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The Effects of Previous Exposure to Independent Study Courses and Open Courseware on Withdrawal from Subsequent Independent Study Courses

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ABSTRACT

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Subsequent Independent Study Courses

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This study examined factors affecting withdrawal rates using a selection of high school and college-level courses from BYU Independent Study (BYU IS). Exposure to BYU Open Courseware (OCW) curriculum prior to registration had no significant effect on withdrawal rates. Prior enrollment in a BYU IS course had a statistically significant positive effect on withdrawal rates, a surprising result. Further HLM analysis of 83,707 students indicated that at least some of the variability in student withdrawal behavior at the high school level was influenced by prior enrollment, the online course format, and courses offered in the fine arts. For both high school and college courses, students enrolled in an online (rather than paper-based "correspondence") course were less likely to withdraw than their paper-based peers. Finally, for college courses, students enrolled in lower division courses were more likely to withdraw from their courses. Students enrolled in Career and Counseling, Engineering Technology, Life Sciences, Family Home and Social Sciences, College of Fine Arts and Communications, Marriott School of Business, or Religious Education courses were less likely to withdraw from their courses than students enrolling in courses from other colleges.

Keywords: withdrawal, Open Courseware, OCW, retention, distance learning, online learning.

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Chapter 1: Introduction

Access to meaningful post-secondary education is a critical prerequisite for people seeking to enter a variety of professions. According to the United States Department of Labor, twelve of the twenty fastest growing occupations require college degrees (2010). In his 2012 State of the Union address, President Barack Obama stated, "higher education can't be a luxury" (para. 42), and students should not be "allowed to walk away from their education" (para, 38). Despite these strong statements, over 40% of post-secondary students who begin the path to higher education give up along the way (Matrix Knowledge Group and American Institute for Research, 2012).

Withdrawal rates at BYU Independent Study (BYU IS) do not differ significantly from national norms, and this issue is of grave concern for BYU IS. In addition to pedagogical and ideological concerns, there are pragmatic reasons for BYU IS to be concerned about student retention. In a distance-education course, an enrollment triggers a series of cost-inducing events such as the distribution of receipts, manuals, and materials, as well as labor costs, record keeping, and support costs. There are also costs associated with processing a student's withdrawal and providing refunds. In short, withdrawals cost BYU IS money.

There is a cost that is even more significant than monetary losses. Students who withdraw from a course because the course does not meet their needs may take away a negative view of the courses or programs offered by BYU IS. If we view enrollment as a customer relationship, business literature suggests that trust between customer and provider is a critical component of a continuing relationship. In addition to missed potential learning, students

dissatisfied with a course experience are less loyal customers and may speak, blog, or tweet about their negative experience (Gounaris, 2005).

Possible Causes and Solutions for Course Withdrawal

Researchers interested in online course retention have identified a link between course curriculum and student withdrawal. After surveying online students, Packham, Jones, Miller, and Thomas (2004) reported that while the number one factor contributing to withdrawal had to do with personal and business circumstances, the number two factor in the decision to withdraw from an online course was that the course itself was not a good fit. After reviewing relevant literature, Diaz (2002) identified course quality, curriculum, and difficulty level—all aspects of the course content itself—as significant factors in withdrawals. Nash (2004) and Packham et al. (2004) reported that withdrawals frequently spring from student dissatisfaction with course design, structure, or content.

If student dissatisfaction with course materials, workload, or course difficulty has led to retention problems, it is reasonable to suppose that exposing potential enrollees to course materials before they registered could reduce the number of students withdrawing from courses by preventing them for registering for poor-fitting courses in the first place. If students had the ability to preview course designs, structures, and content before enrolling, perhaps withdrawals due to misalignment in student desires and course designs could be mitigated.

One mechanism for providing these detailed course previews to the public is open courseware (OCW) publication. OCW publication makes course content freely available to anyone online, and grants users the rights to reuse, revise, remix, and redistribute content. Openly publishing courses has the potential to reduce withdrawal rates because students could preview the content and gauge their level of preparation and interest before they enroll,

preventing them from making poor enrollment choices, having potentially negative experiences with BYU IS, and costing BYU IS precious resources.

Research Questions

This study examined the post-enrollment behavior of students who had prior exposure to IS curriculum either through OCW exposure or enrollment in a BYU IS course within one year prior to the study period. The Method section has detailed the data sources and data collection information as well as explained the study methods and analyses we employed to answer the four research questions.

The specific questions addressed include:

1. How did the rate of withdrawal for students who viewed BYU OCW content prior to enrollment compare with the rate of withdrawal for students who did not view BYU OCW courseware prior to enrollment?
2. How did the rate of withdrawal for students with a prior enrollment in a BYU IS course compare with the rate of withdrawal for students who did not have a prior enrollment?

Given available data, specific follow-up questions included:

3. For high school courses, how did the relationship between prior exposure to IS course materials and withdrawal status vary as a function of (a) discipline, and (b) credit hours?
4. For college courses, how did the relationship between prior exposure to IS course materials and withdrawal status vary as a function of (a) college, (b) credit hours, and (c) target audience?

Chapter 2: Literature Review

Studies dating back to the late 1960s have examined the reasons for attrition and successful degree completion (Bean, 1980; Billings, 1989; Billingham & Travaglini, 1981; Coggins, 1988; Donehower, 1968; Fairbanks, 1968; Glatter, 1969; Moore, 1976; Spencer, 1980; Tinto, 1975). Early theories focused on socialization and the interplay between a student's level of preparation and background and the college experience (Bean, 1980; Pascarelli and Terenzini, 1979; Tinto, 1975). Therefore, this chapter begins with research related to withdrawals generally, then focuses on studies that directly concern themselves with institutionally-controlled, course-related factors that may impact withdrawal rates for distance and online students. The review ends with a specific survey of the few studies on open courseware and withdrawals, open courseware and BYU IS, and BYU IS and withdrawals.

Factors Influencing Withdrawal Rates Based on Tinto's Theoretical Model

Perhaps one of the most cited models in the withdrawal literature is the work of Tinto (1975), who proposed that a theoretical framework "seek(s) to explain, not simply to describe, the processes that bring individuals to leave institutions of higher education" (p. 89). Though his initial work is not based on an analysis of any specific sample of students withdrawing from any particular institution, according to Google Scholar, his 1975 review of research has been cited 2,818 times. He indicated that the process of drop-out (withdrawal) can be "viewed as a longitudinal process of interactions between the individual and the academic and social systems of the college during which a person's experiences in those systems (as measured by his normative and structural integration) continually modify his goal and institutional commitments in ways which lead to persistence and/or to varying forms of dropout" (p. 94). This theoretical model provided the foundation for the later work of Bean (1980), Grate, (2000), Pascarella and

Terenzini (1979), Packham et al. (2004), and many others. Following Tinto's general framework, research in student withdrawal behavior tends to address factors as contributing to a lack of persistence into three general categories, including factors:

- affected by the student's background, preparation and capability (aptitude, attitudes, preparation, socioeconomic status);
- related to circumstances (stress at work, illness or accident, family issues, community issues); and
- controlled by the institution offering the courses/programs (course or program quality, policies and programs which support successful completion, an environment that promotes loyalty, and a feeling of belonging).

In his review of 70 studies on the topic of student retention and withdrawals, Grate (2000) calls these three factors the "'institution-environment-student' triangle" (p. 8).

Student characteristics. Perhaps it is intuitive that the student him or herself has a great deal of influence upon whether or not a withdrawal takes place. The major themes that emerged when considering student characteristics and their impact on withdrawal are grade-point average, socioeconomic status, and student motivations or perceptions. Fishman and Pasanella's 1960 review of literature examined 580 studies from between 1949 and 1959 and found that 70 percent of them linked academic performance (grade point average) to successful completion of college programs. Summerskill (1962) reviewed 35 retention studies, noting a strong correlation between first semester college grades and persistence. Later, Mallette and Cabrera (1991) found that grades account for a statistically significant amount of the variance between persisters and nonpersisters ($B = 1.575$, $df = 846$, $p < .05$).

In addition to grade point average, researchers have looked to student attitudes and values as predictors of withdrawal. Bean's 1982 extension of Tinto's (1975) model explored factors impacting withdrawal behavior by administering surveys to 1,513 college freshman, gathering information about student attitudes. His proposed model included 10 factors impacting student persistence: (a) intent to leave, (b) perceived practical value, (c) certainty of choice, (d) loyalty, (e) grades, (f) courses offered, (g) educational goals, (h) major and job certainty, (i) opportunity to attend a different college, and (j) family approval of the college.

Of the 10 factors, most of them are individual student characteristics and attitudes, and of all the factors examined, intent to leave—that is, a student who entered the university with the intent to drop out or transfer in the next year—accounted for 39.9% of the variance in the model. Cabrera, Nora, and Castenada (1993) conducted a longitudinal study of 446 college freshman who were surveyed at admittance for attitudes, then followed throughout their first year of college. They compared the models proposed by Bean (1980) and Tinto (1975) and determined that a substantial amount of the variance in student persistence could be explained by two factors: (a) intent to leave, and (b) grades.

Fishman and Pasanella (1960) reviewed 23 studies of attrition looking for the impact of student demographics on attrition. They noted a low median correlation (.13) between socioeconomic status and student success. In 1986, Ethington and Smart conducted a longitudinal study of 6,242 men and women over a period of 10 years to determine which variables affect college persistence. They found that a student's background had a direct impact on their persistence in undergraduate education, and that influence continued to impact progress into graduate school, albeit indirectly. In addition to student background, student study habits have been found to impact his or her withdrawal behavior. In a study of college freshman,

Morris, Finnegan, and Wu (2005) compared the means of 354 undergraduate students and discovered a connection between time spent engaging with online content and successful completion of an online course ($t = -10.41$, $p < .00$).

Student environment and circumstances. A student may possess all the characteristics needed to predict persistence in a course or program and still find themselves in circumstances that make completing difficult. Kohen, Nestel, and Karmas (1978) found that working between ten and thirty-five hours per week had a statistically significant effect on withdrawal, that is, part-time working students were more likely to withdraw. They speculated that the added pressure of working derails some students, but explained the lack of significance for students who work 35 hours and over by postulating that students who work full time are more dedicated and organized than those who do not work more than 35 hours. Tello's (2002) analysis of 760 students in an online program indicated that of all the reasons given by students who voluntarily withdrew from their course, 30% of them identify work commitments as the primary reason for withdrawal. Family commitments accounted for 18% of the reasons given for withdrawal in the same study. Tello also noted that 62% of the reasons given for withdrawal have to do with situational barriers to course completion such as work or family issues.

In a similar, though less specific vein, in a qualitative study of 20 online female students in graduate and undergraduate programs, Müller (2008) found "multiple responsibilities" (p. 4) a major barrier to successful completion of an online course. Packham et al. (2004) conducted a qualitative study of 44 students enrolled in an e-learning college in Wales. After interviewing 20 of the students who did not successfully complete their program, the researchers identified eight main reasons for student withdrawal. The top reason for withdrawal was "job or business changed/increasing pressure of work" (p. 339). In a similar study of 228 nontraditional

university students, Gilardi and Guglielmetti (2011) identified student employment as a significant predictor of withdrawal. They found that working students' rates of withdrawal (49%) were more than twice the rate of withdrawal for non-working students (15.7%) and offered the explanation that time constraints may have played a role in the student's decision to withdraw. Finally, Stratten, O'Toole, and Wetzel (2008) reviewed personal changes in circumstances as a factor in withdrawals. They analyzed longitudinal data for 4,226 individuals using a probit model—regression with a dichotomous dependent variable. They found that if a woman had a child, she increased the likelihood that she would drop out of her educational program by 367%, (an odds ratio of 4.6672). The same study found that if a man had a child, he increased the likelihood of dropping out of his educational program by 7720% (an odds ratio of 78.1993).

Institutionally-controlled factors. Institutionally-controlled variables including counseling support, campus climate, student activity programs, and academic support, as well as the quality and consistency of the academic courses and programs themselves have all been examined in an effort to explain withdrawal behaviors. In 1983, Pascarella and Terenzini conducted a path analysis in an attempt to "test the validity of Tinto's model" (p. 215) and identify factors that lead to withdrawal. The researchers administered surveys to 763 college freshman and, modeling survey responses in conjunction with school performance data, they determined that only by adding the academic integration factors suggested by Tinto (1975) could they account for even a modest amount of the variance in student withdrawal behavior. These academic integration factors consider student attitudes toward and participation in university programs as well as student achievement on campus. Their findings "suggest that what happens to a student after arrival on campus may have greater impact on persistence than either the

background characteristics or personal commitments to the institution and the goal of graduation brought to college" (p. 219).

Tinto's model also proposed that social integration was an important factor to consider. Ethington and Smart's 1986 study of 6,242 men and women found that academic and social integration had a high correlation with persistence through graduate school. Morris, Smith and Cejda (2003) proposed another dimension of social integration with their study of spiritual integration. They surveyed 430 incoming freshman at a Christian university to determine the degree to which a student's scores on a spiritual integration scale could predict that student's persistence at the university. Using logistic regression they found that spiritual integration accounted for a statistically significant amount of the variance in persistence ($B=0.256$, $p > .000$). They suggest that whether or not a student is comfortable in the college environment they have selected plays a role in whether or not the student withdraws from the institution.

Bryk and Thum (1989) in an HLM analysis of 4,450 students in 160 schools, identified smaller schools as a significant contributor to persistence. However, in 1990, Adams and Becker administered surveys to 4,623 new freshmen at several universities. Their probit model indicated that students enrolled in large classes were less likely to withdraw.

Other factors on the college campus can also affect student withdrawal behavior. Metzner (1989) found statistically significant effects for academic advising, indicating that students who received academic advising in their freshmen year were less likely to withdraw from their programs than students who did not. In her multiple regression study of 2,400 college freshmen, she found that advising accounted for 2% of the total variance in withdrawal. Chabot College's Office of Institutional Research conducted an internal study in 1996 and discovered

that students who received matriculation counseling services had a much higher rate of persistence than students who did not (Arnold & Ugale, 1996).

