The Influence of Late Registration on the Academic Performance of College-Ready Students

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Abstract

The majority of past studies have suggested that late registration has a negative impact on student success and/or academic performance (Smith, Street & Olivarez, 2002). The data from a small sized, rural two-year technical college with open door and rolling admission policies was considered, and this paper confirmed that late registration was one of the important factors to predicting student success using logistic regression models. In this college, the general consensus has been gradually made that late registrants tend to struggle with their first semester credit completion, an essential requirement to receiving financial aid. A linear regression with robust standard errors was employed, and the current study examined how student first semester completion rates were affected based on a various combination of late registration (early vs. late), college ready (underprepared vs. ready) and success status (unsuccessful vs. successful). The effect of late registration on the credit completion rate was only observed in the college-ready student group. This college tends to focus its retention and/or success efforts on underprepared students; however, the result of this study suggests that the college also needs to focus on college-ready late registrants as well.

*Keywords*: late registration, retention, student success, credit completion rate
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Introduction

There has been a growing interest in studying how late registration affects student success. In a rural, two-year technical college, the general consensus among faculty, staff and administration is that late registrants tend to struggle with completing their first semester courses. This struggle leads to a lower credit completion rate, which then threatens a student’s financial aid eligibility for the future semesters. Without financial aid, students often do not complete their education. Since about 90% of the students in this college receive some sort of financial aid, a low credit completion rate is a great concern. Without this financial assistance, it would be very difficult for students to continue their education.

Therefore, to begin to address this concern, the following two questions were investigated in this study: Does late registration have a negative impact on student success? How are student first semester credit completion rates impacted by the combination of different factors such as late registration, college-readiness, and student success status?

The data from a small sized, rural two-year technical college that employs open door and rolling admission policies was used. The open door admission policy guarantees a student who has a high school diploma or a General Educational Development (GED) certificate will be admitted. The rolling admission policy means that there is no specific application deadline. Students can apply anytime up until the semester begin-date.

In this study, we slightly modified the traditional definition for student retention. As Moore and Shulock (2009) noted, the traditional definition for student retention does not reflect
the reality of two-year colleges in part because the students who transfer to other institutions are not considered at all. Crisp and Mina (2012) also suggested considering those transferred students as a part of measurement of student success. Thus, we defined the student as being successful in the following way: at the beginning of the second fall semester, a student was successful if he/she returned to the institution or transferred out to another institution or completed a program. Even though students did not come back to the institution, we counted them as being successful as long as they continued their education. This definition is widely used in the state colleges and universities system that the college belongs to.

Although the influence of late registration on student retention and/or academic performances has been studied, much more study is still needed. The majority of the studies reported that late registration worked against students. Smith et al. (2002) found that late registrants showed a lower retention rate and a higher course withdrawal rate. Hill (2011) also reported that late registrants were more likely to withdraw from courses. Freer-Weiss (2004) used student admission data and found that late applicants were less likely retained. G. Ford, Stahl, Walker, and Ford (2008) and Safer (2009) observed that late registrants showed lower course grades. On the other hand, in a much earlier study, Angelo (1990) found opposite results. In his study, late registrants exhibited a higher course completion rate. The mean grade was not statistically different based on the late registration status (early vs. late).

The idea of eliminating the late registration policy was discussed and supported by several researchers who found that late registration had a negative impact on students (Smith et al., 2002; Hill, 2011). O’Banion (2012) agreed with them because late registration does not help students become successful. On the contrary, Hiller (2005) did not share their views because abolishment of the policy may limit student access to a college.
Purpose of this Study

This research examined students’ characteristics, first semester academic performances and their first date of registration for the first fall semester. Using these data, the following two hypotheses were tested:

1. Late registration negatively affects student success.
2. Students’ first semester credit completion rates were different based on a various combination of late registration (early vs. late), college ready (underprepared vs. college ready) and success status (unsuccessful vs. successful).

