STUDENTS' PERCEPTIONS MATTER: EARLY SIGNS OF UNDERGRADUATE STUDENT RETENTION/ATTRITION

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INTRODUCTION

Along with the massification of higher education and increasing costs, the pressure on institutions to retain all students to degree completion has been mounting (Crosling, Thomas, and Heagney, 2008). On an international level, for the first time in the nation's history, the Unites States is falling behind other nations in terms of the percentage of the population who is educated (National Science Board, 2008). Nationally, obtaining a higher education degree has been linked to economic growth (Baum and Ma, 2007), which may be particularly poignant during the current recession. At an institutional level, the costs of not retaining students are substantial, both financially and in terms of prestige (Crosling, Thomas, and Heagney, 2008). For individual students,

considering the rising cost of higher education, degree completion becomes more critical in order to feel the benefits for the substantial investment (Paulsen & St. John, 2002).

Historically, both scholars and practitioners have used mainly dichotomous definitions of retention: here or not here, drop out or not, retained or not, persisted or not. This is evidenced by the outcomes of interest in several of the most prominent theories on retention. For example, Tinto's (1993) landmark theory is based on a study of whether a student persists or not. Even models that take into consideration factors that influence non-traditional students have tended to look at retention as persisted or not (Bean and Metzner, 1987). In the past few decades, the studies on retention and persistence that include this type of dichotomous characterization of retention are substantial (see, for example Pascarella & Terenzini, 1980; Spady, 1971; Tinto, 1993).

More recently, scholars have begun to recognize the importance of understanding the various pathways to degree completion. Nationally, one in five students who began college in a four year institution eventually earned their degree via transfer to another institution (Adelman, 2004). Additionally sixty percent of students who earned a bachelors degree had attended more than one post-secondary institution (Adelman, 2004). Concurrent enrollment at dual institutions (or "Double-dipping") continues to be on the rise (Adelman, 2004). Other scholars have investigated how attending a two year institution influences a four-year degree attainment (Cabrera, Burkum, & La Nasa, 2005).

Scholars have arrived at a more complex picture of the pathways through college, termed "swirling," than the more rigid, linear depiction of retention from the 1970s, 80s, and early 90s (Borden, 2004; Santos & Wright, 1990). McCormick (2003) names 8 types of enrollment "swirls" that describe various patterns associated with transferring among

one or more institutions over one or more time periods. Along with this new conceptualization of enrollment patterns have come more complex methodological considerations. The "swirling" patterns cannot adequately be described by logistic regression, which was the traditional methods for retention (Porter, 2002). New studies have used more sophisticated modeling techniques, including multinomial logistic regression among others (see, for example, Porter, 2002).

While more recent studies better account for a more complex view of enrollment patterns, there are three main limitations in the current literature. First, while many institutions are moving toward *reporting* a more complex picture of retention because of accountability movements, such as the Voluntary System of Accountability (VSA), few institutions consider institutional implications of student "swirlers." When institutions are interested in understanding retention, it is typically institution-centric. That is, institutions want to know what factors and programs influence students' decisions to stay at that particular institution. For example, a study by Hausmann, Schofield, and Woods (2007) evaluating the effectiveness of a programmatic effort aimed at retention defined retention as the students' persistence at that one specific institution.

Second, as Porter (2002) describes, few if any of these studies examine stopping out behavior in addition to transferring or concurrent enrollment. For example, Herzog's (2005) study moved beyond a dualistic understanding by tracking in simultaneous institutions and investigating retention from 1st semester to second semester freshmen year and then to sophomore year. While this study is highly useful at describing retention through the second year, it fails to consider the longer term issues in retention and does not consider stopping out behavior. Third, most models of retention that do account for

multiple outcomes focus mainly on academic and financial variables, without including variables on engagement or student perceptions of climate and self abilities (See, for example, Herzog, 2005 and Porter, 2002).

The present study is designed to address these three critiques. First, it is directly linked to practice. Developed in conjunction with a campus-wide assessment committee, the study was designed to inform practitioners about the various predictors of retention. Second, the study investigates four separate enrollment patterns (continuous enrollment, stopping out, transferring out, and discontinued enrollment) using multinomial logistic regression. Third, the study seeks to connect student perceptions from a survey of freshmen with enrollment patterns five semesters later.

THEORETICAL FRAMEWORK

This study is guided by the theoretical understanding of student swirl (Borden, 2004; McCormick, 2003; de los Santos & Wright, 1990). Under this theory, student persistence in college is viewed as a circular rather than linear process. While some students may be continuously enrolled at one institution from matriculation to graduation, many students may stop-out and return to their university or transfer to another university. Some may do a combination of stopping-out and transferring multiple times along their college journey. Others may leave higher education all-together. The theory on student swirl allows for the understanding that the college enrollment process is complex, and students may have various experiences.

