

**WESTMONT COLLEGE**  
**Departmental Grades Report - Summer 2022**

**EXECUTIVE SUMMARY**

A study of fall 2021 and spring 2022 grades from courses identified by each department as “introductory” was undertaken. The data included 4,037 grades earned by 1,135 students enrolled at Westmont; about 91% of students enrolled at Westmont during 2021-22 had at least one grade in the data set. The following findings stand out as perhaps the most interesting or informative:

1. This study follows a similar study of 2020-21 grades. The GPA from grades in the study in 21-22 was 0.045 lower than the GPA from the grades in the 20-21 study. The difference was statistically significant. Further analysis indicated 0.01 of this change may be attributable to fewer students who earned a 4 or 5 on an AP exam in the 21-22 data set.
2. The remaining 0.035 decrease in GPA could be at least partially attributable to the return to in-person instruction—a notable difference between 20-21 and 21-22.
3. As was found in 20-21, gender, HABH/AWU, first-generation status, and 4 or 5 on AP exam continuáes ic

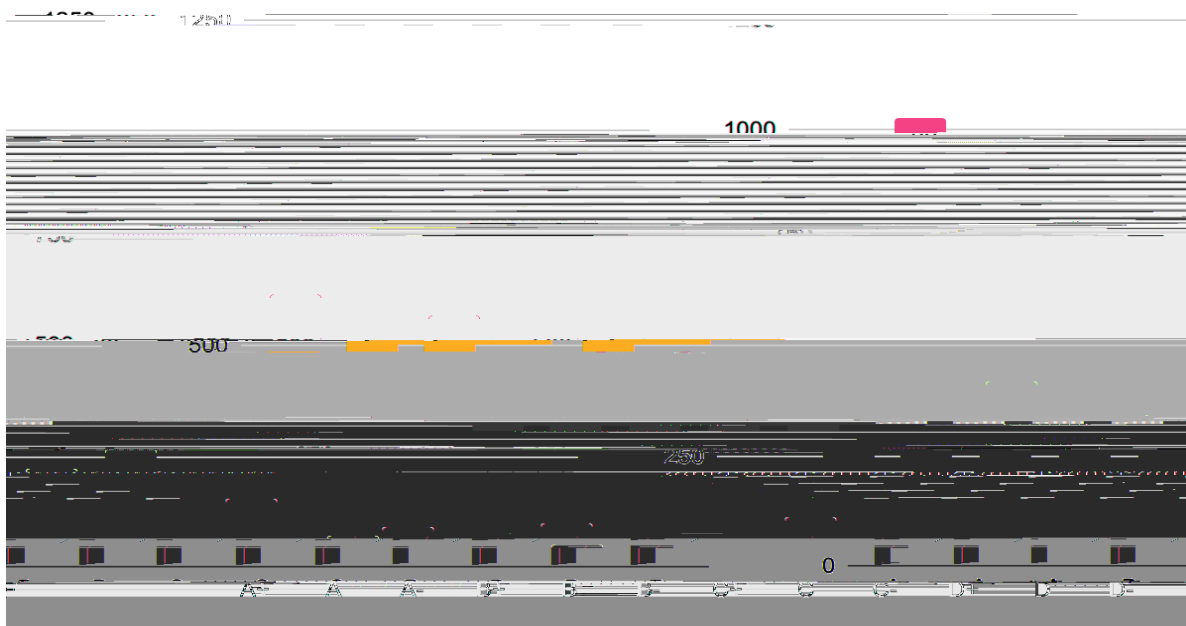
## **INTRODUCTION**

During the 2020-21 school year members of the Program Review Committee (PRC) identified the value of providing academic departments statistical analysis of course grade data, disaggregated by various factors, to use as they review their programs. To that end, reports that include summary findings from grades assigned in introductory level courses identified by departments and a summary report of analysis from the entire data set were generated and distributed.

During the 2021-22 school year, the PRC surveyed department chairs to gather feedback on the value of similar reports based on analysis of data from the 2021-22 academic year. After reviewing results from the survey, the PRC agreed to again generate and distribute reports to each department. As a result, at the conclusion of the second semester, final grades from the departmentally identified courses were pulled by the Office of the Registrar.

|                           |     |     |     |     |     |     |    |    |   |
|---------------------------|-----|-----|-----|-----|-----|-----|----|----|---|
| <b># of Course Grades</b> | 1   | 2   | 3   | 4   | 5   | 6   | 7  | 8  | 9 |
| <b># of Students</b>      | 194 | 218 | 196 | 152 | 152 | 127 | 80 | 15 | 1 |

A handful of students took the same course in both the first and second semester ostensibly to



The median letter grade was a B+ and the mode was an A. Close to half of the grades (43.4%) were in the A range while a much smaller percentage of grades were in the D and F range (7.7%). These results represent a slight change from what was present in the 2020-21 data when 44.7% of grades were in the A range and 6.8% were in the D and F range.

