. (Correlation coefficients are given in Appendix A.)

#### *High School and Pre-College Test Performance<sup>13</sup>*

High school achievement variables are correlated with retention, as would be expected, but the degree of association is modest. In fact, the only impact these variables have on retention is indirect, through their impact on Western GPA. For present purposes, we can report that high school GPA, correlated with retention at .18, can explain just under four percent of all retention decisions—not enough to merit much consideration as an early at risk indicator.

#### *Running Start, College-in-the-High-School, and Advanced Placement Credits*

The group of advanced placement students have higher than average retention, more so as the number of advanced placement credits increases. The group of students with any transfer credits also experience higher retention. These associations are, however, very small and not useful as early indicators of an "at risk" status. That finding is logical since

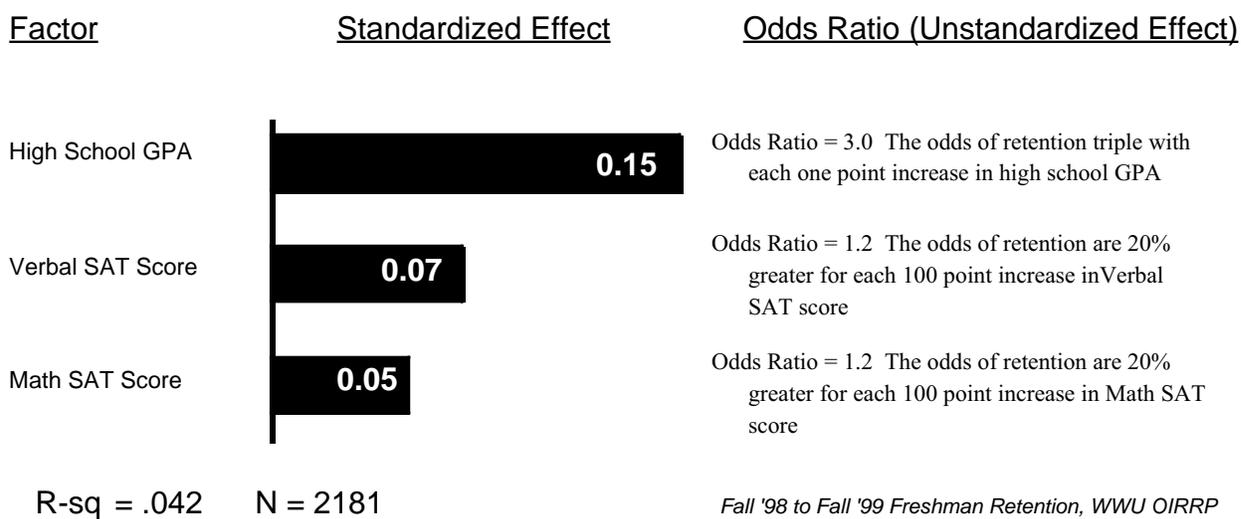
these factors tend to identify students most likely to be in the middle-to-high range of academic success, and retention rates are quite similar among all but the few who earn especially low grades at Western. Transfer GPA is more strongly correlated with retention, but is excluded from analysis because of its redundancy with high school GPA and the fact that its inclusion would limit our sample to only 517 students.

### Analysis of Experiences and Characteristics Prior to Arrival at Western

We test the student characteristics described above in a multivariate model, to identify key predictors of retention—those factors most likely to have a true, unique and reliable impact on retention. The logic of the tests is the same as for those already presented, but the nature of the outcome being studied, retention, requires a different statistical method: logistic regression. Findings are expressed as similarly to earlier findings as possible, with bars showing the standardized impact of each factor on retention and text to the right describing the nature of the effect. The major difference for the reader is that the unstandardized effects described in words are expressed as odds ratios—the ratios between different odds of retention.<sup>14</sup>

Of the student characteristics described above, analysis shows that only high school GPA and math and verbal SAT scores are reliable predictors of freshman retention, and these are such weak predictors that they offer little by way of ability for early identification of “at risk” students. The bars in Exhibit 17 graphically indicate the amount of variation in retention explained by each variable. Even taken together, these variables have little explanatory value. In fact, this model explains only 4.3% of the variation in retention.<sup>15</sup> That is not a sufficient basis on which to mount extensive early prevention efforts. Put another way, we are finding that based solely on Western’s admission criteria, all the student we admit should be able to succeed here and should be retainable.

## Exhibit 17: Effect of Student Characteristics on Retention



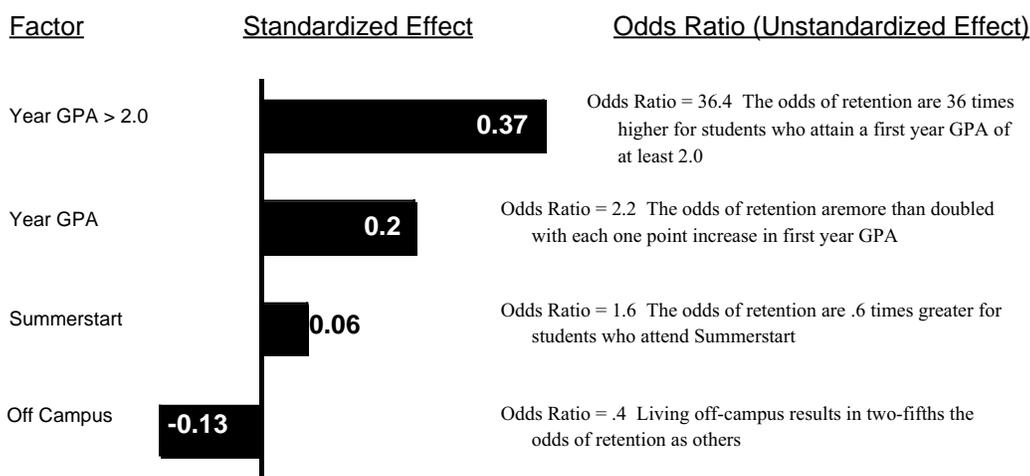
We also tested for non-linear effects of admissions criteria. Specifically, are the few who occupy the lowest ranks of the Admissions Index (AI) more especially prone to non-retention than would be predicted simply on the basis of high school GPA? There are three possibilities: a) no special impact of a particularly low AI: b) very low AI cases represent special risk and are retained less often than would be expected based on AI, or c) they are retained more often than would be expected on the basis of AI because the special review of these cases by Western's Office of Admissions leads Western to select only the least risky of the low AI people and because 50 of them participate in the Access program of advising outreach. Our analysis shows a small but consistent effect of the last type. Students admitted with a very low AI are retained less often than those with a high AI, but still more often than their AI level would predict. Specifically, the 175 students with the lowest AI (below 40) are retained 3.6% more often than predicted by AI as a linear variable.

Experiences During Fall Quarter, as Recorded in Student Information Systems

Western's SIS data provide a further source of information that could be used for early identification of students at higher than average risk of non-retention. Fall quarter experiences available for such analysis are shown in Appendix A, along with the correlation of each with retention. These include participation in Summerstart or not, housing information, courses in which each student is enrolled, and, by the end of fall, fall quarter GPA.

These factors were analyzed for potential effects on retention, with the reduced model containing all statistically reliable effects shown as Exhibit 18. As already established, fall GPA is by far the most powerful predictor of eventual retention. Exhibit 18 also displays the by now familiar finding that the most powerful effect is accounted for by receiving a below-2.0 grade point average.<sup>16</sup> Further, the farther below 2.0 the year grade point average is, the lower the retention, with retention at approximately zero for those with year GPAs below 1.0.

Exhibit 18: Effect of Experiences Since Arriving at WWU on Retention



R-sq = .232 N = 2168

Fall '98 to Fall '99 Freshman Retention, WWU OIRRP

Attending the Summerstart orientation program is related to higher retention rates, over and above its impact, demonstrated earlier, on fall GPA. That is, it predicts retention first indirectly, by predicting GPA and then, additionally, has a separate, direct effect on retention. In addition, freshmen who lived off campus during fall quarter were substantially less likely to be retained by the following fall. (See Exhibit 18.) About 15% (340) of the fall 98 freshmen chose to live off campus. The retention rate among that group was 63%, compared to 81.5% for freshmen who chose to live on campus.

