

Facts about Undergraduate Retention and Graduation Derived from IRDS Projects

IRDS, UC Merced
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Freshman Admissions

The best predictor of future academic success at UCM is past academic success and, at time of admission, high school GPA is the best available predictor. After enrollment, cumulative UCM GPA is the best available predictor but high school GPA continues to be a significant predictor of subsequent performance after the freshman year up to and including graduation.^{i ii}

A weighted high school GPA less than about 3.10, the bottom 20%, is associated with a substantially lower four-year graduation rate (21%) than the four-year graduation rate for the next GPA quintile (27%). The four-year graduation rates for the third and fourth quintiles are 31% and 32%. The four-year rate then increases sharply for the top quintile with high school GPAs greater than 2.725 (44%). High school GPA is also associated with lower retention rates but not as clearly. Freshmen in the bottom two quintiles are retained at an 80% rate and freshmen in the top quintile are retained at a rate of 89%.ⁱⁱⁱ

The SAT is also a valid predictor of academic performance early in postsecondary performance but is not a good predictor of graduation at UC Merced.

Challenging social circumstances, or “risk factors”, which might be associated with academic performance at other UC campuses, have seldom been associated with retention or graduation differences at UC Merced. In fact, students who were neither Pell recipients nor first-generation were less likely to graduate in four years than students who were Pell recipients or first-generation, but not both.^{iv} (See Freshman Year to Graduation section below for additional information.)

UC Merced is a referral campus where UC eligible students may enroll if denied admission at other UC campuses to which they applied. At UCM, referral pool students are retained and graduate at the same rate as those who applied to UC Merced during the standard admission process.^v

Freshman Year

An improving academic record from fall to spring is preferable to a declining GPA record when predicting retention even if the cumulative GPA over the two semesters is equal.

A mathematics or writing developmental course placement is associated with a four-year completion rate that is about a seven percentage points lower. Being placed into both mathematics and writing developmental courses decreases the likelihood of graduating in four years by an additional seven percentage points.^{vi}

Student behaviors associated with lower four-year graduation rates include: earning less than a B in Core 001 or Writing 10; a first-semester GPA less than 2.0, and completing fewer than 16 credit hours in either or both of the first two semesters. These factors are additive. Exhibiting three of these factors leads to about a 10 percentage point further reduction than two and two is about a 10 percentage point further reduction than one factor.^{vii}

About half of “Average” students, students scoring in the middle 75% on all admissions measures, would graduate in four years if they did three or more of the following: took more than 15 credit hours in the first term, earned a GPA of 2.0 or higher in the first term, declared a major (even a “pre” major), or earned a C or higher in CORE 001.^{viii}

Freshman Year to Graduation

The best predictor of year to year retention and graduation in four, six or eight years is cumulative GPA. Retention rate to the next fall for students with a cumulative GPA < 2.0 in the spring is about 50% at each class level.^{ix}

- SAT total score does not predict year to year retention or senior to graduation completion.
- Neither does race/ethnicity.
- Being Pell eligible as a freshman was associated with lower junior to senior year retention and with lower senior to degree completion transition for six- and eight-year graduates – seniors who had been Pell eligible freshmen completed degrees at rates about 5% lower than other students.
- First generation students were less likely to be retained from year to year but were as likely as other students to complete a degree if they reach senior year.

For the freshman cohorts from 2005 through 2009, annual loss was clearly highest from freshman to sophomore year (45%), but was also high from sophomore to junior year (31%). Annual loss was similar for junior to senior year and from senior year to any outcome other than graduating from UC Merced (13% and 11%). While focusing on the freshman to sophomore retention because loss at that transition was largest is appealing, a student’s educational investment and the university’s investment in a student lost in subsequent years is greater than a freshman to sophomore loss. When weighted by time, total loss was greatest from sophomore to junior year, and was similarly high for the other class levels. Expressed relative to the total cost of the freshman to sophomore loss, the weighted total loss from sophomore to junior year is 30% higher, 16% less for junior to senior year, and only 4% less for senior year on. UC Merced needs to be concerned about loss at every class level^x

Summer attendance for students who began as freshman at UCM in 2006 through 2008 was positively associated with completing a degree in four-years. The positive effect of summer enrollment was larger for Natural Sciences (19% to 45%) and SSHA (38% to 51%) majors. However, enrolling for summer sessions at other universities was not associated with higher four-year graduation rates unless summer enrollments also included UC Merced. Enrolling for one or more summer sessions at UC Merced (or UC Merced and another institution) has been an effective way to improve four-year graduation rates.^{xi}

