

Engagement Pathways to Transfer Student Success

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Authors' Note:

This paper is an abbreviated version of the full manuscript, with limited details related to methodologies and statistical findings. The full paper is available in Niner Commons, UNC Charlotte's Institutional Repository (<https://ninercommons.uncc.edu/islandora/object/work:139>). The appendices referenced throughout this paper are available as a separate document via Niner Commons (<https://ninercommons.uncc.edu/islandora/object/work:138>).

I. Introduction

As the number of students entering higher education institutions from high schools decreases and the number of adults needing to complete or continue their education increases, we must develop a deeper understanding of the factors that contribute to transfer student retention and success. What role do out-of-the-classroom engagements play in transfer student success in comparison to first-time freshmen? This continuation of a previous study of undergraduate students who matriculated in summer/fall of 2012 through summer/fall of 2018 focuses on which library, co-curricular, extracurricular, pre-entry (high school GPA, number of incoming credits, Pell grant eligibility), and demographic factors (under-represented minority status) contribute to transfer versus first-time freshman student retention and success at a large, public, research university in the southeast with a high transfer student population. The study investigates which student-level engagements in activities in the library (and total engagements in academic support and extracurricular activities) for transfer students versus first-time freshmen relate to student success as measured by year 1 to year 2 retention, cumulative GPA after 4 years, and time to graduation. The study reveals the role of library and other academic support and extracurricular engagements in transfer student success and helps institutions understand what engagements they should emphasize with incoming transfer students.

This study analyzes transfer versus First Time in College (FTIC) freshmen at UNC Charlotte, an urban, research institution with the Carnegie Classification Doctoral Universities: Higher Research Activity and an enrollment of 30,146 FTE (24,175 undergraduates). Incoming classes are 60% new freshmen (3,999) and 40% transfers (2,632), which means it is a higher transfer student institution.¹ The university emphasizes student participation in research with faculty and in internships in the Charlotte community. According to the most recent statistics for UNC Charlotte (fall 2020), 64.4% (1,684 students) of transfers came from the NC Community College system, 12.9% (337) transferred from one UNC-to-UNC system university to another, 5.8% (153) transferred from a NC private institution to one of the 17 UNC System universities, and 16.9% (442) transferred from out-of-state. The total number of transfers was 2,632 in fall 2020.²

II. Literature Review

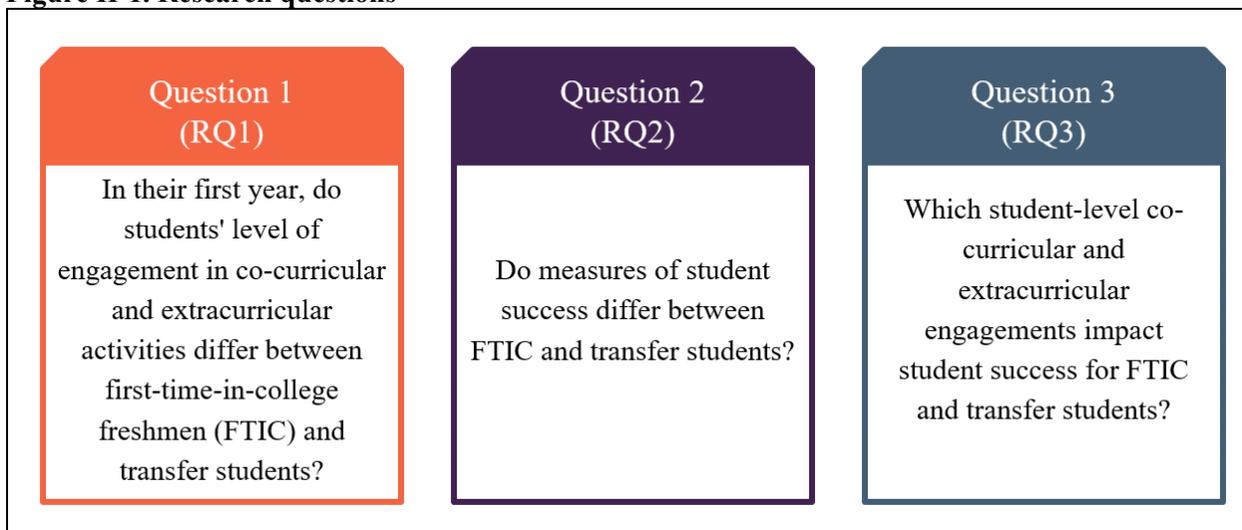
Transfers are a significant and increasing sub-population at colleges and universities. High-transfer, four-year institutions strive to understand the institutional and individual indicators of transfer student matriculation, adjustment, retention, and success to inform policies and services to support transfer students in achieving their academic goals. According to the National Center for Public Policy and Higher Education, “more than half of low-income students, approximately half of Hispanic students, and about one third of African American students begin their college careers at a two-year institution.”³ “A majority

II.5 Engagement on College/University Campus

Transfer students have distinctive adjustment needs from native students.²⁰ Hills hypothesized that “transfer shock” results from “inferior preparation.”²¹ Empirical investigations into the causes of transfer shock have focused on activities of the community college to help students transfer despite inadequate resources and of the four-year institution to welcome²² and integrate transfer students into a vastly larger and more complex environment.²³ Factors that help to overcome shock include identification with the four-year institution,²⁴ involvement,²⁵ and engagement.²⁶ Qualitative studies point to several major barriers transfer students from two-year institutions experience that impede their adjustment to the larger, four-year institution: a) challenges in finding campus representatives to help them,²⁷ b) more academic demands and larger class sizes; c) difficulty making friends in comparison to native students who might have come together from high school;²⁸ d) isolation; and e) preference for academic-oriented activities such as research with faculty or academic clubs over extracurricular social activities such as leisure clubs and sports.²⁹ The last result indicates that Tinto’s landmark theory of social integration³⁰ does not apply in the same manner to transfer students in that transfer students gain integration from academic and career-oriented activities rather than social activities. Laanan expanded the construct of transfer shock to suggest that transfer student success depends on their psychological, climate, and environmental adjustment at the receiving institution.³¹

The research questions identified for the study are illustrated below in Figure II-1.

Figure II-1. Research questions



III. Methods

This project is part of an ongoing, longitudinal study of undergraduate student engagement and success data of students who matriculated in summer/fall 2012 through summer/fall 2018. The researchers conducted a comprehensive comparative analysis of students who entered the university as FTIC freshmen and transfer students, including a deeper exploration of transfer student data to understand the co-curricular, extracurricular, pre-college, and demographic factors that are associated with their success. The full dataset was analyzed using Analysis of Variance (ANOVA) and binary logistic regression with propensity score matching related to three measures of student success: Year 1 to Year 2 Retention, 4-Year Cumulative GPA, and 6-Year Graduation Rates.