The present study seeks to understand what factors are associated with students who have four different enrollment outcomes: stop-out, transfer-out, drop-out, and continuous enrollment. Previous scholars have found that there are multiple factors that

contribute to the retention of students. The present study will focus on eight factors that have been linked to student retention or persistence:

- Student involvement/engagement (Tinto, 2006-2007)
- Academic abilities (Tinto, 1997; Cabrera et al., 1993; Perna,1997; and Hu & St. John, 2001; Cabrera, Burkum, & LaNasa, 2005)
- Financial constraints (Cabrera, Burkum, & LaNasa, 2005; Cabrera, Nora, & Castenada, 1993; Herzog, 2005; Paulsen and St. John, 2002)
- Sense of belonging (Hausmann, Schofield, and Woods, 2007)
- Educational and degree aspirations (Cabrera, Burkum, & LaNasa, 2005)
- Race/ethnicity (Hu & St. John, 2001)
- Gender (Astin, 1975; Peltier, Laden, & Matranga, 1999; Reason, 2003; Tinto, 1993)
- Residency/local student status (Herzog, 2005)

METHODOLOGY

Data Sources

The present study uses pre-existing data to explore issues behind degree-seeking undergraduate students' enrollment patterns. We used two sets of data from students at the University of Maryland (UM), a large, public, research institution in the mid-Atlantic region:

Beginning Student Survey: The *Beginning Student Survey* (BSS) is a locally-developed instrument crafted by the Beginnings subgroup of the Campus Assessment Working Group (CAWG). Created in 1996, CAWG is a volunteer committee dedicated to building a culture of evidence at UM (www.irpa.umd.edu/CAWG). CAWG gathers and

exchanges information about the student, staff, and faculty experience at the university, typically by administering large-scale surveys to cross-sections of students on an annual basis.

The BSS is given to first-time freshmen eight weeks into their first fall semester. In the fall of 2002, the BSS (hereafter referred to as the BSS'02) was administered to students in classes designated for freshmen (e.g., ENGL101, UNIV100, etc). The BSS'02 asked students about their expectations, attitudes and behaviors.

Questions on the BSS'02 covered a broad range of topics. Items from the survey that were selected for inclusion in this study were based on the following criteria: 1) potential usefulness in identifying future enrollment patterns at eight weeks into the semester, (i.e., outcome variables such as college GPA were not included); 2) having sufficient variability; and 3) having face validity with the retention literature or with a previous study conducted by the campus-wide assessment committee.

National Student Clearinghouse (NSC): The National Student Clearinghouse (NSC) is the nation's largest database of enrollment data (www.studentclearinghouse.org). All fifty states are represented as well as some territories, with participating institutions enrolling over 92% of all types of U.S. higher education students. The NSC provides continuing collegiate enrollment and degree information to institutions on their prospective, current, and former students. The NSC uses student identification numbers to search data from every participating institution to supply semester-by-semester enrollment information on these individuals.

Sample

The sample was initially comprised of 2135 first-time, full-time, degree-seeking freshmen in Fall 2002 who completed the BSS'02. Respondents who did not provide a valid university identification number were excluded, as there was no way to link their survey responses to institutional or enrollment data. Additionally, international respondents were removed from the analyses because of possible confounding issues related to visas and/or their family's possible transient diplomatic status, leaving usable data for 2084 respondents. Of those, 49% were male and 51% were female. Additionally, 64% were White, 13% were Asian American, 12% were Black/African American, 6% were Hispanic, <1% was American Indian, and 5% were of an unknown race/ethnicity. Sixty-eight percent entered UM as in-state residents, while 32% were out-of-state residents at matriculation. The mean age was 18 (SD = 0.489).

Procedures

National Student Clearinghouse data were used to categorize the remaining 2084 BSS'02 respondents according to their enrollment status in the fall of 2005, three years after they matriculated at UM. The four categories included:

- **Continuously enrolled Stayers**: Respondents who were continuously enrolled at UM between Fall 2002 and Fall 2005, or had graduated from UM by Fall 2005 (n = 1588, 76%);
- **Stop-outs**: Respondents who were enrolled at UM in Fall 2005 after having temporarily discontinued enrollment at UM for at least one semester between Fall 2002 and Fall 2005 (n = 239, 12%);

- **Transfer-outs**: Respondents who, at some point between Fall 2002 and Fall 2005, discontinued enrollment at UM, and were enrolled at another institution in Fall 2005 or had graduated from another institution by Fall 2005 (n = 158, 8%);
- **Drop-outs**: Respondents who were enrolled at UM in Fall 2002, had left UM, and had no NSC graduation data or enrollment data for Fall 2005 (n = 99, 5%).