Among those living on campus, very small differences in retention may be associated with different residences. In particular, living in a residence that has some substance-free floors shows a weak but reliable bivariate association with higher retention, as does living in residences with a higher percentage of freshmen. However, when these factors are tested in the multivariate model reported in Exhibit 18, they do not retain their effects. The best interpretation is therefore that these small associations result from differential student selection of which residence to live in, consistent with findings concerning residence halls and GPA, reported earlier.

While the correlations shown in Appendix A indicate some very small bivariate associations between taking certain courses during fall and the probability of retention, all these turn out to be reflections of the grades students receive rather than some other factor. The reduced model including fall GPA omits all of the course or department information we tested (see Exhibit 18). That is, whatever effect choice of courses may have on retention is indirect, by influencing Western GPA. It is not the case that taking any particular course discourages or encourages continued attendance enough to have a reliable effect on retention. For those students in the danger zone (about 2.2 or lower), even a modest difference in GPA may tip the decision to withdraw. Since that tipping effect occurs for only a few students, however, the impact on the overall retention rate is small.

#### Measures from the Winter 1999 Survey of Fall 1998 Freshmen

We have already found that several experiences and perceptions reported in our freshman survey influence GPA, thereby indirectly affecting retention. In addition, some survey measures tap issues that appear to have separate, direct impact on retention. Correlations of survey questions with retention are shown in Appendix A. Here, we describe each measure that proves to be a reliable predictor of retention when tested against other survey questions, and indicate the direction of the association (see Exhibit 19).

*“How easy or difficult has your transition to Western been with respect to your transition, overall?”* Seventy percent of respondents experienced a “mostly easy” overall transition to Western. Ten percent had a “very easy” overall transition, and fewer than 2% had a “very difficult” transition. The easier a student’s reported overall transition, the greater his/her chance of being retained.

*“How much, if at all, would being in a small one-credit discussion course on a topic connected to your GURs have improved your experience at Western so far?”* The more a student indicates that this type of course would have improved their experience, indicating early dissatisfaction with GUR lecture classes, the lower their chance of retention.

*Agreement with the statement: “My GURs are offering valuable new ideas and insights.”* Just over 58% agree or strongly agree with this statement; 23% are undecided and 19% disagree or strongly disagree. The more a respondent agrees with this statement, the higher his/her chance of retention.

*“How many of your fall 98 courses were ‘all you could get at the time’.”* For each fall quarter course they took, students were asked whether it was “a first choice you wanted or needed,” a “second choice, still useful for your program of study,” or “all you could get at the time.” The more ‘all you could get’ courses a student enrolls in, the less likely it is that he/she will be retained. Upon closer examination, we find a retention rate of almost .90 for students with zero ‘all you could get’ courses. A very small decline occurs for students with one or two ‘all you could get’ course, and then a dramatic decline for those students with three or more ‘all you could get’ courses. Because of this non-linear effect, we constructed a variable with a value of zero if the student registered for 0, 1, or 2 courses that were ‘all you could get’, and a value of one if the student registered for 3 or more such courses. That measure is included in the model shown as Exhibit 19.

The complementary response that a course was a ‘first choice you wanted or needed’ was also tested. The number of courses that are ‘first choice’ is positively related to retention as expected. Further examination of this relationship shows a clear jump in the chance of retention for students who are able to register for at least one first choice course. It seems that freshmen are fairly satisfied as long as they are able to register for at least one first choice course. Getting no first choice courses turns out to be largely the other side of the coin of having multiple “all you could get” courses. The strongest single measure to carry into the multivariate analysis was whether or not a student had three or more “all you could get” courses. The count of first choice courses was not included as a separate variable, but it shares a great deal of meaning with the “three or more all you could get” variable.

Three advising measures show reliable, and particularly powerful effects on retention. Students were asked if, so far at Western, they *“...felt the need for advisement in any of the following areas, and if so, did you receive the advising you needed?”* The three areas of advising that proved to be related to retention are: *“counseling regarding personal life issues,” “selecting a major” and “selecting courses to prepare for entry into a major.”* In the case of personal life issues, the specific measure associated with retention contrasted one group—those who say they did need assistance and did seek and receive it—versus all others. That group is more often retained. Of the 579 students who chose to respond to the survey question about counseling regarding personal life issues, 431 said they did not need it (85.4% of these students are retained), 103 said they needed help but did not receive it (80.6% of these students are retained), and 45 said

they needed help and did receive it (97.8% of these students are retained). All but one of the students who said they needed help and received it was retained. Based on this fairly small number of students, it seems that receiving counseling regarding personal life issues has a strong positive effect on retention.

In the case of advising to select a major, the distinction of importance is that students who report having had no need for assistance are less likely to be retained than those who say they needed help, whether or not it was received. In this case, the measure is less a comment on Western's advising than on students' engagement with the advisement and decision-making process. Some of the students who say they had no need for advising may in fact have already been planning to withdraw. However, the proportion who say they felt no need—sixty percent—is much too large for that group to have created the finding.

In the case of advising to select courses appropriate as preparation for entry into a major, the group who are less often retained are those who reported needing such advising but not receiving it. Here, the emphasis is once again on advising, although we know from previous assessment studies that most students who need but do not receive advising do not seek it out.

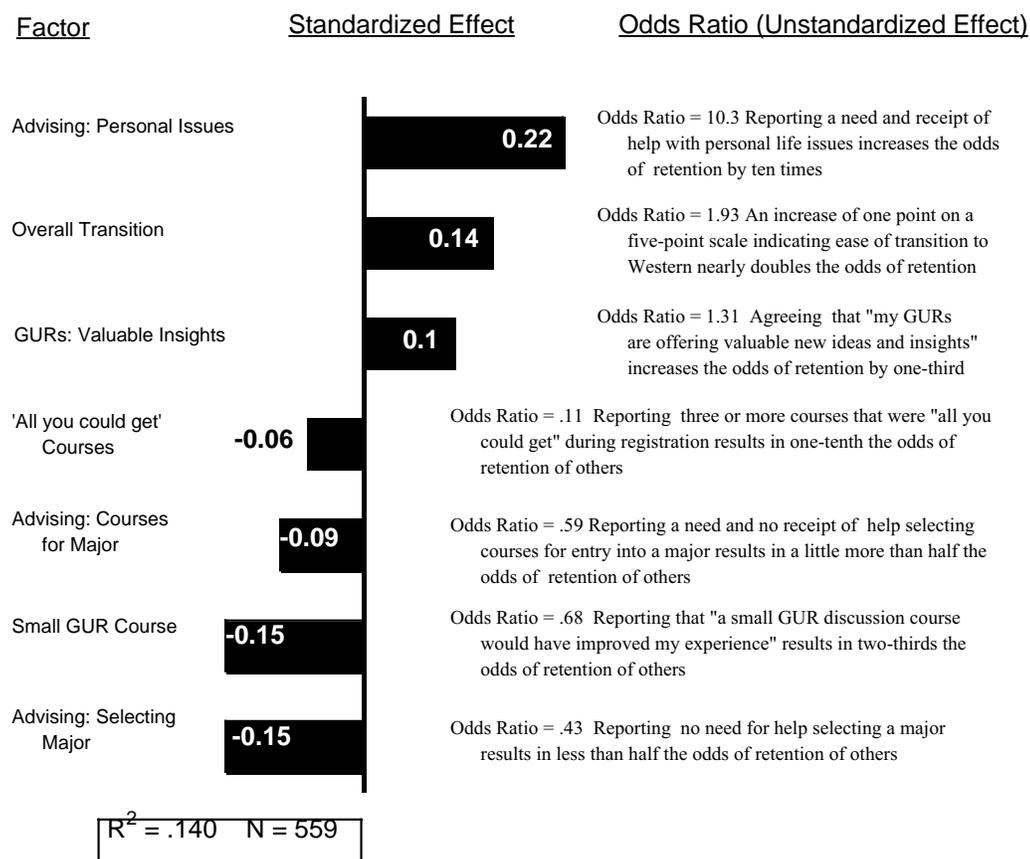
Taken together, these three advising-related measures suggest that both the receipt of advising when it is needed and also the level of engagement that makes one aware of a need for advising and that leads one to seek it out are at issue here. Those who are engaged and those who receive the support they need are more likely to be retained.