Figure III-3. Dependent and independent variables

Research Question	Variables of Interest
RQ1	Dependent: Total Student Engagements Independent: Admission Status Subgroup Membership
RQ2	Dependent: Measures of Success Independent: Admission Status Subgroup Membership
RQ3	Dependent: Measure of Success (binary) Independent: Total Student Engagements Other: Covariates
Variable Categories	
<p style="text-align: center;">Admission Status Subgroup</p> <ul style="list-style-type: none"> ● FTIC ● TRANS 24-39 ● TRANS 40-59 ● TRANS 60+ 	<p style="text-align: center;">Measures of Success</p> <ul style="list-style-type: none"> ● Year 1 to Year 2 Retention ● 4-Year Cumulative GPA ● 6-Year Graduation
<p style="text-align: center;">Total Student Engagements</p> <ul style="list-style-type: none"> ● Co-curricular ● Extracurricular ● Library ● Career Center (RQ3 only) ● UCAE (RQ3 only) ● Specific Library (Info Literacy, EZ Proxy, Book Checkouts, Laptop Checkouts, Library Computer Logins, Study Room Reservations) 	<p style="text-align: center;">Covariates</p> <ul style="list-style-type: none"> ● ACT/SAT Scores ● Pell Grant ● College ● Underrep. Minority ● Total HIPs (Experiential Education, Education Abroad, Learning Community (Yr 1), Undergraduate Research, 1st Yr University Writing Course w/ passing grade)

III.2.A RQ1 and RQ2 Variables

To respond to Research Question 1, the researchers calculated the total number of engagements and means for each student record to assess differences in levels of Year 1 engagement between the study subgroups. The RQ1 response includes one independent variable, Subgroup Membership. (See [Appendix B](#) for variable composition.)

To respond to Research Question 2, the dependent variables used to measure success (Year 1 to Year 2 Retention, 4-Year Cumulative GPA, and 6-Year Graduation Rates) were provided by the university's Office of Institutional Research and obtained through Banner, the university's student information system (SIS). Mean retention rates, cumulative GPA, and graduation rates were calculated and used to assess whether significant differences were present between the subgroups. Like RQ1, the single independent variable for RQ2 was Subgroup Membership. (See [Appendix A](#) for frequencies and percent totals.)

III.2.B RQ3 Variables

To answer Research Question 3, the same dependent variables identified for RQ2 were used. However, for the RQ3 analysis, these variables were converted into binary variables (0=did not meet the condition; 1=met the condition).

Covariate (Confounding) Variables. Findings from prior research suggest that pre-entry academic readiness (ACT/SAT scores), socioeconomic status (Pell Grant status), college of enrollment, underrepresented minority status, and participation in high impact practices are frequently and significantly associated with student success, and thus were included in the present study.³³ The covariates in this study were derived from the SIS. SAT scores were converted into ACT scores using College Board concordance tables.³⁴ Pell eligibility and underrepresented minority status were formatted as binary variables (0 = did not meet the condition, 1 = met the condition). College was dummy coded for each record (0 = not in the college, 1= in the college). A High Impact Practices³⁵_score was calculated for each student by summing their participation in the following, across the relevant periods of time: Experiential Education, Education Abroad, Learning Community Participant (Year 1), Undergraduate Research participant, and completion of the University Writing Course (UWRT) at the university with a passing grade. This study's HIPs were identified by the researchers as aligning with those outlined by the Association of American Colleges & Universities.³⁶ (See [Appendix A](#) for frequencies and mean values.)

The confounding variables were entered into propensity score matching analyses to reduce bias due to imbalances in observed covariates.³⁷ The researchers further controlled for the number of incoming credits for FTIC freshmen and the three transfer groups by running separate binary regression analyses for each subgroup for each independent variable.

Engagement (Treatment) Variables. The RQ3 independent variables were used to measure the degree to which each type of engagement activity impacted each of the three measures of student success. (See [Appendix B](#) for variable composition.) For Year 1 to Year 2 retention analysis, each engagement variable was set up as dichotomous (0=No engagements in Year 1, 1=1+ engagements in Year 1). For the 4-Year GPA and 6-Year Graduation Rates analyses, engagement variables were continuous.

III.3 Data Analysis

To answer Research Questions 1 and 2, Welch's adjusted Analysis of Variance (ANOVA) was used to determine whether significant differences existed between the four study subgroups. Welch's one-way ANOVA was used in place of the traditional ANOVA *F* test, as it is a robust test that is particularly useful when there are unequal sample sizes, as was indicated in this study. For all significant ANOVAs with more than two comparison groups, Games-Howell post hoc analyses were conducted to determine where the differences existed. Significance thresholds for all analyses were limited to $p < .05$ and effect sizes are reported using eta squared (η_p^2).

For Research Question 3, binary logistic regression with propensity score matching analysis was used to identify the student-level co-curricular and extracurricular engagements that impact student success for each admission subgroup. RQ3 covariate variables were used to calculate the propensity scores for each student record, using the steps outlined by Thoemmes and further detailed by Soria et al.³⁸ Additional details for this analysis are outlined in the [full paper companion](#).³⁹

IV. Results

This study sought to answer three research questions to more clearly understand the factors that contribute to transfer student retention and success and the role that out-of-the-classroom engagements play in this success. Comparisons were also made between transfer students and first-time-in-college freshmen. The

results relating to these questions are described below, with statistical details included in the [full paper companion](#) and [appendices](#).

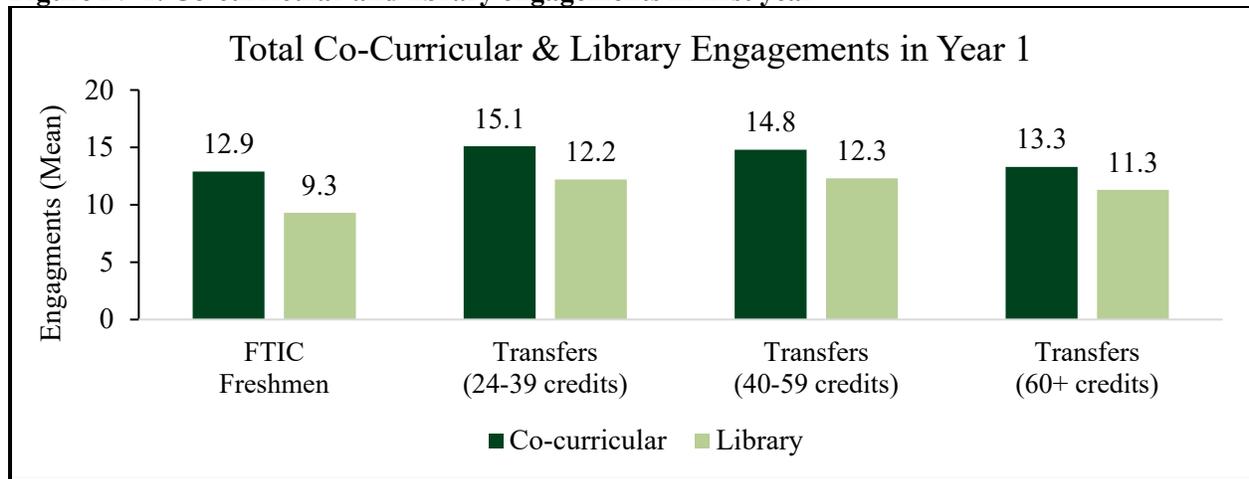
IV.1 RQ1: In their first year, students' levels of engagements differed based on admission status and the number of incoming credits.