This study used several definitions and methods that are seldom used in other research. We found that we had to revise the traditional definition of late registration status (early vs. late). The most common way of defining late registration status is using a semester begin-date as a cut-off date (Hiller, 2005; Safer, 2009; Hill, 2011). Smith et al. (2002) and Angelo (1990) used the cut-off date for late registration as the second day of a semester and after the first week of a semester begin-date, respectively. We tried to follow their definitions; however, less than five percent of the students in this college registered for their first courses on or after the semester begin-date.

In order to determine the optimal cut-off date for late registration in this college, we considered the following cut-off dates, which are the number of weeks prior to the semester begin-date: one week, two weeks, three weeks, four weeks, six weeks and eight weeks. For each of these weeks, we examined the percent of late registrants of the total cohort (N = 787) and its corresponding success rate (See Figure 1). For example, if we use four-weeks prior to the semester begin-date as the cut-off date for late registration, 296 students are categorized as late registrants. This means that 37.6% of the total cohort was categorized as late registrants if we
use this cut-off date. In addition, among those 296 late registrants, 148 students were successful. That is, the success rate for this group was 50.0%.

As shown in Figure 1, the biggest gap in the success rate for late registrants was between the following two cut-off dates: four weeks and three weeks prior to the semester begin-date. The success rates for using the four weeks and three weeks as cut-off date were 50.0% and 44.7%, respectively. Thus, in this study, we defined students as late registrants if their first registration date was on or after the date of four weeks prior to a fall semester begin-date.

Secondly, students’ college ready status (underprepared vs. ready) was determined by using the Accuplacer tests results. In this college, all new students including transfer students must take the three Accuplacer tests (Math, English reading and English writing) or be eligible for a waiver. If a student does not meet the cut scores on any portion of the test, the student has to take a remedial class in the corresponding subject area. The cut scores that are used for Math, English reading and English writing are 65, 78 and 86, respectively. For this study, we defined students as college ready if they did not have to take any of the three remedial classes.

Third, new, full-time, degree-seeking transfer students whose attempted transferred credits were fewer than seven were also included in the study cohort. Generally, a cohort for retention study is defined as new first-time, full-time degree-seeking students. However, about 80% of the transfer students who met the above criteria completed fewer than seven credits at their previous institutions. From our point of view, they were not college experienced; thus, they were also considered in this study.

Fourth, we considered the influence of the student college-ready status and success status in order to test the second hypothesis. It seems reasonable to suppose that college-ready students have a higher course completion rate than underprepared students. Similarly, it also seems
reasonable to suppose that unsuccessful students exhibit a lower course completion rate to those who are successful. In order to assess the effect of later registration on the first semester completion rate more clearly, these factors should be included.

**Methods**

**Student Data**

First-year, full-time, degree-seeking student data for Fall 2008, 2009, 2010 and 2011 were derived from the state-wide student record system. The transfer students who met the conditions described in the previous section were also included. Data from four different cohorts were combined in the current analysis to maximize the sample size. The success rates for the combined data and each cohort are shown in Table 1. The rate of success did not differ across the cohorts ($\chi^2(3, N = 787) = 0.7, p = 0.87$). The predictor variables to student success that we considered in this study are the following: admission status, age, first semester attempted credit hours, college-ready status, first semester credit completion rate, gender, first semester average grade point (GPA), late registration status and underrepresented status.

**Data Analysis**

As a first step, we examined how student success status (unsuccessful vs. successful) and the predictor variables described above were related. Age, first semester attempted credit hours, first semester credit completion rate and GPA were compared using one-way ANOVAs. A series of chi-square test of independence was performed for these categorical predictors: admission status (regular vs. transfer), college ready status (underprepared vs. ready), gender (female vs. male), underrepresented status (non-underrepresented vs. underrepresented) and late registration status (early vs. late) using the cut-off date of four weeks prior to the semester begin-
date. A student is underrepresented if he/she meets at least one of the following criteria: (1) PELL eligible (2) first generation (3) minority.