To compute the grade point average (GPA), letter grades were assigned numeric values based on Westmont's grading convention: A+ = 4.0, A = 4.0, A- = 3.7, B+ = 3.3, etc. The GPA of the 4,037 letter grades was 3.062 with a standard deviation of 0.978. The median grade (B+ = 3.3) is a bit higher than the average grade (3.062), a finding consistent with the skewed distribution of grades.

The GPA from the 2020-21 grades data set was 3.107. The lower GPA from 2021-22 (3.062) is in line with the slight change noted above; the difference in GPAs between 2020-21 and 2021-22 is statistically significant ( $p = 0.0354$ ). In terms of letter grades assigned, this change in GPA resulted from the assignment of fewer As and Bs (-141) and slightly more Cs and Ds (+74) in 2021-22 than in the 2020-21 school years. Note: The number of Fs differed by only one between the years. While this statistically significant change is likely due to a number of things, the 2020-21 school year was marked by significant portions of time in which courses were held remotely while courses were primarily held in person during 2021-22. As a result, a portion of the 0.045 drop in GPA may have been caused by this return to in-person instruction. Note: One may argue that a 0.045 drop in GPA is not "practically significant" even though it is "statistically significant."

#### **GPA OF COMPLETE DATA SET DISAGGREGATED BY IPEDS RACE/ETHNICITY**

An explanation of how IPEDS categorizes students by race/ethnicity is provided to provide an understanding of how students are assigned to these categories.

All international students are placed in the Non-Resident Alien group regardless of what race/ethnicity is reported by the student.

Students reporting a Hispanic/Latino ethnicity are placed in the Hispanic/Latino group regardless of additional racial information provided by the student. (So the grade records of a student that reports being Hispanic/Latino and Black or African American are placed in the Hispanic/Latino grouping.)

Students that report a non-Hispanic/Latino ethnicity and those who leave the ethnicity question blank who report a single race/ethnicity are grouped according to their reported race/ethnicity.

Students that report a non-Hispanic/Latino ethnicity and those who leave the ethnicity question blank who report more than one racial background, are placed in the Two or More Races group. (So the grade records of a student who reports being non-Hispanic/Latino, Black or African American and Hawaiian/Pacific Islander are placed in the Two or More Races group.)

The grade records of any student who does not disclose his or her race/ethnicity during the admission process are placed in the Unknown group.

As a result of these categorization rules, some of the groupings may have their own diversity. For instance, the Non-Resident Alien group may contain academic records from a range of race/ethnicity groupings; similarly, the Hispanic/Latino group will have students who also identify as Black, White, Two-or-ä,B

As can be seen fr

American group was below 100, it was not included in the statistical comparison. Having said that, their GPA is noticeably lower than that of the other groups and it could indicate this group would benefit from additional and intentional support as they engage in these introductory I

### **GPA OF COMPLETE DATA SET DISAGGREGATED BY OTHER FACTORS**

To provide further insight, the course grade data was disaggregated by four other factors available within the student records system: HABH/AWU, gender, first generation status, and academic records related to AP exams.

In other studies at Westmont College, two groupings of students, based loosely on common historic and social factors, have been used to disaggregate data. These groupings typically have enough data points to allow statistical comparisons to be made. The HABH group consists of grades earned by students who are in the IPEDS Hawaiian/Pacific Islander, American/Alaska Native, Black or African American, and Hispanic/Latino groupings. The AWU group consists of grades earned by students in the IPEDS Asian, White, and Unknown groupings. As explained earlier, the IPEDS classification process results in the Non-Resident Alien, Two or More Races, and Non-Resident Alien groupings containing a broad mix of students with varied race/ethnicity backgrounds. Because of the diversity within these three IPEDS categories, their grades (and a third grouping) are not used in the HABH/AWU analysis.

The table below provides summary statistics for the data set when disaggregated by HABH and AWU status:

#### **NUMBER (n)**



Of note, the GPA for first generation HABH students in 2020-21 was 2.540. The difference between the 2021-22 GPA (2.459) and 2020-21 GPA (2.540) was -0.081 which exceeded the average decrease across the two years (-0.045) and would indicate not only did these first generation HABH students do worse in 2021-22 than in 2020-21, they lost more ground than their non-first generation HABH peers.