To answer Research Question 1, total first-year engagements in co-curricular and extracurricular activities were compared across the study subgroups (see Figure III-3). ANOVA analyses revealed significant differences for all measures, while post-hoc analyses indicated nuanced variations across the subgroups and engagement categories. All relevant findings are described in brief below and further outlined in [Appendix C](#). The majority of effect sizes were negligible ($\eta_p^2 < .01$), with the remaining few classified as low ($.01 - < .05$).

IV.1.A Co-curricular, Library, and Extracurricular First Year Engagement

Transfer students with 24-39 credits and 40-59 credits were significantly more engaged in co-curricular activities than FTIC freshmen and transfer students with 60+ credits. Similarly, all transfer student subgroups were significantly more engaged with the library in Year 1 than FTIC freshmen, with a negligible effect size. There were no significant differences in overall library engagement between the transfer subgroups in their first year. (See Figure IV-1.)

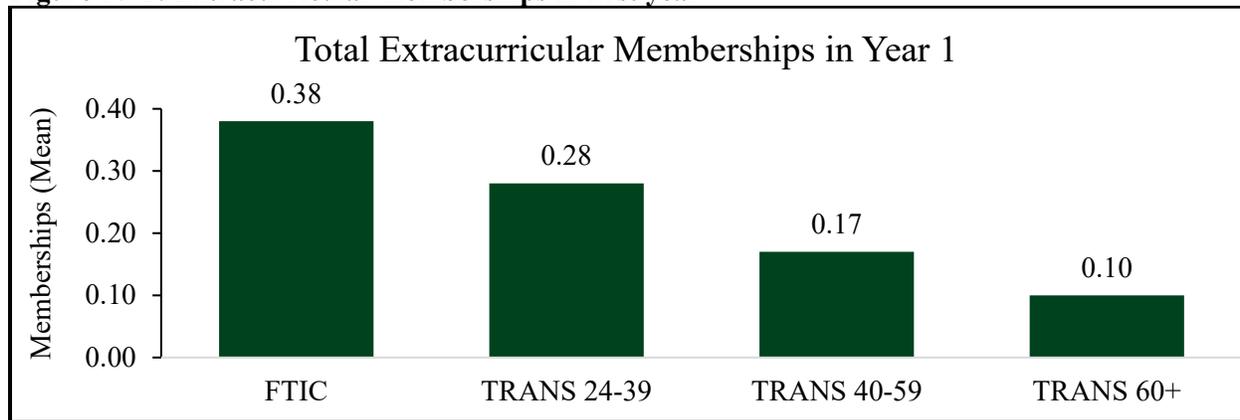
Figure IV-1. Co-curricular and library engagements in first year



Welch's $F_{(3,9777)}=29.3, p < .001, \eta_p^2 = .004$

Students who matriculated as FTIC freshmen were significantly more engaged in extracurriculars than all transfer student subgroups. Conversely, transfer students with 60+ credits were significantly less engaged in these activities than all other study subgroups, with a small effect size. Among the transfer subgroups, transfers with 24-39 credits were significantly more involved in extracurricular activities than those with 40-59 credits and 60+ credits. (See Figure IV-2.)

Figure IV-2: Extracurricular memberships in first year



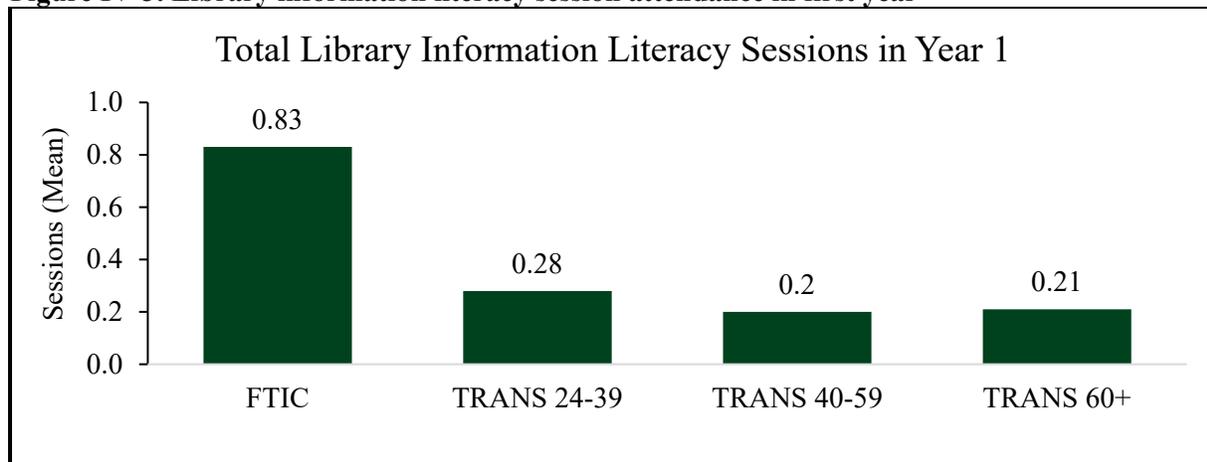
Welch's $F_{(3,4240)}=194.8$, $p < .001$, $\eta_p^2 = .033$

IV.1.B Specific Types of Library Engagement

Analyses of students' first year engagement with specific library activities revealed significant differences between all admission status groups for all comparisons, while post-hoc analyses revealed nuances among the comparison groups. Effect sizes were largely negligible ($\eta_p^2 < .01$).

Information Literacy Instruction. FTIC freshmen participated in significantly more information literacy instruction sessions in Year 1 than all transfer subgroups. Similarly, transfer students with 24–39 credits attended significantly more information literacy sessions than those with 40–59 or 60+ credits. (See Figure IV-3.)

