

CHARACTERISTICS OF FIRST-GENERATION NEW STUDENTS AT UW-MADISON

Academic Planning and Analysis, Office of the Provost

INTRODUCTION

A growing body of research discusses the unique characteristics of and challenges faced by “**first-generation**” college students – students whose parents did not graduate from a four-year college or university¹. Several large-scale studies conducted using national data sets² reveal that first-generation students are at a distinct disadvantage when it comes to all facets of college access -- from preparation starting in middle school to college graduation and beyond -- and that first-generation students have different demographic characteristics than other students.

Until recently, we did not know much about first-generation students at UW-Madison. Only since 2005 are we able to identify these students based on information collected at the time of application³. We now have two full cohorts of new students, both first-year and transfers, who have had the opportunity to answer the first-generation question on the application. Our 2006 Undergraduate Student Survey included a question about parental education that was used to determine first-generation status from the students randomly selected for surveying. An analysis of survey results by first-generation status is available on the APA web site⁴.

This analysis examines these new students who first enrolled at UW-Madison in fall 2006 and fall 2007. We examine demographic characteristics and academic preparation for first-generation students compared to other students. Future analyses will examine outcomes for these students when these initial cohorts have had enough time to declare majors and progress to graduation.

SUMMARY OF KEY FINDINGS

1. At UW-Madison, first-generation students are 21% of new first-year students and 33% of new transfer students.
2. First-generation first-year students are similar to their peers whose parents graduated from college in terms of academic preparation in high school. They have slightly lower ACT scores and are less likely to have taken Advanced Placement (AP) tests. They have similar high school GPAs, and similar math and science coursetaking patterns.

3. First-generation students are more likely than other students to:
 - enter UW-Madison by transferring
 - be from a targeted minority group
 - be female
 - be Wisconsin residents
 - qualify for Pell Grants and other need-based financial aid
 - intend to major in a science field
4. First-generation students who started at UW-Madison as new first-year students are more likely than other first-year students to:
 - be from rural areas of Wisconsin
 - be from certain counties in Wisconsin
 - have taken no AP tests while in high school
5. First-generation students who transferred to UW-Madison are more likely than other transfer students to:
 - enroll on a full-time basis
 - be older (on average)
 - transfer from a Wisconsin two-year institution
 - transfer from a college in Wisconsin

THE ENROLLMENT PIPELINE

Around one in five (21%) first-year students and one in three (33%) transfer students are first-generation college students. This is consistent with national studies that show that first-generation students are more likely to transfer and/or start at two-year institutions.

First-generation applicants are less likely to be admitted than other applicants. However, once admitted, first-generation admits are more likely to enroll at UW-Madison than other admits (see Table 1).

The lower admit rate for first-generation students is offset by their higher yield rate and results in a similar proportion of first-generation students in the applicant pool and enrolling class. For first-year starts, first-generation applicants are 19% of the applicant pool and 21% of the first-year class. First-generation transfer starts are 34% of the transfer applicant pool and 33% of the new transfer class.

Table 1
Applicants, Admits and Enrolled New Students
(Fall 2006 and 2007 Combined)

	First-Year Starts		Transfer Starts	
	First Gener.	Not First Gener.	First Gener.	Not First Gener.
Applicants	8,923	38,763	2,848	5,625
<i>% Applicants</i>	19	81	34	66
Admits	4,332	22,967	1,292	2,943
<i>Admit Rate</i>	49	59	45	52
Enrolled	2,412	9,227	866	1,755
<i>% Enrolled</i>	21	79	33	67
<i>Yield Rate</i>	56	40	67	60

DEMOGRAPHIC CHARACTERISTICS

Race/Ethnicity. First-generation students at UW-Madison are more likely to be from targeted minority groups⁵ than their non first-generation classmates. Twenty-two percent (22%) of first-generation first-year students and 10% of first-generation transfers are from targeted minority groups compared to 7% and 4% of other students, respectively.

Table 2
Percentage Distribution by Race/Ethnicity

	First-Year Starts		Transfer Starts	
	First Gener.	Not First Gener.	First Gener.	Not First Gener.
Targ. Minority	22	7	10	4
African American	6	2	3	2
Hispanic/Latino	7	3	3	2
American Indian	2	1	1	1
SE Asian	7	1	2	0
Non-Targeted	78	93	90	96
Other Asian	3	5	4	4
International	0	6	0	8
Unknown Race	2	3	4	5
White	73	80	82	79
Total	100	100	100	100

National studies show that African Americans and Hispanics are disproportionately likely to be first-generation students. This is also true at UW-Madison, but Southeast Asian students are the most likely ethnic group to be first-generation students at UW-Madison. National studies group all Asian students together and show that Asians as a group are some of the least

likely students to be first-generation. These national studies do not distinguish Southeast Asians, who are mainly refugees and recent immigrants in Wisconsin⁶, from other Asians. At UW-Madison, Southeast Asians are the most likely to be first-generation and other Asians are among the least likely to be first-generation.

