

An Exploration of Early Course Taking in ENGL 101 and UF 100 and Retention to the Second Year

Introduction

Over the last two decades, Boise State has been actively pursuing programs and initiatives to improve student success. As a result, the university has observed substantial improvements in retention and graduation rates. Previous studies (Belcheir, 2013; Warcholak & Ellertson, 2016) have explored the effects of student characteristics, their early college experiences, and academic performance on student success. Among the important early college experiences were students taking English and/or Math in their first year. These were related to first term GPA, which was the best predictor of retention to year two, while also contributing predictive power of their own.

In Fall 2012, the university implemented the Foundational Studies Program (FSP), a new general education curriculum. Common to the FSP is a first-year course, University Foundations 100, the structure of which is a large lecture with small group discussion sections. Given the importance of small course experiences, such as ENGL 101, to student retention, we sought to examine the relationship of UF 100 course-taking to retention, along with participation in ENGL 101.¹

Methods

Cohorts of first-time, full-time bachelor-degree seeking students entering in Fall 2021 and 2022 terms were examined to determine whether UF 100 course-taking and/or enrollment in ENGL 101 was related to their retention to the second year. These cohorts were combined in order to yield a sufficient sample size for analysis.

In order to remove potential confounds due to students who might not have enrolled in the following spring semester—but returned in the following fall—we limited our initial pool to those who were also enrolled in the following spring semester ($n = 5,609$). As shown in Table 1, 3,110 of the students in this study took ENGL 101 in their first semester (or 56%) and 2,939 took UF 100 in their first semester (or 52%). A total of 1,914 (or 34%) of the students in this study took both UF 100 and ENGL 101 in their first semester.

Table 1. ENGL 101 and UF 100 Course-Taking of New First-time, Full-time Cohorts - 2021 & 2022 combined

		Took ENGL 101			
		Neither 1 st nor 2 nd Semester	1 st Semester	2 nd Semester	TOTAL
Took UF 100	Neither 1 st nor 2 nd Semester	780 13.9% (19.5%)	438 7.8% (10.9%)	71 1.2%	1,289
	1 st Semester	873 15.6% (21.8%)	1,914 34.1% (47.8%)	152 2.7%	2,939
	2 nd Semester	441 7.8%	758 13.5%	182 3.2%	1,381
TOTAL		2,094	3,110	405	5,609 100.0%

Note: Parenthetical figures are percentages of the analysis subset ($n = 4,005$).

¹ While some consider “first year writing” to include both ENGL 101 and ENGL 102, here we restrict the analysis to the former.

Analysis

We employed binary logistic regression to explore the following core question: After controlling for a variety of entering student characteristics previously demonstrated as being related to retention, does taking UF 100 and/or ENGL 101 in the first semester help predict retention to the second year?

The analysis was limited to students who either took UF 100 in their first semester or did not take it their first year (identified by the shaded cells in Table 1). Additionally, the same students had to have either taken ENGL 101 in their first semester or not taken one in their first year to be included in the analysis. This was done to: (a) consider the impact of taking UF 100 and taking ENGL 101 separately and together on retention, and (b) avoid the confounding variable of retention to the second semester and its possible impact on retention to the second year. In other words, this was an analysis of admissions variables and early decision-making by students in the form of course enrollments on retention to the second year. In addition, many students today enter Boise State with Advanced Placement or dual enrollment credit for ENGL 101—or who have such credit for a higher English class that exempts them from taking ENGL 101: More students who had this credit were retained the following fall compared to those who did not (88.5% v. 83.8%), a statistically significant difference ($\chi^2 [1] = 18.04, p < .001$). Thus, we also account for this in the model, and this is referenced as “incoming credit” in the discussion below.

Results

The following variables were considered during modeling for predicting retention to the second year: incoming ENGL 101 “credit”, gender, age, ethnicity, residency, Pell-Eligibility, high school GPA, rural status, first generation status, on-campus housing status, UF 100 enrollment in the first semester, and first year ENGL 101 enrollment in the first semester. The statistically significant predictors in the final model, all significantly related to second year retention, were: concurrent credit, age, Latinx identification, residency, Pell eligibility, first-generation status, high school GPA, first semester UF 100 enrollment, and first semester ENGL 101 enrollment. All other predictors were not significant and therefore removed from the final model.

Being a non-resident was positively related to a greater chance of being retained to the second year. The same was true for being older, being a Latinx student, being not-Pell-Eligible, being not-first generation, having a higher high school GPA, enrolling in UF 100 in the first semester, enrolling in EGL 101 in the first semester, and having incoming credit.

In order to isolate the true contribution of any given variable in the model—and given the number of significant student characteristics—it is necessary to set a “hypothetical student” to a certain combination of characteristics, calculate the predicted probability of retention, and then only change the value of a given variable of interest.