### Analysis of Survey Measures

The first test of survey measures is conducted without including the all-important GPA term in the model. We do this to show which of the survey measures are most likely at issue in the case of retention and the nature of the associations. The variables in the model are the ones described in the section above. After this model is discussed, we then present a final model that also includes GPA and other factors from the SIS.

As Exhibit 19 displays, advising issues loom particularly large among the factors identified by the survey data alone. The small group who experienced personal problems and got help with them were nearly 100% retained, whereas those who felt no need for advising regarding majors or preparation for a major were much less likely to be retained. In addition, students' assessment of their own "overall" transition ease, an assessment made shortly after the end of fall quarter, is substantially predictive of the eventual decision to remain at Western or not. We know from earlier findings that very easy social adjustment actually represents a threat to GPA and therefore retention. The best interpretation of the "overall" transition measure is therefore that ease of transition with regards to non-social, largely academic matters, improves retention. Social adjustment is non-problematic except among those students who become so socially active as to interfere with their academic performance.

## Exhibit 19: Effects of Factors from Survey Results on Retention



Fall '98 to Fall '99 Freshmen Retention, WWU Office of Institutional Research & Resource Planning

Two measures related to GUR courses are also key survey predictors of retention. Students' comfort with large GUR lecture courses (more precisely, their desire to have had a small discussion GUR), and their perception that GUR courses "are offering valuable new ideas and insights" both influence retention. These factors combine with the overall transition measure to emphasize the issue of academic adjustment and comfort, as well as success, as key to retention.

Finally, one indicator of course access problems is also identified as a key predictor of retention. A small group of students, none of whom took advantage of the opportunity to attend Summerstart, were essentially unable to get any courses they wanted. Specifically, they rated that three or more of their courses were "all you could get at the time." None of these was able to get even one "first choice" course. That access difficulty presumably acts as proxy for a number of different issues: the disappointment of enrolling only in courses they had not wished to take, the likely lower grades received when enthusiasm and engagement are low, and the set of personal or other circumstances that led these people to place themselves in jeopardy in the first place by failing to attend Summerstart. While the number of individuals who fall into this category is, happily, small, the impact on retention of being in that group is strong.

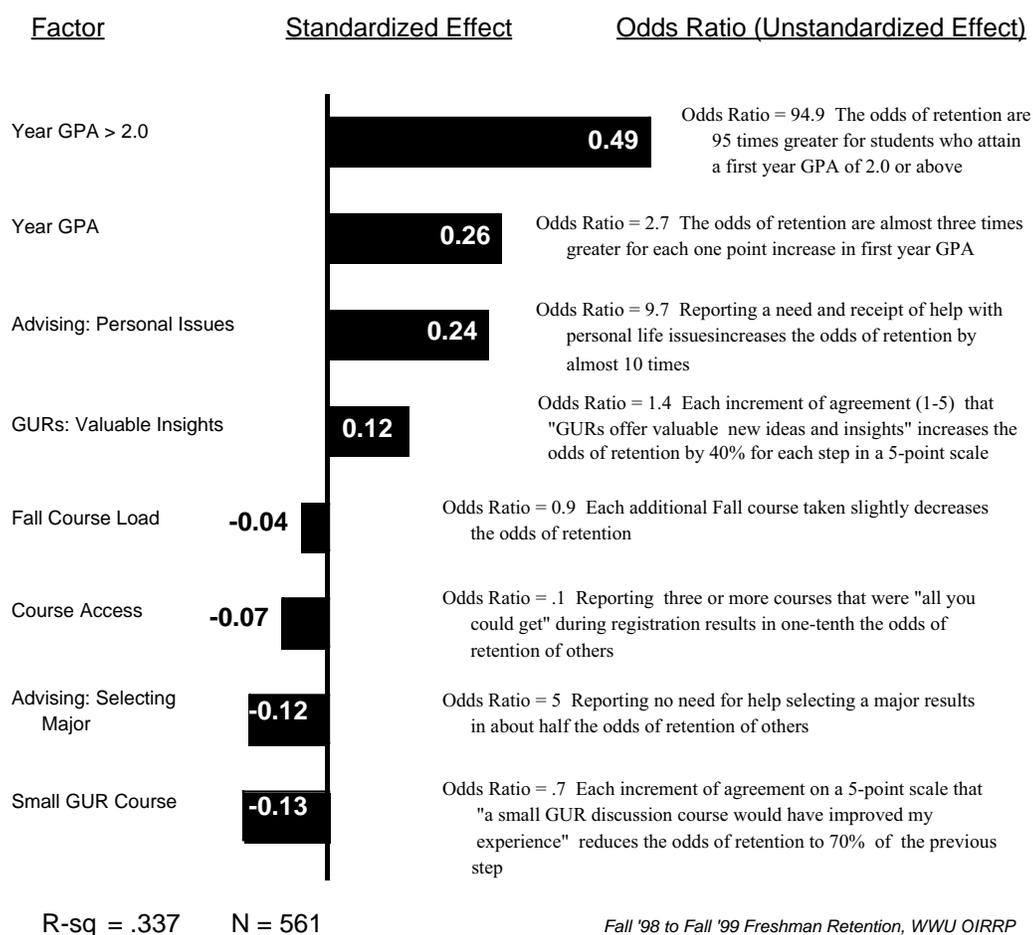
The total ability of these factors to explain retention is limited. Most retention choices are taking place for other reasons. However, our ability to explain even 14% of the variance in retention decisions is greater than typical analyses of single schools excluding the impact of GPA.

### Combined Analysis of Survey and Student Information Data

The fullest analysis we can offer of the reasons for retention/non-retention among 1998 entering freshmen includes both survey measures and also SIS data covering the entire freshman year. The sample for this analysis is limited to 561 students—those who completed all the relevant survey questions. Some of the factors identified earlier in our analysis might show reliable effects if we were able to analyze the entire freshman class, but the effects would almost certainly be very small if those factors did not load in our reduced model shown as Exhibit 20.

The most powerful lesson gained from this analysis, which includes year-long GPA, is that students who end their first full year with a grade average under 2.0 are overwhelmingly less likely to return the following quarter. Every step of GPA, from 4.0 down to 0.0, has an incremental effect, but each increment below 2.0 has an additional, and much more powerful, effect.

Exhibit 20: Factors Influencing Retention (Combined Analysis)



In addition, gaining advising when needed for personal issues has a powerful effect on the modest number of freshmen who had the experience, whereas failing to feel any need for advising concerning selecting a major reduces likelihood of retention. Both these effects occur over and above the correlated effects of academic preparation.

Two indicators of congruence with Western's freshman curriculum also influence retention over and above academic preparation. Students who agree that fall GURs offer "valuable new ideas and insights" are more likely to be retained, while those who agree that their experience would have been improved by having a small GUR discussion course are less likely to be retained. In short, comfort with large classes and excitement about the content of "GURs" both increase retention.

One indicator of course access problems—reporting that three or more fall courses were "all you could get" rather than courses the student wanted—is a significant predictor of eventual non-retention. Students are forgiving of the need to take some courses they did not want, but finding themselves forced to take all or nearly all courses simply on the basis of availability rather than plan or desire is associated with non-retention. This finding is important because it ties to several issues. First, it offers us an insight into the course access issue: it matters most when students experience nearly complete frustration. Short of that, students appear to adjust well. Second, it reinforces the importance of attending Summerstart. While the Summerstart variable drops out of this combined model, its influence is felt in this course access variable. No student who attended Summerstart reported having three or more "all you could get" courses. All these students were ones who skipped Summerstart and arrived at Western to register after all other students had completed their registration. Third, student engagement, commitment and organization—factors that in part determine whether they attend Summerstart or arrive late and hope for the best—appear to exercise a continual, if difficult to measure, influence on both academic success and retention.