Survey Data

The UCUES survey administration provides an opportunity to consider potential relationships between survey responses and actual retention and graduation trends. The relationship between retention and graduation and responses to UCUES items, however, was unclear and often counterintuitive. Freshmen who were MORE satisfied with the campus climate for diversity in the spring were LESS likely to return for the next fall. Juniors who reported being MORE engaged with studies and those who reported MORE gains in skills were LESS likely to return. On the other hand, sophomores who were MORE satisfied with their educational experience were MORE likely to return as were juniors who began as transfer students. And not surprising, seniors about to graduate were more satisfied with their educational experience than seniors returning the next fall.^{xii}

UCUES responses and likelihood of graduating in four years was considered for the 2008 freshman cohort who completed UCUES in 2012. There were no significant differences by college or overall in UCUES factor scores (summary of responses to clusters of similar items) between those who did graduate in four years and those who did not.^{xiii}

UCUES also provided an opportunity to assess concern about cost and debt. Of the class to class transitions, only juniors who matriculated as freshmen were less likely to return if they were more concerned about their debt to that point. However, the finding was a shift within the distribution of responses to the four options. The overall mean level of concern for those returning or not returning was the same.^{xiv}

Freshmen admitted from the referral pool and freshman admitted from the regular pool of applicants are equally satisfied with their educational experience overall and equally likely to choose UCM again if given the chance.^{xv}

University Policies

UC Merced could increase its four-year graduation rate by over 10 percentage points if those currently graduating in the ninth semester managed to graduate in the 8th semester instead.^{xvi}

IRDS applied UC sister campus enrollment and academic progress policies to Merced data to model the impact of enrollment and progress policy alternatives on UCM four-year graduation rates. While fixed period limits, such as UCM's stated nine semester limit policy, would yield large four-year graduation rate improvements if effectively enforced, even larger improvements were associated with policies requiring 15 or more student credit hours per semester.^{xvii}

Institutional Performance as Ratio of Actual to Expected Graduation Rate

The simplest way to improve graduation rates, especially the four-year graduation rate, is to admit students who are better prepared, but UC Merced is a rapidly growing UC campus serving California's Central Valley and expected to absorb UC-eligible students from the referral pool for at least another six years. Therefore, significant increases in selectivity are unlikely for several years. Given these constraints, what are reasonable expectations for UCM graduation rates? To inform these estimates, we used three different national models (Astin, Washington Monthly, and University of Arizona AAUDE).

Using **Astin's**^{xviii} four- and six-year graduation rate equations for UC Merced's 2013 freshman class predicts a **33%** four-year graduation rate and a **56%** six-year rate. Astin's model was built from national data and considers admissions test scores, high school GPA, gender and race/ethnicity but was limited to neither research universities nor public universities.

Washington Monthly incorporates a predicted graduation rate in its ranking system that was developed by Robert Kelchen, Seton Hall. The *Washington Monthly* model includes admissions scores, gender, race/ethnicity, admission rate, campus size, percent receiving financial aid, percent receiving loans, and whether or not the institution is primarily residential. Using these predictors in various combinations in three regression models for research universities, produced six-year expected graduation rates for the UC Merced 2013 class of **45%**, **49%**, and **50%**.

Led by Rick Kroc, **University of Arizona** researchers used Association of American Universities Data Exchange student records to create **five-year graduation rate** models by discipline that were more appropriate for public research universities than Astin's. Their model predicts a five-year graduation rate

for the UCM campus of **52%**. The predicted rates by area of first major were: business management (57%), engineering (48%), humanities (62%), science and mathematics (50%), social sciences (56%), and undecided (56%).^{xix} The Arizona predicted rate overall is between Astin's and *Washington Monthly's* rates. Unfortunately, the Arizona rates are a less common five-year rate.