Table 2 is based on establishing a “baseline” respondent with the following characteristics: average high school GPA (~3.56); non-Pell-Eligible, not first-generation, not Latinx, average age (18), non-resident, did *not* take UF 100, *did not* take ENGL 101 and did not have incoming credit. The baseline predicted probability of retention for this combination of values is 77.5%

The table presents two columns of predicted probabilities: a “minimum” that indicates the predicted probability of retention for the lower (or lowest) value of the given significant predictor (e.g., not Latinx); and a “maximum” which simply reflects the updated predicted probability of retention based on changing the value of that predictor variable to its other value (e.g., *is* Latinx).

Table 2. Baseline v. predictor value changes in probability of F2F retention.					
	Minimum value means:	Minimum value predicted probability	Minimum value means:	Maximum	Difference (Max-Min)
UF 100	Did not enroll	77.5%	Enrolled	81.9%	4.4
ENGL 101	Did not enroll		Enrolled	87.5	10
Latinx	Not Latinx		Latinx	82.2%	4.7
Residency	Non-resident		ID resident	71.8%	-5.7
Pell eligibility	Not Pell eligible		Pell-eligible	68.7%	-8.8
First Gen	Not first gen		1 st gen	71.6%	-5.9
ENGL 101 exempt	Not exempt		Exempt	89.2	11.7
Age	14 YOA	67.2%	50 YOA	99.5%	17.5
Age ²	17 YOA	75.2%	22 YOA	85.3%	5.4
HSGPA	2.04	28%	4.0	86.6%	58.6
HSGPA (25 th -75 th percentile) ³	3.33	71.3%	3.84	83.7	12.4

A review of the table shows that high school GPA has the largest impact in terms of an increase in the probability of retention the following fall, with the predicted probability of retention being 58.6 percentage points higher for those with the highest versus lowest GPA (again, in this hypothetical respondent scenario). In contrast, while UF 100 is significant, it is the weakest of the predictors, with a difference of only 4.4 percentage points between taking and not taking the course. However, enrollment in ENGL 101 evinces a 10-percentage point gain in the probability of retention (77.5 – 87.5%).

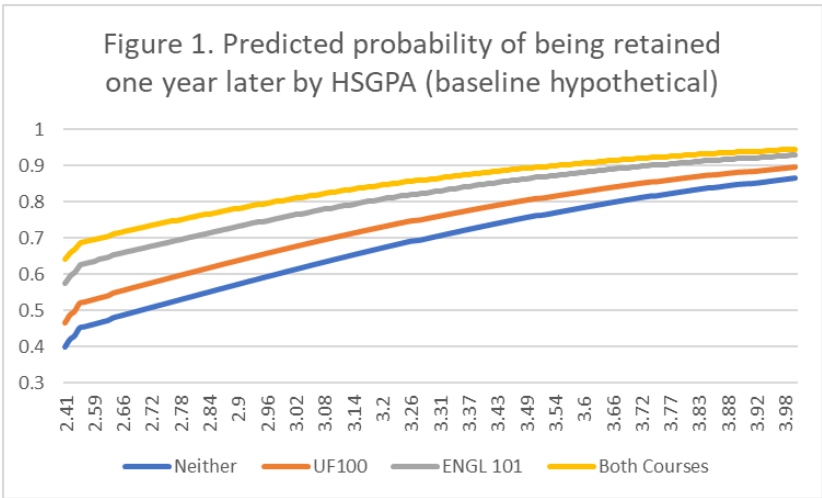
An additional possibility is that the effect of enrolling in UF 100 and/or ENGL 101 might vary based on the high school GPA. Although a formal interaction term was not created in the modeling, a review of the change in predicted probability of retention up and down the range of HSGPA suggests the effect of taking the course is stronger among students with a *lower* GPA.

Setting all of the other variables to the parameters spelled out in the hypothetical student scenario, a student with the lowest GPA and was *not* in UF 100 had a predicted retention probability of 28.1%; this same GPA with *taking* UF 100 had a predicted probability of 34%, for an increased probability of approximately six percentage points. In contrast, shifting between not taking/taking UF 100 at the 4.0 GPA only increases the probability by 2.9 percentage points (86.6 - 89.5%). The contribution of taking ENGL 101 among those with the lowest GPA is a stronger 16.3 percentage point change (28.1 – 44.4%), the same difference at the highest GPA is a mere 6.4 percentage points (86.6 - 93%)