The table below provides summary statistics for the data set when disaggregated by gender:

|              | <b>NUMBER (n)</b> | <b>GPA</b> | <b>ST DEV</b> |
|--------------|-------------------|------------|---------------|
| Female       | 2,433             | 3.127      | 0.976         |
| Male         | 1,604             | 2.963      | 0.973         |
| <b>TOTAL</b> | 4,037             | 3.062      | 0.978         |

The GPA of female students differed significantly from that of the male students ( $p < 0.0001$ ). The difference between the average GPAs (0.164) was larger than that found in the 2020-21 data set (0.164 v 0.079). The GPA of female students in 2021-22 was only slightly below that of female students in 2020-21 (-0.012) and smaller than the average drop in GPA of -0.045. Male students had a larger drop in GPA between 2020-21 and 2021-22 (-0.097). These statistics suggest that males lost ground to femalep

The table below provides summary statistics for the data set when disaggregated by first generation status:

|                              | <b>NUMBER (n)</b> | <b>GPA</b>   | <b>ST DEV</b> |
|------------------------------|-------------------|--------------|---------------|
| First Generation Student     | 594               | 2.640        | 1.088         |
| non-First Generation Student | 3,443             | 3.134        | 0.939         |
| <b>TOTAL</b>                 | <b>4,037</b>      | <b>3.062</b> | <b>0.978</b>  |

Westmont defines first generation students as those whose parents do not have a college degree. This status is determined by Westmont staff evaluating responses students give to parental education questions asked during the application process.

The average GPA in courses taken by first generation students differed significantly from that of non-first generation students ( $p < 0.0001$ ). The difference between GPAs (0.494) was larger than that just identified for gender (0.164) and similar in size to the difference found between HABH and AWU groupings (0.520). The difference between the GPAs was larger in the 2021-22 data set than in the 2020-21 data set (0.494 v 0.393). Between 2020-21 and 2021-22, the GPA of first generation students went down by 0.132; their non-first generation peers experienced a smaller decline in GPA (-0.031). So, as was true for males, first generation students lost more g gV

In the admissions process, students who scored a 4 or 5 on an AP exam submit results to Westmont to receive academic credits. The table below provides summary statistics from the grade data set when disaggregated by whether the student scored a four or five on one or more AP exam(s):

|                                 | <b>NUMBER (n)</b> | <b>GPA</b>   | <b>ST DEV</b> |
|---------------------------------|-------------------|--------------|---------------|
| AP Score of 4 or 5              | 1,274             | 3.495        | 0.724         |
| NO AP Score Reported to College | 2,763             | 2.862        | 1.015         |
| <b>TOTAL</b>                    | <b>4,037</b>      | <b>3.062</b> | <b>0.978</b>  |

Of the 4,037 grades in the data set, 1,274 (31.6% of course grades; n = 383 students) were earned by students who scored a 4 or 5 on one or more AP exam(s). This percentage was down slightly from 2020-21 (33.8% of course grades; n = 413 students) and could be a factor for the previously identified -0.045 in the decline in GPA between the years.

The GPA of the “AP” group (3.495) differed significantly from that of the “non-AP” group (GPA = 2.862,  $p < 0.0001$ ). The difference between the GPAs of the AP and non-AP groups (0.633) was larger than the differences identified when the data were disaggregated by gender, first generation status, and HABH/AWU (0.164, 0.494, and 0.520 respectively). It is also larger than what was identified in the 2020-21 data set (0.593). The difference in GPA of the AP group between 2020-21 and 2021-22 was -0.005, which is much smaller than the average difference in GPA across all the grades (-0.045) and indicates the GPA of the AP students was impacted less in the return to in person instruction than the GPA of the non-AP students.

As was true in the 2020-21 study, these findings continue to support the idea that students who engaged deeply and successfully in at least one AP course while in high school have a strong advantage over students who did not—an advantage that is more influential than that of other factors in the study (gender, first-generation, or HABH/AWU status).