Note that the classification of respondents regarding their Fall 2005 enrollment was institution-centric for individuals with "swirling" enrollment behaviors. That is, an individual who may have attended an institution other than UM between Fall 2002 and Fall 2005, but had returned to UM by Fall 2005 was classified as a stop-out (because he or she ultimately returned to UM), not a transfer-out.

Multinomial Logistic Regression (MLR) was used to evaluate possible associations between student characteristics and survey responses, and Fall 2005 enrollment outcomes (i.e., stayers, stop-outs, transfer-outs, and drop-outs). In order to reduce the number of items to be included in the MLR, maximum likelihood factor analysis was used to distinguish thematic clusters of survey items with the same response options. Two separate analyses were conducted because the survey included two groups of items with different response options. The correlation matrices for both analyses were factorable as evidenced by Bartlett's Test of Sphericity ($p < .001$) and the Kaiser-Meyer-Olkin measure of sampling adequacy (KMO = 0.844 and .883). A varimax rotation with Kaiser normalization was applied to the first analysis to achieve simple structure.

Three factors were extracted (Factors 1 and 2 from the first analysis and Factor 3 from the second), as was determined by a visual examination of the associated scree plots

and a notable drop in eigenvalue magnitude for subsequent factors. Items included in the factors had loadings greater than .350. We evaluated internal consistency among items in each factor through Cronbach's alpha. The three factors had Cronbach's alpha values of greater than .600 (Factor 1 = .644, Factor 2 = .723, Factor 3 = .855). These results suggest the internal consistency of each factor is adequate, or that each set of items does an adequate job of measuring a single unidimensional construct.

We examined the content of items within each component (see Table 1) and developed construct names (Factor 1: Academics; Factor 2: Institutional Connectedness; Factor 3: Study Skills). Respondents' answers were averaged across the survey items associated with each factor to form scale scores.

Factor	Response Options	Survey Items
Academics	5 point scale with 1=Strongly disagree; 5=Strongly agree	I am earning the grades I want. I've stayed motivated. I feel adequately prepared for academic demands here. I'm adjusting to the academic work of college.
Study Skills	4 point scale with 1=Below average; 4=Highest 10%	At present, how do you think you compare with other freshmen at UM in the following areas: • Oral communication skills • Math skills • Note taking • Listening • Managing time • Understanding what you read • Reading speed • Writing – organization • Writing – grammar • Managing stress • Memory • Preparing for exams • Taking exams
Institutional Connectedness	5 point scale with 1=Strongly disagree; 5=Strongly agree	There are social/leisure activities on campus that I like. If I run into problems here, I know someone who'll listen to and help me. I'm adjusting to the social life of college. There are sufficient campus activities on weekends to meet my interests and needs. I'm satisfied with my current living arrangements. I'm as involved in campus activities as I want to be. I can develop a class schedule that fits my needs. I feel safe on campus. I know where to get help on campus with reading and study skills. I understand the purpose of the CORE program.

Table 1. Items that contribute to three factors

Variables included in the model are listed in Table 2, below. They were selected by their relevance to the theoretical framework, grounded in the literature on retention,

and those of interest to the campus committee due to their potential usefulness for practitioners.

Model	Construct	Item/factor	Data Source
IV	Involvement/engagement	Institutional Connectedness Factor	BSS
IV	Academic abilities and resources	Academics Factor, Study Skills Factor	BSS
IV	Financial constraints	Working on or off campus, Concern about ability to pay for education	BSS
IV	Sense of belonging	General attitude toward UM, Whether UM was first choice	BSS
IV	Educational and degree aspirations	Having selected a field of study/major, Having identified a career direction or interest	BSS
IV	Race/ethnicity	Asian American, Black/African American, Hispanic, White, Unknown	Institutional data
IV	Residency/local student status	In-state v. Out-of-state	Institutional data
IV	An interaction between state residency and financial concern was included to allow for the possibility that financial concern may act differently for in-state and out-of-state students.	Interaction between state residency and concern about finances	Institutional data and BSS
DV	Enrollment Pattern	Outcome five semesters after matriculation (fall '05): Continuously enrolled, Stop-out, Transfer-out, Drop-out	NSC data

Table 2. Conceptual Model

Over the last several decades, the literature on retention of college students has consistently demonstrated that gender is an important predictor variable for retention (e.g., Astin, 1975; Peltier, Laden, & Matranga, 1999; Reason, 2003; Tinto, 1993). Furthermore, our initial analyses showed significant interactions between gender and the

other variables in the model. Therefore, we ran separate analyses for men and women, and report the separate findings.

