Project *COMPLETA*: Comprehensive Support for Student Success

LaGuardia Community College, CUNY

P116F40213

Evaluator's Report: Year 5

Prepared By: Ashley Finley, Project Evaluator

Submitted: 11/25/19

Evaluation Overview – Objectives and Hypotheses

The Project *Completa* year 5 evaluation examined differences in progress toward degree and retention rates between students who participated in the first-year seminar (FYS) program and those students who did not participate in the program. Comparisons between FYS and Non-FYS students were analyzed at the department level (i.e. students taking the FYS course and enrolled in a major that offers FYS vs. students not taking the FYS and enrolled in a major that does not offer FYS) and at the student level (i.e. students taking the FYS course and enrolled in a major that offers FYS vs. students not taking the FYS but enrolled in majors offering FYS).

The research was guided by the following two hypotheses:

H_1: Students in the FYS course will demonstrate greater progress toward their degree, academic achievement, and higher levels of retention than their peers who did not take an FYS course and were enrolled in majors *not offering* FYS.

H_2: Students in the FYS course will demonstrate greater progress toward degree, academic achievement, and higher levels of retention than peers *in the same departments* offering FYS but who did not take the FYS course.

Results reflecting outcome effects combined across multiple cohorts, indicate that students who took the first-year seminar (FYS) course had higher levels of

retention, cumulative credits, and cumulative GPA compared with students who did not take the FYS course (Non-FYS). This was true when comparing FYS students to Non-FYS students in other majors not offering the first-year seminar course and also when comparing FYS students to Non-FYS students in the same majors who had not taken the FYS course. In both types of comparisons – across and within majors – outcomes effects maintained statistical significance multiple semesters following the FYS semester (i.e. treatment semester). Additionally, effect sizes largely indicated that the magnitude of these relationships was moderate to strong; the majority of effect sizes exceeded the What Works Clearinghouse's (WWC) definition of substantive importance (g=.25).

Similar trends were observed when comparing differences in graduation and transfer rates as well. FYS students demonstrated higher graduation and transfer rates than their Non-FYS peers, either in different majors or in the same majors. These differences were consistently notable up to four (4) years post-treatment.

The strength and persistence of differences over time between FYS and Non-FYS students both across different departments and within the same departments raise important insights into the efficacy of high-impact practices, both at LaGuardia and nationally. A closer examination of findings comparing FYS and Non-FYS students are provided below.

Methodology

This report analyzes data from ten (10) matched cohorts of first-year students at LaGuardia Community College in the Fall and Spring terms from 2014-2019. To understand the magnitude of effects on dependent variables over time, data were analyzed according to the number of semesters each first-year cohort was post-treatment (i.e. FYS course was offered). For example, a fall cohort just entering the program is examined at the end of its second semester (1 semester post treatment); previous cohorts are also examined at the end of the third semester (2 semesters post treatment), and fourth semester (3 semesters post treatment), and so on. To indicate baseline effects, the outcome differences for GPA and credits are

also provided for the treatment semester (i.e. the semester the FYS course was taken) (see Tables 3 and 4).

To help account for selection bias, students in the FYS program and those students outside of the program were matched using a propensity score matching procedure. Threats from selection bias can arise in two different ways in this project. First, because the FYS program is offered through departments, one source of selection bias is in the departments that elect to participate in the FYS program at a particular stage of the development toward complete institutionalization of the program. In the long term, it is hoped that all academic departments at LaGuardia will offer an FYS course. However, there may be selection issues between students who have opted into a particular major that offers an FYS and students who opted into another major that does not offer an FYS course. Second, even for students within the same department offering an FYS, there are various reasons that students do not end up in the required FYS course (e.g. missed communications, unevenness in advising, failure to comply). Therefore, selection bias must also account for students in the same department who either do or do not end up in the FYS course.

To address potential selection effects, students who participated in the FYS course and those who did not were matched on academic achievement and socioeconomic status. Academic achievement was measured using students' entering score on a math placement exam. During the course of the study, the math placement test changed from the ACT to the ACC. This created three subgroups for matching on this variable: 1) students who took the ACT placement test; 2) students who took the ACC test; and 3) students who took both. To account for this variation, matching was done within each of the three sub-groups and then ultimately pooled into a single cohort for this variable.