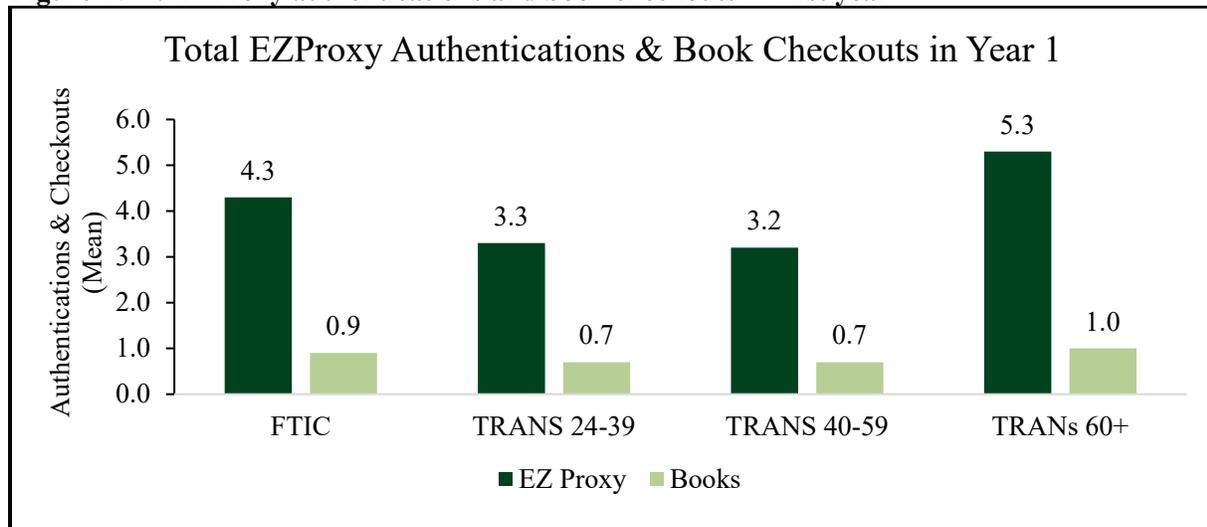
Figure IV-3. Library information literacy session attendance in first year



Welch's $F_{(3,11324)}=1918.6$, $p < .001$, $\eta_p^2 = .005$

Use of Library Scholarly and Academic Resources. EZProxy authentications and library book checkouts were used to assess student engagement with library scholarly and academic resources. Transfer students with 60+ credits had significantly more EZProxy authentications in Year 1 than all other study subgroups, while FTIC freshmen had significantly more EZProxy authentications than transfers with 24–39 credit and 40–59 credits. Similarly, transfer students with 60+ credits had significantly more book checkouts in Year 1 than all other subgroups; FTIC freshmen had significantly more book checkouts than transfer students with 24–39 and 40–59 credits. (See Figure IV-4.)

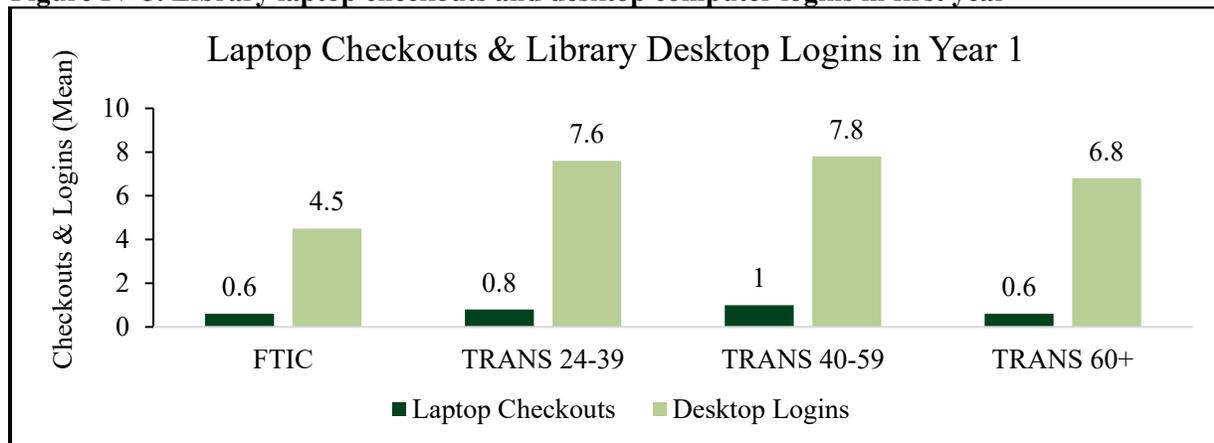
Figure IV-4. EZProxy authentications and book checkouts in first year



Welch's $F_{(3,7291)}=7.5, p < .001, \eta_p^2 = .001$

Use of Library Computing Equipment. Library laptop checkouts and library desktop computer logins were used to assess student engagement with the library's computing equipment. Transfer students with 24-39 credits checked out significantly more library laptops than FTIC freshmen. Transfer students with 40-59 credits also checked out significantly more laptops than FTIC freshmen and transfer students with 60+ credits. Regarding library desktop computer usage, all transfer subgroups had significantly more computer logins in Year 1 than FTIC freshmen, while transfer students with 40-59 credits had significantly more library desktop computer logins than transfers with 60+ credits. (See Figure IV-5.)

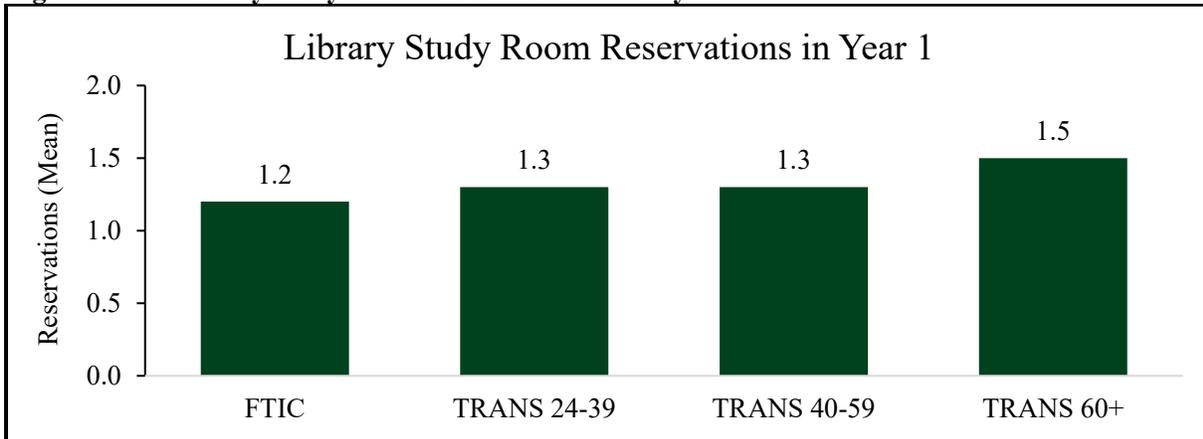
Figure IV-5. Library laptop checkouts and desktop computer logins in first year



Welch's $F_{(3,9477)}=105.7, p < .001, \eta_p^2 = .010$

Use of Library Spaces. Library study room reservations were used to assess student engagement with the library's physical spaces. ANOVA and post-hoc analyses revealed that transfer students with 60+ credits reserved significantly more library study rooms in Year 1 than FTIC freshmen, with a negligible effect size. No significant differences between the transfer subgroups were noted. (See Figure IV-6.)