LIMITATIONS

This report provides some useful insight into issues that can influence undergraduates' enrollment patterns. However, the study has some limitations. Only first-time full-time freshmen who both responded to the BSS'02 and gave their UID were included. The analyses were limited to questions that appeared on the BSS'02 and to institutional data. The BSS'02 is a self-report questionnaire. The accuracy of the responses has not been validated by other independent measures. The National Student Clearinghouse data, although quite comprehensive, reflect only participating colleges and universities. Fall 2005 was selected as the cutoff by which to categorize respondents' enrollment status. An earlier or later cutoff date could have categorized some students differently (e.g. a Stop-out in Fall 2005 might have transferred later on or someone not enrolled in Fall 2005 may be stopping out from another institution during that semester). Additionally, the study did not seek to understand the experience of students who were concurrently enrolled at multiple institutions, which is a growing trend in higher education (Adelman, 2004). Lastly, it is important to bear in mind that the MLR results provide a screening tool for identifying issues that are associated with certain enrollment patterns (Stayers, Stop-outs, Transfer-outs, or Drop-Outs). The MLR does <u>not</u> claim to prove causal relationships, and therefore should <u>not</u> be used to make predictions for individual students.

RESULTS

To determine if a predictor had a significant omnibus effect on enrollment behavior, a likelihood ratio test was applied comparing the difference in -2 log-likelihoods between the final model and a reduced model in which the effect of the predictor is omitted. A significant likelihood ratio test indicates that at least one of the predictors' regression coefficients is not equal to zero in the model. The results of logistic regressions comparing continuously-enrolled respondents to 1) stop-outs, 2) transfer-outs, and 3) drop-outs are presented are then examined to determine the specific comparison(s) in which the predictors' regression coefficients are statistically significantly different than zero. Only those predictors determined to have a significant omnibus effect are addressed in the comparisons of continuously enrolled respondents against the other groups. The exploratory p value considered throughout the study was $p<.10$.

Note that the MLR gives results in terms of positive or negative changes to the odds – that is, the likelihood of the relevant outcome divided by the likelihood of staying continuously enrolled, given certain student characteristics. In order to simplify the description of the findings but also remain true to the MLR, we describe these odds ratios in terms of "relative risk." We indicate the effect on the relative risk of a unit increase in a given predictor variable, given all other variables in the model are held constant.

Women

As indicated in Table 3, six of the predictors in the MLR help distinguish continuously enrolled females from those with other enrollment behavior: general attitude, academics, residency, UM choice, future direction, and race/ethnicity.

Effect	Model Fitting	Likelihood Ratio Test		
	-2 Log Likelihood of Reduced Model	Wald Test	DF	Sig
Intercept	1350.903	0.000	0	--
Residency x Finances	1351.809	0.906	3	0.824
Study Skills	1354.248	3.345	3	0.341
Institutional Connectedness	1356.303	5.401	3	0.145
General Attitude	1378.144	27.241	3	0.000
Finances	1352.935	2.033	3	0.566
Academics	1359.588	8.685	3	0.034
Residency	1359.428	8.525	3	0.036
Work ON Campus	1357.020	6.117	3	0.106
Work OFF Campus	1355.215	4.312	3	0.230
UM NOT 1st Choice	1360.086	9.183	3	0.027
Future Direction	1375.933	25.030	9	0.003
Race/ethnicity	1381.945	31.042	12	0.002

Table 3. Omnibus Test of Effects on Female Enrollment Behavior

The results of the MLR comparing female stop-outs with females who remained continuously enrolled are presented in Table 4.

Predictor	B	Std. Error	Sig	Exp(b)
Intercept	-1.459	0.946	0.123	--
Out-of-State	0.552	0.485	0.255	1.737
Race/ethnicity (vs. White)				
Black/African American	-1.307	0.400	0.001	0.271
Asian	-0.621	0.372	0.095	0.537
Hispanic	-1.104	0.629	0.080	0.332
Unknown	-0.121	0.421	0.774	0.886
Work ON campus	0.373	0.349	0.286	1.451
Work OFF campus	0.070	0.379	0.853	1.073
UM NOT 1st Choice	0.612	0.202	0.002	1.843
Future Direction (vs. no major or career)				
Identified major only	-0.121	0.364	0.739	0.886
Identified career only	-0.114	0.328	0.728	0.892
Identified both major and career	-0.732	0.230	0.001	0.481
Academics	0.440	0.179	0.014	1.552
Study Skills	-0.286	0.237	0.227	0.751
Institutional Connectedness	-0.408	0.243	0.093	0.665
General Attitude	0.152	0.159	0.339	1.164
Finances	0.044	0.106	0.676	1.045
Residency x Finances	-0.058	0.145	0.691	0.944

Table 4. Female Stop-Outs vs. Continuously Enrolled

Compared to females who were continuously enrolled, the relative risk of stopping out is greater for those who did not know their future direction. That is, females reporting that they had not selected a major or identified a career direction are more likely to stop-out than females saying they had selected both a major and career path, with the relative risk increasing by a factor of 2.