Finally, this model includes a bit of a surprise, given previous findings. We have found consistently that the more courses students take, the higher their GPAs. Now, controlling for GPA, we find another effect—that taking more courses slightly reduces retention. This is an odd effect that emerges only after all the appropriate variables are included in the model. (Even then, the effect is small and we should not make too much of it.) Course load appears to have two, cross-cutting effects: first, it increases GPA which in turn increases retention; second, after adjusting for the first effect we learn that course load also, in and of itself, slightly reduces retention. To disentangle this effect would require more data than we possess. Speculatively, it appears that the best case scenario for students who are highly engaged is to be able to take a full credit load and receive high grades without taking too many different courses. Taking more courses both indicates engagement (with positive effects) and also something else (exhaustion?) that slightly undermines retention.

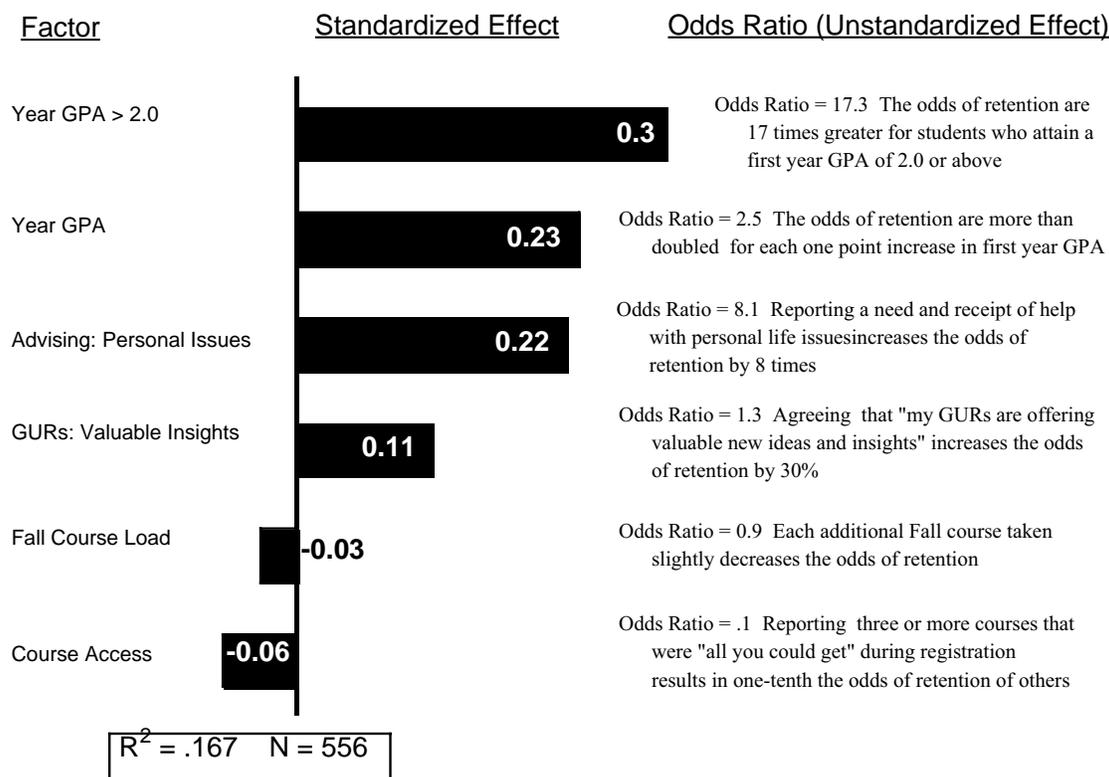
The combined model displayed as Exhibit 20 explains just over one-third of the variation in students' decisions to return to Western the fall of their second year, or not. But that model is explaining two types of non-retention: voluntary withdrawal from the university and being dismissed for reasons of academic failure. The powerful effect of having a GPA

below 2.0 is partially explained by the fact that some of those with such low GPAs were asked not to return.

In the cohort studied here, 474 freshmen failed to return for fall of a second year. Sixty-one of those did so because they were dismissed for academic failure. In addition, another 53 were on academic probation, with a cumulative GPA below 2.0, and 100 were on “continuing probation,” which means that they began Spring quarter on probation and their Spring quarter GPA was above 2.0, but their cumulative GPA still below 2.0. The retention rate among students on probation was 62.3%, and among those on continuing probation, 71%. These rates are below, but not remarkably far below, rates for students with higher grades.

To examine whether the set of factors leading to retention/non-retention was different for those who choose not to return than for those who were dismissed, we repeated the analysis reported in Exhibit 20, excluding dismissals. What we found was very much the same pattern reported in Exhibit 20, except much weaker. We could explain only half the variance as explained in the model including dismissals, but GPA was the most important factor, with advising, congruence and course access playing similar, but weaker, roles in explaining retention. (See Exhibit 21.)

### Exhibit 21: Factors Influencing the Retention of Students Who Are Not Subject to Academic Dismissal



Fall '98 to Fall '99 Freshmen Retention, WWU Office of Institutional Research & Resource Planning

This analysis lets us conclude that students who succumbed to academic failure and are therefore unable to continue their education at Western are subject to pretty much the same press of factors as those whose non-retention was voluntary in one degree or another. In either case, retention is first and foremost a question of academic success, and then in addition, influenced by how well students “fit” with and feel comfortable with the freshman experience Western gives them, how much they understand their own need for advising and get it, how well they are able to get the courses they want or feel they need, and how engaged and committed they are to higher education and to Western.