In addition to counseling services, there are instructional services that can be offered to students to improve persistence. Faculty involvement has been shown to have an impact on student withdrawal behavior. Using survey responses and demographic data from 777 randomly selected freshman, Pascarella and Terenzini (1979) identified lack of positive faculty relationships as a statistically significant predictor of withdrawal. Considering a more recent study that addressed online students in particular, Huett, Kalinowski, Moller, and Huett (2008) identified a significant difference in the drop rates for students contacted regularly about their studies via email. Students who received the additional email support withdrew at a rate of 4.76% while students who did not withdrew at a rate of 15.52%.

Another institutional variable which has been shown to impact student withdrawal is curriculum itself. Fozdar, Kumar, and Kannon (2006) surveyed 68 online students who withdrew from their university programs to discover why they had discontinued their studies. Of the respondents, 47% indicated that they withdrew because the curriculum was too difficult to study at a distance. Student perception of curriculum impacted withdrawal behaviors in Tello's (2002) research as well. He showed that 39% of the reasons given by the 62 students withdrawing from their program were related to items controlled by the institution, such as course content, instructor quality, or program quality.

From Tinto's early work to more current studies on online learning, most withdrawal research has consisted of surveying students, administering questionnaires designed to evaluate constructs such as academic integration, and/or comparing demographic variables to determine why some students in a course or program withdrew while others persisted. From qualitative

analyses of student surveys (Packham et al., 2004) to evaluation of pathways to completion from historical data (Robinson, 2004), there are many approaches to answering questions about persistence. Given the wide range of issues that can impact student success, this is expected. Grate (2000) observed "attempts to fit models or formulae to the question of student retention are likely to remain unsuccessful because too many factors and variables, interacting with one another in an unpredictable and idiosyncratic fashion, are involved" (p.16).

Rather than address the entire spectrum of reasons why students withdraw from courses, I will focus more narrowly on concrete aspects of the student experience in a distance learning course that an institution can directly control—the curriculum itself, as well as mechanisms students use to sign up for the right course, and prepare themselves to succeed in that course. There are many ways that these factors have been shown to impact retention, including (a) course quality and effective design, (b) student perception of their own ability to complete the course materials once they have enrolled, and (c) students' prior experience with the learning platform or typical course structure offered by the institution (Chacon-duque, 1985; de Freitas & Lynch, 1986; Nash, 2004; Packham et al., 2004).

Curriculum quality. Rovai (2003) discussed generally the matter of improving curriculum to benefit distance learners, but made recommendations that were rather nebulous, such as creating a community spirit and establishing trust between the learners. Other researchers have provided more concrete statements about the curriculum itself. For example, Chacon-duque (1985) stated that persistence was "enhanced by quality of instructional presentations in textbooks and study guides [and] variety of media" (para. 4). Packham, et al. (2004) studied 44 students attending an e-learning college in Wales. They administered surveys, conducted focus groups, and analyzed demographic data, concluding that retention and

persistence in an online program is largely attributable to eight primary causes and four of those causes have to do with the content or quality of the course materials themselves. Ivankova and Stick (2007) conducted a mixed-methods study of 258 graduate students engaged in a distance education program, surveying them initially, and then selecting four representative students for a case study. One of the significant factors identified by the team was "quality of academic experiences" (p. 93). Aragon and Johnson (2008) surveyed 305 students, then combined analysis of demographic and student performance data with a synthesis of survey responses. They found that 28% of survey respondents (18 students) who withdrew from their courses pointed to course design as a factor in their decision. These researchers identified a connection between withdrawal rates and curriculum quality.

Student perception of course or program. Closely related to curriculum quality is student perception of the course they are taking. A course may be of high quality and well-designed, but the research suggests that if the course is not a good fit for a student or does not meet student expectations, withdrawal rates increase. In studying traditional student motivations for withdrawing, Phythian and Clements (1980) identified three reasons for noncompletion. The first two are concerns with employment and concerns with domestic problems, but the third is that the course was too difficult.

Literature specifically addressing distance student attrition yielded similar results. Sweet's 1986 survey of 356 learners in an adult distance education program explained at least a part of the variance in persistence rates with student ratings of course materials. Billings' 1989 analysis acknowledges satisfaction with course materials as a factor in course completion for distance education students. Packham et al. (2004), in focus group interviews with 20 students who withdrew from an e-college program, identified eight factors which influenced their

decisions to withdraw. The most commonly listed factor was job related stress identified by 40% of the surveyed students as the primary reason for withdrawal. However, the second and third primary reason for withdrawal had to do with student perceptions of coursework. Their findings identified the students' perception that the course "was not the right course" (p. 339) as the second primary reason for withdrawal, followed closely by "amount of coursework" (p. 339). Tello's (2002) analysis of 760 students in an online program also found that of all the reasons given for withdrawal, the second most frequently given reason (23% of respondents) was that the course was not what they had expected. (The primary reason 30% of the students gave for withdrawing was work commitments.)

Another perception problem distance learning programs face is the notion that distance-education courses are not as rigorous as face-to-face classes, though the meta-analysis Bernard, et al. (2004) conducted of 255 studies shows no significant difference. Unfortunately for online and distance learning programs, students' notion that an online course will be easier seems to persist. Nash's 2005 look at students participating in the Coastline Community College online program cross-tabulated results of a 478 person survey with completion statistics. He found that 10% of the surveyed students who failed or dropped their online course "thought the course would be easier" (Table 1, row 3).

Prior exposure to online or distance education courses. Some of the withdrawal research has hinted that students with prior exposure to online or distance learning are more likely to complete. Dupin-Bryant (2004) administered surveys to 464 online course students to determine if a prescriptive model for online students could be developed. Combining survey responses with demographic data, she then performed a discriminant analysis to identify statistically significant predictors of completion or non-completion. Her findings indicate that

students with prior exposure to online curriculum were less likely to withdraw from an online course. This conclusion has also been made by Hiltz and Shea (2005) who noted that the "number of distance learning courses previously taken relates positively to course completion" (p. 155). Similarly, Welsh (2007) conducted a logistic regression using data from 926 online community college students and discovered that enrollment in another online course was a statistically significant predictor of completion. In another study of 305 online students, Aragon and Johnson (2007) indicated that "completers (M = 4.32, SD = 2.63) enrolled in more online courses than noncompleters (M = 1.48, SD = 2.48)" (p. 148). It seems intuitive that students with prior exposure to the online learning method would be more comfortable in an online course thus less likely to withdraw.

Open Courseware (OCW)

In October of 2002, the Massachusetts Institute of Technology (MIT) opened its course content to the world with a program called OpenCourseware (OCW). OCW courses make course content freely available to anyone. Anyone with an Internet connection can view MIT OCW courses and learn from distinguished professors in a variety of subjects (reuse), adapt MIT course content to create their own versions of learning objects or courses (revise and remix), and share these learning materials with others (redistribute). MIT's stated goal for the project is "to use the Internet in pursuit of MIT's mission—to advance knowledge and educate students" (n.d.a). MIT has since expanded its OCW offering to over 1,900 courses—in effect, its entire undergraduate and graduate catalog.

OCW usage. The interest in open content seems to be increasing with time. According the MIT OCW website, there have been 96,000,000 visits from virtually every country in the world (n.d.b). One OCW course features video of physics Professor Walter Lewin. Professor

Lewin's videos were downloaded over one million times and pushed Professor Lewin's Classical Mechanics videos into the number one spot at iTunes U (MIT, 2008). Individual and institutional interest is not limited to the MIT OCW project. The Utah State University OCW project reported 550,000 page views in 2009. Since MIT's launch, over 200 institutions have joined together to form the OpenCourseware Consortium (ocw.org) and have now published over 13,000 courses in several languages (Yang, 2010).

OCW and withdrawal rates. How can these OCW materials impact withdrawal rates? In addition to analyzing web-metrics, interviewing participants, and reviewing email feedback, MIT administered surveys to 4,115 OCW viewers in 2005 to find out more about who used the content and why. According to MIT's evaluation data, user categories included self-learners (46.5%), students (32%), educators (16.4%), and others (5.2%) (2006). The MIT OCW Evaluation Report hints that students may be using MIT OCW materials for pre-registration planning. Of the self-reported "student" learners, 20% indicated that they used the MIT courseware to plan their educational programs (MIT Evaluation, 2006).

Presumably, a student who can view syllabi and course content makes a more informed decision about the college he or she wishes to attend. Consider the business experience of online retailers such as Amazon.com. In 2002 Amazon.com stock had dropped from over $100 per share in 2000 to less than 10$ per share in 2001. Amazon executives indicated that a focus on the online customer experience, including the *Search Inside This Book* feature, helped them to turn their first-ever non-holiday season profit shortly after introducing the feature in October of 2004 (Frey & Cook, 2004). According to MSN Money (http://investing.money.msn.com/investments/stock-price?symbol=AMZN, accessed April 1, 2012), Amazon.com stock today is worth $199.17 per share.

Perhaps OCW could serve a purpose similar to *Search Inside This Book.* I could identify no literature that directly tied OCW consumption or even OCW availability to a reduction in withdrawals. However, the leadership at the University of Massachusetts at Boston felt that OCW offerings would have a direct impact on student persistence, announcing in 2009 that it would "expand the university's OpenCourseware offerings, with the aim of increasing the retention rate" (UMass, 2009, para. 1). Supporters of the movement feel we are moving into "a knowledge ecology with unfettered access to educational resources" (Batson, et al., 2010, p. 90).

The knowledge ecology notwithstanding, it would be helpful to identify the discrete benefits of opening curriculum in an OCW format. The financial realities of offering OCW are beginning to affect some of the OCW programs that blossomed after MIT's groundbreaking announcement. For example, Utah State University, an early proponent of the OCW movement, lost its funding and temporarily suspended further work on OCW offerings (Yang, 2010). Some scholars argue that the sustainability issue is a moot point and that institutions will be required to participate in the OCW movement through government legislation and public demand (Matkin, 2010; Wiley, 2006; Wiley, 2009). However, in light of funding cuts and budget difficulties plaguing educational institutions across the country, it seems logical that those with content to offer may hesitate to begin an OCW program without a sustainable funding model and an idea what pedagogical and financial benefits may result from opening the curriculum (Johnson & de Vise, 2010).

OCW and BYU Independent Study. In 2009, BYU IS began a limited, pilot OCW program, clearly focused on understanding the financial impact of the OCW program on BYU IS. The BYU IS program is self-funding, meaning that its revenue must cover all of its operating costs. The program is not supported by budget allocations from the university or the university's

sponsoring organization, The Church of Jesus Christ of Latter-day Saints. Therefore, administrators are appropriately cautious on the financial point. They need to know what the actual costs of opening and maintaining an OCW program are, and how the existence of an OCW course affects potential paid enrollments in that same course offered for credit.

Johansen and Wiley recently addressed these topics, specifically, the impact of creating OCW versions of courses, and the subsequent effect of viewing OCW courseware on paid enrollments (2010). They concluded the open publishing of courseware could be sustainable and even revenue positive (Johansen and Wiley, 2010). Johansen also cautions that further research must be done to determine more specifically the risks and benefits of providing access to OCW courseware. One study he suggested is an examination of the influence of OCW on post-enrollment student behavior (Johansen, 2009).

Possible impact of BYU Independent Study OCW on withdrawal. If, as the MIT Evaluation hints and other organizations have assumed, OCW availability assists students in preregistration planning, then one possible piece of the withdrawal puzzle could be allowing access to free and OCW content that BYU IS offers. BYU IS recorded 165,026 total enrollments in the year 2008. If even 10% of these students withdrew, that represents over 16,000 students who may not have achieved their desired goals when they enrolled in one of the 591 university, high school, and personal enrichment distance-learning courses (Johansen, 2009). These students are not seeking a BYU IS degree and will not be considered in part of a program completion study. The BYU IS program is not a program which offers degrees; it is a service organization which provides curriculum to assist students in completing other institutional programs. BYU students do make up a percentage of BYU IS enrollments, but the courses also serve a variety of other students as well (personal communication, R. Bryant, February 3, 2012).

The BYU IS program's goal is assisting students in completing one course at a time. To that end, in 2011, Jeffrey E. Hoyt and Duane Lemley of the Division of Continuing Education conducted an internal review of withdrawal in BYU IS courses. The team sent a simple three-question survey to 2,800 BYU IS students who had withdrawn from a high school or a university-level course asking about factors that led to withdrawal. There were 539 responses to the survey. I have included the data from Hoyt and Lemley's survey (See Table 1).

Three of the reasons they identified pertain directly to institutionally-controlled, course-related issues considered earlier: (a) academic or course difficulty; (b) quality concerns; and (c) curriculum alignment. BYU IS conducted the withdrawal study in part to address issues related to student attrition, seeking ways to mitigate the problem of attrition through a variety of strategies, including but not limited to making content available for students to preview. Hoyt and Lemley's study referenced plans to develop and deploy a readiness assessment to help students determine if they are adequately prepared to take an online course and to conduct future studies to improve program withdrawal rates. They also discussed improved catalog descriptions to assist students in selecting the correct course. A more informed enrollment decision could lead to lower withdrawal rates.

Perhaps students who could preview a course's academic content or quality could make more informed enrollment decisions and avoid courses which were a poor fit for their expectations and needs. Even the more nebulous "registration decisions" factor cited by students in Hoyt and Lemley's study could be influenced by pre-registration exposure to curriculum. Students who have trouble with the online format or think a course will be too hard at a distance might have been aided by a preregistration look at what would be expected.

Table 1

Frequency of Reasons for Withdrawing from IS Courses

Reasons	High School		University	
	Students	%	Students	%
Registration decisions	93	31.3	65	26.9
Time management or not enough time	50	16.8	35	14.5
Academic/course difficulty	47	15.8	37	15.3
Learning preferences not met (need for instructor, deadlines, social experience)	36	12.1	20	8.3
Quality concerns	30	10.1	12	5.0
Alternative provider used instead	29	9.8	19	7.9
Credit not accepted	19	6.4	7	2.9
Motivation (lack of it)	15	5.1	9	3.7
Other	15	5.1	8	3.3
Testing	9	3.0	2	0.8
Technology problems	7	2.4	6	2.5
Cost	6	2.0	19	7.9
Personal issues	5	1.7	16	6.6
Curriculum alignment	4	1.3	0	0.0
Customer service	3	1.0	4	1.7

Note: Students often reported more than one reason

If, as the literature suggests, prior exposure to curriculum leads to lower withdrawal rates, OCW is one way to expose students to said curriculum. Given the mission of BYU IS to serve students one course at a time, a better previewing service could help students align their own academic goals and the requirements of their home institution, wherever that might be, with their BYU IS curriculum choice. These questions should be explored, so as to provide the best service possible to BYU IS distance education students.