The Academics factor also helps distinguish between female stop-outs and females who stay continuously enrolled. The higher the female respondent's score on the Academics factor, the greater her relative risk of stopping out. Specifically, given a one

unit increase in Academic score, the relative risk of being a stop-out would be 1.5 times more likely when the other variables in the model are held constant.

Female respondents for whom UM was their first choice institution have a lower relative risk of stopping out. For those saying UM was not their 1st choice, the relative risk of stopping-out rather than staying continuously enrolled increases by a factor of 2.

Lastly, race/ethnicity is a variable helping to distinguish female stop-outs from females who remained continuously enrolled. Compared to White females, women of color have a lower relative risk of stopping out. White females are more likely to stop-out than 1) Black/African American females with their relative risk increasing by a factor of nearly 4, 2) Hispanic females with their relative risk increasing by a factor of 3, and 3) Asian females with their relative risk increasing by a factor of 2.

Although the regression coefficient associated with Institutional Connectedness is significant in the comparison of female stop-outs and stayers, the omnibus test for this effect is not statistically significant.

The results of the MLR comparing female transfer-outs with females who remained continuously enrolled are presented in Table 5.

Predictor	B	Std. Error	Sig	Exp(b)
Intercept	1.990	1.213	.101	--
Out-of-State	1.857	0.676	0.006	6.403
Race/ethnicity (vs. White)				
Black/African American	-0.646	0.432	0.135	0.524
Asian	-0.704	0.536	0.189	0.495
Hispanic	-0.264	0.625	0.673	0.768
Unknown	-0.668	0.768	0.384	0.513
Work ON campus	-0.557	0.640	0.384	0.573
Work OFF campus	0.470	0.482	0.329	1.600
UM NOT 1st Choice	0.123	0.281	0.661	1.131
Future Direction (vs. no major or career)				
Identified major only	0.288	0.463	0.534	1.334
Identified career only	0.308	0.418	0.462	1.361
Identified both major and career	-0.608	0.328	0.064	0.544
Academics	0.431	0.237	0.068	1.539
Study Skills	-0.390	0.339	0.249	0.677
Institutional Connectedness	-0.429	0.330	0.194	0.651
General Attitude	-0.944	0.198	0.000	0.389
Finances	-0.079	0.131	0.549	0.924
Residency x Finances	0.129	0.204	0.527	1.138

Table 5. Female Transfer-Outs vs. Continuously Enrolled

For this comparison, general attitude helps distinguish female transfer-outs from females who remained continuously enrolled. A less-than-positive general attitude towards UM indicates a greater relative risk of transferring out. Specifically, for a one unit increase in general attitude, the relative risk of transferring out would be expected to decrease by a factor of 0.389 when the other variables in the model are held constant.

Residency also plays an important role in this comparison; for out-of-state respondents relative to in-state respondents, the relative risk for being a transfer-out relative to a stayer increases by a factor greater than 6.

Compared to females who were continuously enrolled, the relative risk of transferring out is also greater for those who did not know their future direction. That is, the relative risk of females reporting that they had not selected a major or identified a career direction stopping out is nearly twice as great as females saying they had selected both a major and career path.

Again, the Academics factor helps distinguish between female transfer-outs and females who stay continuously enrolled. Given a one unit increase in Academic score, the relative risk of transferring out would be 1.5 times more likely when the other variables in the model are held constant.

The results of the MLR comparing female drop-outs with females who remained continuously enrolled are presented in Table 6.

Predictor	B	Std. Error	Sig	Exp(b)
Intercept	0.889	1.520	0.559	--
Out-of-State	0.507	0.759	0.504	1.661
Race/ethnicity (vs. White)				
Black/African American	-0.183	0.441	0.678	0.833
Asian	-2.119	1.048	0.043	0.120
Hispanic	-0.029	0.615	0.963	0.971
Unknown	NA[a]	NA[a]	NA[a]	NA[a]
Work ON campus	0.920	0.443	0.038	2.510
Work OFF campus	0.912	0.453	0.044	2.490
UM NOT 1st Choice	0.089	0.354	0.801	1.093
Future Direction (vs. no major or career)				
Identified major only	0.124	0.838	0.882	1.132
Identified career only	-0.136	0.833	0.871	0.873
Identified both major and career	0.835	0.464	0.072	2.306
Academics	-0.048	0.227	0.863	0.953
Study Skills	-0.465	0.432	0.282	0.628
Institutional Connectedness	-0.518	0.374	0.166	0.596
General Attitude	-0.215	0.259	0.406	0.807
Finances	-0.256	0.224	0.253	0.774
Residency x Finances	0.139	0.270	0.608	1.149

Table 6. Female Drop-Outs vs. Continuously Enrolled

[a] The maximum likelihood estimate could not be reached for this parameter.