Figure IV-6. Library study room reservations in first year



Welch's $F_{(3,10449)}=2.5, p < .001, \eta_p^2 = .001$

IV.2 RQ2: There were significant differences between first-time-in-college and transfer students across all three measures of success.

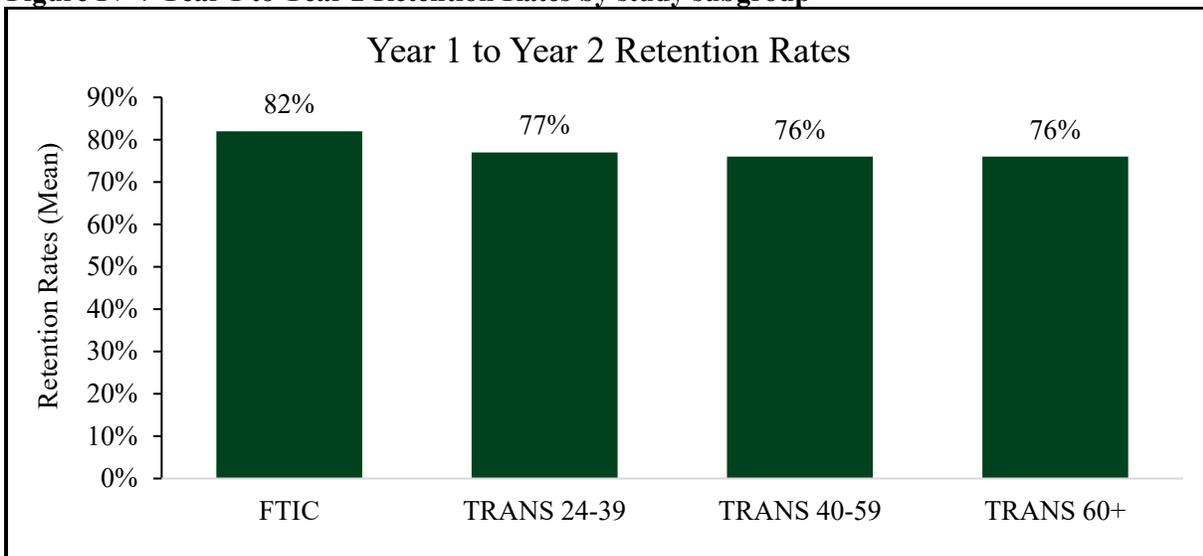
To answer Research Question 2, Year 1 to Year 2 Retention Rates, 4-Year Cumulative GPA, and 6-Year

Graduation Rates were compared across the four study subgroups using Welch's ANOVAs and Games-Howell post-hoc analyses. All RQ2 ANOVAs revealed significant differences between groups across all measures of success, while post-hoc analyses highlighted nuances among the study subgroups. These findings are outlined in [Appendix C](#) and further discussed below.

IV.2.A Year 1 to Year 2 Retention Rates

Findings revealed that FTIC freshmen had significantly higher Year 1 to Year 2 retention rates than all transfer subgroups, though with negligible effect. There were no significant differences for Year 1 to Year 2 retention between the transfer subgroups. (See Figure IV-7.)

Figure IV-7 Year 1 to Year 2 Retention Rates by study subgroup

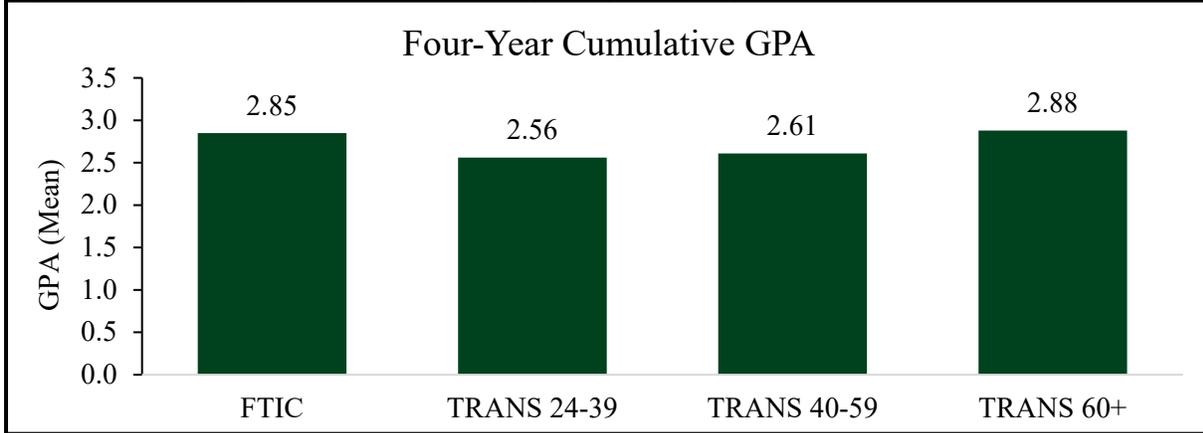


Welch's $F_{(3,10317)} = 60.2, p < .001, \eta_p^2 = .005$

IV.2.B Four-Year Cumulative GPA

Both the FTIC freshmen and transfer students with 60+ credits had significantly higher four-year cumulative GPAs than transfer students with 24–39 credits and transfer students with 40–59 credits, with a small effect. (See Figure IV-8.)