Chapter 3: Method

The goals of the current study are to answer the following questions:

1. How did the rate of withdrawal for students who viewed BYU OCW content prior to enrollment compare with the rate of withdrawal for students who did not view BYU OCW courseware prior to enrollment?
2. How did the rate of withdrawal for students with a prior enrollment in a BYU IS course compare with the rate of withdrawal for students who did not have a prior enrollment?
3. For high school courses, how did the relationship between prior exposure to IS course materials and withdrawal status vary as a function of (a) discipline, and (b) credit hours?
4. For college courses, how did the relationship between prior exposure to IS course materials and withdrawal status vary as a function of (a) college, (b) credit hours, and (c) target audience?

The remainder of this chapter describes the methodology that will be used to address the questions at the heart of this study.

Terminology

Many of the researchers in persistence, withdrawal, and retention have discussed the variety of terminology and the lack of consistency in calculating or even defining withdrawal rates (Hawkins & Barbour, 2010; Howell, Laws, & Lindsay, 2004; Saba, 1998). In the BYU IS context, "withdrawal" constituted intentional removal of one's registration from a specific

distance-learning course—a *formal* withdrawal. BYU IS does not count as withdrawals students who enroll and never complete or those who complete but do so with a failing grade.

Study Limitations and Purpose

This study only considered factors controlled by the institution offering the course, specifically examining course-level variables which influenced withdrawal from a course. The study examined student exposure to curriculum prior to registration and the effect of this prior exposu re on the event of withdrawal itself. Ignoring student preparation, social belonging, student circumstances and other considerations, this study asked if exposure to course materials before enrollment affected the overall withdrawal rate in BYU IS courses.

In addition to these core questions, the study also covered exploratory ground by comparing rates of withdrawal between courses offered (a) from various disciplines, (b) in paper and online contexts, (c) for upper- versus lower-classmen, and (d) for more credit hours. All of these factors are course-related considerations. If curriculum expectations and course difficulty are a factor as Packham et al. (2004), Nash (2004), and others suggested, then preregistration exposure to curriculum and appropriate support for students enrolling in various courses based on discipline, course format, and so forth might partially mitigate the persistence problem. If there was a reduction in the withdrawal rate upon pre-enrollment exposure to any BYU IS curriculum through OCW or prior registration, then opening courseware via OCW may provide a simple way to address at least one aspect of the withdrawal and retention problem. If there is an increase in withdrawal rate for students selecting a particular format or discipline, then additional support could be offered to those students.

Data Sources

Data to answer the study questions was gathered from two different archival sources: (a) a MySQL database and (b) a custom programmed RS6000 brand server system developed and maintained by BYU Independent Study. More specific details about the types of data collected and the steps taken to prepare the data for this study follow.

OCW visits, enrollments, and withdrawals. I gathered the data harvested to answer Question 1 from a MySQL database programmed by BYU IS employees to capture information about the students visiting six courses offered in an OCW format. The six courses available in this format are Geography 41, Earth 41, Government 45, Business Management 418, School of Family Life 110, and Theater and Media Arts 150. These courses represented low, mid-range, and high-enrolling courses from the high school and college portfolios and cover a variety of disciplines with the six courses.

In order to track the behavior of potential students visiting these six courses, BYU IS programmers used various technologies such as cookies and Google Analytics, to track users who visited OCW courses throughout their OCW experience. If a student used a *click to enroll* button, the system noted this information in the database and recorded the registration. If a student looked at OCW materials, a cookie indicated that they had visited an OCW course. If that same user subsequently visited the registration pages and enrolled in a BYU IS course, the cookie triggered a tracking event and the OCW database also noted this registration. At the end of the study period, BYU IS recorded 480 unique enrollments by students who had viewed OCW prior to enrollment. The system tracked the student's name, the name of the OCW course that he or she viewed, the registration code for the courses he or she subsequently enrolled in, and other demographic data. I verified each entry in the OCW database by looking up the recorded

registration codes and ensuring that the students listed had actually enrolled in the course indicated and identified which of the 480 students later withdrew from the course they had enrolled in. I also harvested student identification numbers and unique student/course identifiers from the registration system.

BYU IS enrollments and withdrawals. BYU IS used an RS6000 brand server system during the study period. For the purposes of this study, I obtained the RS6000 system data from May 9, 2008 through December 23, 2010 (the last month BYU IS used the system) from the Computer Operations Department of the Division of Continuing Education. They provided the information in a .CSV file which contained unique person identifiers, unique person/course identifiers, the course name, the course section number, pertinent dates such as enrollment and completion, as well as demographic information and course-performance indicators including course statuses, given as Withdraw, Expire, Complete, and Transfer. The initial data file included 357,156 individual enrollment records.

Data Preparation

After receiving the initial data file, some manipulation was necessary to carry out the desired analyses. In order to answer Questions 2, 3 and 4, all of which required identification of students with a prior enrollment in a BYU IS course, I requested the records for the year prior to the study period so that I could determine which students had enrolled in a BYU IS course in the previous year. I sorted the data by student identifier, then by date of enrollment. I determined which students had enrolled in a course prior to the study period using SPSS and a formula which compared the student identifier to the prior student identifier line in the dataset. If the difference between the numbers was "0," (the student identifier numbers were the same) then the record was flagged with a "1" for prior enrollment. If the difference between the two numbers

was anything other than "0," then the record was flagged with a "0" for no prior enrollment. Once this variable was calculated, I eliminated all the enrollments before the study period. At this point, I also eliminated student records with missing or obviously erroneous data, such as an enrollment date of 2020 or an age of 137. Additionally, I eliminated enrollments with the "test student" identifier that BYU IS used for internal testing purposes.

After test student enrollments were eliminated, the dataset included 134,633 enrollments for the period from May 9, 2009, to May 9, 2010. At this point I sorted the data by student identifier and date of enrollment. I retained the first enrollment for each student during the study period and all additional enrollments for that student were eliminated. The remaining dataset included 83,774 unique individual student enrollments in all courses. I then eliminated all non-standard enrollments (enrollments in non-credit courses or directed research courses not available to the general public) from the dataset which left 83,707 enrollments for the study.

Description of Final Dataset

This study examined the archival records for 83,707 independent study enrollments: 68,803 students in high school courses and 14,904 students in university-level courses. Of these students, 1,977 students enrolled in the six courses which included an OCW offering, and 480 students viewed OCW offerings then went on to enroll in a BYU IS course. Of the 480 OCW viewers, only 45 of these students subsequently enrolled in one of the six OCW courses. The average age of the students in the dataset was 19.1. The youngest student in the dataset was 10, and the oldest student 94. Gender was approximately equally split with 48.4% female students and 51.6% male students. Specifics about the research analyses for each of the four questions follows in the Research Analyses section.

Research Analyses in Regard to the Questions

In order to analyze the factors which might influence student withdrawals, I used two main approaches, initially testing proportions of students who did and did not formally withdraw from their courses and then narrowing in on specific groups of students and specific course level factors which could influence withdrawals for each population using Hierarchical Linear Modeling. Specifics about the approach used to answer each of the questions follows.

Identifying OCW impact. Question 1 addressed the effects of OCW upon BYU IS withdrawals. To answer this question, I extracted enrollment information for all six OCW courses during the study period from the RS6000 and the OCW databases. Question 1 examined the proportion of students who viewed an OCW course prior to enrollment that did and did not withdraw from a BYU IS course, in an attempt to determine whether OCW use affected withdrawal rate. To compare the withdrawal rates for this group with the group that did not view OCW courses prior to enrollment, I performed a z-test of proportions.

Determining effect of prior enrollment. Question 2 addressed the influence of prior enrollment upon BYU IS withdrawals. To answer this question, I extracted enrollment information for all BYU IS enrollments during the study period from the RS6000 data files. Question 2 examined the proportion of withdrawing students who did and did not register in a course within the year prior. To compare the proportion of withdrawals for the two groups, I performed a *z*-test of proportions.

Exploring variability. Questions 3 and 4 sought to understand the factors which may have influenced the variability in withdrawal rates and obtain more precision in describing the sources of variability in factors related to course. The initial *z*-test indicated a significant difference between the withdrawal rates of students who had a prior enrollment and students who

did not; however, the *z*-test did not give me information about how the withdrawal rates might different between various student groups.

To analyze these group differences, rather than perform a typical regression—which assumes that the measurements are independent—I elected to model the data using Hierarchical Linear Modeling. Using HLM addresses differences in students' withdrawal behaviors that can be influenced by course-level groups such as the college department sponsoring the course taken (a math course versus a humanities course) or the course's target audience (a lower-division course versus an upper-division course). Assuming independence when cases are not actually independent may inflate the size of the standard error and increase the chance of observing an unwarranted relationship of statistical significance (Bickel, 2007). In addition, if the effect of group membership is not considered, the analysis could miss important group effects (Goldstein, 1999, Raudenbush & Bryk, 2002).

In addition to reducing the chance of Type I error or missing important cluster effects, the HLM method took advantage of the larger data set and allowed closer examination of the behavior and characteristics of withdrawing students, factoring out variance due to personal characteristics such as gender, age, and choice of course format so that I could focus on variance explained by course level variables such as originating college or subject area, and intended audience.

To model the data, I first separated enrollments in BYU IS courses from May 9, 2009 to May 9, 2010 into two groups, high-school-level courses and college-level courses using SPSS. Then, I grouped each dataset into two levels in preparation for running the HLM models. Level 1 variables included student-level characteristics such as age, gender, format selected by the

student upon registration, and so forth. See Table 2 for a list of Level 1 variable names and descriptions.

Table 2

Hierarchical Linear Modeling Level 1 Variables

Variable Names	Description of Variable
COURSEID	Linking variable for both levels
WITHDRAW	Value of 1 indicates the student officially withdrew from the course
OCWVIEWS	Value of 1 indicates the student viewed OCW courseware
PRIOR	Value of 1 indicates student enrolled in a BYU IS course within the year prior to enrollment during the study period
AGE	Numerical value of age at registration.
GENDER	Value of 1 indicates Female
FORMAT	Value of 1 indicates student selected online delivery of course. Value of 0 indicates student selected correspondence (paper) delivery.

The Level 2 variables are course level variables. The reference category for the sponsoring college dummy variables was physical and mathematical sciences. This category was selected as the reference category because it is widely represented in both the high school and college level enrollments. There are many difference math and physical science courses available through BYU IS and many students enroll in these course. See Table 3 for a list of the Level 2 variables names and descriptions.

Table 3

Hierarchical Modeling Level 2 Variables

Variable Names	Description of Variable
Referent	Reference Category: Physical and Mathematical Sciences
COCCC	Value of 1 indicates Career and Counseling Center
CONURS	Value of 1 indicates Nursing[a]
COET	Value of 1 indicates Engineering and Technology
COFHSS	Value of 1 indicates Family Home and Social Sciences
COLS	Value of 1 indicates Life Sciences
COMSBUS	Value of 1 indicates Business
COMSED	Value of 1 indicates Education[a]
COPE	Value of 1 indicates Physical Education
CORE	Value of 1 indicates Religious Education[a]
COHUM	Value of 1 indicates Humanities
CFAC	Value of 1 indicates Fine Arts
COURSECR	Credit hours (ranges from 0 through 6).
LD	Value of 1 indicates lower-division university course. Value of 0 indicates upper-division course.[a]

[a].Note that these variables only apply to the college HLM study.

Using HLM 7 software, marketed by Scientific Software International, I ran the models. Each model indicated the degree to which various student and course-level factors influenced student withdrawal. Using HLM the study determined the degree to which course-level factors such as sponsoring department, number of credit hours, and target audience predict withdrawal behaviors accounted for variance in withdrawal rates, given student-level factors such as OCW views, age, gender, and selected course format.

High school. The high school dataset included 68,803 students in 213 courses. The Level 2 model specified grouped students into sponsoring colleges to determine if general subject matter had statistically significant effects on variability. The descriptive statistics, specified model and model fit data follow.

Model specified with descriptive statistics. The descriptive statistics for Level 1 and 2 high school variables with sample sizes for each Level 2 group are included (Table 4). Twenty-two cases with missing data were excluded from the model when the analysis was performed.

The model specified for the high school student population used restricted PQL as the method of estimation with the maximum number of macro iterations set to 100. The distribution specified for Level-1 was Bernoulli, as was appropriate for dichotomous data. The Level 1 full model specified was Prob($WITHDRAW_{ij}$=1|β_j) = ϕ_{ij} log[ϕ_{ij}/(1 - ϕ_{ij})] = $\eta_{ij,}$ η_{ij} = β_{0j} + β_{1j}*($OCWVIEWS_{ij}$) + β_{2j}*($PRIOR_{ij}$) + β_{3j}*(AGE_{ij}) + β_{4j}*($GENDER_{ij}$) + β_{5j}*($FORMAT_{ij}$). The Level 2 Model specified was β_{0j} = γ_{00} + γ_{01}*($COURSECR_j$) + γ_{02}*($COCCC_j$) + γ_{03}*($COET_j$) + γ_{04}*($COFHSS_j$) + γ_{05}*($COLS_j$) + γ_{06}*($COMSBUS_j$) + γ_{07}*($COPE_j$) + γ_{08}*($COHUM_j$) + γ_{09}*($CFAC_j$) + $u_{0j,}$ β_{1j} = γ_{10}, β_{2j} = γ_{20}, β_{3j} = γ_{30}, β_{4j} = γ_{40}, β_{5j} = γ_{50} . OCWVIEWS, PRIOR, AGE, GENDER, and FORMAT were centered around the grand mean. Level-1 variance equals 1/[ϕ_{ij}(1-ϕ_{ij})].