Although the regression coefficients associated with the employment variables are significant in the comparison of female drop-outs and stayers, the omnibus test for this effect was not statistically significant. Again, future direction helps distinguish female drop-outs from females who remained continuously enrolled. Females reporting that they had selected a major and identified a career direction are more likely to drop out than females saying they had not selected a major or career path, with their relative risk increasing by a factor of 2. Race/ethnicity also plays a role, with Asian females having a lower relative risk of dropping out as compared with White females; for White females

relative to Asian females, the relative risk for dropping out compared to staying continuously enrolled increases by a factor of 8.

Men

As indicated in Table 7, three of the predictors in the MLR help distinguish continuously enrolled males from those with other enrollment behavior: study skills, general attitude, race/ethnicity.

Effect	Model Fitting	Likelihood Ratio Test		
	-2 Log Likelihood of Reduced Model	Wald Test	DF	Sig
Intercept	988.550	0	0	--
Residency x Finances	991.446	2.896	3	0.408
Study Skills	995.507	6.957	3	0.073
Institutional Connectedness	992.763	4.213	3	0.239
General Attitude	999.506	10.956	3	0.012
Finances	989.998	1.448	3	0.694
Academics	993.740	5.190	3	0.158
Residency	993.598	5.048	3	0.168
Work ON Campus	989.003	0.453	3	0.929
Work OFF Campus	990.552	2.002	3	0.572
UM NOT 1st Choice	991.480	2.930	3	0.403
Future Direction	994.703	6.153	9	0.724
Race/ethnicity	1011.187	22.637	12	0.031

Table 7. Omnibus Test of Effects on Male Enrollment Behavior

The results of the MLR comparing male stop-outs with males who remained continuously enrolled are presented in Table 8.

Predictor	B	Std. Error	Sig	Exp(b)
Intercept	-2.961	1.429	0.038	--
Out-of-State	1.600	0.741	0.031	4.951
Race/ethnicity (vs. White)				
Black/African American	-0.559	0.759	0.461	0.572
Asian	0.020	0.483	0.967	1.020
Hispanic	-0.950	1.045	0.363	0.387
Unknown	0.954	0.506	0.059	2.596
Work ON campus	0.247	0.470	0.599	1.280
Work OFF campus	-0.694	0.758	0.360	0.500
UM NOT 1st Choice	0.278	0.315	0.376	1.321
Future Direction (vs. no major or career)				
Identified major only	-0.800	0.608	0.188	0.449
Identified career only	-0.132	0.474	0.780	0.876
Identified both major and career	-0.643	0.390	0.099	0.526
Academics	0.091	0.299	0.760	1.096
Study Skills	-0.076	0.355	0.831	0.927
Institutional Connectedness	0.570	0.357	0.110	1.768
General Attitude	-0.543	0.225	0.016	0.581
Finances	-0.187	0.164	0.254	0.830
Residency x Finances	0.309	0.225	0.169	1.362

Table 8. Male Stop-Outs vs. Continuously Enrolled

Although the regression coefficients associated with residency is significant in the comparison of male stop-outs and stayers, the omnibus test for this effect was not statistically significant. General attitude, however, plays a role, in that the relative risk of stopping out decreases as general attitude toward UM improves. Specifically, for a one-unit increase in general attitude, the relative risk of stopping out compared to staying continuously enrolled is expected to decrease by a factor of 0.581. Lastly, respondents of an unknown race/ethnicity are more likely to stop out than White respondents, though this finding may have limited practical meaning.

The results of the MLR comparing male transfer-outs with males who remained continuously enrolled are presented in Table 9.

Predictor	B	Std. Error	Sig	Exp(b)
Intercept	1.143	1.205	0.343	--
Out-of-State	0.229	0.634	0.718	1.257
Race/ethnicity (vs. White)				
Black/African American	0.358	0.456	0.432	1.431
Asian	-0.829	0.557	0.137	0.436
Hispanic	0.673	0.466	0.149	1.959
Unknown	-0.284	0.764	0.710	0.753
Work ON campus	-0.160	0.501	0.750	0.852
Work OFF campus	0.331	0.410	0.420	1.392
UM NOT 1st Choice	-0.137	0.305	0.653	0.872
Future Direction (vs. no major or career)				
Identified major only	-0.316	0.495	0.523	0.729
Identified career only	-0.409	0.478	0.392	0.664
Identified both major and career	-0.139	0.356	0.695	0.870
Academics	-0.463	0.248	0.062	0.629
Study Skills	-0.442	0.336	0.188	0.643
Institutional Connectedness	0.221	0.304	0.467	1.247
General Attitude	-0.291	0.196	0.139	0.748
Finances	-0.033	0.155	0.830	0.967
Residency x Finances	-0.149	0.203	0.464	0.862

Table 9. Male Transfer-Outs vs. Continuously Enrolled

None of the predictors help to distinguish between male respondents who transfer out and those who remain continuously enrolled. Note that although the regression coefficients associated with Academics is significant in the comparison of male transfer-outs and stayers, the omnibus test for this effect is not statistically significant.