The table below presents the AP exam data further disaggregated by IPEDS race/ethnicity for the 2021-22 grades:

**GPA of AP  
Score of 4 or 5**

|                           |                                      |                               |                   |
|---------------------------|--------------------------------------|-------------------------------|-------------------|
| Black or African American | 2.886                                | 2.070                         | 0.816             |
| Hawaiian/Pacific Islander | 3.400                                | 2.500                         | 0.900             |
| Hispanic/Latino           | 3.357                                | 2.491                         | 0.866             |
| Non-Resident Alien        | 3.950                                | 2.883                         | 1.067             |
| Two or More Races         | 3.350                                | 2.970                         | 0.380             |
| Unknown                   | 3.529                                | 2.787                         | 0.742             |
| White                     | 3.528                                | 3.073                         | 0.455             |
| <b>TOTAL</b>              | 3.495                                | 2.862                         | 0.633             |
|                           | <b>GPA of AP<br/>Score of 4 or 5</b> | <b>GPA of NO<br/>AP Score</b> | <b>Difference</b> |

As can be seen in the tabled results, the general trend of AP students earning higher grades than their non-AP classmates holds true across all race/ethnicity groupings.

To further understand the impact of prior success in AP coursework, the 2021-22 data was also disaggregated by the number of 4 or 5 AP exam scores each student earned and reported:

|                           |       |       |       |       |       |       |       |
|---------------------------|-------|-------|-------|-------|-------|-------|-------|
| <b># 4 or 5 AP scores</b> | 0     | 1     | 2     | 3     | 4     | 5     | 6+    |
| <b>GPA</b>                | 2.862 | 3.361 | 3.414 | 3.494 | 3.555 | 3.699 | 3.783 |

While successfully earning a 4 or 5 on at least one AP exam was a significant discriminator in terms of GPA earned in the introductory courses, the trend in the table above indicates even greater academic success for students who earned a 4 or 5 on multiple AP exams.

Disaggregating the AP score data by gender shows females were slightly more represented in the AP Score of 4 or 5 group than in the data set as a whole (61.5% v 60.3%); GPA of females who earned a score of 4 or 5 on an AP exam was higher than that of males in the same group (3.565 v 3.382); GPA of females in the non-AP group exceeded that of males in the non-AP group (2.918 v 2.779). These findings all align with differences noted between male and female GPAs in the 2021-22 data set.

A small number of course grades in the AP Score 4 or 5 group were earned by first generation students (6.5% of the grades in the AP group). The GPA of the first generation AP group exceeded that of their non-AP first generation counterparts (3.177 v 2.552) indicating they too benefited from their AP experiences. The AP first generation GPA (3.177) was lower than that of non-first generation AP students (3.517), indicating that while participation in AP courses boosted grades when compared with non-AP first generation students (3.177 v 2.862), it did not

equalize academic outcomes with AP non-first generation students. The first generation AP students did, however, have a higher GPA than the non-AP students. Of note, 6.9% of the AP students were first generation while 18.4% of the non-AP students were first generation indicating first generation students were under-represented in the AP group and

|                      |                   |                    |               |
|----------------------|-------------------|--------------------|---------------|
| HABH                 | 136               | 1,165.0            | 144.9         |
| AWU                  | 418               | 1,263.9            | 147.3         |
| Male                 | 272               | 1,269.4            | 154.0         |
| Female               | 339               | 1,220.4            | 153.1         |
| First Generation     | 90                | 1,143.2            | 125.4         |
| non-First Generation | 521               | 1,259.3            | 153.6         |
| 4 or 5 on AP Exam    | 239               | 1,341.8            | 122.2         |
| No AP Exam           | 372               | 1,178.3            | 139.9         |
| <b>TOTAL</b>         | 611               | 1,242.2            | 155.3         |
|                      | <b>NUMBER (n)</b> | <b>Average SAT</b> | <b>ST DEV</b> |

As can be seen, the average SAT score for the HABH group was about 100 points lower than that for the AWU group; the average SAT score for the first generation group was also about 100 points lower than for the non-first generation group; the average SAT score for the non-AP Exam group was about 170 points lower than for the AP group; and, bucking the trend, the average SAT score for males was about 50 points higher than that of the female group. Some may interpret these results as indication that at-risk students enter Westmont with academic skills that are not on par with those of students in the non-at-risk groups. Of course because these findings are based on only 56% of the students in the study, that type of conclusion could be weak. To further examine this, high school GPA was analyzed.

After submitting the 2020-21 report, some asked the extent to which identified differences in academic performance at Westmont were related to differences in academic preparation or performance from primary and secondary schools. While an in-depth analysis of this question would be lengthy, a few comments may be of interest.