Table 4

High School Enrollment Descriptive Statistics for Level 1 (Top) and Level 2 (Bottom) Variables

Variable	N	M	SD
Level 1			
OCW View	68803	0.00	0.058
Prior Enrollment	68803	0.20	0.398
Withdrawal	68803	0.07	0.248
Age	68803	17.06	2.541
Gender	68781	0.50	0.500
Format	68803	0.84	0.362
Level 2			
Credit Hours	213	0.49	0.06
Career Counseling	213	0.08	0.28
Physical and Mathematical Sciences	213	0.18	0.38
Engineering and Technology	213	0.02	0.15
Family, Home, and Social Science	213	0.21	0.41
Life Science	213	0.06	0.24
School of Business	213	0.04	0.19
Physical Education	213	0.05	0.22
Humanities	213	0.30	0.46
Fine Arts and Communications	213	0.06	0.24

Model fit. The Mulitlevel Logistic Empty Model indicated that there was significant variability, τ_{00} = . 0.208, χ^2 (213) = 999.294, p < 0.001, SD = 0.456, around the intercepts for these data. The odds of a student withdrawing from any course was .077, which was equivalent to the withdrawal rate in the empty model. The maximum number of Level-1 units was 68781. The maximum number of Level-2 units was 213. The maximum number of micro iterations was 14, and the maximum number of macro iterations was set to 100. The Level 1 Empty Model specified follows: Prob($WITHDRAW_{ij}$=1|β_j) = $\phi_{ij,}$ log[ϕ_{ij}/(1 - ϕ_{ij})] = $\eta_{ij,}$ η_{ij} = β_{0j}. The Level 2 model specified was β_{0j} = γ_{00} + $u_{0j,}$ Level-1 variance = 1/[ϕ_{ij}(1-ϕ_{ij})]. The Mixed Model was η_{ij} = γ_{00} + $u_{0j.}$ The value of the log-likelihood function at iteration 11 was -1,554.071.

The intraclass correlation coefficient was .059, calculated using the variance of the logistic distribution (3.29). The variability attributable to Level 2 variables was larger than 0, which indicated that the rates of withdrawal were more similar within Level 2 groups than a model which didn't consider the clustering effects would assume (O'Connell, Goldstein, Rogers, & Peng, 2008). The empty model τ Intercept1, $\beta_{0,}$ was 0.2077, and the value of the log-likelihood function at iteration 2 = -97,000.30. See Table 5 for the fixed effects for this model.

Table 5

High School Population-Average Model with Robust Standard Errors

Fixed Effect	Coefficient	SE	t-ratio	*df*	*p*-value	Odds Ratio	95% CI
For INTRCPT1, β_0							
INTRCPT2,γ_{00}	-2.48	0.041	-61.13	212	<0.001	0.08377	[0.077, 0.091]

Note: The value of the log-likelihood function at iteration 2 = -92,122.93.

HLM 7 also provided SPSS files of residual statistics at both levels, from which I evaluated fit. I plotted the Level 1 Residuals for this data set in a P-P Plot. The line indicates an

approximately linear plot, indicating that the distribution of Level 1 error was approximately normal and the therefore did not violate the assumption of normality (see Figure 1). I also plotted Level 2 residuals in a Q-Q Plot, with acceptable results (see Figure 2).

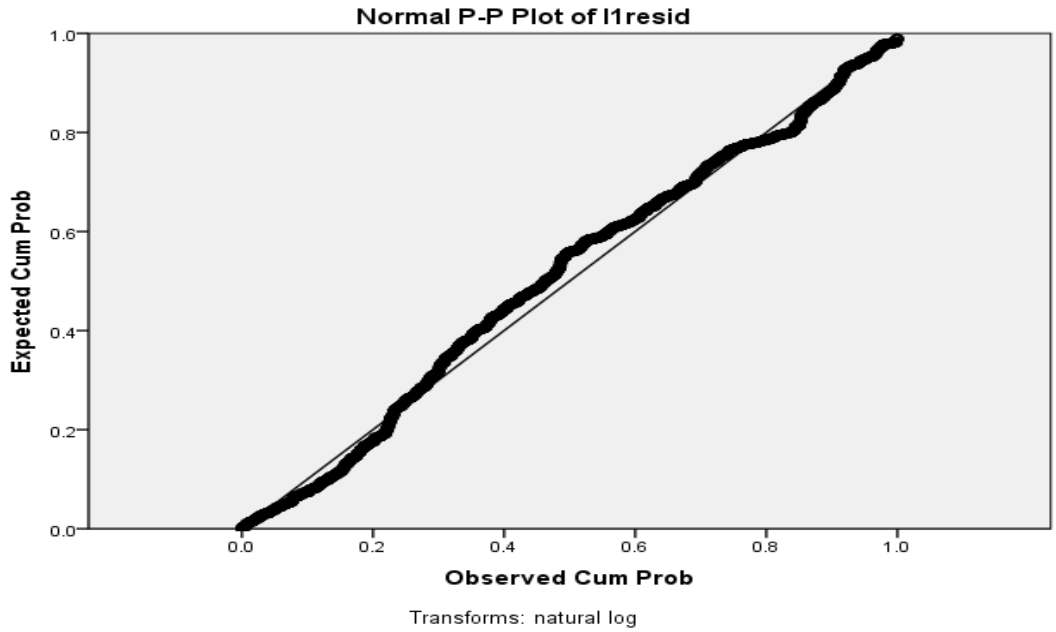

Figure 1. P-P Plot of leve1 1 residuals for high school courses.

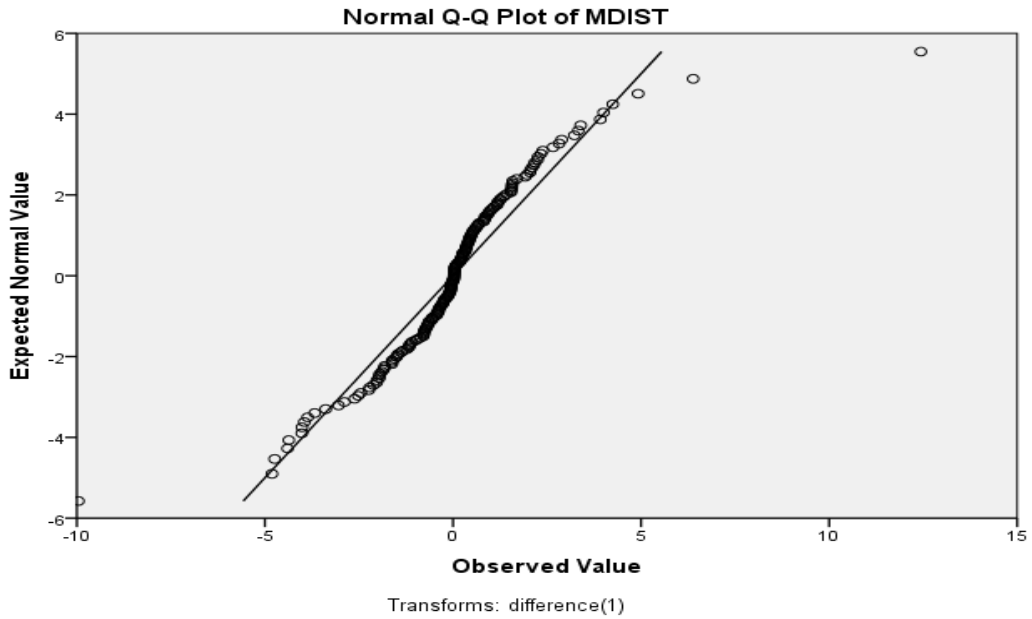

Figure 2. Q-Q Plot of leve1 2 residuals for high school courses.

Given the ICC value larger than 0 and the plots of Level 1 and Level 2 residual error shown in Figures 1 and 2, HLM Modeling was determined to be an appropriate choice to evaluate these data (O'Connell et al. 2008; Raudenbush, Bryk, Cheong, Congden, & Toit, 2011).

College.

The high school dataset included 14,904 in 269 courses. The Level 2 model specified grouped students into sponsoring colleges to determine if general subject matter had statistically significant effects on variability. The descriptive statistics, specified model and model fit data follow.

Model specified with descriptive statistics. The descriptive statistics for Level 1 and 2 college variables including sample sizes for each Level 2 group (See Table 6) are included. Five cases with missing data were excluded from the model.

The model specified used restricted PQL as the method of estimation, with the maximum number of macro iterations set to 100. The maximum number of micro iterations was 14. The maximum number of Level-1 units was 14898. The maximum number of Level-2 units was 269. The distribution at Level-1 was Bernoulli. The Level 1 model specified was $\text{Prob}(WITHDRAW_{ij}=1|\beta_j) = \phi_{ij}$, $\log[\phi_{ij}/(1 - \phi_{ij})] = \eta_{ij}$, $\eta_{ij} = \beta_{0j} + \beta_{1j}*(OCWVIEWS_{ij}) + \beta_{2j}*(PRIOR_{ij}) + \beta_{3j}*(AGE_{ij}) + \beta_{4j}*(GENDER_{ij}) + \beta_{5j}*(FORMAT_{ij})$. The Level 2 Model specified was $\beta_{0j} = \gamma_{00} + \gamma_{01}*(LD_j) + \gamma_{02}*(COURSECR_j) + \gamma_{03}*(COCCC_j) + \gamma_{04}*(COET_j) + \gamma_{05}*(COFHSS_j) + \gamma_{06}*(COLS_j) + \gamma_{07}*(COMSBUS_j) + \gamma_{08}*(COMSED_j) + \gamma_{09}*(CONURS_j) + \gamma_{010}*(COPE_j) + \gamma_{011}*(CORE_j) + \gamma_{012}*(COHUM_j) + \gamma_{013}*(CFAC_j) + u_{0j}$, $\beta_{1j} = \gamma_{10}$, $\beta_{2j} = \gamma_{20}$, $\beta_{3j} = \gamma_{30}$, $\beta_{4j} = \gamma_{40}$, $\beta_{5j} = \gamma_{50}$. OCWVIEWS, PRIOR, AGE, GENDER, and FORMAT were all centered around the grand mean. The Level-1 variance equaled $1/[\phi_{ij}(1-\phi_{ij})]$.

Table 6

College Enrollment Descriptive Statistics for Levels 1 (Top) and Level 2 (Bottom) Variables

Variable	N	M	SD
Level 1			
OCW View	14904	0.01	0.097
Prior Enrollment	14904	0.24	0.430
Withdraw	14904	0.11	0.317
Age	14904	28.67	10.771
Gender	14899	0.59	0.492
Format	14904	0.76	0.424
Level 2			
Lower Division	269	0.44	0.50
Credit Hours	269	2.65	0.74
Career and Counseling	269	0.01	0.12
Physical and Mathematical Science	269	0.07	0.26
Engineering and Technology	269	0.02	0.14
Family, Home, and Social Science	269	0.27	0.44
Life Science	269	0.06	0.24
School of Business	269	0.07	0.26
School of Education	269	0.11	0.32
Nursing	269	0.00	0.06
Physical Education	269	0.03	0.16
Religious Education	269	0.07	0.26
Humanities	269	0.19	0.39
Fine Arts and Communication	269	0.09	0.28

Model fit. The Multilevel Logistic Empty Model indicated that there was significant variability (τ_{00} = . 0. 32813, χ^2 (268) = 891.55902, p < 0.001, SD = 0.573), among the intercepts for these data. The odds of a student withdrawing from any course was 0.1066. The maximum number of Level-1 units was 14898. The maximum number of Level-2 units was 269. The maximum number of micro iterations was 14. The method of estimation was restricted PQL. The maximum number of macro iterations was 100. The distribution at Level-1 was Bernoulli. The Level-1 model specified was Prob($WITHDRAW_{ij}$=1|βj) = ϕ_{ij}, log[ϕ_{ij}/(1 - ϕ_{ij})] = η_{ij}, $\eta_{ij} = \beta_{0j}$. The Level 2 Model specified was $\beta_{0j} = \gamma_{00} + u_{0j}$ with Level-1 variance equal to 1/[ϕ_{ij}(1-ϕ_{ij})]. The mixed model was $\eta_{ij} = \gamma_{00} + u_{0j}$. The value of the log-likelihood function at iteration 11 was -3,834.843.

The intraclass correlation coefficient was .091, again calculated using the variance of the logistic distribution. This finding indicated that the variability attributable to Level 2 variables was larger than 0; the rates of withdrawal were more similar within Level 2 groups than a model which didn't consider the clustering effects would assume (O'Connell et al., 2008). The empty model τ Intercept1, $\beta_{0,}$ was 0.32813, and the value of the log-likelihood function at iteration 2 = --2,0758.50. The results of the fixed effect for the Empty Model are shown in Tables 7.

Table 7

College Population-average Model with Robust Standard Error

Fixed Effect	Coefficient	SE	t-ratio	*df*	Odds Ratio	95% CI
For INTRCPT1, β0						
INTRCPT2, γ00	-2.126	0.052	-41.124	268	0.1193	[0.108, 0.132]

I plotted the Level 1 residuals for this data set in a P-P Plot using SPSS. The plot was approximately linear, indicating that the distribution of Level 1 error was approximately normal

and the therefore does not violate the assumption of normality (see Figure 3). I also plotted the Level 2 residuals in a Q-Q Plot, with acceptable results (see Figure 4).

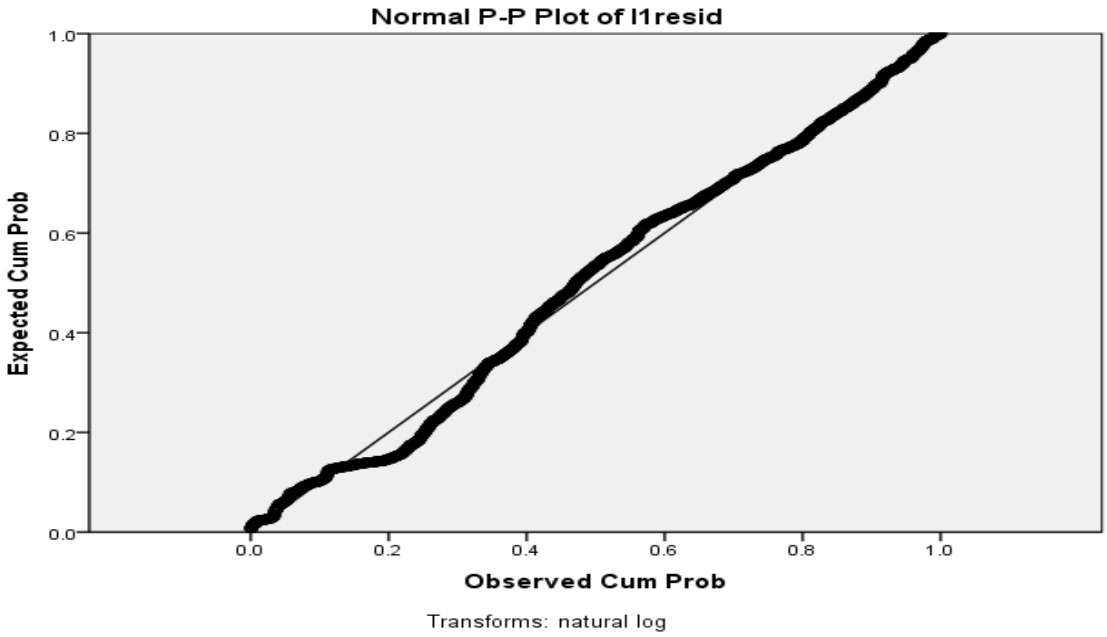

Figure 3. P-P Plot of Leve1 1 Residuals for University Courses.