Figure IV-8. Four-year cumulative GPA by study subgroup

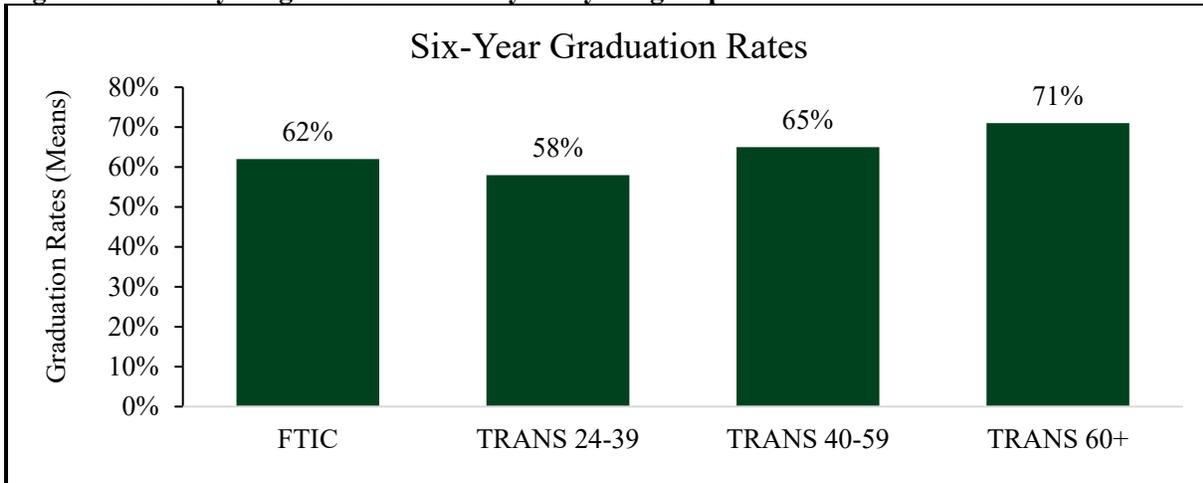


Welch's $F_{(3,6820)} = 130.7, p < .001, \eta_p^2 = .017$

IV.2.C Six-Year Graduation Rates

Transfer students who entered the university with 60+ credits had significantly higher six-year graduation rates than all other study subgroups, with a small effect. Conversely, transfers with 24–39 incoming credits had significantly lower six-year graduation rates than all other study subgroups. (See Figure IV-9.)

Figure IV-9. Six-year graduation rates by study subgroup



Welch's $F_{(3,3172)} = 25.2, p < .001, \eta_p^2 = .006$

IV.3 RQ3 Findings: Specific undergraduate co-curricular and extracurricular engagement activities increase the odds of student success.

To answer Research Question 3, binary logistic regression analysis with propensity score matching findings indicated that participation in every type of engagement explored in this study significantly increased a student's odds for success across all three measures. However, the degree to which these

engagement factors contribute to success is nuanced based upon study subgroup and success measure. (See [Appendices D–F](#).)

IV.3.A Year 1 to Year 2 Retention

The results from the analysis related to Year 1 to Year 2 retention indicate that overall, if a student in any of the four study subgroups engaged in at least one co-curricular activity in their first year, their odds of enrolling for a second year of study were significantly improved over those who did not engage at all, particularly for FTIC freshmen and transfer students with 60+ incoming credits. Similar trends were noted for students who engaged with the library at least one time in their first year, with more noteworthy findings for FTIC freshmen and transfer students with 60+ credits.

Across all subgroups, students who had at least one engagement with either the Career Center or the University Center for Academic Excellence (UCAE) were significantly more likely to return for a second year over non-engagers. Use of the Writing Center in Year 1 was significantly and positively related to retention for transfer students with 60+ incoming credits, though it was not significant for the other groups. Additionally, FTIC freshmen and transfer students with 24–39 credits with at least one extracurricular membership in the first year were significantly more likely to return for a second year of study, though extracurricular membership did not impact transfer students with 40 or more incoming credit hours.

With respect to engagement with specific types of library activities, accessing library resources via EZProxy authentication at least one time in a student's first year significantly increased odds for retention over those who did not engage, with noteworthy increases in odds for transfer students with 40-59 incoming credits and 60+ incoming credits. Also of note, odds of returning for a second year of study were significantly higher for students who checked out at least one book from the library or logged into a library desktop computer at least once in their first year than those who did not, particularly for transfer students with 60+ incoming credits (book checkouts $e^B = 2.381$, $p < .001$; desktop computer logins $e^B = 2.242$, $p < .001$). (See [Appendix D](#).)

IV.3.B Four-Year Cumulative GPA

Findings from binary logistic regression analysis related to four-year cumulative GPA indicate that for each engagement activity a student participated in during the first four years of study, their odds of earning a GPA of 2.50 or higher significantly increased. This held true for all study subgroups. Of note, with each Career Center engagement, a student's odds of earning an above-average GPA increased significantly, particularly for transfer students with 40-59 incoming credits and FTIC freshmen. For FTIC freshmen, each engagement with UCAE significantly increased the odds of earning a GPA of 2.50 or higher to a greater degree than for the other groups. For each Writing Center engagement, a student's odds of earning a GPA of 2.50 or higher increased significantly regardless of study subgroup. This held true for extracurricular membership across all subgroups. With respect to specific library engagements, for each library information literacy session attended, the odds for earning an above average GPA were significantly increased to a greater degree than the other library variables, with particularly noteworthy findings for transfer students with 24–39 incoming credits. (See [Appendix E](#).)