Gender. First-generation students, at UW-Madison and in national studies, are slightly more likely to be female than other students. Fifty-six percent (56%) of first-year first-generation students are female compared to 53% of other first-year students. Fifty-four percent (54%) of first-generation transfer students are female compared with 48% of other transfer students.

Table 3
Percentage Distribution by Gender

	First-Year Starts		Transfer Starts	
	First Gener.	Not First Gener.	First Gener.	Not First Gener.
Female	56	53	54	48
Male	44	47	46	52
Total	100	100	100	100

Full-time Status. Almost all new students at UW-Madison enroll full-time⁷, at least initially. This is true of both first-generation and other students. In fact, first-generation transfer students are more likely to enroll on a full-time basis than other transfer students.

Table 4
Percentage Distribution by Full-Time Status

	First-Year Starts		Transfer Starts	
	First Gener.	Not First Gener.	First Gener.	Not First Gener.
Full-Time	100	100	97	92
Part-Time	<1	<1	3	8
Total	100	100	100	100

This finding is not consistent with national studies and with our own 2006 Undergraduate Survey. These studies show that first-generation students are more likely to enroll part-time. One key difference between this analysis and the Undergraduate Survey is timing. For this analysis, full-time status was determined on the semester census date (the 10th day of the semester) during students' first semester at UW-Madison. The Undergraduate Survey samples students at all levels and none of the students sampled is in their first semester at UW-Madison.

Age. Although the vast majority of first-year students at UW-Madison enroll immediately after high school graduation, first-generation first-year students are even more likely to do so. Ninety-three percent (93%) of first-generation first-year students are in the 16-18 age group compared to 91% of other first-year students.

In contrast, national studies show that first-generation students are older than other students. First-generation transfer students at UW-Madison do tend to be older than other transfer students. Twenty-seven percent (27%) of first-generation transfer students are age 23 or older compared to 12% of other transfers. Fifty-four percent (54%) of first-generation transfer students are in the 19-20 age group compared to 71% of other transfers.

**Table 5
Percentage Distribution by Age Group**

	First-Year Starts		Transfer Starts	
	First Gener.	Not First Gener.	First Gener.	Not First Gener.
16 - 18	93	91	1	4
19 - 20	7	9	54	71
21 - 22	0	0	18	14
23 and over	0	0	27	12
Total	100	100	100	100
Average	18.1	18.0	22.2	20.5

GEOGRAPHIC CHARACTERISTICS

State Residency. First-generation students are disproportionately likely to be Wisconsin residents. Eighty percent (80%) of first-generation first-year students are Wisconsin residents compared to 54% of other first-year students. Ninety percent (90%) of first-generation transfer students are Wisconsin residents compared to 73% of other transfer students.

**Table 6
Percentage Distribution by Tuition Residency**

	First-Year Starts		Transfer Starts	
	First Gener.	Not First Gener.	First Gener.	Not First Gener.
Wisconsin Res.	80	54	90	73
MN Reciprocity	8	12	5	7
Non-Resident	12	34	5	20
Total	100	100	100	100

County Residency. We see differences in the home counties⁸ of first-year students based on first-generation status. First-generation students are less likely to be from certain counties -- namely Dane, Milwaukee, Ozaukee and Waukesha -- compared to other first-year students. These counties have average to above average proportions of adults with four-year college degrees⁹. First-generation first-year students are slightly more likely to be from Marathon, Sheboygan, and Washington Counties. These are counties with below-average proportions of adults with college degrees. The fact that both Marathon and Sheboygan Counties have high concentrations of Southeast Asians and that Southeast Asians are particularly likely to be first-generation students may explain the greater likelihood of first generation students coming from these counties. In each of these counties, more than 4% of residents are Asians compared to an overall Wisconsin average of 2%.

**Table 7
Percentage Distribution by Home County For First-Year Wisconsin Resident Students**

	First-Year Starts	
	First Generation	Not First Generation
Dane County	12	16
Milwaukee County	13	14
Ozaukee County	2	3
Waukesha County	8	15
Marathon County	3	2
Sheboygan County	3	1
Washington County	3	2
Other WI Counties	56	47
Total	100	100

Rural. First-generation first-year students who are from Wisconsin are more likely to be from rural¹⁰ areas of the state than other first-year students.