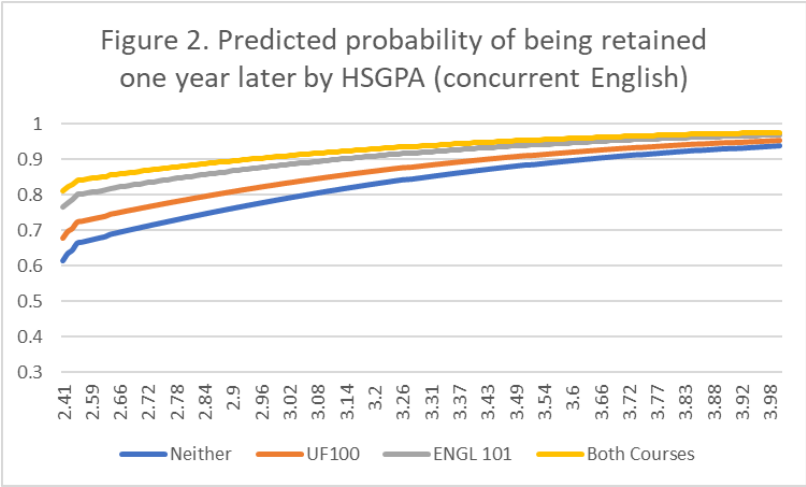
Figure 1 shows four trend lines: taking neither course; taking UF 100, taking ENGL 101, or taking both UF 100 and ENGL 101 in the first semester. Clearly, the greater probability changes occur in the bottom half of the GPA range.

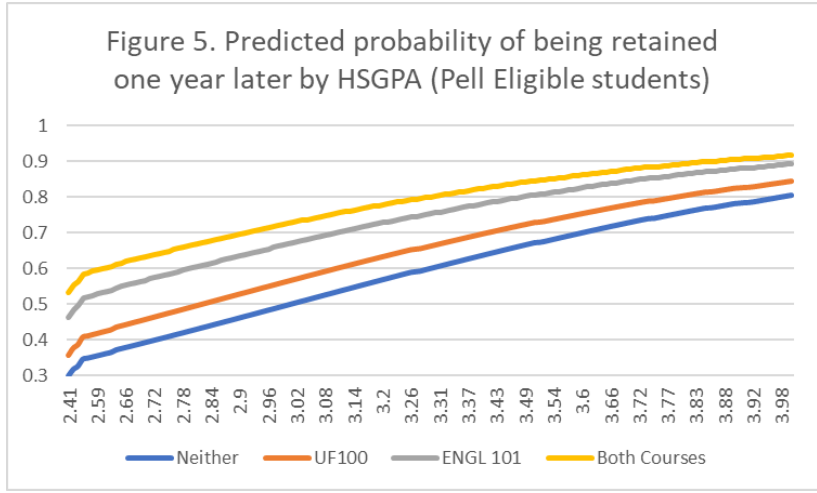
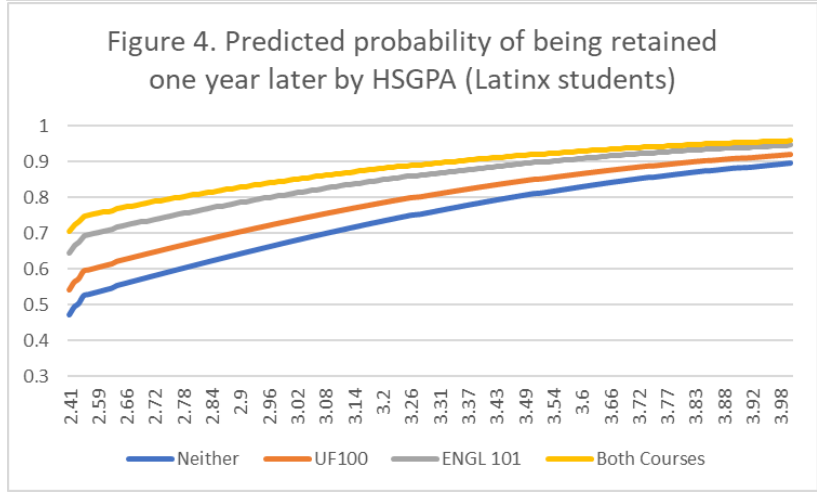
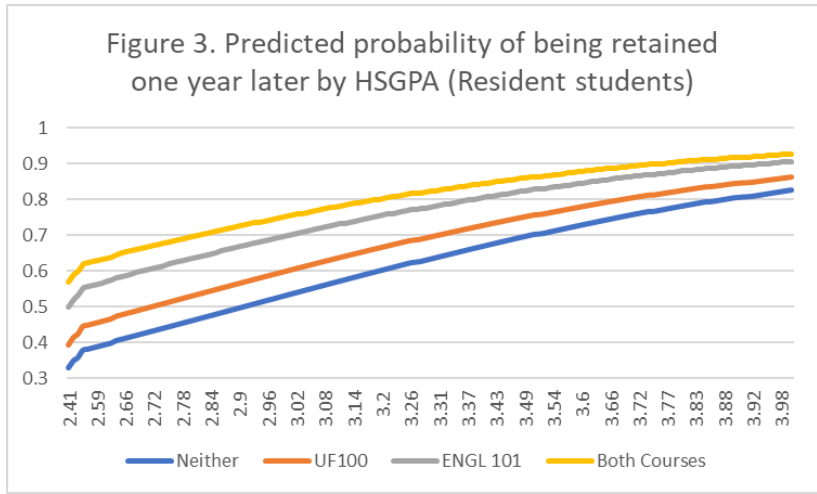
² Over 99% of the sample is between 17 and 22 years old (inclusive). This range is probably a more realistic assessment of the range of retention rate change.