Socioeconomic status was measured based upon whether a student had received a Pell grant. Propensity score matching was determined by subdividing propensity scores for the treatment group (FYS students) into five strata. Non-FYS students were then matched to FYS students according to strata. This procedure was performed for analyses of FYS and Non-FYS students who were both in majors offering FYS and a separate analysis of FYS students compared to Non-FYS students

who were in majors not offering FYS. The matching procedure and subsequent analyses span all 10 cohorts of entering first-year students, Fall and Spring 2014-2019.

Descriptive characteristics of the matched population of students are provided in Tables 1 and 2. Table 1 provides proportional representation of students across matching characteristics used for the comparative analysis of FYS students in majors offering FYS compared with Non-FYS students enrolled in majors not offering FYS. Table 2 provides the proportional representation of students across matching characteristics for the comparative analysis of FYS students in majors offering FYS and Non-FYS in the same departments but not enrolled in the FYS course. Sample sizes for each matched group according to proportional representation in the FYS program or outside of the FYS program (Non-FYS) are provided in Tables 3 and 4.

In order to address Hypotheses 1 and 2 above, progress toward degree is defined by cumulative credits[1] and percent of students retained across successive terms. Academic achievement is measured by students' cumulative grade point average (GPA) across successive terms. Significant differences in outcome variables across FYS and Non-FYS comparison groups, both within the same departments and between departments offering FYS and those not offering FYS, were determined using pooled t-tests. Effect sizes for all outcome variables (percent retained, cumulative credits, cumulative GPA, and graduation and transfer rates) were determined using Hedges' g. Results across individual cohorts comparing the treatment (FYS) and control (Non-FYS) groups across outcome variables are presented in Tables 3 and 4. Results are presented in terms of outcome effects post-treatment (i.e. having taken, or not taken, the FYS course), up to nine (9) semesters after having taken the FYS course. Combined cohort analyses, both within and across majors offering FYS, are presented in Tables 5 and 6. These tables provide aggregate results across all ten (10) cohorts according to the semester post-

[1] Cumulative credits refer to equated credits, rather than degree credits. Equated credits indicate completion of remedial courses, as well as credits that count toward obtaining a degree.

treatment. Finally, Table 7 presents the individual cohort analysis for differences across graduation and transfer rates. Table 8 provides the combined cohort analysis for examining differences for graduation and transfer.

Discussion of Results

Hypothesis 1 (Across Majors Comparison): Students in the FYS course will demonstrate greater progress toward degree, academic achievement, and higher levels of retention than their peers who did not take an FYS course and were enrolled in majors not offering FYS.

Table 3 provides the comparative analysis for each cohort of FYS students in departments offering the FYS and Non-FYS peers who did not take the course because they were in majors not offering the FYS course over successive semesters post treatment. This table details the variation in effects for retention, cumulative GPA and cumulative credits. However, the comparative effects of the FYS course between students in FYS and those students not in majors offering FYS are more clearly shown by examining the combined cohort analysis (Tables 5 and 8). For this analysis, cohorts at each successive semester post-treatment have been combined in order to show the cumulative effects at a particular semester post treatment. This reveals the points at which the FYS intervention is most effective, including the robustness of effects over time. Table 3 indicates which cohorts were combined to provide the results presented in Tables 5 (cumulative GPA, retention rates, and cumulative credits) and Table 8 (graduation and transfer rates).

Table 5 indicates that the FYS program has the most robust impact on students' cumulative GPA. Compared with Non-FYS students in majors that do not offer the FYS course, FYS students on average demonstrate cumulative GPAs that are .17 points higher. These differences are statistically significant up to seven (7) semesters post-treatment. The greatest size effects of these differences are witnessed up to five (5) semesters post-treatment with an average Hedges g = 1.04. Statistically, this means that 85% of Non-FYS students have a cumulative GPA below 2.71, the mean cumulative GPA of FYS students up to five semesters post-treatment.

The average Hedges g drops modestly to .88 if including up to seven (7) semesters post-treatment, which is still well above the threshold for substantive differences according to the WWC.