IV.3.C Six-Year Graduation Rates

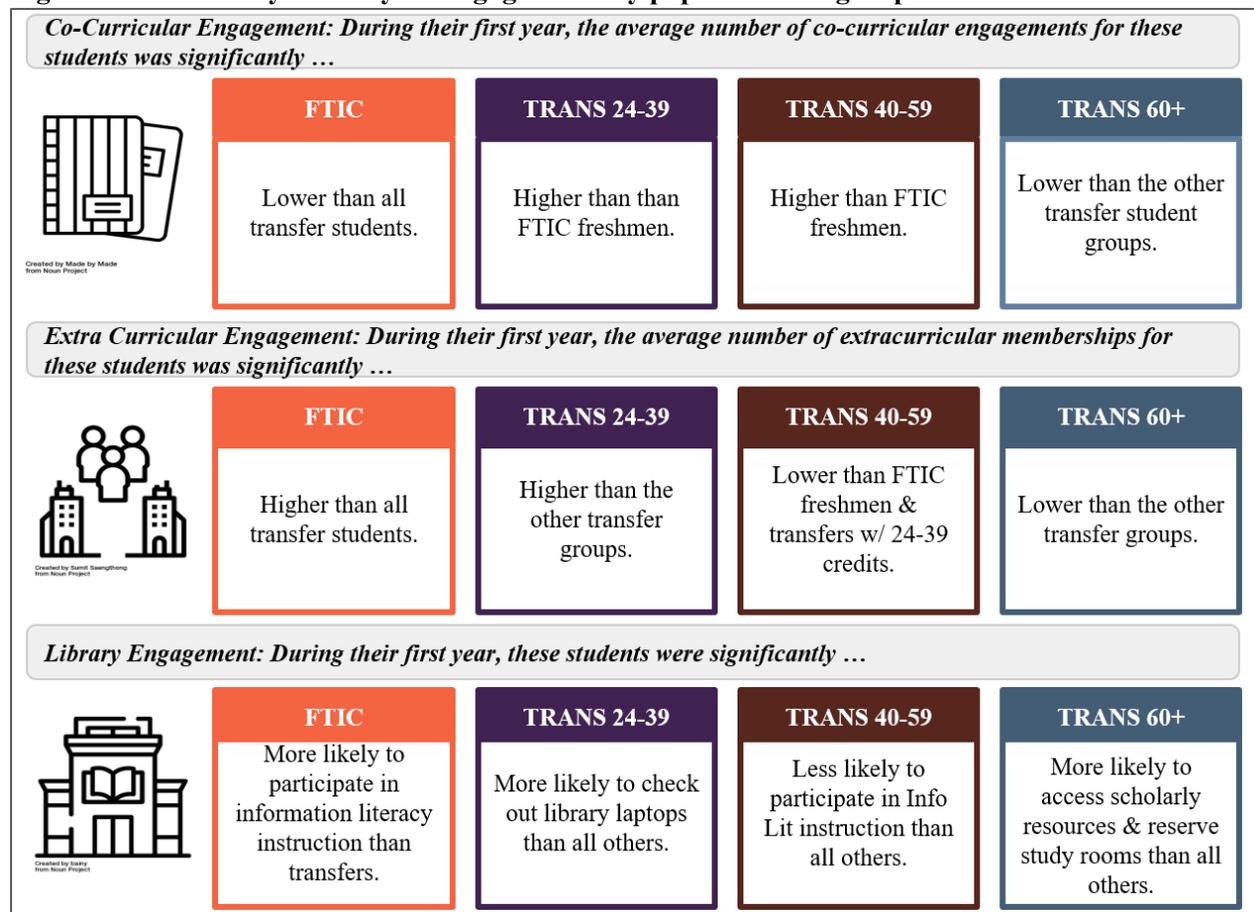
Results from the binary logistic regression analysis related to 6-Year graduation rates indicated that overall, for each engagement activity a student participated in during their first six years of study, the odds of graduating in six years or less increased significantly, with a few exceptions for particular study subgroups and engagement types. Of note, for each Writing Center engagement, a student's odds of graduating in six years or less increased significantly, particularly for transfer students with 24–39 incoming credits and 40–59 incoming credits. Extracurricular membership also stood out as a factor that increased odds of graduating in six years or less for FTIC freshmen and transfer students with 24–39

incoming credits; no significant findings were noted for the other transfer subgroups. Across the specific types of library engagements, library information literacy session attendance demonstrated the greatest potential, with the odds of graduation in six years or less significantly increased for each session attended, with consistent findings across all four subgroups. (See [Appendix F](#).)

V. Discussion

Taken together, the findings for this study indicate that each of the four study subgroups are uniquely different with respect to their engagement in co-curricular and extracurricular activities, in their achievement of the measures of success, and in their engagement pathways for success. Findings suggest that in their first year, transfer students as a whole were significantly more engaged in their use of co-curricular services and resources and significantly less engaged in extracurricular activities than FTIC freshmen. Transfer students with 24–39 incoming credits were also significantly more engaged in extracurricular activities than the other transfer subgroups. With respect to specific library engagements, nuanced findings were noted across the four study subgroups. While FTIC freshmen had a significantly greater level of participation in information literacy instruction, transfer students with 60+ credits were the most engaged with the library's scholarly resources and spaces. Transfer students with 24–39 and 40–59 incoming credits were significantly more likely to use or borrow the library's computing equipment than FTIC freshmen and transfer students with 60+ credits. (See Figure V-1.)

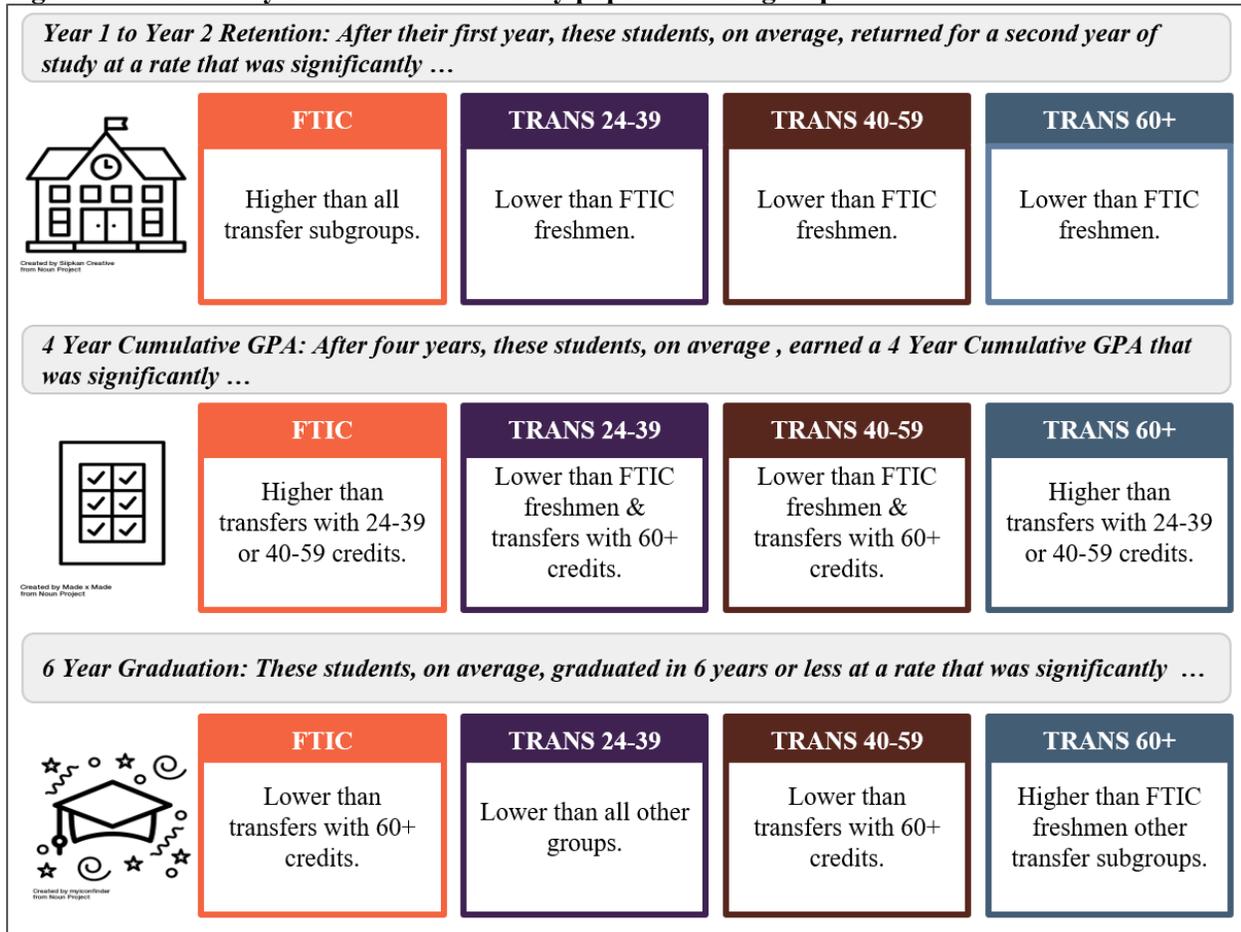
Figure V-1. Summary of first year engagements by population subgroup