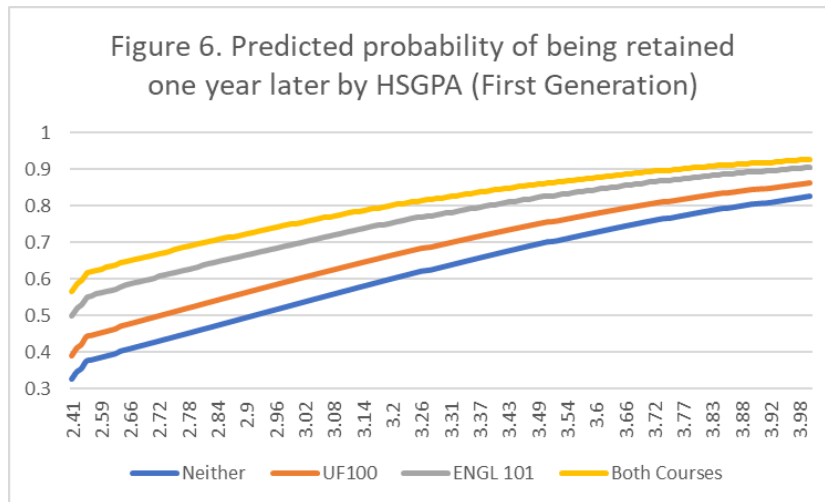
³ This alternative figure may be a more accurate (or less skewed) magnitude by limiting the values to the middle 50% of GPAs. See the Appendix for a categorization of the distribution of the GPA range.



In addition, we replicated this graph across key demographic groups to see if the pattern holds across all groups or varies between them. Figures 2-6 clearly show that the pattern is largely the same, but that some groups begin with more of an advantage, even before accounting for taking one or more of these courses (i.e., those entering with ENGL 101 exemption and Latinx students). However, with the exception of those not required to take ENGL 101, the difference between taking neither course and taking both courses at the lower end of the GPA is roughly the same across these demographics (approximately 23-24 percentage points). Interestingly, the data suggests that even those who students who are not required to take ENGL 101 still may benefit from enrolling if they choose to do so.