The results of the MLR comparing male drop-outs with males who remained continuously enrolled are presented in Table 10.

Predictor	B	Std. Error	Sig	Exp(b)
Intercept	1.557	1.671	.352	--
Out-of-State	-0.454	1.077	0.673	0.635
Race/ethnicity (vs. White)				
Black/African American	1.438	0.523	0.006	4.211
Asian	0.727	0.539	0.177	2.069
Hispanic	0.771	0.689	0.263	2.163
Unknown	NA[a]	NA[a]	NA[a]	NA[a]
Work ON campus	-0.186	0.769	0.809	0.830
Work OFF campus	0.306	0.551	0.579	1.358
UM NOT 1st Choice	-0.600	0.455	0.187	0.549
Future Direction (vs. no major or career)				
Identified major only	-0.259	0.766	0.735	0.772
Identified career only	0.004	0.688	0.995	1.004
Identified both major and career	0.367	0.553	0.507	1.443
Academics	0.409	0.374	0.274	1.505
Study Skills	-1.078	0.475	0.023	0.340
Institutional Connectedness	-0.414	0.419	0.324	0.661
General Attitude	-0.524	0.242	0.031	0.592
Finances	0.080	0.287	0.780	1.083
Residency x Finances	-0.162	0.330	0.623	0.850

Table 10. Male Drop-Outs vs. Continuously Enrolled

[a] The maximum likelihood estimate could not be reached for this parameter.

For this comparison, the Study Skills factor helps distinguish male drop-outs from their continuously-enrolled counterparts. Holding all else constant, for a one-unit increase in Study Skills, the relative risk of dropping out decreases by a factor of 0.340. Put differently, the lower the male respondent's score on the Study Skills factor (i.e., "below average"), the greater his relative risk of being not enrolled.

As found in other comparisons, general attitude toward UM is an important predictor of enrollment behavior. For a unit increase in general attitude, the relative risk

of dropping out as compared to staying continuously enrolled decreases by a factor of 0.592 given the other variables in the model are held constant. Again, this means that the relative risk of being not enrolled increases as general attitude toward UM became less-than-positive.

Lastly, for Black/African American males relative to White males, of the relative risk of dropping out compared to staying continuously enrolled is expected to increase by a factor of 4.

Summary of Results

Compared with female Stayers:

Female Stop-outs

- The relative risk of stopping out was greater for those who did not know their future direction.
- The higher the female respondent's score on the Academics factor, the greater her relative risk of stopping out.
- Female respondents for whom UM was their first choice institution had a lower relative risk of stopping out.
- African American, Hispanic, and Asian women had a lower relative risk of stopping out compared with White women.

Female Transfer-outs

- The relative risk of transferring out was greater for those who did not know their future direction.
- A less-than-positive general attitude toward UM indicated a greater relative risk of transferring out.
- Out-of-state women had a greater relative risk of transferring out compared with in-state women.
- The higher the female respondent's score on the Academics factor, the greater her relative risk of transferring out.

Female Not Enrolled

- The relative risk of dropping out was greater for those who knew their future direction.
- Asian American women had a lower relative risk of being not enrolled compared with White women.

Compared with male Stayers:

Male Stop-outs

- The relative risk of stopping out increased as their general attitude toward UM was less-than- positive.

- For men of an undisclosed race, the risk of stopping out was greater than it was for White men.

Male Transfer-outs

- There were no main effect variables that distinguished between male respondents who transferred out and those who were continuously enrolled.

Male Not Enrolled

- The relative risk of being not enrolled increased as their general attitude toward UM was less-than-positive.
- For African American men, the risk of being not enrolled was greater than it was for White men.
- The lower the male respondent's score on the study skills factor (i.e., "below average"), the greater his relative risk of being not enrolled.

DISCUSSION

The present study finds that there are certain perceptions and demographics that are related to the relative risk of stopping-out, dropping-out, or transferring out as compared to being continuously enrolled. For both men and women, general attitude toward UM seems to be related to subsequent enrollment pattern. This may indicate that students can detect early on in their experience whether the campus is a good fit, mirroring research on sense of belonging and the first year experience (Hausmann, Schofield, and Woods, 2007). Similarly, race/ethnicity seemed to play a role for both men and women, which corroborates the research conducted by Hu & St. John (2001). Interestingly, Herzog (2005) had the opposite finding: race did not have a significant influence on retention. In the present study, race/ethnicity was a significant predictor for both men and women, but there was no consistent pattern of racial/ethnic group influences in enrollment outcomes.