**Table 8
Percentage Distribution by Rural Status For First-Year Wisconsin Resident Students**

	First-Year Starts	
	First Generation	Not First Generation
Rural	20	11
Not Rural	80	89
Total	100	100

Transfer Sending Institution. First-generation transfer students are more likely to transfer from two-year institutions in Wisconsin than other transfer students. They are less likely to transfer from institutions outside Wisconsin. Forty-two percent (42%) of first-generation transfer students enrolled from two-year institutions in Wisconsin (Wisconsin Technical Colleges or the UW Colleges) compared to 22% of other transfers.

Table 9
New Transfer Students by Sending Institution Type

	Transfer Starts	
	First Generation	Not First Generation
UW System Four-Year	35	32
UW Colleges (2-year)	23	10
WI Technical College	19	12
Other Wisconsin	4	4
Outside Wisconsin	19	42
Total	100	100

SOCIOECONOMIC CHARACTERISTICS

A comprehensive examination of socioeconomic status requires information about family income and other socioeconomic characteristics that we do not collect from all students. This kind of information is available for students who apply for financial aid; however, this only encompasses about half of UW-Madison undergraduates. For this analysis, we rely on two proxy measures of socioeconomic status from financial aid applicants – eligibility for Pell Grants and eligibility for need-based financial aid.

Pell Grant Eligibility. Pell Grants are Federal grants to the financially neediest college students. Eligibility for a Pell Grant is often used as a proxy for low income, particularly when income information is not known for a whole population. A higher proportion of first-generation students, both first-year and transfer, are eligible for Pell Grants. First-generation first-year students are more than five times as likely to qualify for a Pell Grant compared to other first-year students.

Overall, a higher proportion of transfer students are eligible for Pell Grants. Still, first-generation transfers are almost three times as likely to qualify for a Pell Grant compared to other transfers.

Table 10
Percentage Distribution by Pell Grant Eligibility

	First-Year Starts		Transfer Starts	
	First Gener.	Not First Gener.	First Gener.	Not First Gener.
Pell Eligible	28	5	32	11
Not Pell Eligible ¹¹	72	95	68	89
Total	100	100	100	100

Need-Based Financial Aid. In addition to being more likely to qualify for Pell Grants, first-generation students are also more likely to receive financial aid based on financial need. Among first-year students, almost one in two first-generation students receives need-based financial aid compared to one in five other first-year students. Among transfer students, more than half receive need-based financial aid compared to slightly more than a quarter of other transfer students.

Table 11
New Students by Financial Aid Type

	First-Year Starts		Transfer Starts	
	First Gener.	Not First Gener.	First Gener.	Not First Gener.
Need-Based Financial Aid	49	19	55	28
No Need-Based Financial Aid ¹²	51	81	45	72
Total	100	100	100	100

Results from the 2006 Undergraduate Survey show that first-generation undergraduates are more likely than other students to rely on income from student jobs and from personal savings. They are less likely to report that their families are helping them pay for college.

INTENDED MAJOR

At the time of application, new students are asked to indicate their intended major, if known. Comparing the distributions of intended majors¹³ shows few differences in intended majors between first-generation and other students.

First-generation first-year students are slightly less likely to be “undecided”. They are more likely to intend majors in the sciences (agriculture, biological, physical, engineering, math, health).

Table 12
Percentage Distribution by Intended Major
New First-Year Students

	First-Year Starts	
	First Generation	Not First Generation
Agriculture/Nat. Res.	2	1
Arts and Humanities	7	9
Bio. & Phys. Sciences	17	16
Business	13	15
Education	3	2
Engineering/Math	13	12
Health Sciences	8	4
Social Sciences	9	11
Undecided	28	30
Total	100	100

First-generation transfer students are less likely to intend a business major and more likely to intend a major in the health sciences.

Table 13
Percentage Distribution by Intended Major
New Transfer Students

	Transfer Starts	
	First Generation	Not First Generation
Agriculture/Nat. Res.	3	3
Arts and Humanities	14	14
Bio. & Phys. Sciences	10	11
Business	9	16
Education	5	4
Engineering/Math	10	10
Health Sciences	15	7
Social Sciences	19	20
Undecided	14	15
Total	100	100

ACADEMIC PREPARATION AND ACHIEVEMENT

There are several measures of academic preparation and achievement that factor into the decision to admit first-year students. National studies show that first-generation students are often less academically prepared for college and attend lower-performing high schools and schools with fewer college preparatory classes. Results from the 2006 Undergraduate Survey show that first-generation students are less likely than

other first-year students to report that their high school prepared them extremely well for UW-Madison.