### A Serendipitous Finding

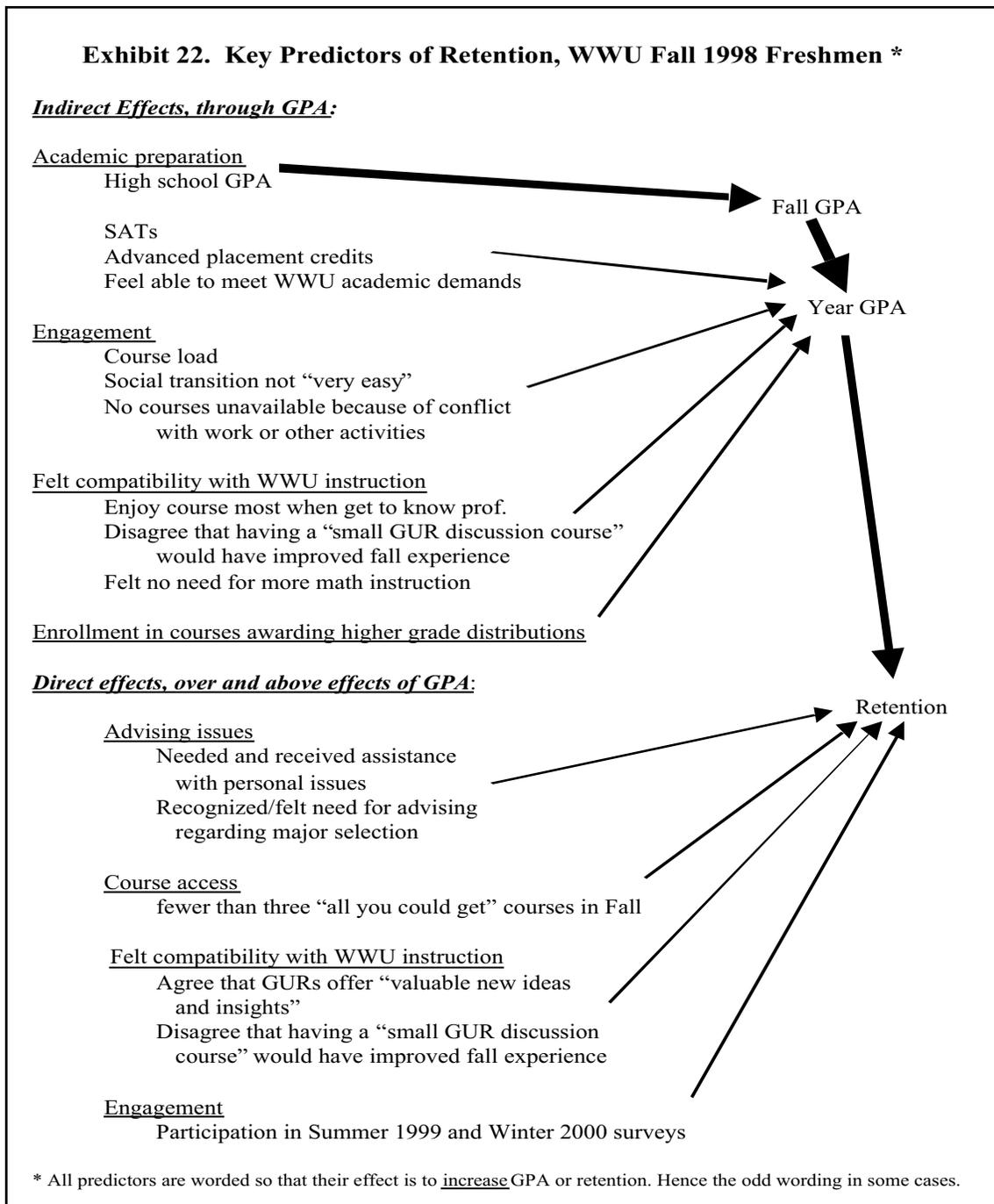
Several findings reported above are usefully viewed as indicators of student engagement in and commitment to Western and the academic process. As a byproduct of conducting the survey that allows these analyses, we happened on an additional indicator of engagement that affects retention net of the effects of GPA. That indicator, ironically, is whether or not a student completed a survey. Students who completed our survey were markedly more likely to return to Western the following fall.

Because our survey was conducted during the middle of winter quarter, some of the non-respondents to our survey may have already decided or partially decided not to return the following year. That is, their disengagement may be the result, rather than the cause of their non-retention decision. We therefore examined the association between completing a different survey—one that was administered during the summer before students entered Western. That survey, the CIRP (Cooperative Institutional Research Program) survey of freshmen, was sent to all in-coming freshmen during early Summer. Among the 605 who completed the CIRP, 83% persisted to the second year. Among the 1594 who did not complete the survey, 77% persisted. That effect is retained when analyzed as part of the multivariate model predicting retention. That is, over and above all the other factors reported in Exhibit 20, survey completion, as an indicator of engagement, is a reliable predictor of retention, raising the odds of retention by approximately one-third.

### Integrated Model of Quantitative Findings

The combined quantitative analysis focuses our emphasis on academic preparation, engagement, and compatibility as the most powerful influences on retention, with course access and use of advising also predicting retention. (See Exhibit 22.) The most powerful sequence is, as always in this type of research, that academic preparation has a very strong influence on GPA, which in turn has a powerful impact on retention. In addition, a set of indicators of engagement and congruence with Western’s academic culture also influence GPA and therefore retention. The congruence measures also have an additional direct effect on retention. That is, they influence retention first via their effect on GPA and secondly by having an additional influence on retention, over and above the effects of GPA.

Both indirect effects and direct effects on retention place our attention squarely on the academic process at Western. It is not the case that a student life or residential life program can address Western’s retention issues adequately. As important as these are, the problem, assuming that we wish to interpret 80% retention as a problem, is almost entirely in the point of academic nexus: the point where what Western offers by way of curriculum and



instruction meets what students bring to Western by way of academic preparation and orientation.

The question of academic preparation is typically written off as completed prior to entrance into university. But we can ask whether the preparation matches well what Western expects, and if not, what we can do about it. And we can ask whether Western grades, the driving force behind retention, are higher or lower than we might wish, given the quality of our students. For example, one reason Western’s freshman retention is lower

than at the University of Washington, which selects students with approximately the same academic preparation, is that our freshman year grade average is so much lower than at UW. Which distribution is “better” is a policy question that cannot be addressed by this analysis. We can note only that the issue has implications and that it is a legitimate one to treat as university policy.

The question of student engagement and students’ feeling of “fitting” with academics as offered at Western poses even more strongly this image of the two-sided coin. Are students ready to engage, or do they lack maturity, direction, etc.? Does Western create a freshman year experience that engages students as well as it should? We see some indicators that tilt relatively more each way. For example, being too well integrated socially undermines academic success—indicating students’ lack of academic seriousness—, while students who felt that GURs were failing to give them “valuable new ideas and insights” were more often to leave Western—indicating a quite serious orientation by students who are being failed by the curriculum. In fact, each indicator in the model includes both sides of this coin—students not ready to engage and a university that could do more to engage them academically.

Even the one indicator of course access problems—something that we might say is entirely Western’s fault—includes a strong element of student choice and failure to engage. None of the freshmen who attended Summerstart found themselves forced to take all or nearly all courses that were “all you could get at the time.” Those who faced that problem and who withdrew from the university for that reason, had the option to place university orientation as high priority and to benefit from Summerstart’s early registration. This finding displays the interplay between student and university in that the students who were less often retained were those who a) were among the one-tenth of new students who passed by their opportunity to attend Summerstart and b) were among the one-third or so of those students who found the university no longer offered enough GUR course variety for them to enroll in a minimally satisfactory set of fall courses.

### Open-Ended Responses

One open-ended question was included in the Winter 1999 Survey of Fall Quarter Freshmen: “Finally, we have an optional question for everyone. Western is actively considering ways to improve the first year experience for freshmen. We would appreciate any observations you have about what was especially good or especially bad about your first two quarters, or any suggestions you have for ways to improve the experience of all freshmen at Western”. These comments are not directed in any way and, therefore, tend to reflect the thoughts most salient in respondents’ minds at the time they completed the survey. Survey respondents made a total of 524 comments offered by 292 respondents (maximum of 3 per survey were coded).

By far the most frequent type of comment is negative comments about advising, mentioned by more than one-fourth (28.4%) of respondents. In contrast, only 1.7% of respondents made positive comments about advising. The most common complaints were that students needed help understanding major requirements, deciding on a major or help with a four year plan. Others reported that they didn’t know who their

advisor was or how to get advising help. Many cited the need for more advisors, with several even calling for mandatory advising. Others called for small group advising or advising support groups.

Related to advising, 4.8% of respondents who commented say Western should offer more written information describing student activities, clubs, organizations, resources, etc. Another 2.1% called for more information about majors and how to declare them.

Comments concerning Summerstart were evenly mixed between positive and negative (4.5% of respondents offering criticisms, 4.5% offered suggestions, and 5.5% offered praise). Complaints emphasized that Summerstart was too rushed, confusing or impersonal. Suggestions were varied, but the most common by far was that the advising period was not long enough. Positive were global: Summerstart was good/great/helpful.

Negative comments about housing are also common, offered by 15.1% of respondents. Many respondents (5.5%) indicated that more care needs to be taken in order to pair roommates with similar personalities, interests, and year in school. Another 3.8% of respondents complained that R.A.s were ineffective. Another 3.8% offered positive comments about university residences or R.A.s.

The most common specific comment has to do with course access: that the courses respondents needed or wanted were full at the time of their registration (9.9% of respondents). Another 3.4% added that more courses are needed for freshmen. Fewer comments (6.2% of respondents) were made about course content. Some (1.7%) said course work was too difficult, while others (1.0%) said they were too easy. Others called for clearer information concerning expectations, requirements and grading policies. In addition, 5.8% of respondents called for improved registration. Most of these were in fact directed to questions of course access and the frustration accompanying difficulty getting desired courses or getting add codes. Two respondents (0.7%) noted that RSVP is convenient.