For women, some unexpected patterns emerged. Enrollment patterns of women seem to be more complex than for men: there are more factors that can help identify those who will not stay continuously enrolled. They are at higher risk of stopping out when

they do not know where they are going (lack future direction), mirroring Cabrera, Burkum, & LaNasa's (2005) findings that educational aspirations predict retention patterns. The higher the score on the academics factor, the higher the odds of stopping out and transferring. What does it mean that female students who perceive themselves highly in academics are more at-risk to go elsewhere or to "pause" their education? For women who score high on the academics factor and lack future direction, are they going "full steam ahead" in no direction, and stopping out as a result? Additionally, if UM was not her first choice, a woman student is at a higher risk of stopping-out, but not for transferring-out. Why did she decide to return to UM? A female student is also at greater risk of transferring-out if she is a non-resident of the state. Is out-of-state tuition a concern? Is distance from home a concern? Is the culture on campus different than home?

For men, we know less from this model about what makes a difference in their enrollment outcomes. Other than general attitude and race/ethnicity that were significant for both genders, there was only one additional variable that was a significant predictor to the overall model: study skills. The lower the score on the study skills factor, the higher the odds of dropping-out. This finding mirrors several studies that demonstrate that academic abilities matter in retention studied (see, for example Tinto, 1997; Cabrera et al., 1993; Perna,1997; and Hu and St. John, 2001). For this study, does the negative relationship between perceived study skills and continuous enrollment have to do with confidence or abilities? Do they struggle with the academic rigor and then leave as a result?

Implications

Possible early interventions based on the associations observed in this investigation were brainstormed by CAWG. Some of these recommendations are listed below. However, because the associations do not suggest causality, the effectiveness of these recommendations must be investigated to determine their impact on subsequent enrollment behavior.

- Many of the issues discussed are identifiable eight weeks into the semester through a few simple questions that could be asked by an advisor or a resident assistant, and by looking at institutional records.
- Early general attitude toward UM plays an active role in subsequent enrollment patterns. Therefore, faculty, administrators, and staff can take a proactive approach by asking students first hand what is behind their attitude toward UM and what might enhance their experience.
- UM has ample resources for its undergraduate students. Making a conscious effort to guide students to these resources could positively affect their future enrollment decisions.

Future Research

This study is exploratory, and most of the variables used in the MLR model are from a survey given early in respondents' first semester. While the MLR findings offered insight into the role of certain issues in students' subsequent enrollment patterns, further questions were raised and need to be explored:

- What factors influence the role that gender plays in a student's subsequent enrollment? Why are more female students stopping out than male students? Why

are more men than women who leave UM seemingly not enrolled in higher education three years after their matriculation at UM?

- What dynamics influence the role that race/ethnicity plays in a student‘s subsequent enrollment?
- What shapes the early less-than-positive general attitude toward UM that influences a student’s subsequent enrollment?
- What role does coming to UM with self-perceived lower study skills play in a student’s subsequent departure from UM and apparently from higher education generally? The lower the male respondents’ scores on their self-assessed study skills, the higher their relative risk of being a drop-out. Does this tendency have to do with confidence or abilities? What role does coming to college with self-perceived lower study skills play not only in their departure from UM but also in their not enrolling in another institution? Did male students in the drop-out category leave school altogether because they felt they had below average skills for <u>any</u> college/university? Were these students knowledgeable of academic support resources on campus?
- What role does being undecided about one’s major or or career direction play in a female student’s subsequently deciding to stop out? Did they do so because they needed more time to decide on their field of study?
- Are there differences between students who transferred out to a two-year and a four-year institution? Can these differences help practitioners to better understand and perhaps intervene with these groups of students?

CONCLUSIONS

The analyses presented in the present study reveal that students' perceptions do matter with regard to enrollment patterns. While models that use financial aid, GPA, and other direct measures can be helpful in understanding students' enrollment patterns, it may be that instead of using a model to predict whether students will leave, an academic advisor or resident advisor could simply ask them: what is your general attitude toward our university?

Secondly, this research was a collaborative effort with a campus-wide group that engaged in dialogue about how the findings could be translated into practice. This kind of scholar-practitioner model is especially poignant in studies of retention because interventions for students who are at risk of leaving must be considered in light of campus resources. The present model allows practitioners at UM to think differently about identifying transfer-outs, stop-outs, drop-outs and continuously enrolled students and meeting their unique needs.

ACKNOWLEDGEMENTS

The authors wish to thank the members of the Campus Assessment Working Group, especially Eowyn Ellison and the Beginnings Subgroup for their work with the BSS, and the Retention Subgroup for their role in the development of this project, modeling approach, and initial analyses and reporting. We also wish to acknowledge IRPA staff members Michelle Appel and John Dobrosielski for their assistance with the NSC data.

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