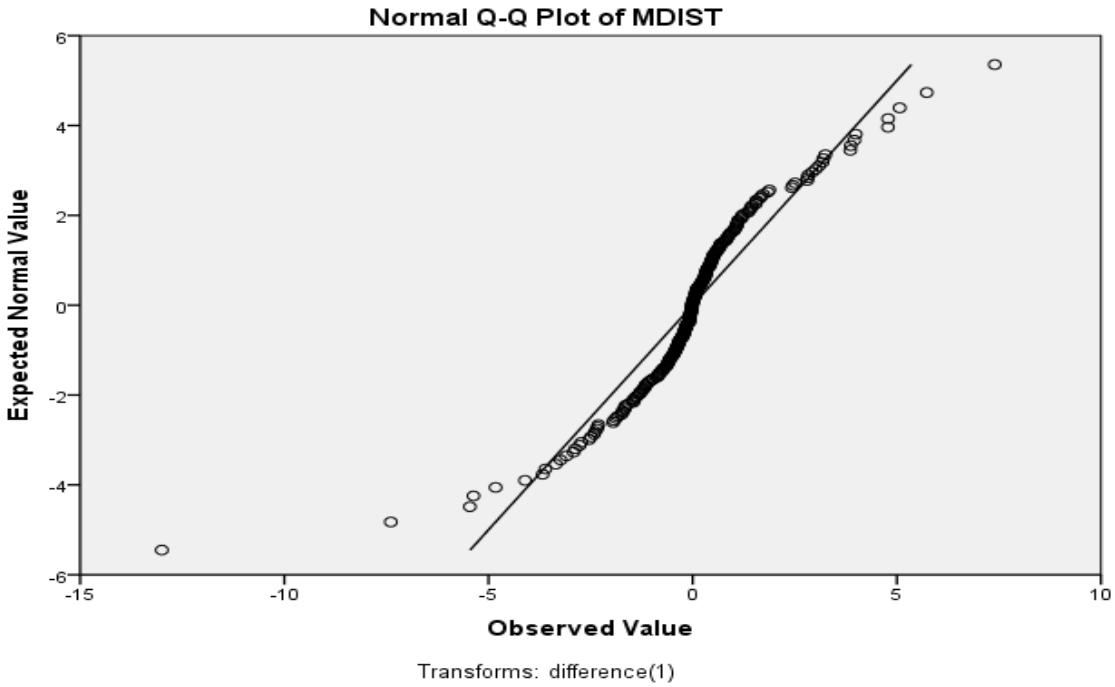

Figure 4. Q-Q Plot of Leve1 2 Residuals for University Courses.

Given the ICC value and the plots of residual error shown in Figures 3 and 4, HLM Modeling was determined to be an appropriate choice to evaluate these data (O'Connell et al., 2008; Raudenbush et al., 2011).

Chapter 4: Results

In this chapter I present the results of the statistical tests described in the Method chapter. A discussion of these results is presented in the next chapter, Discussion and Conclusions.

OCW Exposure Effect on Formal Withdrawal Rate

Table 8 displays the number and percent of students who formally withdrew from a course prior to completion and indicates whether or not they had viewed OCW prior to enrolling in the course. The formal withdrawal rates were reported by course as well as the total number aggregated across the six courses. Though the proportion of formal withdrawals for those who had viewed OCW was smaller than the proportion of formal withdrawals for those who had not viewed OCW (.044 and .055 respectively), *z*-test results indicated the difference between the proportions was not statistically significant ($p < .05$).

Table 8

Percent of Withdrawing Students Who Viewed and Did Not View OCW

Course	Viewed OCW			Did Not View OCW		
	Total Enrolled	Number Who Withdrew	% Who Withdrew	Total Enrolled	Number Who Withdrew	% Who Withdrew
Business Management 418	0	0	0.0	20	4	20.0
Earth Science 41	10	0	0.0	645	49	7.6
Geography 41	9	0	0.0	430	12	2.8
Government 45	10	0	0.0	412	25	6.1
School of Family Life 110	4	1	25.0	79	3	3.8
Theater and Media Arts 150	12	1	8.0	346	13	3.8
Combined Total	45	2	4.4	1932	106	5.5

Prior Enrollment Effect on Formal Withdrawal Rates

Table 9 displays the number and percent of students who withdrew from a course prior to completion and whether or not they had enrolled in a BYU IS course in the year prior to this study. (Only the aggregate totals were reported. For individual course formal withdrawal rates, see Table 1A in the Appendix.) The proportion of students with a prior enrollment who subsequently withdrew from their course was larger than the proportion of students without a prior enrollment who withdrew from their course. The *z*-test comparing column proportions indicated a statistically significant difference ($p < 0.05$) in the opposite of the anticipated direction.

Table 9

Percent of Withdrawing Students with a Prior Enrollment in a BYU IS Course

Prior Enrollment Status	Total Enrolled	Number Who Withdrew	% Who Withdrew
Had previously enrolled in at least one BYU IS course	17197	1624	9.44
Had not previously enrolled in a BYU IS course	66510	4611	6.93
Combined Total	83707	6235	7.45

Factors Affecting Formal Withdrawal

In order to further explore results from the z-test indicating that prior enrollment in a BYU IS course positively impacted withdrawal, two HLM models were evaluated. The first study examined high school course withdrawals and the second examined college course withdrawals.

High school courses. The Level 2 HLM analysis revealed that certain factors predict withdrawal behaviors at both Level 1 and Level 2. According to the results of the model, high

school students who have enrolled in a prior course do have an increased probability of formal withdrawal from a BYU IS high school course (PRIOR, γ 20 = .256, $p < .001$). In addition, students who selected the online delivery format (FORMAT, $\gamma 50 = -.966$, $p < .001$), have a decreased probability of formal withdrawal from their course.

The HLM software reported the odds ratio for each variable. An odds ratio (OR) is a measure of association between the outcome and the explanatory variable. It is calculated by dividing the coefficient for the predictor by the coefficient of the intercept for $\gamma_{00.}$ In the case of this study, the odds ratio is a comparison of the probability of withdrawing for a student with the specific predictor (such as enrollment in a CFAC course) with the probability of any student withdrawing. The analysis predicted that students who enroll in Fine Arts (CFAC) courses withdraw at a higher rate. If the odds ratio is greater than 1, the interpretation is fairly simple. For example, the odds ratio for CFAC was 1.64; this means that CFAC students were 1.64 times more likely to withdraw from the course than a student in any course that is not a CFAC course. For odds ratios less than 1, the interpretation is best understood when the ratio is converted using the formula 100% * (OR – 1). For example, the odds ratio for course format (FORMAT) was 0.381. We could say a student increases the odds of withdrawing by .381 times, but it is simpler to calculate the net percent effect using the formula. Calculating 100% * (0.381 – 1) = -61.9%. Students enrolled in the online course format were 61.9% less likely to withdraw holding all other effects constant. Whenever the odds ratios were less than zero, I will report the percentage rather than the odds ratio itself.

The only Level 2 factor which predicted a change in the probability of a formal withdrawal in a statistically significant manner was enrollment in a Fine Arts and Communications (CFAC) course. (See Table 10 for a full list of fixed effects.)

Table 10

Results for Population-Average Model with Robust Standard Errors Final Estimation of Fixed Effects (High School)

	Coefficient	SE	*t*-ratio	*Df*	*p*-value	Odds Ratio	95%CI
For INTRCPT1, β_0							
INTRCPT2, γ_{00}	-2.502	0.508	-4.93	203	<.001	0.082	[0.030, 0.223]
COURSECR, γ_{01}	-0.085	1.008	-0.085	203	.933	0.918	[0.126, 6.709]
COCCC, γ_{02}	-0.144	0.149	-0.964	203	.336	0.866	[0.645, 1.162]
COET, γ_{03}	-0.108	0.214	-0.508	203	.612	0.897	[0.589, 1.367]
COFHSS, γ_{04}	-0.202	0.116	-1.734	203	.084	0.817	[0.650, 1.028]
COLS, γ_{05}	-0.202	0.172	-1.172	203	.243	0.817	[0.582, 1.148]
COMSBUS, γ_{06}	-0.347	0.373	-0.931	203	.353	0.707	[0.339, 1.474]
COPE, γ_{07}	-0.268	0.168	-1.598	203	.112	0.765	[0.549, 1.065]
COHUM, γ_{08}	0.055	0.094	0.579	203	.563	1.056	[0.877, 1.272]
CFAC, γ_{09}	0.496	0.213	2.325	203	.021	1.643	[1.078, 2.503]
For OCWVIEWS slope, β_1							
INTRCPT2, γ_{10}	0.136	0.211	0.645	68563	.519	1.146	[0.758, 1.731]
For PRIOR slope, β_2							
INTRCPT2, γ_{20}	0.256	0.046	5.545	68563	<.001	1.292	[1.180, 1.414]
For AGE slope, β_3							
INTRCPT2, γ_{30}	0.004	0.007	0.51	68563	.610	1.004	[0.990, 1.018]
For GENDER slope, β_4							
INTRCPT2, γ_{40}	0.036	0.027	1.352	68563	.176	1.037	[0.984, 1.092]
For FORMAT slope, β_5							
INTRCPT2, γ_{50}	-0.966	0.091	-10.592	68563	<.001	0.381	[0.318, 0.455]

High school students who enrolled in a CFAC course increased the odds of formal withdrawal by 1.64 times (CFAC, γ_{14} = .496, p < .02). Estimate of variance component showed statistically significant variability still exists about the intercepts across Level 2 variables, u_0 = 0.190, $\chi^2(203) = 831.850$, p < .001. Reported reliability estimate was 0.567.

College courses. The Level 2 HLM analysis of the college course enrollments also revealed that certain factors predict formal withdrawal behaviors at both Level 1 and Level 2, but the factors predicting formal withdrawal at a statistically significant level were different for the college level courses. According to the results of the model, students who selected the online format had a decreased probability of formally withdrawing from a BYU IS college level course (γ_{20} = -0.190, p < .005), however, none of the other Level-1 variables predict formal withdrawal at a significant level. However, at Level-2, several factors predict either increased or decreased odds of formal withdrawal at a statistically significant level. See Table 11 for full list of fixed effects.

Students who enroll in a lower division college course were 1.404 times (LD, γ_{01}= .339, p < 001) more likely to withdraw. Students who enrolled in a Career Counseling Course (COCCC) course were 69.3% less likely to withdraw than students in any other course. (COCCC, γ_{03} = -1.18, p < .007). Students who enrolled in a College of Engineering and Technology (COET) courses were 55.5% less likely to withdraw than students in any other course (COET, γ_{04} = -0.811, p < .024). Students who enrolled in a College of Family, Home and Social Sciences (COFHSS) course were 44.1% less likely to withdraw than other students (COFHSS, γ_{05} = -0.517, p < .001). Students who enrolled in a Life Sciences (COLS) course were 30% less likely to withdraw (COLS, γ_{06} = -0.461, p < .031). Students who enrolled in a Marriott School of Business (COMSBUS) course were 36.9% less likely to withdraw than

students in other courses (COMSBUS, $\gamma_{07} = -0.460$, $p < .028$). Students who enrolled in a Religious Education (CORE) course were 60% less likely to withdraw than students in other courses (CORE, $\gamma_{11} = -0.917$, $p < .001$). Students who enrolled in a College of Fine Arts and Communication (CFAC) course were 40.4% less likely to withdraw than other students (CFAC, $\gamma_{14} = -0.517$, $p < .027$). Estimate of variance component showed statistically significant variability still exists about the intercepts across Level 2 variables, $u_0 = 0.239$, $\chi^2(255) = 586.921$, $p < .001$. Reported reliability estimate was 0.384.

Table 11

Results for Population Average Model Final Estimation of Fixed Effects (College)

Fixed Effect	Coefficient	SE	*t*-ratio	*d.f.*	*p*-value	Odds Ratio	95% CI
For INTRCPT1, β_0							
INTRCPT2, γ_{00}	-2.196	0.309	-7.098	255	<.001	0.111	[0.061, 0.205]
LD, γ_{01}	0.339	0.105	3.225	255	.001	1.404	[1.141, 1.727]
COURSECR, γ_{02}	0.095	0.092	1.033	255	.302	1.100	[0.918, 1.318]
COCCC, γ_{03}	-1.181	0.433	-2.726	255	.007	0.307	[0.131, 0.721]
COET, γ_{04}	-0.811	0.358	-2.267	255	.024	0.445	[0.220, 0.899]
COFHSS, γ_{05}	-0.582	0.160	-3.634	255	<.001	0.559	[0.407, 0.766]
COLS, γ_{06}	-0.461	0.213	-2.163	255	.031	0.630	[0.414, 0.960]
COMSBUS, γ_{07}	-0.460	0.208	-2.208	255	.028	0.631	[0.419, 0.952]
COMSED, γ_{08}	-0.145	0.251	-0.579	255	.563	0.865	[0.528, 1.417]
CONURS, γ_{09}	-0.999	0.620	-1.611	255	.108	0.368	[0.109, 1.249]
COPE, γ_{010}	0.130	0.356	0.364	255	.716	1.139	[0.564, 2.296]
CORE, γ_{011}	-0.917	0.249	-3.684	255	<.001	0.400	[0.245, 0.653]
COHUM, γ_{012}	-0.289	0.173	-1.674	255	0.095	0.749	[0.533, 1.052]
CFAC, γ_{013}	-0.517	0.232	-2.224	255	0.027	0.596	[0.377, 0.943]
For OCWVIEWS slope, β_1							
INTRCPT2, γ_{10}	0.234	0.241	0.969	14624	0.333	1.263	[0.787, 2.027]
For PRIOR slope, β_2							
INTRCPT2, γ_{20}	0.114	0.061	1.885	14624	0.059	1.121	[0.995, 1.263]

(continued)

Results for Population Average Model Final Estimation of Fixed Effects (College), continued

Fixed Effect	Coefficient	SE	*t*-ratio	*d.f.*	*p*-value	Odds Ratio	95% CI
For AGE slope, β_3							
INTRCPT2, γ_{30}	-0.004	0.003	-1.370	14624	0.171	0.996	[0.991, 1.002]
For GENDER slope, β_4							
INTRCPT2, γ_{40}	-0.037	0.054	-0.687	14624	0.492	0.963	[0.866, 1.072]
For FORMAT slope, β_5							
INTRCPT2, γ_{50}	-0.190	0.068	-2.791	14624	0.005	0.827	[0.724, 0.945]

Note: Robust standard errors cannot not be calculated for this model.