There are several measures of academic preparation and achievement that can be examined, although no single measure ever determines admission. High school GPA and ACT/SAT test results are common measures of academic performance¹⁴ and the number of high school academic units¹⁵ and rigor of the high school curriculum are measures of academic preparation. Here we examine the number of math and science units and the number of AP tests taken.

High School GPA. First-year first-generation students have comparable average GPAs to non first-generation first-year students. Average high-school GPAs of first-generation students are more likely to be 3.50 or higher.

Table 14
Percentage Distribution by High School GPA

	First-Year Starts	
	First Generation	Not First Generation
Under 3.00	5	5
3.00 – 3.49	15	21
3.50 – 3.99	62	58
4.00	18	16
Total	100	100
Average	3.70	3.66

ACT¹⁶ Scores. First-generation students have slightly lower average ACT scores compared to non first-generation students. First-generation students are less likely to achieve a score of 28 and above on the ACT (the UW-Madison average for all first-year students).

Table 15
Percentage Distribution by ACT Score

	First-Year Starts	
	First Generation	Not First Generation
Under 22 (WI average)	9	2
22 – 24	17	8
25 – 27	37	32
28 – 30	28	36
31 – 33	8	19
36 - 36	1	3
Total	100	100
Average	26.3	28.1

High School Math. The vast majority of first-year students have had the equivalent of four years of high school math and more than half have had the equivalent of five or more. First-generation first-year students are less likely than other first-year students to have five or more years of high school equivalent math. The average number of courses is similar.

Table 16
Percentage Distribution by HS Math “Years”

	First-Year Starts	
	First Generation	Not First Generation
Three	4	3
Four	34	29
Five	51	54
More than Five	11	14
Total	100	100
Average	4.6	4.7

High School Science. The vast majority of first-year students have also had four or more years of high school equivalent science classes. But unlike high school math, first-generation first-year students are more likely to have taken more than five years of high school equivalent science. The average number of high school equivalent science courses is the same, 4.4, for first-generation and other first-year students.

Table 17
Percentage Distribution by HS Science “Years”

	First-Year Starts	
	First Generation	Not First Generation
Three	12	12
Four	45	48
Five	25	25
More than Five	18	15
Total	100	100
Average	4.4	4.4

AP (Advanced Placement) Tests. AP courses are college-level courses taught in high schools by high school teachers using a curriculum developed and monitored by The College Board. College credit for this work is determined by scores on the national AP exams administered at the end of the course.

There is wide variation in access to AP classes nationally and Wisconsin is no different. In Wisconsin, the range of AP offerings in high schools ranges from none in a few to more than 30 in others. A complete analysis of academic preparation using AP coursetaking as a metric should consider what AP courses a student took relative to what was available in high school. However, this type of individual analysis is impractical for a large class from a large number of high schools. This type of analysis requires a comprehensive and up-to-date listing of the AP offerings at each sending high school plus an understanding of the local policies that govern access to AP courses.

For this analysis, we examine the number of AP tests¹⁷ that first-year students took to see if there are differences by first-generation status. First-generation students are less likely to take AP tests at all – 31% took no AP test compared to 24% of other first-year students. Those who did take AP tests were more likely to take one or two whereas non first-generation students who took AP tests were most likely to take three or more.

Table 18
New Freshman Students by AP Tests Taken

	First-Year Starts	
	First Generation	Not First Generation
Zero	31	24
One	17	13
Two	17	16
Three	14	15
More than Three	14	21
Total	100	100
Average	2.1	2.7

NOTES

¹The term “first generation” in this analysis and in general use at UW-Madison means that neither of a student’s parents holds a four-year college degree. There are other definitions of “first generation” that are used by other states, universities, and financial aid programs. For example, students whose parents attended a four-year institution but did not graduate or hold associate’s degrees are sometimes not considered “first generation” students. Furthermore, there are a variety of questions that elicit this information from students and student responses to questions purportedly asking for the same information might not match due to differences in interpretation.

²Chen, X. (2005). *First-Generation Students in Postsecondary Education: A Look at their College Transcripts*. Washington, DC: National Center for Education Statistics.

Choy, S. (2001). *Students Whose Parents Did Not Go To College: Postsecondary Access, Persistence, and Attainment*. Washington DC: National Center for Education Statistics.

Engle, J, Bermeo, A. and O’Brien C. (2006). *Straight from the Source: What Works for First-Generation College Students*. Washington, DC: The Pell Institute for the Study of Opportunity in Higher Education.