A multinomial logistic regression and a stepwise logistic regression were conducted to find the most important predictors for student success. The predictor variables considered in these analyses were described above. The reference groups for the categorical predictors were as follows: success status (unsuccessful), admission status (regular), college ready status (underprepared), gender (female), underrepresented status (non-underrepresented) and late registration status (early). Multicollinearity was checked by using the variance inflation factor (VIF). GPA had the highest VIF values (VIF = 4.7), suggesting that there was collinearity associated with this variable. Thus, after a careful consideration, GPA was excluded from the list of predictors. VIFs were recalculated, and as a result, all VIFs were less than or equal to 1.2.

In order to test the effect of late registration on the credit completion rate, we considered a three-factor design using the credit completion rate as the dependent variable and student success status (unsuccessful vs. successful), college ready status (underprepared vs. ready) and late registration status (early vs. late) as the categorical independent factors. A standard ANOVA method was originally employed; however, the residual analyses found a departure from normality (Shapiro-Wilk test, \( p < 0.05 \)) and a violation of constant variance (Levene's test, \( p < 0.05 \)). Although it is well-known fact that ANOVA is quite robust to violation to the model assumptions if group sizes are equal (Lindman, 1974), the group sizes in this study were quite unequal (See Table 2). Thus, a robust regression approach was used to overcome this unequal sample size problem. All analyses were conducted using Stata Software Version 12.1 (StataCorp., College Station, TX)
Results

Student Characteristics

Table 1 shows the characteristics of the students. The success rate for the combined cohort was 61.8%. Successful students took more credits and showed better academic performances (GPA and credit completion rate) than unsuccessful students ($F(1, 785) > 27; ps < 0.001$). Chi-square tests suggested that early registrants were more likely to be successful than late registrants ($\chi^2(1, N = 787) = 27.8, p < 0.001$). Transfer students, college-ready students and non-underrepresented students exhibited higher success rates, respectively ($\chi^2s(1, N = 787) > 5.2, ps < 0.03$).

Significant Predictors for Student Success

Both multinomial and stepwise logistic regressions revealed that credit completion rate, gender and late registration status were the most important predictors for student success. We then conducted the final logistic regression model using these predictors. Hosmer and Lemeshow's goodness-of-fit test was conducted, and with a p-value of 0.45, the model explained the data well. The overall classification rate, sensitivity and specificity were 83.2%, 92.4% and 68.4%, respectively.

The final model suggested that students whose credit completion rates (increment by one percent) were higher tended to be more successful ($OR = 1.05, p < 0.001$). Male students were less likely to be successful ($OR = 0.64, p < 0.05$). The odds of success for late registrants was 1.54 times less than the odds of success occurring for early registrants ($OR = 0.65, p < 0.05$).

Robust Regression on Credit Completion Rate

Successful students showed a higher completion rate than unsuccessful students ($F(1, 779) = 201.6, p < 0.001$). There was also a main effect of college-ready status indicating that college-ready students exhibited a higher completion rate compared to underprepared students.
(\(F(1, 779) = 20.1, p < 0.001\)). A more remarkable difference in the completion rate between successful and unsuccessful students was observed in the underprepared group rather than college ready group, as evidenced by success status \(\times\) college ready status interaction (\(F(1, 779) = 10.2, p < 0.01\)).

A late registration status \(\times\) college ready status interaction was found (\(F(1, 779) = 4.3, p < 0.05\)). As illustrated in Figure 2, the effect of late registration was perceived only in the college-ready group, and early registrants showed higher completion rate than late registrants. However, no such finding was observed in underprepared group. This was also confirmed by a late registration status \(\times\) college ready status \(\times\) student success status interaction (\(F(1, 779) = 4.2, p < 0.05\)). As shown in Figure 3, unsuccessful college-ready late registrants showed a notably lower completion rate compared to other college-ready students (\(F(1, 779) = 8.3, p < 0.01\)). Late registration did not affect the completion rate of underprepared students.

Two things should be noted. First, we also conducted a standard three-way ANOVA and observed the same findings that are stated above. This qualifies those findings because two different methods reached the same conclusions. Second, since logistic regression analyses suggested that gender was one of the important factors to student success, we also assessed a four-factor robust regression and a standard ANOVA models by including gender. No main or interaction effects were found for gender (\(Fs < 1.69, ps > 0.19\)). Thus, gender was excluded from these models, and three-factor models were employed in the current study.