Chapter 5: Discussion

Reflections on Findings

When a student enrolls in a course, it is an act of faith in him or herself (I can do this course), the institution (you will provide support that I need to complete this course), and in circumstances (I will have the time and resources I need to complete this course). The research on the withdrawal question shows that issues which lead to BYU IS student withdrawal can be loosely assigned to three categories: student preparedness issues, college and curriculum issues, and issues related to life circumstances (Hoyt and Lemley, 2011). From study skills to personal tragedies to economic worries and changing career paths, many things keep a student, especially a distance-education student, from success. Many of these factors are completely outside institutional control.

Though external factors will always influence a student's ability to complete a given course or program, it is important for professionals in instructional design and distance education to minimize barriers and to be aware of factors within course curriculum which contribute to student success. We must provide as much support as possible for the courses we design and deploy. BYU IS administrators should continue to examine causes of attrition and also seek to understand elements that provide support for successful completion. Much more information is needed to help provide the best student support possible to minimize factors which lead to withdrawal and increase the probability of successful completion of a BYU IS course.

Effects of viewing OCW prior to enrollment on withdrawal. For the 2009 student enrollments in BYU IS distance learning courses, my results indicate a slight decrease in the withdrawal rates among students registered in OCW courses who could be determined to have

viewed OCW prior to registration; however, the difference was not statistically significant. The students who viewed OCW materials withdrew at a rate of .044, while students who did not view OCW material withdrew at a rate of .055. These results suggest that a student who views BYU IS OCW content was not less likely to withdraw from a BYU IS Course.

However, given the decrease in withdrawal rates I observed between the two groups, perhaps further exploration is warranted. Our *z*-test used only the 45 students who had viewed OCW, then enrolled in one of the six BYU IS courses available in OCW format. Perhaps as more data is collected from OCW visitors, the test should be conducted again. Additionally, there are other variables that we could and should look at to determine what assistance the OCW curriculum may be providing students, if any. OCW content may provide support for learning that evidences itself in ways other than reducing withdrawals. When we understand better how OCW impacts students and what benefits it offers, we can make recommendations to future students about whether viewing these materials can assist them, whether or not OCW impacts withdrawals.

Although we did not identify a statistically significant impact, OCW may be impacting withdrawal behaviors in statistically significant ways that this study did not address due to improper or insufficient data collection or a faulty study metric. There are factors which could have rendered these results suspect. Perhaps more students viewed the OCW than are recorded in our MySQL database. It is also possible that students viewed OCW on a different computer than they used to register which means that more students than we recorded actually did view OCW curriculum. Another possibility is that there were visitors to OCW who subsequently chose not to enroll in the OCW curriculum due to poor curriculum fit. If a course is not offered OCW, students have no way to evaluate curriculum fit prior to registration. Curriculum fit, as I have

already noted in this study, has been cited as a common reason for withdrawal. If prior exposure to curriculum via OCW actually prevented some students from enrolling who might later have withdrawn, looking at overall course withdrawal rates for courses offered OCW as compared to courses not offered OCW generally might be a more informative study.

Influence of prior enrollment on withdrawal. When examining the withdrawal rates of students who had a prior enrollment, I saw a rate of .094 for students with a prior enrollment in a BYU IS course, and a rate of .069 for a student without a prior enrollment in a BYU IS course. The z-test results for the proportion of students withdrawing from a BYU IS course do show a statistically significant difference when students experience prior exposure to a BYU IS course before registering. However, those students with prior experience withdraw more frequently rather than less frequently. This suggests that a student who had a prior enrollment in a BYU IS course is more likely to withdraw than a student who has no prior enrollments. I did not expect these findings—they contradict most of the research on online learning and attrition. Most of the research I examined found that prior enrollment in a course tends to improve completion (Howell, Laws, & Lindsay, 2004). One study by Adams and Becker, who examined students in traditional college courses, did conclude that students with more experience withdrew more frequently than students with less experience (1999). Note that the HLM analysis I subsequently performed revealed that prior enrollment is only a significant predictor of withdrawal in the high school courses, so my findings did not completely align with Adams and Becker who were examining college course withdrawals.

Further study is required to determine why students withdraw from courses, and what a withdrawal actually means in terms of student satisfaction and achievement of the goals of registration. Hoyt and Lemley's internal study suggests that a withdrawal was more often a

function of registration issues or personal circumstances rather than a failure of the course or program to meet a student's needs (2011). If students who are more familiar with the program withdraw more frequently, perhaps there are first time enrollees who would benefit from the withdrawal process and simply do not know how to do it. If this is the case, students should be given more training so that they understand what recourse is available if personal circumstances or course or program shortcomings prevent them from properly completing an enrollment. Educating first time enrollees might increase the withdrawal rate, but an increased withdrawal rate is more desirable than an inflated failure rate. It is presumably better for students who find themselves in difficulty to know how to withdraw from a course than to register and fail to complete it.

If the withdrawal study could be expanded to include both students who enroll and never actually complete a course as well as students who enroll and fail to achieve a passing grade, we may be able to learn more about how to best support students in their academic goals. More study such as the internal report by Hoyt and Lemley should be conducted to determine what support structures BYU IS could offer to help students to register for the correct course and complete it successfully.

Sources of variability in withdrawal rates. One of the reasons the HLM Modeling software was used for this question was to avoid Type I error by assuming statistical significance when none is warranted. Researchers who have concluded that there is a positive relationship between prior course experience and completion rates may have fallen into the trap of allowing small data sets with clustering effects to lead them to erroneous conclusions. Through HLM, we seek to determine more specifically how much of the variance could be explained by prior exposure to a BYU IS course.

High school courses. The first 2-Level HLM study modeling predictors of withdrawal in high school courses revealed that certain factors predict changes in withdrawal rates at both Level 1 and Level 2. Level 1 variables that appear to affect the withdrawal rates are: (a) prior enrollment in an BYU IS course (which increased the odds of withdrawing) and (b) the online course format students chose at registration (which decreased the odds of withdrawing). The only Level 2 variable which affected withdrawal rates to a significant level was enrollment in courses in the Fine Arts (CFAC) category. Table 12 lists the statistically significant variables.

Table 12

Statistically Significant Predictors of Withdrawal Behavior in High School Courses

Fixed Effect	Coefficient	SE	*t*-ratio	*df*	*p*-value
Level 2 CFAC, γ_{09}	0.496	0.176	2.814	203	0.005
Level 1 For PRIOR slope, β_2					
INTRCPT2, γ_{20}	0.256	0.035	7.341	68563	<0.001
Level 1 For FORMAT slope, β_5					
INTRCPT2, γ_{50}	-0.966	0.033	-28.986	68563	<0.001

Note that the introduction of the Level 2 predictors decreases the variance component produced by the empty model from 0.208 to 0.190. The predictors we introduced succeed in explaining .086, or 8.6% of the variance. Certainly there are many other factors addressed in the relevant literature which affect withdrawal behaviors which this study did not address. However, considering only basic demographics such as age and gender, course level variables do successfully predict variability in withdrawal behavior.

The analysis predicts that students who enroll in Fine Arts (CFAC) courses withdraw at a higher rate. Further exploration is needed to determine if this higher rate is related to problems in the course materials, the subject matter generally, or some other factor. Examining qualitative comments from student surveys, internal withdrawal studies, and other sources could help to identify any weaknesses in course materials that may prompt more students to withdraw more often from courses in one discipline versus another.

College courses. The college dataset is smaller than the high school dataset, but still large enough to allow the use of the HLM method to reduce the possibility of Type I error and analyze effects at both the individual student and group (course) levels. The 2-Level HLM study of the withdrawal behavior of students enrolled in college level course reveals that certain factors predict changes in withdrawal rates at both Level 1 and Level 2. The only Level 1 variable determined to affect the withdrawal rates is the course format students choose at registration; selecting an online format decreased the odds of withdrawing. Prior enrollment in a BYU IS course is not a statistically significant predictor of a change in withdrawal rate at the college level. This finding also diverges from the literature as several studies of college level distance learning students indicated a statistically significant effect when students have experience in a prior course. This could be due to the varying definitions of persistence. For example, Aragon and Johnson's study found a statistically significant predictor of completion, but they defined completion as successfully finishing an online course whereas my outcome variable was intentional withdrawal from an online course (2004). It also could be the result of prior researchers using a less fine-grained approach to their data—by assuming independence where there are actually important group level effects, which inflates the Type I error rate.

Level 2 variables in the HLM model predict lower withdrawal rates for students enrolled in the Career and Counseling (COCCC), Engineering (COET), Family, Home, and Social Sciences (COFHSS), College of Life Sciences (COLS), School of Business (COMSBUS), College of Religious Education (CORE), and the College of Fine Arts (CFAC). Additionally, the analysis predicts that students enrolled in a course designed for Lower Division College students (LD) will withdraw more frequently than students in an upper division university course. Table 13 lists the statistically significant predictors modeled. These findings corroborate those of Patrick (2004), who stated that "certain subject areas have been identified in which attrition rates differ from the norm" (p. 166) in his study of 2,679 undergraduate students.

Table 13

Statistically Significant Predictors of Withdrawal Behavior in College-Level BYU IS courses

Fixed Effect	Coefficient	SE	*t*-ratio	*d.f.*	*p*-value
For INTRCPT1, β_0					
INTRCPT2, γ_{00}	- 2.196	0.309	- 7.098	255	<0.001
LD, γ_{01}	0.339	0.105	3.225	255	0.001
COCCC, γ_{03}	- 1.181	0.433	- 2.726	255	0.007
COET, γ_{04}	- 0.811	0.358	- 2.267	255	0.024
COFHSS, γ_{05}	- 0.582	0.160	- 3.634	255	<0.001
COLS, γ_{06}	- 0.461	0.213	- 2.163	255	0.031
COMSBUS, γ_{07}	- 0.460	0.208	- 2.208	255	0.028
CORE, γ_{011}	- 0.917	0.249	- 3.684	255	<0.001
CFAC, γ_{013}	- 0.517	0.232	- 2.224	255	0.027
For FORMAT slope, β_5					
INTRCPT2, γ_{50}	- 0.190	0.068	- 2.791	14624	0.005

Note that the introduction of the Level 2 predictors decrease the variance component produced by the empty model from 0.328 to 0.239. The predictors we introduced succeed in explaining .272, or 27.2% of the variance. It seems that at the college level, the college that sponsors a course has more influence on whether or not a student withdraws from a course, and prior enrollments have less of an effect upon withdrawal rate than for the high school courses.

Again, the relevant literature addresses other factors shown to influence withdrawal behaviors which were not addressed in this study. I sought to identify factors which could be directly controlled by the institution offering the online courseware, that is, the curriculum itself. Considering only basic demographics such as age and gender, course-level variables do successfully predict variability in withdrawal behavior for college students. Students who enroll in courses sponsored by certain colleges seem to withdraw at lower rates. Further exploration is needed to determine if the differing rates among colleges relate to problems in the course materials, ease of subject matter, or some other factor. Again I recommend examining qualitative comments from student surveys, internal withdrawal studies, and other sources that could help to identify strengths and weaknesses in course materials that may prompt more students to withdraw more often from courses sponsored by one college versus another.

The only other Level 2 factor which predicts a statistically significant change in the rate of withdrawal is enrolling in a lower-division university course. Students who enroll in lower-division courses are more likely to withdraw than students in upper-division course. It is possible that students in lower-division courses withdrawing at a higher rate could simply be related to the significant pressures on a person in that demographic. Numerous studies on persistence identify balancing school, work and family concerns as a significant barrier to completing online courses (Hoyt and Lemley, 2011, Nash, 2007; Packham et al., 2004). Additionally, students who

have made progress in their programs and are taking upper-division courses may be more motivated to complete a program and push through difficulties which might cause a lower division student to withdraw. More research is needed to determine what support, if any, can be provided to lower-division students to help them push through difficulties at the start of their programs.

Recommendations

Institutions that offer distance-learning courses have an obligation to assist their students in selecting the correct courses and completing them efficiently. Further exploration of the OCW option is warranted. We must bear in mind that BYU IS offers only six courses in an OCW format, while over four-hundred online courses are actually available to potential BYU IS students. As more courses are converted to the OCW format and made available to registering students, we should continue to gather information about student behaviors and course level trends to determine if and how access to OCW curriculum assists students in their planning and support needs. We must understand much more about how course-related (and thus institutionally controlled) variables influence students in order to provide better support in their online course experiences. I offer the following general recommendations.

I recommend examining other post-enrollment student behavior in addition to withdrawal statistics for all of the groups examined in this withdrawal study**.** For BYU IS students there are four levels of student achievement to consider: (a) students who officially withdraw, (b) students who unofficially withdraw by enrolling and never completing the curriculum, (c) students who complete the curriculum and fail the course, and (d) students who complete the curriculum and pass the course. This study examined only students in the first category. The factors I

considered in this study may influence student achievement in other categories as well as students who officially withdrew.