There were also significant and noteworthy differences between the four study subgroups with respect to the three measures of success explored in this study. FTIC freshmen demonstrated significantly higher

retention rates than all three transfer subgroups. Similarly, FTIC freshman and transfer students with 60+ incoming credits had significantly higher four-year cumulative GPAs than the other transfer subgroups. Transfer students with 60+ incoming credits had the highest six-year graduation rate overall while transfer students with 24–39 incoming credits had the lowest graduation rate across all groups. (See Figure V-2.)

Figure V-2. Summary of success measures by population subgroup



Lastly, the engagement pathways for student success are uniquely different for each of the three measures and across the four study subgroups, as summarized in Figures V-3, V-4, and V-5. Student engagement with the activities noted in the pathways increase the odds that they will return to the university for a second year of study, earn an above-average cumulative GPA, or graduate in six years or less with a few minor exceptions. Higher odds ratios indicate an increased likelihood for success if a student engages in the associated activity.

Figure V-3. Top Five Year 1 engagement activities that increase odds of Year 2 retention

	 Co-curricular (any)	 UCAE (any)	 Extracurricular (any)	 Library (any)	 Library EZ Proxy	 Library Computer Login	 Library Book Checkout
FTIC	X		X	X	X	X	
TRANS 24-39	X		X	X	X	X	
TRANS 40-59	X	X		X	X		X
TRANS 60+	X			X	X	X	X

Figure V-4. Top Five Engagement activities that increase odds of earning above-average four-year GPA

	 Career Center (any)	 UCAE (any)	 Writing Center (any)	 Extracurricular (any)	 Library Info Lit Instruct.	 Library Study Room
FTIC	X	X	X	X	X	
TRANS 24-39	X	X	X	X	X	
TRANS 40-59	X	X	X		X	X
TRANS 60+	X		X	X	X	X

Figure V-5. Top Five Engagement activities that increase odds of graduating in six years or less

	 Co-curricular (any)	 Career Center (any)	 Writing Center (any)	 Extracurricular (any)	 Library Info Lit Instruction	 Library Study Room	 Library Book Checkout
FTIC	X	X	X	X	X		
TRANS 24-39	X	X	X	X	X		
TRANS 40-59	X	X	X		X	X	
TRANS 60+	X	X	X		X		X

Together, comparison of levels and types of engagements as well as the measures of success across the four study subgroups suggests that disaggregating student engagement and success data into subgroups based not only a student's admission status (FTIC or transfer) to the university, but also their number of incoming credits is a worthwhile investigation. The study of transfer versus FTIC admission groups provides a more nuanced understanding of each of these populations not only with regards to how they engage with the university, but also how their engagement relates to retention, academic performance, and likelihood of graduation.

Examining the four study subgroups separately while using propensity scoring to isolate the effects of confounding variables enabled the researchers to identify key pathways for success for each of the study's subgroups. Of particular note, across all engagement pathways to success, certain activities were consistently significant, including engagement with the Library, especially information literacy instruction and EZProxy authentications, the Writing Center, and the Career Center. Engagement with the University Center for Academic Excellence was noted to play a more noteworthy role in student GPA than in retention and graduation rates. The role of extracurricular engagement varied such that it played a greater role in the retention and graduation of FTIC freshman and transfer students with 24–39 incoming credits than for the other transfer subgroups.

VI. Conclusion

The findings of the study provide a model of the engagements of transfer students in the library as well as in other co-curricular and extracurricular activities as opposed to first-time freshmen with various incoming characteristics, such as incoming credits, high school GPA, Pell grant eligibility, and under-represented minority status. As part of a longitudinal project that creates an institutional repository of student-level data that can be mined to understand the factors that contribute to student success, this study is the first of its kind to compare out-of-classroom engagement of transfers with various numbers of credits and FTIC students.

The results of this study confirm that the more credits transfer students have when they arrive at the four-year institution, the less likely they are to engage in extracurricular activities and the more likely they are to engage with co-curricular services, which supports the premise that they are more interested in academic-related activities and less in the social environment and friendships embraced by FTIC students. Results confirm previous studies that individual student characteristics are the most important factor in student success for transfer students.⁴⁰ Several results confirm the theory of “transfer shock”⁴¹ as transfers are retained at a lower rate than FTIC from year 1 to year 2, students with fewer than 60 credits take longer to graduate, and transfers with 60+ credits had the highest six-year graduation rates of the four groups (more than enough credits to overcome a one-semester adjustment period). Yet another confirmation of transfer shock is that those with 60+ credits and the FTIC had higher four-year cumulative GPAs than transfers with fewer than 60 credits at the point of transfer. Since transfers with more than 60 credits had the highest rate of graduation within six years, it appears that more courses/credits do not necessarily result in a protracted graduation rate. Transfers who came in with the lowest number of credits (24–39) relied more heavily on campus resources such as loaner library laptops. Transfers with 40–59 credits were less likely to participate in library instruction than the other groups, which indicates transfers at all numbers of credits need to have equivalent library instruction as FTIC freshmen.

The study results indicated that most library, co-curricular, and extracurricular engagements played a significant role in year 1 to year 2 retention, above-average four-year GPA, and graduation within six years. Library engagements of any type were significant for all groups in retention and information literacy instruction was significant for all groups in six-year graduation. While any co-curricular activity was significant in retention, extracurricular activity was significant in retention only for FTIC freshmen

and transfers with 24–39 credits at transfer. Tutoring, writing center, extracurricular, and library information literacy participation were significant for higher GPA for most groups. And for graduation within six years, co-curricular, career center, and library information literacy engagements were all significant indicators for all four study groups.

The findings from this study will help libraries and universities structure support systems and services to help this growing population of students succeed and graduate.

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