Table 5 also indicates significant and robust differences between FYS students and Non-FYS students in majors not offering FYS with regard to retention rates. We would expect the greatest differences to be revealed up to three (3), and perhaps four (4), semesters post-treatment. Beyond this point retention rates are likely to become highly conflated with graduation and transfer rates. Indeed, Table 5 shows that the retention differences between three (3) to four (4) and from (4) to five (5) semesters post-treatment decreased dramatically, with an average decrease of 12%. Up to three (3) semesters post-treatment, FYS students had an average retention rate of 61.3% versus Non-FYS students in Non-FYS majors, who had an average retention rate of 55.3%. On average, FYS students had a retention rate that was 5.7% higher than Non-FYS students in Non-FYS majors up to four (4) semesters post-treatment. Differences in retention were also statistically significant up to four (4) semesters post-treatment, with an average Hedges g = .97. After four (4) semesters post-treatment the difference between treatment and control groups shrinks considerably to an average retention rate difference of 1% and becomes statistically non-significant.

Unlike cumulative GPA and retention, the combined cohort analysis for differences between FYS and Non-FYS students in Non-FYS majors shows the fewest effects with regard to cumulative credits. Table 5 shows the strongest effects across cohorts emerge at three (3) and four (4) semesters post-treatment, with FYS students accumulating, on average, 1.7 more credits than Non-FYS students at these stages, with a medium effect size (Hedges g = .48). This medium effect size indicates that 68% of Non-FYS students have cumulative credits 41.26 credits, which is the average number of cumulative credits acquired by FYS students at three (3) and four (4) semesters post-treatment. There is a modest reduction in these effects at five (5) semesters post-treatment, when the difference in cumulative credits drops to 1.1 and the effect size drops just below the .25 threshold for substantive importance (Hedges g = .24), as defined by the WWC. At one (1) and two (2)

semesters post-treatment and after five (5) semesters, differences between groups is small (or in the reverse direction) and effect sizes are very small.

Finally, Table 8 shows that compared with Non-FYS students in Non-FYS majors, FYS students had significantly higher three-year graduation and transfer rates, with an average combined graduation and transfer rate of 21.5% (FYS) vs. 18% (Non-FYS). The size effects for the graduation and transfer rate were also well above the threshold for substantive importance at g = .59 and g = .81, respectively. Differences in graduation and transfer rates were similarly large four years post-treatment. The average combined four-year graduation and transfer rates were 28.5% (FYS) vs. 25% (Non-FYS). Medium size effects were calculated for these differences with four-year graduation rates having a Hedges g = .52 and transfer rates having a Hedges g = .49. Thus, approximately 69-70% of Non-FYS students had transfer and graduation rates below the 28 and 29% transfer and graduation rates of FYS students at this stage post-treatment.

Hypothesis 2 (Within Majors Comparison): Students in the FYS course will demonstrate greater progress toward degree, academic achievement, and higher levels of retention than peers in the <u>same</u> departments who did not take an FYS course.

Tables 6 and 8 provide the combined cohort analysis comparing FYS students who took the FYS course and students in the same majors who did not take the course. Table 4 indicates which cohorts were combined to provide the results presented in Tables 6 (cumulative GPA, retention rates, and cumulative credits) and Table 8 (graduation and transfer rates). As with the comparison of differences between FYS and Non-FYS students in different majors, the within major comparison showed similarly significant and robust effects as evidenced by FYS students having, on average, more cumulative credits, higher retention rates, and higher cumulative GPAs than Non-FYS students in the same majors.

Specifically, with regard to cumulative GPA, FYS students demonstrated GPAs that were on average .17 points higher than Non-FYS students in the same majors

up to three (3) semesters post-treatment. These differences were statistically significant with a very large average size effect (Hedges g = 1.32). Statistically, this means that 91% of Non-FYS students in the same majors had cumulative GPAs below 2.69, which was the average cumulative GPA of FYS students three (3) semesters post-treatment. At four (4) semesters post-treatment, the difference in cumulative GPA was no longer statistically significant, but the size effect remained above the threshold for substantive importance (Hedges g = .34).

Students in the FYS course also demonstrated consistently higher levels of semester to semester retention than their peers in the same majors who did not take the FYS course. On average, FYS students had retention rates that were 9% percentage points higher than Non-FYS students up to six (6) semesters post-treatment. Additionally, the average size effect was very large (g = 1.83). Statistically, this means 97% of Non-FYS students who had not taken the FYS course had retention rates below the mean retention rate of FYS students, which was 46%.