As part of the admissions process, Westmont collects high school GPA from almost all students who enroll. (Some transfer students, international students, and students from non-traditional programs do not have a high school GPA reported in Colleague.) The table below reports averages of both high school weighted GPA and the cumulative Westmont GPA for students in the study. Because Westmont does not weight grades, the average cumulative Westmont GPA will naturally be lower than the average weighted high school GPA.

|  |                  |     |                 |     |                    |
|--|------------------|-----|-----------------|-----|--------------------|
|  | Cum Westmont GPA |     | Weighted HS GPA |     | Difference in GPAs |
|  | Num. (n)         | GPA | Num. (n)        | GPA |                    |

|                               |             |             |             |             |             |
|-------------------------------|-------------|-------------|-------------|-------------|-------------|
| American Indian/Alaska Native | 3           | 2.86        | 3           | 3.37        | 0.51        |
| Asian                         | 79          | 3.23        | 76          | 3.83        | 0.60        |
| Black or African American     | 21          | 2.57        | 20          | 3.61        | 1.04        |
| Hawaiian/Pacific Islander     | 8           | 2.96        | 7           | 3.58        | 0.62        |
| Hispanic/Latino               | 230         | 2.93        | 214         | 3.67        | 0.74        |
| Non-Resident Alien            | 23          | 3.07        | 14          | 3.60        | 0.53        |
| Two or More Races             | 75          | 3.25        | 67          | 3.87        | 0.62        |
| Unknown                       | 90          | 3.12        | 63          | 3.67        | 0.55        |
| White                         | 606         | 3.30        | 573         | 3.95        | 0.65        |
| Male                          | 453         | 3.10        | 402         | 3.80        | 0.70        |
| Female                        | 682         | 3.23        | 635         | 3.88        | 0.65        |
| HABH                          | 262         | 2.90        | 244         | 3.66        | 0.76        |
| AWU                           | 775         | 3.27        | 712         | 3.91        | 0.64        |
| First Generation              | 166         | 2.86        | 152         | 3.64        | 0.78        |
| non-First Generation          | 969         | 3.23        | 885         | 3.88        | 0.65        |
| 4 or 5 on AP Exam             | 376         | 3.56        | 367         | 4.16        | 0.60        |
| Did not earn 4 or 5 on AP     | 759         | 2.99        | 670         | 3.67        | 0.68        |
| <b>TOTAL</b>                  | <b>1135</b> | <b>3.18</b> | <b>1037</b> | <b>3.85</b> | <b>0.67</b> |

The difference between the HS GPA (3.85) and the Westmont GPA (3.18) for the entire group is 0.67. This provides an initial statistic to use to identify differences in performance between high school and Westmont. Values that exceed 0.67 in the “Difference in GPAs” column could indicate a group that may be performing worse at Westmont than they did during high school; differences close to 0.67 could indicate a group that is experiencing similar levels of achievement at Westmont that they had during high school; and differences smaller than 0.67 could indicate a group that is experiencing greater achievement while at Westmont. Using this simple metric, the following groups may be experiencing achievement at Westmont that is below what they experienced in high school: Black or African American (1.04), first generation (0.78), HABH, (0.76), and Hispanic/Latino (0.74)—all at-risk groups identified earlier in the study as in need of additional support or attention.

A second statistic to consider is the difference between GPAs of grouped pairs in the study. For example, the HS weighted GPA of males and females differed by 0.08 but the cumulative

Westmont GPA of males and females differs by 0.13. This indicates that the GPA of males was closer to that of females while they were in high school but since joining Westmont, the gap has widened. This could indicate the achievement gap between males and females has widened while at Westmont. Similar computations for other grouped pairs of interest include:

The HS weighted GPA of HABH and AWU students differed by 0.25 while the cumulative Westmont GPA of HABH and AWU students differs by 0.37.

The HS weighted GPA of first generation and non-first generation students differed by 0.24 while the cumulative Westmont GPA of first generation and non-first generation students differs by 0.37.

The HS weighted GPA of the 4 or 5 on AP exam group and those who did not earn a 4 or 5 differed by 0.49 while the cumulative Westmont GPA of the 4 or 5 on AP exam group and those who did not earn a 4 or 5 differed by 0.57.

Thus for each of the four "at-risk" groups (male, HABH, first generation, and non-AP) , N





first generation students was lower than that of their non-first generation peers; across every department HABH and first generation students had lower GPAs than the AWU and non-first generation students. This pattern alone indicates a significant difference for each of these factors (without relying on a traditional parametric statistical test).