**Discussion**

The primary finding of this study is that late registration negatively impacted on the credit completion rate for only the college-ready student group. College-ready, early registrants showed a higher credit completion rate than those late registrants who registered for their first
courses on or after the cut-off date, which is four weeks prior to a fall semester begin-date (See Figure 2). However, this impact of late registration was not present among underprepared students. To our best knowledge, no study has directly shown this finding, especially when using data from a rural, small sized, two year technical college. Before we come to a closer examination of this finding, it is helpful to discuss the results from the two logistic regression models first.

In light of the results from multinomial and stepwise logistic regression analyses, both models suggested that late registration status, student first semester credit completion rate and gender were the most important factors to student success. Perhaps it is reasonable to say that students’ late registration status can be a measure of their motivation, commitment to their schoolwork, and/or the availability of guidance. Really motivated or committed students may apply and register early so that they are ready for the new environment. Late registrants may or may not be as motivated, but they might not have the resources and/or guidance that would encourage early registration. Late registration brings about compounding problems. As O’Banion (2012) mentioned, late registrants are obsessed with getting many things (i.e., financial aid, child care, transportation, etc.) done in less time. Completing the process of getting ready for the new experience of college in less than a month can be daunting. If that process is not completed by the first day of classes, the domino effect of missing class, and missing assignment due dates can cause a student to fall behind, fail classes and drop out of college.

Another way in which late registration has a direct negative impact on students is when they cannot register for course in their desired field of study. As often occurs in a small college, only a limited choice of courses is available to late registrants by the time they register for their courses. As a result, some students cannot register for the courses they originally want to take,
and they need to register for other, less desirable courses to fill up their schedules (Tinto, 1997; O’Banion, 2012). It is likely that students who are dissatisfied with their first-semester course schedule find it difficult to feel motivated and get off to a good start on their first semester. Hale and Bray (2011) argued that dissatisfaction with course schedule and student retention are related.

Student preparedness and motivation are only part of the problem inherent in late registration. In order to receive financial aid, students must maintain satisfactory academic progress (SAP) in three qualitative and quantitative requirements: GPA, credit completion rate and maximum time frame (MTF). A student is required to have a minimum of 2.0 cumulative GPA and maintain an overall completion rate of 67%. In this study, MTF was not relevant because our study cohort included only new freshmen and transfers with less than seven credits.

Although GPA is a key component of SAP, we dropped GPA from the set of predictors because of a multicollinearity problem. GPA (VIF = 4.7) and credit completion rate (VIF = 4.6) were strongly correlated ($r(785) = 0.88, p < 0.001$). There was another reason why we excluded GPA in addition to that it had the highest value of VIF. We recognized that meeting the requirement of credit completion rate is more difficult compared to meeting the GPA requirement. For example, let us assume that a student takes four courses (a total of 12 credits) in the first semester and receives a grade of “F” on all of them. The completion rate and GPA for this student are both zero, and as a result, this student will be placed under academic warning. In the following semester, assume this student retakes those four courses and receives a grade of “C” or better on all four courses. In that case, the cumulative GPA will be greater or equal to 2.0. However, the cumulative completion rate will be still at 50%, which is under the required 67% for this college. Should this occur, this student will receive a financial aid suspension. Although this is an extreme example, our purpose here is to illustrate how difficult it can be to maintain the
requirement of the credit completion rate if a student struggles during the first semester. If a student receives a low completion rate in the first semester, the chance that the student will end up with a financial aid suspension is very high.

Based on the literature reviews, we expected that late registration status and completion rate would be found to be significant factors to student success. However, we did not anticipate gender to be found as a factor. As shown in Table 1, there was only a marginal relationship between student success status and gender ($\chi^2(1, N = 787) = 3.0, p = 0.08$). The percent of successful female students was marginally higher than male students. Between male and female students, no difference in credit completion rates was observed ($F(1, 785) = 0.03, p = 0.86$). However, further investigation revealed that female students were more likely to be early registrants in this college ($\chi^2(1, N = 787) = 5.3, p = 0.02$). This finding is consistent with Safer (2009). Probably the gender difference on the late registration status can be considered as a reason why gender was found as a factor in determining student success. We admit there is room for further investigation.