With regard to cumulative credits, FYS students were likely to have significantly more cumulative credits than their peers in the same major who had not taken the FYS course. FYS students had, on average, 3.64 more credits than Non-FYS students up to six (6) semesters post-treatment. The average effect size across six (6) semesters post-treatment was large at g = 1.19. The greatest differences were shown at two (2), three (3), and four (4) semesters post-treatment, when FYS students had an average of 4.84 more credits than Non-FYS students in the same majors. At two (2), three (3), and four (4) semesters post-treatment, the average size effect was g = 1.71, indicating that 96% of Non-FYS students had fewer than 37.96 cumulative credits, which was the average number of cumulative credits obtained by FYS students during these semesters.

Table 8 presents the results for graduation and transfer rates aggregated across cohorts. Among FYS and Non-FYS students in the same majors, there were consistent differences in graduation and transfer rates with FYS students demonstrating higher graduation and transfer rates up to four (4) years post-treatment. In only one instance did this trend not hold; at two-years post-treatment, Non-FYS students had a 1% higher transfer rate than FYS students, with a medium

effect size of g = .57. Apart from this, the average two (2), three (3), and four (4) year graduation rate for FYS students was 4% percentage points higher than Non-FYS students in the same majors. The average effect size, g = 1.26, indicated that 90% of Non-FYS students had graduation rates below the average FYS graduation rate of 21%. Additionally, the three (3) and four (4) year transfer rate was 3% higher for FYS students as compared with Non-FYS students in the same major, with a small-medium average effect size of .44.

Discussion

Overall, the comparison of findings for FYS and Non-FYS students, both within majors offering FYS and across majors not offering the FYS course, suggest a high degree of program efficacy. Particularly striking was the degree of impact over time, with differences between treatment and control groups persisting across multiple semesters post-treatment with consistently large effect sizes. In terms of magnitude of effects, perhaps the strongest differences between FYS and Non-FYS students in <u>different</u> majors was with regard to cumulative GPA, whereas for FYS and Non-FYS students in the <u>same</u> major the strongest differences appeared in relation to cumulative credits. The trends in differences in graduation and transfer rates were remarkably similar between comparison groups, whether looking within or across majors offering the FYS course.

The findings from this study are particularly compelling for two reasons. First, the ability to compare treatment and control groups within the same major helps to eliminate a potential source of bias that occurs when comparing students across majors. Differences between students in different majors could be due to self-selection biases; students opt into different majors and this will contribute to other observed differences. However, the within major comparison provides an element of homogeneity in the cohorts and less variation between students, at least in terms of selection bias. Thus, the within major comparisons suggest that it is in the best interest of departments to implement the FYS course for <u>all</u> students in the major.

Additionally, findings also indicate the endurance of outcome effects over time, in most cases up to three (3) and four (4) semester post-treatment and in

some cases up to six (6) semesters post-treatment. High-impact practices, such as first-year seminars (FYS), are susceptible to being effective only in the short-term because as the amount of time from a student's engagement in an experience (or intervention) increases, the effects from that initial exposure are at risk of waning or disappearing altogether. However, students who took the LaGuardia FYS course still tended to demonstrate higher outcomes across successive semesters after participating in the FYS. This finding is important for gaining a better understanding of the enduring effects of high-impact practices, both at LaGuardia and nationally.

Overall, the results indicate that the connections students make in the FYS course through development of ePortfolios; introduction to their chosen major; team-based and peer advising; development of an education plan; and co-curricular experiences are creating lasting impacts on their progress toward their degrees and academic achievement. Though it is not known if any one of these elements is more powerful than the others, the combined effect of this multifaceted intervention is significant. Persistent differences in accomplishment between students who are and who are not engaged in the FYS course suggest that FYS students are far more likely to succeed. The evidence is highly encouraging for departments considering whether to offer the FYS. And for departments that already offer the FYS, these findings reinforce the need to support efforts to ensure all students in the major enroll in the course. These findings should continue to guide efforts to identify gaps and strengthen efforts in streamlining course scheduling, supporting advising and communication with students, and advancing faculty professional development toward the full enrollment of students in LaGuardia's FYS courses.