Using the same dataset as I used for this study, BYU IS personnel could analyze factors related to other levels of achievement to determine what factors predict success. If a statistically significant difference in success rates is found in any group, then students successfully completing at higher rates should be surveyed to try and understand the students' perception of why they are successful. Focus groups could be conducted to ask a selected sample about services that BYU IS could extend to assist online learners in successful completion. Once new services or curriculum support are implemented, withdrawal and completion questions should be revisited to determine if there has been any change.

I also recommend collecting more information from students who withdraw, officially or unofficially, as well as students who do not achieve a passing score**.** Using Hoyt and Lemley's survey as a model, all students who do not successfully complete a BYU IS course should be periodically surveyed to determine if any support can be offered by the institution to maximize success**.**

In addition, because we identified the online course format as a factor that predicted students will be less likely to withdraw for both college and high school students, I recommend that BYU IS survey students who enroll in the paper course format and subsequently withdraw to determine why they withdrew. There may be additional support necessary for students in the paper format.

Further explore OCW effects. In addition to the general recommendations, I recommend examining overall course withdrawal statistics to determine if courses offered OCW have a significant difference in withdrawal rates than courses which do not have an OCW

offering. It is also conceivable that viewing OCW impacts one or more of the four levels of achievement. A study of the relationship of OCW consumption with unofficial withdrawal, failure, and successful completion should also be considered. Additionally, students who do access OCW content should be surveyed to determine why they are using the materials so that we can better understand students' perceptions of the role of OCW. Further work should be done to determine how students are using the OCW materials and if OCW can be shown to affect other student outcomes in a positive and statistically significant way.

Consider effect of prior enrollment on high school students. Since our HLM analysis revealed that prior enrollment only affects withdrawal in a statistically significant way at the high school level, further information should be gathered from first-time BYU IS high school students who do not complete their courses successfully. The students should be surveyed to determine what support might have been offered to assist them and to ask if the students were aware of the withdrawal policy and procedures. If it is determined that the reason first-time students do not withdraw is that they are not aware of the withdrawal policies, BYU IS should give students with no prior enrollment more instructions concerning their ability to access the withdrawal process.

Analyze student performance in college courses. Some sponsoring departments as well as lower division courses were identified as statistically significant factors in college student withdrawals. In addition to the general recommendations, BYU IS personnel should seek to understand more about why students enrolled in courses from certain sponsoring departments or why students in lower division courses withdraw at higher rates. If it can be determined that the additional withdrawals in some departments or in lower division courses have anything to do with curriculum difficulty or a lack of student preparedness for particular disciplines or

foundation courses, then remedial course materials or additional scaffolding to assist students in working through the course materials may reduce the withdrawal. Perhaps BYU IS researchers should examine the relationship between sponsoring department and final grade to determine if difficulty of course content is having an impact on students. Perhaps higher or lower withdrawal rates are a symptom of students having a harder time with some subject areas.

Survey students regarding support needs. Student withdrawal rates could be related to something other than subject area; Hoyt and Lemley's (2011) study captures a variety of student reasons for withdrawals. Perhaps these responses could be analyzed further to help BYU IS researchers determine why students in lower division courses withdraw more frequently than students in other courses. Patterns in the initial survey responses could be used to craft a more specific survey aimed at determining what might actually help a student complete a lower division course rather than simply asking why the student withdrew from a course. Refined questions could help uncover what students wish they had when they sign up for a BYU IS course. Conducting more in-depth focus groups or case study analyses could shed light on resources students feel they need or other support tools that might make completion more generally achievable. With more precise information, BYU IS personnel could make decisions about support materials and services needed, and then follow up the deployment of such materials with further analyses to determine if a positive impact can be detected.

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Appendix

Summary Withdrawal Statistics for All Courses Listed by Students Who Did and Did Not Have a Prior Enrollment

Prior Enrollments	Course	M	N	SD
No	A HTG100	0.140	133	.343
Yes	A HTG100	0.230	56	.426
Course Total	A HTG100	0.160	189	.371
No	ACC200	0.110	152	.316
Yes	ACC200	0.050	41	.218
Course Total	ACC200	0.100	193	.299
No	ACC201	0.070	59	.254
Yes	ACC201	0.100	10	.316
Course Total	ACC201	0.070	69	.261
No	ACC202	0.100	21	.301
Yes	ACC202	0.000	4	.000
Course Total	ACC202	0.080	25	.277
No	ACC210	0.350	23	.487
Yes	ACC210	0.100	10	.316
Course Total	ACC210	0.270	33	.452
No	ACC241	0.060	71	.232
Yes	ACC241	0.000	15	.000
Course Total	ACC241	0.050	86	.212

(continues)

Summary Withdrawal Statistics for All Courses Listed by Students Who Did and Did Not Have a Prior Enrollment, continued

Prior Enrollments	Course	M	N	SD
No	ACC41	0.100	88	.305
Yes	ACC41	0.310	13	.480
Course Total	ACC41	0.130	101	.337
No	AEROB41	0.020	81	.156
Yes	AEROB41	0.000	15	.000
Course Total	AEROB41	0.020	96	.144
No	AEROB45	0.040	248	.197
Yes	AEROB45	0.130	40	.335
Course Total	AEROB45	0.050	288	.223
No	ALG41	0.080	395	.269
Yes	ALG41	0.110	132	.309
Course Total	ALG41	0.090	527	.280
No	ALG43	0.120	93	.325
Yes	ALG43	0.160	85	.373
Course Total	ALG43	0.140	178	.348
No	ALG51	0.070	1301	.259
Yes	ALG51	0.120	366	.326
Course Total	ALG51	0.080	1667	.276
No	ALG53	0.070	1066	.262
Yes	ALG53	0.080	322	.278
Course Total	ALG53	0.080	1388	.266
No	ALG55	0.070	2044	.263
Yes	ALG55	0.100	466	.299

(continues)

Summary Withdrawal Statistics for All Courses Listed by Students Who Did and Did Not Have a Prior Enrollment, continued

Prior Enrollments	Course	M	N	SD
Course Total	ALG55	0.080	2510	.270
No	ALG57	0.100	1185	.296
Yes	ALG57	0.080	413	.279
Course Total	ALG57	0.090	1598	.292
No	ANTHR101	0.050	111	.227
Yes	ANTHR101	0.080	38	.273
Course Total	ANTHR101	0.060	149	.239
No	ANTHR110	0.000	13	.000
Yes	ANTHR110	0.250	4	.500
Course Total	ANTHR110	0.060	17	.243
No	ANTHR309	0.080	12	.289
Yes	ANTHR309	0.000	4	.000
Course Total	ANTHR309	0.060	16	.250
No	ANTHR312	0.070	15	.258
Yes	ANTHR312	0.000	2	.000
Course Total	ANTHR312	0.060	17	.243
No	APBIO59	0.130	63	.336
Yes	APBIO59	0.150	13	.376
Course Total	APBIO59	0.130	76	.340
No	APBIO60	0.110	9	.333
Yes	APBIO60	0.400	5	.548
Course Total	APBIO60	0.210	14	.426

(continues)

Summary Withdrawal Statistics for All Courses Listed by Students Who Did and Did Not Have a Prior Enrollment, continued

Prior Enrollments	Course	M	N	SD
No	APPSY59	0.050	64	.213
Yes	APPSY59	0.080	13	.277
Course Total	APPSY59	0.050	77	.223
No	APPSY60	0.000	10	.000
Yes	APPSY60	0.000	7	.000
Course Total	APPSY60	0.000	17	.000
No	ARAB41	0.180	11	.405
Yes	ARAB41	0.500	2	.707
Course Total	ARAB41	0.230	13	.439
No	ART31	0.100	20	.308
Yes	ART31	0.140	7	.378
Course Total	ART31	0.110	27	.320
No	ART41	0.100	127	.304
Yes	ART41	0.070	30	.254
Course Total	ART41	0.100	157	.295
No	ART43	0.260	47	.441
Yes	ART43	0.230	22	.429
Course Total	ART43	0.250	69	.434
No	ART45	0.090	193	.284
Yes	ART45	0.090	74	.295
Course Total	ART45	0.090	267	.287
No	ART51	0.150	62	.355
Yes	ART51	0.300	23	.470

(continues)

Summary Withdrawal Statistics for All Courses Listed by Students Who Did and Did Not Have a Prior Enrollment, continued

Prior Enrollments	Course	M	N	SD
Course Total	ART51	0.190	85	.393
No	ART53	0.080	51	.272
Yes	ART53	0.200	20	.410
Course Total	ART53	0.110	71	.318
No	ART59	0.030	120	.157
Yes	ART59	0.140	21	.359
Course Total	ART59	0.040	141	.203
No	ART61	0.300	77	.461
Yes	ART61	0.280	40	.452
Course Total	ART61	0.290	117	.456
No	ARTHC340	0.020	53	.137
Yes	ARTHC340	0.090	23	.288
Course Total	ARTHC340	0.040	76	.196
No	ARTHC350	0.060	32	.246
Yes	ARTHC350	0.000	6	.000
Course Total	ARTHC350	0.050	38	.226
No	ASL41	0.150	132	.360
Yes	ASL41	0.080	12	.289
Course Total	ASL41	0.150	144	.354
No	ASL43	0.000	5	.000
Yes	ASL43	0.000	2	.000
Course Total	ASL43	0.000	7	.000

(continues)

Summary Withdrawal Statistics for All Courses Listed by Students Who Did and Did Not Have a Prior Enrollment, continued

Prior Enrollments	Course	M	N	SD
No	AUTO43	0.060	293	.241
Yes	AUTO43	0.020	115	.131
Course Total	AUTO43	0.050	408	.216
No	BIO100	0.070	259	.255
Yes	BIO100	0.160	62	.371
Course Total	BIO100	0.090	321	.283
No	BIO275	0.240	55	.429
Yes	BIO275	0.400	10	.516
Course Total	BIO275	0.260	65	.443
No	BIOL41	0.040	615	.201
Yes	BIOL41	0.040	129	.194
Course Total	BIOL41	0.040	744	.200
No	BIOL43	0.040	355	.188
Yes	BIOL43	0.040	119	.201
Course Total	BIOL43	0.040	474	.191
No	BIOL49	0.040	199	.197
Yes	BIOL49	0.070	42	.261
Course Total	BIOL49	0.050	241	.209
No	BLAW41	0.050	75	.226
Yes	BLAW41	0.070	14	.267
Course Total	BLAW41	0.060	89	.232
No	BMATH41	0.040	1549	.202
Yes	BMATH41	0.070	384	.247

(continues)

Summary Withdrawal Statistics for All Courses Listed by Students Who Did and Did Not Have a Prior Enrollment, continued

Prior Enrollments	Course	M	N	SD
Course Total	BMATH41	0.050	1933	.212
No	BMATH43	0.020	124	.126
Yes	BMATH43	0.050	136	.222
Course Total	BMATH43	0.030	260	.183
No	BMRKT41	0.030	88	.183
Yes	BMRKT41	0.000	18	.000
Course Total	BMRKT41	0.030	106	.167
No	BOWL41	0.060	555	.240
Yes	BOWL41	0.080	92	.267
Course Total	BOWL41	0.060	647	.244
No	BUS M200	0.200	30	.407
Yes	BUS M200	0.360	11	.505
Course Total	BUS M200	0.240	41	.435
No	BUS M300	0.060	70	.234
Yes	BUS M300	0.000	25	.000
Course Total	BUS M300	0.040	95	.202
No	BUS M340	0.080	53	.267
Yes	BUS M340	0.000	16	.000
Course Total	BUS M340	0.060	69	.235
No	BUS M418	0.190	16	.403
Yes	BUS M418	0.250	4	.500
Course Total	BUS M418	0.200	20	.410

(continues)

Summary Withdrawal Statistics for All Courses Listed by Students Who Did and Did Not Have a Prior Enrollment, continued

Prior Enrollments	Course	M	N	SD
No	BUS M430	0.120	26	.326
Yes	BUS M430	0.000	7	.000
Course Total	BUS M430	0.090	33	.292
No	CALC41	0.080	700	.278
Yes	CALC41	0.230	200	.422
Course Total	CALC41	0.120	900	.321
No	CALC43	0.080	229	.276
Yes	CALC43	0.130	83	.341
Course Total	CALC43	0.100	312	.295
No	CE EN103	0.070	55	.262
Yes	CE EN103	0.000	7	.000
Course Total	CE EN103	0.060	62	.248
No	CE EN203	0.100	30	.305
Yes	CE EN203	0.140	7	.378
Course Total	CE EN203	0.110	37	.315
No	CE EN204	0.070	27	.267
Yes	CE EN204	0.110	9	.333
Course Total	CE EN204	0.080	36	.280
No	CH EN273	0.070	28	.262
Yes	CH EN273	0.500	2	.707
Course Total	CH EN273	0.100	30	.305
No	CHEM100	0.180	57	.384
Yes	CHEM100	0.290	14	.469

(continues)

Summary Withdrawal Statistics for All Courses Listed by Students Who Did and Did Not Have a Prior Enrollment, continued

Prior Enrollments	Course	M	N	SD
Course Total	CHEM100	0.200	71	.401
No	CHEM41	0.050	116	.222
Yes	CHEM41	0.130	48	.334
Course Total	CHEM41	0.070	164	.261
No	CHEM45	0.090	407	.291
Yes	CHEM45	0.100	154	.306
Course Total	CHEM45	0.100	561	.295
No	CHEM47	0.110	285	.312
Yes	CHEM47	0.110	150	.318
Course Total	CHEM47	0.110	435	.314
No	CHILD41	0.050	403	.223
Yes	CHILD41	0.070	104	.252
Course Total	CHILD41	0.060	507	.229
No	CHILD43	0.060	33	.242
Yes	CHILD43	0.030	34	.171
Course Total	CHILD43	0.040	67	.208
No	CHILD51	0.080	91	.268
Yes	CHILD51	0.020	43	.152
Course Total	CHILD51	0.060	134	.238
No	CHIN43	0.000	1	.
Course Total	CHIN43	0.000	1	.
No	CLOTH41	0.000	15	.000

(continues)

Summary Withdrawal Statistics for All Courses Listed by Students Who Did and Did Not Have a Prior Enrollment, continued