Let us now return to the examination of why the negative impact of late registration was only observed in college-ready students. As shown in Figure 3, there were no differences in the credit completion rate between early and late registrants for underprepared students regardless of their success status. In this college, several student support programs are offered (i.e., a series of college success workshops, learning community, etc.) to help those underprepared students become motivated to succeed as well as to help them raise their academic skill level. Assuming that those programs are indeed helping students to become more motivated to succeed, it is not surprising that no differences in the credit completion rate were found among those students.
Underprepared students are actively recruited to participate in student support programs. College-ready students could also participate in the same programs; however, they are not proactively invited like underprepared students. The college’s focus has not been on this set of students in the past because it was assumed that underprepared students needed the most help. Among college-ready students, only unsuccessful late registrants showed a completion rate that is lower than 67%. Given that the first semester credit completion rate is a part of the reflection of student academic preparedness, late registration gave rise to an undesired student academic result. Traditionally, much attention from faculty, staff and administration as well as retention committees was focused on underprepared students; however, this finding suggests that the college also needs to focus on college-ready, late registrants.

In order to begin to rectify the problem of first semester failure among late registrants, some two-year colleges eliminated the late registration policy, and in doing so showed remarkable improvement on their retention rates (Fain, 2013; Hale and Bray, 2011). However, the downside of ending the policy induced a decline in enrollment. At this college, changing the policy would be very difficult since college funding is heavily dependent on enrollment, but a strategy to help all late registrants could be implemented. One thing we could do is to inform late registrants about the negative impact of late registration and to encourage them to register for their courses as early as possible. Additionally, if the college knows the student demands for specific courses ahead of time, it may be able to add extra courses or sections to accommodate late registrants. For those who still register late, mandatory attendance in a pre-college workshop may also work. Crash courses in preparing for the college environment could be created to help registrants become motivationally ready for their new college life. In addition, student mentors
could be used to connect new students with seasoned ones. Finally, the advising process could be strengthened to connect program-related advisors with late registrants.

This study was limited by the relatively small sample size. It was also limited because this study did not include part-time students. As Hagedorn (2012) mentioned, the traditional definition for measuring student retention and persistence does not consider part-time students. However, especially in two-year colleges, the majority of the student body is now part-time. For example, part-time students in the college examined in this study account for 60% of the total number of students. The U.S. Department of Education released an action plan that considers including degree-seeking, part-time students in the cohort for measuring student persistence and completion rates (Nelson, 2012). Including those part-time students in this kind of retention and/or success study can be challenging, but it is necessary for this college to understand them and serve them better. Therefore, this needs more study.

This college assumes that the academically-prepared students will succeed in their courses, but the data in this study shows this assumption to be incorrect. We have shown that late registration has a negative impact on the first semester credit completion rate of college-ready students. This finding suggests that this college needs to focus on college-ready late registrants as well as underprepared students. As shown in Table 2, there were 91 college-ready, late registrants in the four-year combined cohort, an average of about 23 students per year. Offering this manageable number of students the same special attention it gives to the underprepared students would not be difficult for this college. Not only would this special attention offer a more successful experience for these students, it would also decrease the dropout rate for the college and increase revenues. Long-held assumptions about who benefits from
special support and attention need to be recalibrated so that all students are given the opportunity to be as successful as they can be.
References