³In 2005, the Office of Undergraduate Admissions began collecting information about the level of parental education from applicants for admission to UW-Madison. Specifically, applicants are asked whether either of their parents has earned a four-year or bachelor’s degree. Students without at least one parent with a four-year college degree are referred to as “first generation” students.

⁴apa.wisc.edu/Surveys/UnderSurvey06_firstgen.pdf

⁵Targeted minorities are students whose race/ethnicity is “targeted” under Plan 2008. Targeted racial/ethnic groups are African American, Hispanic/Latino(a), American Indian, and Southeast Asian (Hmong, Laotian, Cambodian, Vietnamese).

⁶See [ftp://ftp-fc.sc.egov.usda.gov/WI/outreach/hmongsep.pdf](http://ftp-fc.sc.egov.usda.gov/WI/outreach/hmongsep.pdf)

⁷Full-time status for undergraduate students at UW-Madison is 12 or more credits.

⁸Home counties are based on the address of the student’s high school. Counties where there is more than a one percentage point difference between first-generation and non first-generation first-year students

are specifically shown. The difference between the proportion of first-generation first-year students from a particular county compared to non first-generation first-year students is less than one percent for all other counties.

⁹ U.S. Census Bureau: American Fact Finder, 2006. factfinder.census.gov/home/saff/main.html?_lang=en

¹⁰ The definition of rural is based on U.S. Census Bureau classifications of municipalities applied to the high school that a student attended. This classification was used in a previous analysis of outcomes of rural and non-rural students at UW-Madison (see www.apa.wisc.edu/admissions/AnalysisofSchoolCharacteristics.pdf). The analysis contains a full listing of Wisconsin public high schools and their rural or non-rural designation. Basing the rural designation on a first-year student’s high school is the best proxy we have but probably undercounts rural students to some degree. Students who live in a rural area but attend high school in a larger or more urban community will not be considered rural in these analyses.

¹¹The term “not Pell Grant eligible” here means that students 1) applied for financial aid but did not meet the threshold for Pell Grant eligibility OR 2) did not apply for financial aid.

¹²The term “no need-based financial aid” here means that students 1) applied for financial aid but did not meet the threshold for need-based financial aid OR 2) did not apply for financial aid.

¹³ For the purposes of this analysis, majors are grouped by their two-digit CIP Code areas. The U.S. Department of Education’s Classification of Instructional Programs (CIP) codes represent a standard disciplinary taxonomy. Each major at UW-Madison is assigned a CIP code for analytic and reporting purposes. For more information see: <http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2002165> For this analysis, CIP areas have been aggregated as follows: Agriculture and Natural Resources (CIPs 1, 3 and 4), Arts and Humanities (CIPs 5, 9, 16, 23, 38, and 50), Biological and Physical Sciences (CIPs 26, 30 and 40), Business, (CIP 52), Education (CIP 13), Engineering/Math (CIPs 11, 14 and 27), Health Sciences (CIP 52), Social Sciences (CIPs 19, 42, 44, 45, and 54).

¹⁴High school rank percentile is another common measure. However, students are increasingly attending high schools that don’t rank students or high schools that have an optional ranking. As a result, this

metric is becoming increasingly unavailable. Furthermore, the high schools that don't rank their students are not randomly distributed. They are more likely to be high schools outside Wisconsin and competitive, well-resourced Wisconsin high schools.

¹⁵Among first-year students, there is little variation in the number of English and Social Studies units taken. Per admission requirements, all students have had at least four units of English. Even though three units of social studies are required, almost all UW-Madison first-year students have a four. Most of the variation in the depth of high school coursework comes in the math and science areas and these areas are shown in this analysis.

¹⁶For this analysis, SAT scores for students who only took the SAT are converted to ACT scores using a concordance table provided by The College Board.

¹⁷The number of AP tests is a proxy for, but not necessarily the same thing as, taking an AP course. Other rigorous but non-AP courses can prepare students well for the AP tests. Conversely, many students take AP classes but do not take the tests. There are a variety of reasons for this from financial (there is a cost for each test taken) to motivational (the tests are in May at the end of the year) to ignorance (some students take AP courses to give them a leg up in the admission process without consideration of the college credit that they could receive for good test performance).

Data Sources

First Generation Status: InfoAccess UGRD_Prospect and UGRD_Recruitment_Category data views

Enrolled Students: InfoAccess

Frozen_Enrollment_Demo data view

Applicants: InfoAccess STDNT_UGRD_Applicant, STDNT_Prev_Institutions_Codes and

STDNT_High_School_Codes data views

Financial Aid: InfoAccess FA_Application_Detail and FA_Award data views (in test).

Academic Preparation: InfoAccess STDNT_Test data view