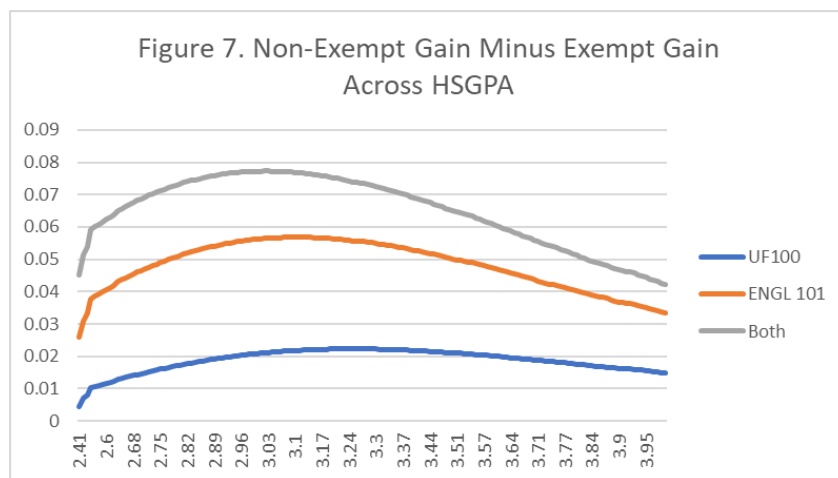




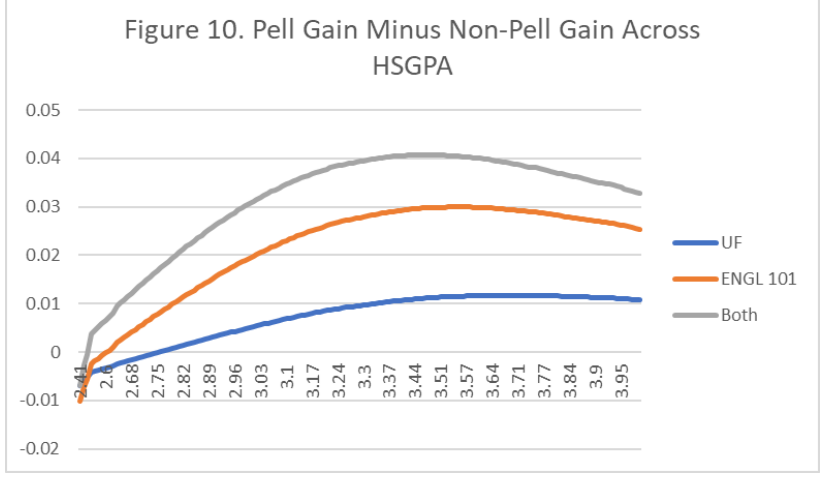
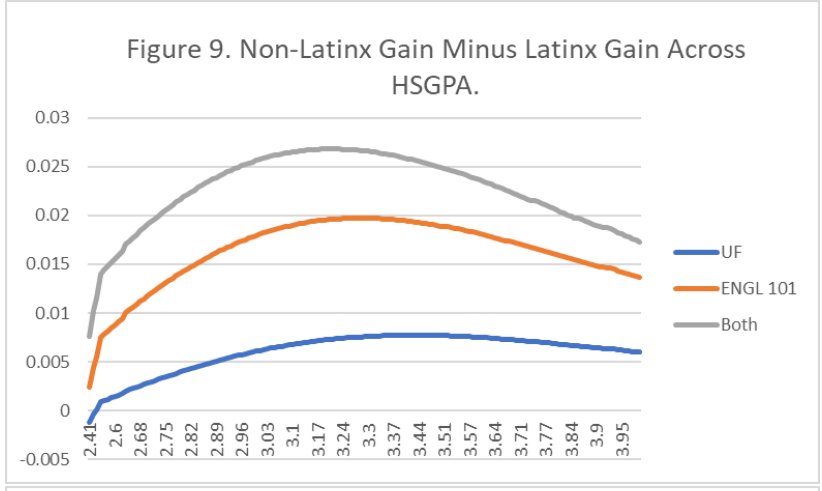
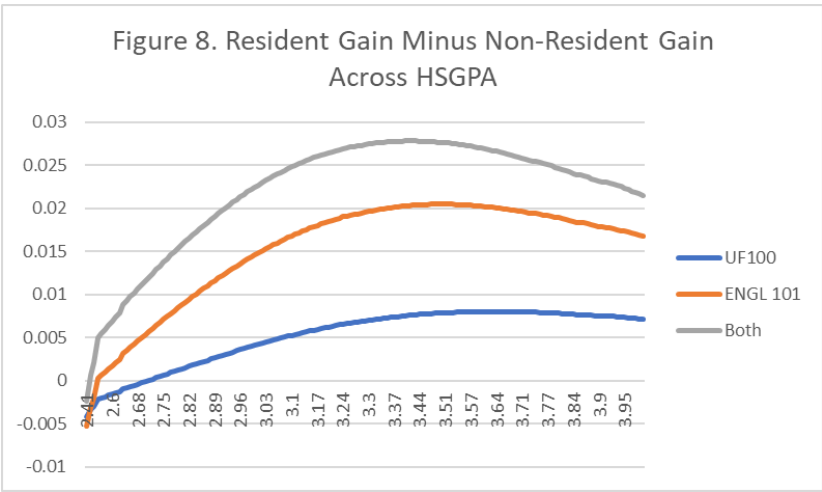


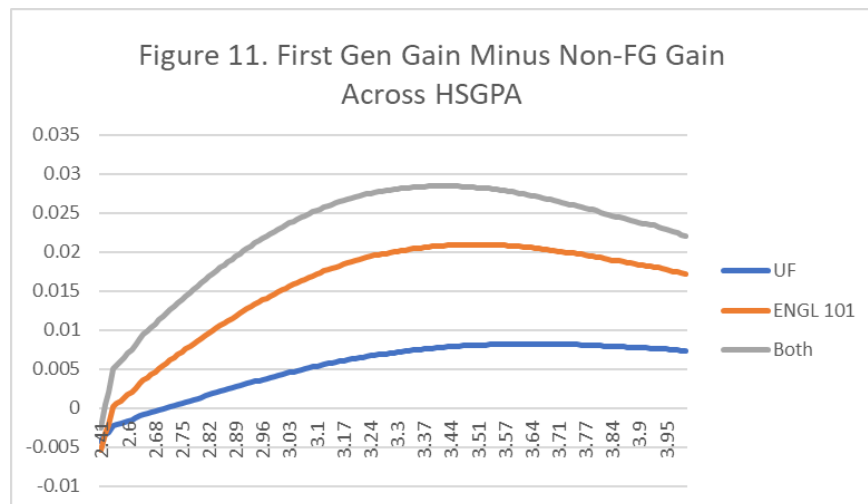
However, the difference in the predicted probability of retention is not necessarily linear across high school GPA, and the nature of this non-linear pattern may vary depending on the demographic group in question. To see this, we first subtracted the predicted probability of retention for those who did not take UF 100 and/or ENGL 101 from those who *did* across the full range of high school GPA for the baseline student profile discussed above. Second, we repeated this subtraction for each demographic group (e.g., Pell Eligible). Third, at each GPA point, we subtracted the baseline profile's predicted probability *change* from the demographic profile's probability *change* to yield a measure of the differences in retention probability gains between the two.