Table 1

Student Characteristics Based on Success Status

<table>
<thead>
<tr>
<th></th>
<th>Successful</th>
<th>Unsuccessful a</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(N = 486, 61.8%)</td>
<td>(N = 301, 38.2%)</td>
<td></td>
</tr>
<tr>
<td>Entering Cohort (%)</td>
<td></td>
<td></td>
<td>0.87</td>
</tr>
<tr>
<td>Fall 2008 (n = 158)</td>
<td>63.9%</td>
<td>36.1%</td>
<td></td>
</tr>
<tr>
<td>Fall 2009 (n = 243)</td>
<td>62.6%</td>
<td>37.4%</td>
<td></td>
</tr>
<tr>
<td>Fall 2010 (n = 207)</td>
<td>60.4%</td>
<td>39.6%</td>
<td></td>
</tr>
<tr>
<td>Fall 2011 (n = 179)</td>
<td>60.3%</td>
<td>39.7%</td>
<td></td>
</tr>
<tr>
<td>Late Registration (%) b</td>
<td></td>
<td></td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>Early a</td>
<td>68.8%</td>
<td>31.2%</td>
<td></td>
</tr>
<tr>
<td>Late</td>
<td>50.0%</td>
<td>50.0%</td>
<td></td>
</tr>
<tr>
<td>Admission Status (%)</td>
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<td>0.03</td>
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<tr>
<td>Regular a</td>
<td>58.8%</td>
<td>41.2%</td>
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</tr>
<tr>
<td>Transfer</td>
<td>67.2%</td>
<td>32.8%</td>
<td></td>
</tr>
<tr>
<td>Age (years)</td>
<td>24.5 (0.4)</td>
<td>23.3 (0.4)</td>
<td>0.06</td>
</tr>
<tr>
<td>Attempted Credit Hours</td>
<td></td>
<td></td>
<td>&lt; 0.001</td>
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<tr>
<td>College Ready Status (%)</td>
<td></td>
<td></td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>Underprepared a</td>
<td>54.1%</td>
<td>45.9%</td>
<td></td>
</tr>
<tr>
<td>College Ready</td>
<td>77.3%</td>
<td>22.7%</td>
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</tr>
<tr>
<td>Credit Completion Rate</td>
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<td></td>
<td>&lt; 0.001</td>
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<tr>
<td>Gender (%)</td>
<td></td>
<td></td>
<td>0.08</td>
</tr>
<tr>
<td>Female a</td>
<td>65.1%</td>
<td>34.9%</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>59.1%</td>
<td>40.9%</td>
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<tr>
<td>GPA</td>
<td>3.1 (0.04)</td>
<td>1.2 (0.07)</td>
<td>&lt; 0.001</td>
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<tr>
<td>Underrepresented (%)</td>
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<td>0.01</td>
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<tr>
<td>No a</td>
<td>70.4%</td>
<td>29.6%</td>
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</tr>
<tr>
<td>Yes</td>
<td>59.0%</td>
<td>41.0%</td>
<td></td>
</tr>
</tbody>
</table>

*Note.* Entries represent mean and standard error of the mean unless showed in percentage.

a Reference group that was used in logistic regression.

b As a cut-off date, four weeks prior to a semester begin-date was used.
Table 2

Student Distribution Based on Success, College Ready and Late Registration Status

<table>
<thead>
<tr>
<th></th>
<th>Early Registrants</th>
<th></th>
<th>Late Registrants (^a)</th>
<th></th>
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</thead>
<tbody>
<tr>
<td></td>
<td>College Ready</td>
<td>Underprepared</td>
<td>College Ready</td>
<td>Underprepared</td>
</tr>
<tr>
<td>Successful</td>
<td>145</td>
<td>193</td>
<td>56</td>
<td>92</td>
</tr>
<tr>
<td>Unsuccessful</td>
<td>24</td>
<td>129</td>
<td>35</td>
<td>113</td>
</tr>
</tbody>
</table>

\(^a\) As a cut-off date, four weeks prior to a semester begin-date was used.
Figure 1. The Percent of Late Registrants of the Total Cohort ($N = 787$) and Their Success Rate for each Cut-Off Date for Late Registration. The horizontal axis indicates the number of weeks prior to a semester begin-date. Students were defined as late registrants if their first registration date was on or after the cut-off date.
Figure 2. Mean First Semester Credit Completion Rate for Student Late Registration and College Ready Status. Line bars show standard error of the mean. Students were defined as late registrants if their first registration date was on or after the cut-off date. Note. ** $p < 0.01$. 
Figure 3. Mean First Semester Credit Completion Rate Based on Student Success, Late Registration and College Ready Status. Line bars show standard error of the mean. Students were defined as late registrants if their first registration date was on or after the cut-off date.

Note. ** $p < 0.01$. 