Predicted four-, five-, and six-year graduation rates for UCM based on historic transitions and enrollment management targets are expected to remain at about 34%, 53%, and 62%.^{xx}, which are well above the rates predicted using national models for research universities. UCM's current six-year graduation rate is 57% to 58% and is well above the rate predicted by using any of these national models.^{xxi}

Transfer Students

The number of transfer students matriculating each fall has varied from year to year but has always been relatively small, averaging fewer than 150 in total. There has been large variance in number, retention rates, and graduation rates from year to year. These patterns at UCM have not been sufficiently stable to provide a clear picture, but summary measures are discussed subsequently. The graduation rate for all transfer students admitted from fall 2005 through fall 2012 was 71%. For the purpose of comparison, if a cohort were created of students who started as UMC freshmen after they reached the junior year, the graduation rate for that contrived junior cohort would be 85%. The two-year graduation rate for transfers was 31% compared to the contrived junior cohort's rate of 45%. Overall, transfer students in SSHA graduated at a higher rate (76%) compared to Engineering (68%) and Natural Sciences (67%).^{xxii}

IRDS recently examined the relationship between initial course placements in marker courses and transfer student success. The marker courses were courses that indicated preparation similar to that expected of junior level students who started as freshmen at UCM and tables have been made available to advisors describing success rates and time to degree for students by course placement. Given a variety of placements, Schools with various course requirements, and changes in admission policy over time, the summary information should be used with caution. Perhaps one reasonable observation is that less well prepared matriculating transfer students take longer to graduate but ultimately graduate at rates similar to those of better prepared new transfer students. Whether Schools should demand better prepared students are not is less about ultimate success rates and is more about access to limited resources—admitting underprepared transfer students means finding seats for them in high demand lower-division courses.^{xxiii}

The following resources are available at ipa.ucmerced.edu.

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- ⁱ First Year Success and Four Year Graduation Rates, presentation to Undergraduate Student Success Committee of the Enrollment Management Council, 2013.
 - ⁱⁱ October 2014 Summary Report Composite, Table 1, IRDS, Merced, CA, 2014.
 - ⁱⁱⁱ First Year Success and Four Year Graduation Rates, presentation to Undergraduate Student Success Committee of the Enrollment Management Council, 2013.
 - ^{iv} First Year Success and Four Year Graduation Rates, presentation to Undergraduate Student Success Committee of the Enrollment Management Council, 2013.
 - ^v Retention and Graduation Rates by Freshman Admission Type: Regular, Referral or Exception. IRDS, Merced.
 - ^{vi} First Year Success and Four Year Graduation Rates, presentation to Undergraduate Student Success Committee of the Enrollment Management Council, 2013.
 - ^{vii} First Year Success and Four Year Graduation Rates, presentation to Undergraduate Student Success Committee of the Enrollment Management Council, 2013.
 - ^{viii} Student Behaviors Associated with Degree Completion in Four Years or Less, Steve Chatman, IRDS, August 6, 2014.
 - ^{ix} October 2014 Summary Report Composite, Tables 1 and 2, IRDS, Merced, CA, 2014.
 - ^x October 2014 Summary Report Composite Table 3, IRDS, Merced, CA, 2014.
 - ^{xi} Relationship between Summer Enrollment at UC Merced or Elsewhere and Ability to Graduate in Four or Six Years, IRDS, Merced, CA.
 - ^{xii} October 2014 Summary Report Composite, Table 4, IRDS, Merced, CA, 2014.
 - ^{xiii} October 2014 Summary Report Composite, Table 6, IRDS, Merced, CA, 2014.
 - ^{xiv} October 2014 Summary Report Composite, Table 5, IRDS, Merced, CA, 2014.
 - ^{xv} Retention and Graduation Rates by Freshman Admission Type: Regular, Referral or Exception. IRDS, Merced, 2014.
 - ^{xvi} First Year Success and Four Year Graduation Rates, presentation to Undergraduate Student Success Committee of the Enrollment Management Council, 2013.
 - ^{xvii} University of California Campus Strategies for Undergraduate Enrollment Limits, Steve Chatman, IRDS, August 6, 2014
 - ^{xviii} Astin, A. W., & Oseguera, L. (2005). Degree attainment rates at American colleges and universities (Revised ed.). Los Angeles: Higher Education Research Institute, UCLA.
 - ^{xix} Composite Collection for Fall 2014, IRDS, Merced, CA.
 - ^{xx} Current Enrollment Forecasts, IRDS, 2014.
 - ^{xxi} National Graduation Rate Models, Tables 1, 2 and 3, IRDS, Merced, CA, 2014.
 - ^{xxii} October 2014 Summary Report Composite Tables 3 and 7, IRDS, Merced, CA, 2014
 - ^{xxiii} Transfer Student Admissions, Gateway Course Placements, and Graduation Rates. IRDS, 2014.