Figures 7-11 show these plots for each of the four demographic groups (ENGL 101 exemption, Idaho residency, Latinx, Pell eligible, and first generation). With the exception of those with ENGL 101 exemption and Latinx students (Figures 7 & 9), being in the demographic student group (e.g., being first generation) exhibits a larger percentage point gain compared to the baseline profile. To put it another way, Latinx and those with concurrent exemption are already advantaged, so the gains are relatively more evident in *non*-Latinx and *non*-exempt students. Two things are evident across all four graphs: The size of the difference is, again, relatively small and is also not linear across the GPA range; it is the GPA points somewhat in the lower-middle where the differences are more notable.⁴



⁴ Because the GPA data point of 2.04 was clearly an outlier, it is omitted from the graphs for clearer presentation.





Summary and Conclusions

While keeping in mind that this study is exploratory and that any retention model is not going to include all possibly influential variables on retention, the following conclusions about this analysis seem reasonable:

- UF 100 and ENGL 101 are positively related to retention in the following fall semester, but the effect is larger for ENGL 101.
- High school GPA has the largest effect on retention among the demographic variables.
- Having tested out or having concurrent credit for also makes a notable contribution to retention. The next-strongest contributions to retention descending order are: enrollment in ENGL 101, Pell eligibility, first generation status, residency, Latinx status, age, and UF 100 enrollment.
- The positive contribution of enrolling in UF 100 and/or ENGL 101 may benefit students who are somewhat lower in high school GPA, but this may vary depending on the intersectionality of student characteristics.
- Though not large in number, those students who choose to enroll in ENGL 101 despite not being required to do so may still experience positive benefits from experiencing the course.

While the conclusions are limited to discussions about taking ENGL 101 or UF 100 in the first semester, this does not mean that these relationships would fail to hold for students who took those courses in the second semester. This is simply a limitation of the analysis for the reasons mentioned in the methods section.

Predicting retention, especially based only on information available from students at the beginning of the first semester as was done here, is challenging. There are various behaviors, attitudes, beliefs, and social circumstances that students work with as they proceed in their schooling, most of which is not measured. It may be that these factors are being expressed to some extent in the decision to enroll in UF 100 or ENGL 101 the first semester. It may also be that for many students, participation in these courses is enabling academic and social integration that often occurs when taking small courses. As such, taking these courses *may* act as proxy measures for behaviors we know from the literature on student success to be positively related to retention.

References

Belcheir, M. 2013. Predicting student success using ten years of cohorts data and retention data.

<https://www.boisestate.edu/wp-content/uploads/sites/501/files/2017/12/Predicting-Retention-Using-Ten-Years-of-Cohorts-and-Retention-Data-v2.pdf>

Warcholak, N., & Ellertson, S. 2016. Is taking UF 100 related to retention? An exploration of early course taking in English and UF 100 and retention to the second year.

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Office of Institutional Effectiveness

Appendix A

High School GPA - Descriptive Statistics

	<i>Overall</i>	<i>Enrolled – UF 100</i>	<i>Not Enrolled – UF 100</i>
Minimum	2.04	2.50	2.04
Maximum	4.00	4.00	4.00
Mode	4.00	4.00	4.00
Median	3.62	3.59	3.69
Mean	3.56	3.54	3.59
Standard Dev.	0.34	0.34	0.34
25 th percentile	3.33	3.31	3.38
50 th percentile/median	3.62	3.59	3.69
75 th percentile	3.84	3.82	3.90

Appendix B

High School GPA - Distributions

Overall

	Frequency	Cumulative Percent
2.040	1	0.0
2.410	1	0.0
2.470	1	0.1
2.500	2	0.1
2.560	3	0.2
2.570	3	0.3
2.580	1	0.3
2.590	1	0.3
2.600	1	0.3
2.610	5	0.5
2.620	3	0.5
2.640	4	0.6
2.650	2	0.7
2.660	4	0.8
2.670	4	0.9
2.680	2	0.9
2.690	6	1.1
2.700	7	1.3
2.710	5	1.4
2.720	6	1.5
2.730	4	1.6
2.740	7	1.8
2.750	8	2.0
2.760	10	2.3
2.770	10	2.5
2.780	5	2.6
2.790	3	2.7
2.800	10	3.0
2.810	4	3.1
2.820	3	3.1
2.830	6	3.3
2.840	10	3.5
2.850	10	3.8
2.860	8	4.0

2.870	2	4.0
2.880	8	4.2
2.890	12	4.5
2.900	11	4.8
2.910	10	5.1
2.920	8	5.3
2.930	9	5.5
2.940	9	5.7
2.950	11	6.0
2.960	21	6.5
2.970	5	6.6
2.980	18	7.1
2.990	6	7.2
3.000	35	8.1
3.010	6	8.3
3.020	24	8.9
3.030	7	9.0
3.040	23	9.6
3.050	21	10.1
3.060	14	10.5
3.070	15	10.9
3.080	16	11.3
3.090	14	11.6
3.100	19	12.1
3.110	18	12.5
3.120	17	13.0
3.130	22	13.5
3.140	21	14.0
3.150	33	14.9
3.160	22	15.4
3.170	16	15.8
3.180	19	16.3
3.190	18	16.7
3.200	33	17.6
3.210	25	18.2
3.220	31	19.0
3.230	18	19.4
3.240	20	19.9
3.250	18	20.3
3.260	29	21.1