### HEDGES' G

To further understand the effect of the factor pairs studied, Hedges' g was computed for each of the following groupings: HABH/AWU, female/male, first generation/non-first generation, and AP/non-AP. Hedges' g is a measure of effect size and can be used to help describe how much one group differs from another; a larger Hedges' g value indicates the discriminating factor has more effect than a smaller Hedges' g value. Also instructive, Hedges' g values can be compared to each other to help order the factors based on their level of influence on the measured outcome (in this case GPA). The following rule of thumb is used to interpret these measures: Small effect = 0.2, medium effect = 0.5, and large effect = 0.8.

The table below reports the Hedge's g statistic for the four factor pairs:

| FACTOR                                 | HEDGES' g |
|--|-----------|
| HABH/AWU                               | 0.5452    |
| Male/Female                            | 0.1682    |
| First Generation/non-First Generation  | 0.5133    |
| 4 or 5 on AP test/no 4 or 5 on AP test | 0.6784    |

These measures indicate that while statistically significant differences were found for all four pairs of groupings, the effect size of gender was small, the effect size of HABH/AWU and first generation status were similar and roughly medium, and the effect size of 4 or 5 on AP Test was between medium and large. Interestingly, all four of the effect sizes grew in comparison to scores from the 2020-21 data set (0.3840, 0.0831, 0.4175, and 0.6524 respectively). This is 0 f



high level of proficiency in a rigorous course of study before attending college. These students are academically successful at Westmont and so come with lower risk during admissions and beyond. Perhaps the College could consider providing non-AP students with targeted academic and life skill training that might help close the gap with their AP peers. Because participation in AP coursework during high school is strongly correlated with race/ethnicity and socioeconomic status, focusing academic support efforts on

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|       |       |       |       |       |       |
|-------|-------|-------|-------|-------|-------|
| F     | 99    | 51.5% | 36.4% | 31.3% | 89.9% |
| TOTAL | 4,037 | 23.0% | 39.7% | 14.7% | 68.4% |

To interpret this table, the HABH group accounted for 14.2% of the As earned during the first and second semesters; overall 23.0% of the grades in the data set were earned by HABH students (note the TOTAL row). If there were no relationship between HABH and grade earned, then one would expect that the HABH students would earn roughly 23% of the As, Bs, Cs, Ds, and Fs (with some minor variations due to randomness).

Of note, while accounting for 23% of the grades in the data set, the HABH students earned over half of all the Fs assigned (51.5%); a total more than twice their share. The same was true for first-generation students who accounted for roughly 15% of the grades earned but accounted for over 30% of the Fs assigned. The data suggest that HABH and first-generation students were underrepresented in the A band but overrepresented in the other grade bands with the amount of overrepresentation growing as the grades decrease. In similar form, male students were underrepresented in the A category and slightly overrepresented in the B, C, and D categories. But males were underrepresented in the F band (36.4% of Fs while 39.7% of grades). Additionally, males were under- and overrepresented to lesser extents in the other grade bands. The findings here align with the Hedges' g values and statistical comparisons in other parts of the study and continue to point to HABH and first generation status as the primary factors of note with the influence of gender being small.

In some sense, one would expect students who had success on AP exams to outperform those who did not. And so while it is also true that the non-AP students were underrepresented in the A bands and overrepresented in the B, C, D, and F bands, this doesn't rise to the same level as concern as it makes sense that these students are not as academically strong.

### Statistics Related to Repeaters

Twenty-two students in the data set took the same course in both the fall and spring semesters. These students earned a D or F in the course during the fall semester and retook the course in the spring semester, ostensibly to "replace" the low initial grade. The GPA of these grades earned in the fall semester was 0.395 and the GPA of these grades earned in the spring semester was 1.859. Thus this group of students increased their initial D/F course grade by an average of 1.464 (roughly one and a half letter grades). This is akin to going from the F range to the C- range (C- = 1.700) by repeating the course in the following semester.

To be further illustrative of the situation, the table below shows the first and second semester grades for these students:

|  |   |   |   |   |   |
|--|---|---|---|---|---|
|  | F | D | C | B | A |
|--|---|---|---|---|---|

|             |    |   |    |   |   |
|-------------|----|---|----|---|---|
| Fall 2021   | 13 | 9 | 0  | 0 | 0 |
| Spring 2022 | 2  | 5 | 10 | 5 | 0 |

The most often repeated course was Introduction to Old Testament (n = 5); Calculus I was a close second (n = 4). All of the other courses had only one or two D/F grades.

Seven of the twenty-two students did not improve the grade to a C- or better (31.8%). One student ear