ON a closely related matter, 9.6% of respondents criticized GURs, with comments divided between a) various ways of saying that GURs are horrible and should be reduced (6.2%) and that Western should make sure that required GURs are available ((3.4%). No positive comments about GURs were volunteered. Some (3.8%) did, however, offer the neutral comment that they wished for more information on GURs, perhaps embedded in a course introducing college life.

Comments about faculty were weighted toward the negative, with 4.8% offering criticisms and 2.1% offering praise. Criticisms are varied and highly specific and interactive. Positive comments are also varied but more global.

There are a number of comments relating to social activities at Western (13.1%), most indicating that Western should offer more information about all types of activities and that Western should offer more freshmen activities during their first quarter. There are also the *de rigueur* comments pertaining to the quality and variety of food at Western (8.2%).

While critical comments and suggestions predominated among these open-ended comments, respondents also offered positive comments about Western. In addition to those mentioned above, global positive feelings were reported by 13.0%.

Finally, a number of survey respondents did not return to Western in the fall (85). The comments of these students are similar to those above, except that the proportion of negative comments is much higher. Regarding specific issues, the percent of negative comments were as follows: advising, 22%; housing, 11%; GURs, 10%; other comments on course scheduling and size, 8%; and negative comments about faculty 6%. Only 8% of comments were positive, split between faculty and student residences.

## SECTION FIVE: QUALITATIVE INTERVIEWS

In this section, we add information from open-ended interviews with a sample of students whose early academic performance placed them at risk of failure or withdrawal—whose fall quarter GPA was below 2.0. Their perspective is particularly valuable for retention efforts since only about half (52.2%) of students who achieve a fall GPA of lower than 2.0 still attend Western the following fall quarter. Open-ended interviews explore the ways in which students construct and explain their experiences as Western freshmen. That perspective can offer a very different set of conclusions from those generated by quantitative analysis. As we see below, however, the two perspectives are mutually reinforcing, with the qualitative offering some detail concerning why some factors came to be included in Exhibit 22 (next page).

Western's Office of Survey Research conducted in-depth personal interviews with a random sample of freshmen whose fall quarter GPA was below 2.0. Minority students experience a lower retention rate than majority students, and are somewhat more likely to have low GPAs during fall quarter. We therefore attempted to over-sample minorities. As it happened, minority students were more likely to cooperate in the survey effort, so that more than half of these in-depth interviews were with minority students. Thirty-two freshmen were interviewed (18 minorities; 11 males, 21 females). Of the 32 interviewed freshmen, 20 (62.5%) returned the following fall. However, analysis revealed no patterned differences in the responses of minority and majority group students, so no further findings on that subject are presented.

Seven interviewers (six of whom were students) conducted the interviews primarily during Winter Quarter 1999. The interviews lasted between 1/2 hour and one hour. Respondents were informed that their name was randomly drawn from the larger mail-out sample to participate in a more in-depth study about students' transition to Western and were assured confidentiality. They were not aware that they were sampled from students receiving relatively low fall GPAs.

After their first quarter at Western (fall 1998), respondents' GPA ranged from 0.69 to 1.98, averaging 1.58. One student did not attend winter quarter and remained on "warning" status during spring. Just over half of the respondents (18 of 32) were placed on "academic probation", as their cumulative GPAs remained below 2.00 for two quarters. Six students were subject to academic dismissal after their first year, and another three were

not only because they did not attend in the Spring. Of the remaining 23 students—those who retained the choice—, nineteen (82.6%) returned the following fall. One student who did not attend in the spring also returned in the fall.

These at-risk students whom we interviewed matched the profile identified in the quantitative portion of this report. They entered Western with lower than average SAT scores and high school GPAs, more often experience the academic transition to Western as difficult, quite often found themselves overly engaged in social activities, and experienced difficulties with course access. In addition, some, primarily minority students, report some difficulty finding a comfortable “fit” at Western. At the same time, most of these students were enjoying Western and feeling OK about their adjustment, and the group displays experiences and attitudes very similar to more successful students, aside from concerns with academic adjustment. Below, we summarize students’ responses to our open questions.

### Why Western?

These freshmen chose Western because they like the area and campus, and because it is close to home. They also appreciate Western’s positive reputation and it’s size—in particular that UW and WSU are too large. And they often knew others already here and wanted in-state tuition. These findings are identical to those other assessment studies have identified for all incoming Western freshmen.

### Transition to Western

When asked what contributed most to a successful transition to Western, students emphasized the interpersonal: relationships with friends and professors, and dorm life. About one-third also mentioned Summerstart. Another one-third refer to having good courses. (See Exhibit 23 on next page.) Almost all of these students say that coming to Western has worked out very well for them socially. About half feel they are doing fairly well academically, and half feel quite challenged by Western’s courses.

When asked what aspects of the transition to Western were most problematic, nearly all these low GPA students refer to Western’s academic expectations—greater course demands than they expected or difficulty understanding what to expect, how to take tests, etc. In addition, half refer to time management problems or to a lack of study skills and one-third say they feel unprepared by their high schools. In addition to these core academic performance issues, students refer primarily to course access problems, poor advising, and negative experiences with professors, T.A.s or roommates. The negative experiences with professors were primarily that professors are distant and uncaring, especially in large classes, or that they failed to establish clear expectations. One student of color referenced a more serious conflict with a professor the student felt was biased. Comments regarding T.A. instruction all dealt with quality of instruction. Only three in this sample mention problems with social integration, and two of these say their own activity decisions are to blame. Overwhelmingly, these are students who find Western satisfying socially, but who are unprepared for or disengaged from the academic demands of university life. (See Exhibit 24.)

**Exhibit 23. Things students say contributed most to their making a successful transition to Western--"positive experiences"**

*Interviews with freshmen at risk, Winter '99*

	Frequency*
Friends, roommates, family; friendly/supportive people	22
Professors--encouraging, enjoyable, helpful, friendly	16
Dorm "community", activities, R.A.'s	16
Summerstart	12
Good Courses	11
Advising (Dept. & Academic Advising Center)	5
Registration easy, including deciding on classes	5
Study groups	4
Access program	3
Being open-minded, adaptable	3
High school preparation re: study skills, running start	3
Various facilities, services at Western	7
Other	4

\*(n=32) Multiple responses are possible.

**Exhibit 24. Things students say are most problematic or challenging during Transition to Western**

*Interviews with freshmen at risk, Winter '99*

	Frequency*
Difficulty with expectations	26
Expectations "high"; course material difficult	13
Difficulty <i>understanding</i> expectations— adjusting to lecture styles, testing styles	13
Study skills lacking; difficulty managing time	16
Classes full/ hard to get classes needed/wanted	13
Advising/Summerstart not helpful, poor; lack of advising	10
Feel "unprepared" by high school/Running Start	10
Negative experiences with professors	9
Problems with living situation/dorms/roommates	7
Workload demanding, homework "intense"	6
Disliked having T.A.'s teaching class(es) (poor teaching)	4
Difficulty meeting people, lonely, depressed	3
Other, WWU (classes too large, unaware of services, food)	6
Other, self (homesick, money problems, travel)	5

\*(n=32) Multiple responses are possible.

**How Western can Improve Students' First Quarter Experience**

*Student Orientations* – Almost all (29) of the interviewed students attended a new student orientation. Of the 26 who attended Summerstart, ten give the program good marks, eleven say that is helpful but could be improved, and 5 are critical. The three who

attended the Access orientation are very positive. The major suggested improvements to Summerstart were a desire for more in-depth and accurate advising (10 comments) and a request to stress the difficulty of the course material compared to high school and to provide an extensive discussion of study habits (5 comments). One interesting comment made by two students was that orientation should be repeated after school to reinforce the information. Each of the three students who attended the Access Program was very pleased with the help they received.

Most (18) students say that Summerstart or other advising was their primary source for deciding which courses to take. Others worked it out themselves by studying the GUR list and timetable, and others say they just took any GUR course that looked interesting and/or was available.