3.265	1	21.1
3.270	17	21.5
3.280	21	22.0
3.290	28	22.7
3.300	31	23.5
3.310	27	24.2
3.320	22	24.7
3.330	31	25.5
3.340	21	26.0
3.350	41	27.1
3.360	29	27.8
3.370	22	28.3
3.380	35	29.2
3.390	34	30.1
3.400	25	30.7
3.410	34	31.5
3.420	34	32.4
3.430	38	33.3
3.440	30	34.1
3.450	30	34.8
3.460	42	35.9
3.470	28	36.6
3.480	36	37.5
3.490	42	38.5
3.500	31	39.3
3.510	26	40.0
3.513	1	40.0
3.520	23	40.5
3.530	28	41.2
3.540	34	42.1
3.550	40	43.1
3.560	38	44.0
3.570	56	45.4
3.580	32	46.2
3.590	45	47.4
3.600	49	48.6
3.610	38	49.5
3.620	29	50.3
3.630	50	51.5
3.640	34	52.4

3.650	38	53.3
3.660	30	54.1
3.670	57	55.5
3.680	42	56.5
3.690	40	57.5
3.700	60	59.0
3.710	34	59.9
3.720	39	60.8
3.730	39	61.8
3.739	1	61.8
3.740	53	63.2
3.750	53	64.5
3.760	51	65.8
3.770	54	67.1
3.780	45	68.2
3.790	42	69.3
3.800	52	70.6
3.810	43	71.7
3.820	49	72.9
3.830	56	74.3
3.840	38	75.2
3.850	36	76.1
3.852	1	76.2
3.860	49	77.4
3.870	44	78.5
3.880	51	79.8
3.890	36	80.6
3.900	49	81.9
3.905	1	81.9
3.910	37	82.8
3.913	1	82.8
3.920	52	84.1
3.930	57	85.6
3.940	48	86.8
3.950	56	88.2
3.960	56	89.6
3.970	61	91.1
3.980	91	93.4
3.990	30	94.1
4.000	236	100.0

Enrolled in UF 100

	Frequency	Cumulative Percent
2.500	2	0.1
2.560	3	0.2
2.570	2	0.3
2.580	1	0.3
2.590	1	0.3
2.610	4	0.5
2.620	2	0.5
2.640	2	0.6
2.650	1	0.6
2.660	4	0.8
2.670	2	0.9
2.680	2	0.9
2.690	3	1.0
2.700	6	1.3
2.710	3	1.4
2.720	3	1.5
2.730	2	1.5
2.740	4	1.7
2.750	6	1.9
2.760	4	2.0
2.770	9	2.4
2.780	4	2.5
2.790	2	2.6
2.800	7	2.8
2.810	3	2.9
2.820	2	3.0
2.830	5	3.2
2.840	5	3.4
2.850	9	3.7
2.860	6	3.9
2.880	5	4.1
2.890	9	4.4
2.900	6	4.6
2.910	7	4.9
2.920	3	5.0
2.930	6	5.2
2.940	6	5.4

2.950	8	5.7
2.960	13	6.2
2.970	2	6.2
2.980	15	6.8
2.990	5	7.0
3.000	25	7.9
3.010	5	8.0
3.020	15	8.6
3.030	6	8.8
3.040	21	9.5
3.050	15	10.1
3.060	12	10.5
3.070	12	10.9
3.080	13	11.4
3.090	11	11.8
3.100	14	12.3
3.110	14	12.8
3.120	10	13.2
3.130	16	13.7
3.140	17	14.4
3.150	31	15.5
3.160	16	16.0
3.170	13	16.5
3.180	16	17.1
3.190	12	17.5
3.200	27	18.5
3.210	20	19.2
3.220	20	19.9
3.230	14	20.4
3.240	13	20.9
3.250	10	21.2
3.260	21	22.0
3.270	14	22.5
3.280	18	23.1
3.290	19	23.8
3.300	25	24.7
3.310	18	25.4
3.320	17	26.0
3.330	24	26.8
3.340	17	27.4

3.350	31	28.6
3.360	18	29.2
3.370	17	29.8
3.380	26	30.7
3.390	24	31.6
3.400	19	32.3
3.410	23	33.1
3.420	30	34.2
3.430	30	35.3
3.440	24	36.1
3.450	23	37.0
3.460	32	38.1
3.470	21	38.9
3.480	26	39.8
3.490	34	41.0
3.500	22	41.8
3.510	21	42.6
3.513	1	42.6
3.520	14	43.1
3.530	19	43.8
3.540	23	44.6
3.550	33	45.8
3.560	28	46.8
3.570	44	48.4
3.580	21	49.1
3.590	34	50.3
3.600	37	51.7
3.610	27	52.6
3.620	22	53.4
3.630	28	54.4
3.640	23	55.3
3.650	30	56.3
3.660	23	57.2
3.670	40	58.6
3.680	26	59.5
3.690	33	60.7
3.700	39	62.1
3.710	24	63.0
3.720	22	63.8
3.730	26	64.7