*Courses* – Students in the sample were asked whether any changes regarding the courses they took—organization, size, teaching, etc.—would have helped them. Nineteen students said that smaller, more personal/interactive classes would have been helpful to their first quarter experience. Another six called for more discussion groups. Six also sought more course sections. Five say their classes were fine and have no suggestions.

*Support Services* – Ten students know about services, but feel no need to seek help. Others say they needed help but hate to ask don't get around to it. Of the students who used the services, most deemed them very helpful. Two students say they didn't know about any available services. Ten say they used the Math Center, with eight saying it was very helpful. Six used the Writing Center and found it very helpful. Two found Academic Advising Services helpful and three more planned to go soon. Other offices referenced as very helpful but used by only one or two of the 32 students we interviewed: Tutorial center, Counseling Center, Ethnic Student Center, Office of Student Affairs, and the Shalom Center.

*Is there anything else Western could have done?* Asked if Western could have done anything else to improve their first quarter experience, nearly half of the students in our sample (14) answer, "no". They indicate that their challenges were all related to self-adjustment, personal issues, and their own mistakes. Of the others, almost all (15) say that more and better advising support would help. Ten say that Summerstart should provide more accurate and in-depth advising. They believe that poor or inadequate advising is directly related to their experiences with bad classes, taking too many credits, and not being informed about studying expectations. Five other individuals say that mandatory advising and on-going, one-on-one support would be helpful. Other ideas suggested by 3-5 of the 32 we interviewed include more residence-based activities, more information on services and greater course availability, and increasing the clarity of course expectations and demands.

*What would students have done differently?* We also asked what the students themselves might do differently if they could repeat fall quarter. Three-fourths (24) say they would have studied more and organized their time better. Ten say they would have chosen different classes, trying to achieve a better balance of courses for them. Nine would have sought different advising. While the majority of students list friends, roommates, and the dorm life as positive experiences in their adjustment to Western, five students admit that social life in the dorm gets in the way of studying. Almost one-fourth of the respondents (7) say that if

they could do fall quarter over again, they would have spent *less time* socializing or participating in social activities, and more time studying.

One striking finding is that fewer than half of this group of freshmen (14 of 32 respondents) would have sought help of any kind. Nine respondents say they would have sought more or different advising, including more detailed descriptions of classes, expectations and types of assignments. Three students would have sought more contact with professors to ask for help, one student would have taken advantage of support services (counseling/tutorials), and one would have talked with upperclassmen about classes.

### Overlap Between Quantitative and Qualitative Findings

It is often the case that conclusions drawn from quantitative analysis differ from those drawn from people's subjective impressions expressed in open-ended interviews. In this instance, however, they are highly consistent, albeit with slightly different emphasis and expressed in slightly different terms. Academic preparation weighs most heavily in the quantitative analysis. Open-ended responses from students doing poorly at Western found a near-universal emphasis on problems of academic demands and expectations, along with some emphasis on lack of preparation. Other themes appearing in both the quantitative and qualitative analyses include advising issues (emphasized more in open-ended interviews, but present in both analyses), course access and choice issues, problems stemming from large classes and the lack of personal connection when all classes are large, and engagement issues (in open-ended interviews, normally expressed by admitting to too much non-academic time, usually social but sometimes work or athletic).

Finally, our quantitative analysis reveals some findings that we have characterized as indicating problems of compatibility with WWU instruction. The specific measures found there are also mentioned in open-ended interviews. In addition, the nearly universal complaint is that WWU academic expectations and practices are not well understood by these students and that students receive no help gaining such an understanding. Summerstart receives quite positive reviews, but the major area of complaint is that it did too little to prepare students for academic life at Western. Whether that complaint would be voiced by students with higher GPAs is not something we can say based on these data.

In short, the quantitative analysis reinforces our findings that students' social integration is non-problematic or is, in fact, too good—with social life pushing out academic pursuits, but that academic integration is problematic for many. In particular, academic expectations are not understood well by many low performing students, the nature of the instruction—large class, impersonal, lacking discussion and engagement—undercuts comfort and performance for some, the lack of proactive advising (students do not seek out advising, but feel its absence) contributes to problems with course selection, academic expectations, and coping mechanisms, and limits on course access options also undercuts engagement for some.

All this is in some sense unsurprising. In a process where college GPA overwhelmingly drives retention, it makes sense that the greatest block to retention that Western itself can do something about is weak academic involvement. Our orientation is valuable, but does little to set academic expectations. First quarter GURs tend not to engage students academi-

cally. And supports put in place for weaker students are partial and often not used by students. Of course, the other side of the same coin is students' readiness to engage academically. Some appear to have weak academic preparation. Others lack the maturity or experience to settle into academic discipline in the face of enjoyable social life and large, impersonal classes.

## CONCLUSION & POLICY IMPLICATIONS

The focus of this report is to expand our understanding of success during the first year and of freshman retention. In addition, in this concluding section, we point to a few possible policy implications of these findings. These are suggestive only, since the analysis does not directly address the question of best approaches to overcome the problems we identify—or even which determinants of retention should be considered problematic. (Some proportion of the students who leave are probably best served by doing so. However, we assume that others would be better served if problems leading to their departure had been addressed, allowing them to remain enrolled.) We offer them in the spirit of stimulating discussion.

The most powerful influence on retention/withdrawal, academic performance, is a confusing issue for universities. Is poor academic performance entirely the student's responsibility? How well prepared are our students? What is a reasonable distribution of grades for the students we admit, their level of engagement, etc.? How much should Western offer by way of remediation, tutoring and advisement to support students who are performing badly? That is, where is the hypothetical dividing line that retains high academic standards and also supports students who could meet those but are having temporary difficulties?

No analysis can answer such complex questions, but ours does highlight some issues that could be part of policy conversations. Western is awarding failing grades to more students than UW, despite similar admissions, and our retention is falling. These findings suggest room for conversations about whether we are drawing the line too high (or inconsistently) or offering too little support.

One set of findings in particular recommend campus conversations among faculty: grade distributions vary widely with GUR course and section. Among courses enrolling over 100, the range of average grades in fall 1998 varied from a low of 1.7 to a high of 3.4. While some variation in grading practices is natural and some differences are created by students' selection into different courses, it becomes a problem when a student's GPA is in part determined by which course or section she happened to enroll in. Matters such as faculty grading practices should not become bureaucratized or rule-bound, but faculty should perhaps meet to talk out such matters. Interestingly, the departments that produce the most restrictive grade distributions in fall 1998 were not those stereotypically associated with great difficulty or demanding faculty, except for math and then only in the lower level GUR sections. Faculty discussion and collaboration is likely to result in more equitable treatment of our new students.

Western could also provide more by way of tutoring, especially in math, and more proactive advising, reaching out to students whose initial grades put them on track for

withdrawal. We have anecdotal evidence that the Access program, which serves only a few students admitted with low Admissions Index scores, is highly effective. Recent moves toward more Internet-based advising may help, but we still face a problem of limited advising contact with freshmen.

Related to the question of academic performance is the issue of orienting students to Western's academic expectations and practices, and engaging students in the academic sector at Western. Freshmen are well integrated socially, but not academically. Measures of engagement predict both grades and retention, and failing students complain of not understanding expectations or grading practices and feel (correctly or not) that their professors are too distant to ask for help. We know from other assessment research that most Western students do not really engage until they enter their majors, most in the junior year. Too many of the non-engaged freshmen are earning low grades and then deciding to leave Western. They are, if you will, potential late bloomers who nip themselves in the bud and therefore never get to bloom.

We also know from other assessment research that freshmen do not see GURs as meaningful—as organized in ways that make sense for learners. Consequently, many students view GURs as a distraction—as preventing them from “making progress toward a degree” rather than as part of that progress. One policy implication of all this research is that GURs should, to the extent consistent with Western's mission, be organized such that they are inherently meaningful. That is, students should be able to review the requirements and understand why these are a sensible and valuable way to expand their horizons and become better educated citizens. And, growing out of that, advisors and faculty could more easily explain the reasons for GURs and assist students in making wise GUR choices.