3.739	1	64.7
3.740	39	66.1
3.750	33	67.3
3.760	35	68.6
3.770	37	69.9
3.780	30	71.0
3.790	31	72.1
3.800	42	73.6
3.810	29	74.6
3.820	37	76.0
3.830	39	77.4
3.840	31	78.5
3.850	26	79.4
3.852	1	79.4
3.860	29	80.5
3.870	34	81.7
3.880	31	82.8
3.890	25	83.7
3.900	29	84.8
3.905	1	84.8
3.910	23	85.6
3.920	31	86.7
3.930	35	88.0
3.940	31	89.1
3.950	33	90.3
3.960	39	91.7
3.970	34	92.9
3.980	51	94.7
3.990	11	95.1
4.000	136	100.0

Not Enrolled in UF 100

	Frequency	Cumulative Percent
2.040	1	0.1
2.410	1	0.2
2.470	1	0.2
2.570	1	0.3
2.600	1	0.4
2.610	1	0.5
2.620	1	0.6
2.640	2	0.7
2.650	1	0.8
2.670	2	1.0
2.690	3	1.2
2.700	1	1.3
2.710	2	1.5
2.720	3	1.7
2.730	2	1.9
2.740	3	2.1
2.750	2	2.3
2.760	6	2.8
2.770	1	2.9
2.780	1	3.0
2.790	1	3.0
2.800	3	3.3
2.810	1	3.4
2.820	1	3.4
2.830	1	3.5
2.840	5	3.9
2.850	1	4.0
2.860	2	4.2
2.870	2	4.4
2.880	3	4.6
2.890	3	4.8
2.900	5	5.3
2.910	3	5.5
2.920	5	5.9
2.930	3	6.2
2.940	3	6.4
2.950	3	6.7

2.960	8	7.3
2.970	3	7.6
2.980	3	7.8
2.990	1	7.9
3.000	10	8.7
3.010	1	8.8
3.020	9	9.5
3.030	1	9.6
3.040	2	9.8
3.050	6	10.3
3.060	2	10.4
3.070	3	10.7
3.080	3	10.9
3.090	3	11.2
3.100	5	11.6
3.110	4	11.9
3.120	7	12.5
3.130	6	13.0
3.140	4	13.3
3.150	2	13.5
3.160	6	14.0
3.170	3	14.2
3.180	3	14.4
3.190	6	14.9
3.200	6	15.4
3.210	5	15.8
3.220	11	16.7
3.230	4	17.1
3.240	7	17.7
3.250	8	18.3
3.260	8	19.0
3.265	1	19.0
3.270	3	19.3
3.280	3	19.5
3.290	9	20.3
3.300	6	20.8
3.310	9	21.5
3.320	5	21.9
3.330	7	22.5
3.340	4	22.8

3.350	10	23.6
3.360	11	24.5
3.370	5	25.0
3.380	9	25.7
3.390	10	26.5
3.400	6	27.0
3.410	11	27.9
3.420	4	28.2
3.430	8	28.9
3.440	6	29.4
3.450	7	30.0
3.460	10	30.8
3.470	7	31.4
3.480	10	32.2
3.490	8	32.8
3.500	9	33.6
3.510	5	34.0
3.520	9	34.7
3.530	9	35.5
3.540	11	36.4
3.550	7	36.9
3.560	10	37.8
3.570	12	38.8
3.580	11	39.7
3.590	11	40.6
3.600	12	41.5
3.610	11	42.4
3.620	7	43.0
3.630	22	44.8
3.640	11	45.7
3.650	8	46.4
3.660	7	47.0
3.670	17	48.4
3.680	16	49.7
3.690	7	50.2
3.700	21	52.0
3.710	10	52.8
3.720	17	54.2
3.730	13	55.3
3.740	14	56.4

3.750	20	58.0
3.760	16	59.4
3.770	17	60.8
3.780	15	62.0
3.790	11	62.9
3.800	10	63.7
3.810	14	64.9
3.820	12	65.8
3.830	17	67.2
3.840	7	67.8
3.850	10	68.6
3.860	20	70.3
3.870	10	71.1
3.880	20	72.7
3.890	11	73.6
3.900	20	75.3
3.910	14	76.4
3.913	1	76.5
3.920	21	78.2
3.930	22	80.0
3.940	17	81.4
3.950	23	83.3
3.960	17	84.7
3.970	27	86.9
3.980	40	90.2
3.990	19	91.8
4.000	100	100.0