We can perhaps look to Summerstart and other advising to help set academic expectations, but these are rather minor as interventions go. Yet the small-campus Western where informal contact with faculty might suffice no longer exists, and something perhaps needs to replace it. Fall quarter GUR instructors could be more attuned to issues of academic integration, but most such courses enroll many non-freshman students, and the courses are responsible to teach content and skill, not to provide advising. Finding ways to reach out to students (all or those performing weakly) during freshman year—especially fall quarter—should remain one of our top priorities toward enhancing freshman retention.

One possible way of addressing early academic engagement is also a policy directly called for by students with relatively low grades and also other students who decide to withdraw from Western. That is to offer a small, discussion-oriented GUR course in the first quarter at Western. One of students' primary reasons for choosing to attend Western is our size—in particular being similar in quality but much smaller than UW. And while the size appears to translate into social adjustment and comfort well enough, the same is not true for academic adjustment until students enter majors. Although a Western GUR enrolling 150 is smaller than one at UW enrolling 600, neither engages discussion, encourages students' questions about being students, etc. Some version of University 101 or FIG courses may address both students' need for at least one early course where they can interact and be responded to while also addressing our need to engage students more fully and giving students one instructor they know well enough to ask questions as they arise.

Practices such as offering discussion seminars to all fall freshmen or proactive advising attempts to all students are expensive. If Western wishes to engage in them but cannot afford them for all, one possibility is to identify students whose high school records profile predicts low performance or non-retention. Our analysis makes clear that any such projection would be far from fully accurate, but would have some predictive value. It also makes clear that the felt need for getting to know professors and having small classes is concentrated among those who earn low grades at Western.

Course access remains an issue that affects satisfaction more than grades or retention except in the case of those registering very late, who can find no courses they actually wanted. While Western can continue to work on this issue (setting aside seats, etc.), it is less problematic than it used to be and is not a very strong driver of performance or retention.

The GUR math requirement is also an area of concern, both because it seems a problem place for some students and also because at present one department has the wildly disproportionate load of providing one-fifth of SCH for incoming freshmen. This issue intersects with issues of curricular reform, departmental instructional burdens, and student preparation. In this context we therefore note only that math plays a rather central role in the adjustment to Western of new freshmen and unevenness in the instruction of math 201 raises cause for concern.

Finally, one possibility worth discussing takes a different tack to address the question of students' lack of mature readiness for college performance and also Western's failure to fully integrate students academically during their first quarter. Western now has a very small "fresh start" program, which allows students returning after five years or longer to have their cumulative GPA calculated only on the basis of their current courses, not those from their earlier schooling. We should perhaps discuss whether something similar might be introduced following the first freshman quarter at Western. Specifically, freshmen whose first quarter GPA is below some cutoff—perhaps 2.0 or perhaps lower—might be allowed the one-time-only option of restarting the calculations of GPA involved in academic standing and graduation, provided that they participated actively in a program of special advising. Their first quarter grades could still be calculated into their cumulative GPAs for purposes such as admission into a major and transcripts, but not be included in calculations of academic standing or the minimum GPA for graduation.

Such a program would recognize that academic qualifications and maturity are separate, and that, while students should be allowed to make mistakes, some mistakes are too severe to learn and recoup from. It would also recognize that students who fail early can, if motivated, gain from advice, support and direction. Students' frequent complaints that they did not grasp the academic expectations at Western or got too involved in non-academic pursuits illustrates that point. Tying a partial "fresh start" option to participation in ongoing advisement, mentoring and perhaps tutoring would add the infrastructure Western needs to reach out to those who are a) most at risk of withdrawing and b) most motivated to improve. As long as a first quarter with a very low GPA is retained in GPA calculations, students have little chance of recouping. They of course recognize that fact, which

undermines their engagement in realistically attempting to improve their performances, a prediction of failure that becomes self-fulfilling. A fresh start option would avoid such an excuse for non-engagement and challenge students to take the renewed opportunity to “get it right.”

### Endnotes

<sup>1</sup> At a later stage in the analysis, we also tested for possible suppression effects, but none was found.

<sup>2</sup> Two thousand one hundred and ninety-nine freshmen started fall quarter: 32 did not finish fall quarter, and 22 registered for exclusively s/u grading courses. These 54 students are not included in any analysis of GPA. Of the 32 students who did not finish fall quarter, only 3 (9.4%) returned in fall of 1999.

<sup>3</sup> The median GPA is 2.75.

<sup>4</sup> Chi-square difference is 15.8 with one degree of freedom.

<sup>5</sup> A t-test shows that these are statistically different groups with respect to retention.

<sup>6</sup> Of the 2199 1998 freshmen, 45 are Native American or Alaskan Native, 36 African-American, 62 Hispanic, and 164 Asian-American.

<sup>7</sup> High school percentile rank varies in our sample from 6.0 to 99.8 with a mean of 74.3 and a standard deviation of 17.7. A high value on this variable corresponds with a high class ranking.

<sup>8</sup> Standardized Betas are affected by the variance of both the independent and dependent variables. In the case of membership variables, Beta depends heavily on the size of the smaller group. If a group is very small, even a large effect on each member of the group will not produce a large Beta because non-members of the group—most members of the sample—cannot be affected.

<sup>9</sup> The full data are shown in Appendix F.

<sup>10</sup> Strictly speaking, we should test these against only winter and spring GPA, since year GPA includes fall and it is contaminated. However, the full year GPA is most at issue for retention, and the contamination of fall GPA is diluted significantly by the addition of all three quarters, so we move forward, acknowledging this slight impropriety in the analysis.

<sup>11</sup> A direct test of this complaint on only winter and spring GPAs confirms that the issue is not one of composition, but that the fall complaint is predictive of later performance. The estimated effect is exactly the same for winter-spring GPA as for year GPA.

<sup>12</sup> A direct test of effect of attending Summerstart on winter and spring GPAs confirms.

<sup>13</sup> As in the GPA analysis, we exclude the high school percentile variable as redundant because it is so highly correlated with high school GPA. For this analysis of retention, we use high school grades to interpolate approximated SAT scores for the 113 students missing them.

<sup>14</sup> Odds express the likelihood of being retained versus withdrawing. Thus, odds of 3:1 means that three freshmen returned in Fall '99 for each one who did not. Expressed as a percentage, odds of 3:1 translate into 75% retained. An odds ratio is the ratio between two odds. If the odds of retention for one group is 4:1 (80% likely), and for another, 2:1 (50% likely) the ratio between the two odds is 2:1. That is, the odds of retention are twice as great for the first group as for the second. The effects described here may seem large to one new to the method, but that is a quirk of the need to express findings as odds ratios. In the above example, the difference in the percent retained is 30%, while the odds are twice as great for one group as for the other.

<sup>15</sup> Exhibit 17 reports that a full point increase in high school GPA corresponds to a three-fold increase in the odds of retention. An example will help clarify the magnitude of that finding. This model predicts that a student with average SAT scores and a 2.5 high school GPA has odds of returning for a second year of college equal to 1.4:1, which translates to a 57.5% probability of retention. A student with a 3.5 high school GPA—1.0 higher on GPA—has odds of 4.2:1 of retention, which translates to an 80% chance of being retained. The ratio between odds of 1.4:1 and 4.2:1 is 3:1. The probability of retention differs by 22.5%. In fact, Western admits so few students with low GPAs that the practical differences among our freshmen are too small to be useful early predictors of retention.

<sup>16</sup> Those below 2.0 have a cumulative deficit determined by adding together the linear effect of year GPA with the additional effect of having a GPA under 2.0.

# APPENDIX A:

## Correlation Coefficients

# APPENDIX B:

## Descriptive Statistics

# APPENDIX C:

## Survey Form

## APPENDIX D:

Department Share of Fall, 1998,  
Courses Taken by New Freshmen