Prior Enrollments	Course	M	N	SD
Yes	CLOTH41	0.290	7	.488
Course Total	CLOTH41	0.090	22	.294
No	CLOTH47	0.030	98	.173
Yes	CLOTH47	0.080	25	.277
Course Total	CLOTH47	0.040	123	.198
No	CM415	0.020	44	.151
Yes	CM415	0.330	3	.577
Course Total	CM415	0.040	47	.204
No	COMD133	0.070	29	.258
Yes	COMD133	0.000	3	.000
Course Total	COMD133	0.060	32	.246
No	COMMS101	0.090	43	.294
Yes	COMMS101	0.220	18	.428
Course Total	COMMS101	0.130	61	.340
No	COMMS230	0.000	4	.000
Yes	COMMS230	0.000	1	.
Course Total	COMMS230	0.000	5	.000
No	COMMS235	0.000	3	.000
Yes	COMMS235	0.330	3	.577
Course Total	COMMS235	0.170	6	.408
No	COMMS300	0.060	31	.250
Yes	COMMS300	0.110	9	.333
Course Total	COMMS300	0.080	40	.267

(continues)

Summary Withdrawal Statistics for All Courses Listed by Students Who Did and Did Not Have a Prior Enrollment, continued

Prior Enrollments	Course	M	N	SD
No	COMMS41	0.050	103	.216
Yes	COMMS41	0.080	49	.277
Course Total	COMMS41	0.060	152	.237
No	COMMS480	0.000	17	.000
Yes	COMMS480	0.000	6	.000
Course Total	COMMS480	0.000	23	.000
No	COMMS51	0.500	4	.577
Yes	COMMS51	0.000	1	.
Course Total	COMMS51	0.400	5	.548
No	CPSE400	0.080	36	.280
Yes	CPSE400	0.170	6	.408
Course Total	CPSE400	0.100	42	.297
No	CPSE515	0.060	35	.236
Yes	CPSE515	0.060	17	.243
Course Total	CPSE515	0.060	52	.235
No	CPSE600	0.000	10	.000
Yes	CPSE600	0.000	2	.000

(continues)

Summary Withdrawal Statistics for All Courses Listed by Students Who Did and Did Not Have a Prior Enrollment, continued

Prior Enrollments	Course	M	N	SD
Course Total	CPSE600	0.000	12	.000
No	CPSE618	0.000	9	.000
Yes	CPSE618	0.000	1	.
Course Total	CPSE618	0.000	10	.000
No	CTECH41	0.040	171	.199
Yes	CTECH41	0.020	43	.152
Course Total	CTECH41	0.040	214	.190
No	DANCE130	0.200	10	.422
Yes	DANCE130	0.000	3	.000
Course Total	DANCE130	0.150	13	.376
No	DANCE180	0.000	7	.000
Course Total	DANCE180	0.000	7	.000
No	EARTH41	0.060	459	.240
Yes	EARTH41	0.110	196	.310
Course Total	EARTH41	0.070	655	.263
No	EARTH43	0.030	134	.171
Yes	EARTH43	0.080	63	.272
Course Total	EARTH43	0.050	197	.209

(continues)

Summary Withdrawal Statistics for All Courses Listed by Students Who Did and Did Not Have a Prior Enrollment, continued

Prior Enrollments	Course	M	N	SD
No	EARTH51	0.040	232	.204
Yes	EARTH51	0.060	98	.241
Course Total	EARTH51	0.050	330	.215
No	EARTH55	0.040	115	.205
Yes	EARTH55	0.060	70	.234
Course Total	EARTH55	0.050	185	.216
No	ECON110	0.260	100	.441
Yes	ECON110	0.400	30	.498
Course Total	ECON110	0.290	130	.457
No	ECON41	0.040	269	.198
Yes	ECON41	0.190	58	.395
Course Total	ECON41	0.070	327	.251
No	ECON43	0.050	875	.209
Yes	ECON43	0.050	254	.213
Course Total	ECON43	0.050	1129	.210
No	ECON47	0.200	15	.414

(continues)

Summary Withdrawal Statistics for All Courses Listed by Students Who Did and Did Not Have a Prior Enrollment, continued

Prior Enrollments	Course	M	N	SD
Yes	ECON47	0.300	10	.483
Course Total	ECON47	0.240	25	.436
No	EL ED340	0.070	91	.250
Yes	EL ED340	0.030	29	.186
Course Total	EL ED340	0.060	120	.235
No	EL ED515	0.190	98	.397
Yes	EL ED515	0.200	30	.407
Course Total	EL ED515	0.200	128	.398
No	ELANG322	0.060	34	.239
Yes	ELANG322	0.080	13	.277
Course Total	ELANG322	0.060	47	.247
No	ENGL115	0.110	257	.307
Yes	ENGL115	0.240	54	.432
Course Total	ENGL115	0.130	311	.335
No	ENGL218	0.170	90	.375
Yes	ENGL218	0.230	26	.430
Course Total	ENGL218	0.180	116	.387

(continues)

Summary Withdrawal Statistics for All Courses Listed by Students Who Did and Did Not Have a Prior Enrollment, continued

Prior Enrollments	Course	M	N	SD
No	ENGL220	0.060	16	.250
Yes	ENGL220	0.090	11	.302
Course Total	ENGL220	0.070	27	.267
No	ENGL230	0.090	55	.290
Yes	ENGL230	0.050	20	.224
Course Total	ENGL230	0.080	75	.273
No	ENGL251	0.140	42	.354
Yes	ENGL251	0.310	16	.479
Course Total	ENGL251	0.190	58	.395
No	ENGL291	0.030	30	.183
Yes	ENGL291	0.250	8	.463
Course Total	ENGL291	0.080	38	.273
No	ENGL292	0.100	21	.301
Yes	ENGL292	0.000	7	.000
Course Total	ENGL292	0.070	28	.262
No	ENGL293	0.000	15	.000
Yes	ENGL293	0.200	5	.447
Course Total	ENGL293	0.050	20	.224

(continues)

Summary Withdrawal Statistics for All Courses Listed by Students Who Did and Did Not Have a Prior Enrollment, continued

Prior Enrollments	Course	M	N	SD
No	ENGL31	0.180	68	.384
Yes	ENGL31	0.500	4	.577
Course Total	ENGL31	0.190	72	.399
No	ENGL312	0.100	93	.297
Yes	ENGL312	0.090	23	.288
Course Total	ENGL312	0.090	116	.294
No	ENGL313	0.130	16	.342
Yes	ENGL313	0.000	10	.000
Course Total	ENGL313	0.080	26	.272
No	ENGL314	0.420	24	.504
Yes	ENGL314	0.240	17	.437
Course Total	ENGL314	0.340	41	.480
No	ENGL315	0.140	42	.354
Yes	ENGL315	0.050	20	.224
Course Total	ENGL315	0.110	62	.319
No	ENGL316	0.050	80	.219
Yes	ENGL316	0.110	18	.323
Course Total	ENGL316	0.060	98	.241
No	ENGL317	0.220	9	.441
Yes	ENGL317	0.180	11	.405
Course Total	ENGL317	0.200	20	.410
No	ENGL319	0.000	2	.000
Yes	ENGL319	0.000	3	.000

(continues)

Summary Withdrawal Statistics for All Courses Listed by Students Who Did and Did Not Have a Prior Enrollment, continued

Prior Enrollments	Course	M	N	SD
Course Total	ENGL319	0.000	5	.000
No	ENGL320	0.210	14	.426
Yes	ENGL320	0.500	6	.548
Course Total	ENGL320	0.300	20	.470
No	ENGL33	0.060	17	.243
Yes	ENGL33	0.000	2	.000
Course Total	ENGL33	0.050	19	.229
No	ENGL336	0.180	11	.405
Yes	ENGL336	0.110	9	.333
Course Total	ENGL336	0.150	20	.366
No	ENGL35	0.090	45	.288
Yes	ENGL35	0.130	8	.354
Course Total	ENGL35	0.090	53	.295
No	ENGL350	0.000	16	.000
Yes	ENGL350	0.130	16	.342
Course Total	ENGL350	0.060	32	.246
No	ENGL361	0.170	12	.389
Yes	ENGL361	0.000	3	.000
Course Total	ENGL361	0.130	15	.352
No	ENGL362	0.000	4	.000
Yes	ENGL362	0.000	4	.000
Course Total	ENGL362	0.000	8	.000

(continues)

Summary Withdrawal Statistics for All Courses Listed by Students Who Did and Did Not Have a Prior Enrollment, continued

Prior Enrollments	Course	M	N	SD
No	ENGL363	0.140	21	.359
Yes	ENGL363	0.130	8	.354
Course Total	ENGL363	0.140	29	.351
No	ENGL366	0.330	3	.577
Yes	ENGL366	0.000	7	.000
Course Total	ENGL366	0.100	10	.316
No	ENGL37	0.110	19	.315
Yes	ENGL37	0.500	2	.707
Course Total	ENGL37	0.140	21	.359
No	ENGL374	0.330	12	.492
Yes	ENGL374	0.000	7	.000
Course Total	ENGL374	0.210	19	.419
No	ENGL382	0.040	27	.192
Yes	ENGL382	0.000	9	.000
Course Total	ENGL382	0.030	36	.167
No	ENGL385	0.130	8	.354
Yes	ENGL385	0.000	1	.
Course Total	ENGL385	0.110	9	.333
No	ENGL395	0.070	15	.258
Yes	ENGL395	0.000	14	.000
Course Total	ENGL395	0.030	29	.186
No	ENGL41	0.060	1205	.232
Yes	ENGL41	0.120	155	.321

(continues)

Summary Withdrawal Statistics for All Courses Listed by Students Who Did and Did Not Have a Prior Enrollment, continued

Prior Enrollments	Course	M	N	SD
Course Total	ENGL41	0.060	1360	.245
No	ENGL420	0.080	75	.273
Yes	ENGL420	0.150	20	.366
Course Total	ENGL420	0.090	95	.294
No	ENGL43	0.060	723	.244
Yes	ENGL43	0.090	121	.289
Course Total	ENGL43	0.070	844	.251
No	ENGL45	0.100	916	.296
Yes	ENGL45	0.130	182	.333
Course Total	ENGL45	0.100	1098	.303
No	ENGL47	0.050	649	.217
Yes	ENGL47	0.080	146	.265
Course Total	ENGL47	0.050	795	.226
No	ENGL490	1.000	1	.
Course Total	ENGL490	1.000	1	.
No	ENGL495	0.330	6	.516
Yes	ENGL495	0.070	15	.258
Course Total	ENGL495	0.140	21	.359
No	ENGL51	0.060	1172	.239
Yes	ENGL51	0.080	176	.271
Course Total	ENGL51	0.060	1348	.243
No	ENGL53	0.060	702	.232

(continues)

Summary Withdrawal Statistics for All Courses Listed by Students Who Did and Did Not Have a Prior Enrollment, continued

Prior Enrollments	Course	M	N	SD
Yes	ENGL53	0.080	185	.274
Course Total	ENGL53	0.060	887	.241
No	ENGL55	0.060	1051	.230
Yes	ENGL55	0.090	171	.284
Course Total	ENGL55	0.060	1222	.239
No	ENGL57	0.050	494	.224
Yes	ENGL57	0.040	136	.206
Course Total	ENGL57	0.050	630	.220
No	ENGL59	0.020	209	.153
Yes	ENGL59	0.050	55	.229
Course Total	ENGL59	0.030	264	.172
No	ENGL61	0.000	1	.
Course Total	ENGL61	0.000	1	.
No	ENGN41	0.100	49	.306
Yes	ENGN41	0.200	10	.422
Course Total	ENGN41	0.120	59	.326
No	ENVRN41	0.050	146	.228
Yes	ENVRN41	0.000	41	.000
Course Total	ENVRN41	0.040	187	.203
No	ESL41	0.050	21	.218
Yes	ESL41	0.000	3	.000
Course Total	ESL41	0.040	24	.204

(continues)

Summary Withdrawal Statistics for All Courses Listed by Students Who Did and Did Not Have a Prior Enrollment, continued

Prior Enrollments	Course	M	N	SD
No	ESL43	0.000	2	.000
Yes	ESL43	0.250	4	.500
Course Total	ESL43	0.170	6	.408
No	EXSC116	0.250	8	.463
Yes	EXSC116	0.500	2	.707
Course Total	EXSC116	0.300	10	.483
No	EXSC139	0.230	31	.425
Yes	EXSC139	0.300	10	.483
Course Total	EXSC139	0.240	41	.435
No	EXSC172	0.000	3	.000
Course Total	EXSC172	0.000	3	.000
No	EXSC181	0.170	6	.408
Yes	EXSC181	0.200	5	.447
Course Total	EXSC181	0.180	11	.405
No	EXSC191	0.000	8	.000
Yes	EXSC191	0.250	4	.500
Course Total	EXSC191	0.080	12	.289
No	EXSC349	0.000	9	.000
Yes	EXSC349	0.210	14	.426
Course Total	EXSC349	0.130	23	.344
No	EXSC351	0.000	15	.000
Yes	EXSC351	0.500	2	.707
Course Total	EXSC351	0.060	17	.243

(continues)

Summary Withdrawal Statistics for All Courses Listed by Students Who Did and Did Not Have a Prior Enrollment, continued

Prior Enrollments	Course	M	N	SD
No	FALG43	0.050	94	.226
Yes	FALG43	0.000	29	.000
Course Total	FALG43	0.040	123	.198
No	FINL41	0.050	159	.219
Yes	FINL41	0.110	64	.315
Course Total	FINL41	0.070	223	.251
No	FIT41	0.120	699	.329
Yes	FIT41	0.090	89	.288
Course Total	FIT41	0.120	788	.324
No	FIT45	0.040	224	.197
Yes	FIT45	0.060	54	.231
Course Total	FIT45	0.040	278	.204
No	FIT49	0.050	132	.209
Yes	FIT49	0.120	26	.326
Course Total	FIT49	0.060	158	.233
No	FOODS41	0.070	243	.249
Yes	FOODS41	0.080	49	.277
Course Total	FOODS41	0.070	292	.253
No	FOODS43	0.000	18	.000
Yes	FOODS43	0.000	14	.000
Course Total	FOODS43	0.000	32	.000
No	FREN202	0.200	30	.407

(continues)

Summary Withdrawal Statistics for All Courses Listed by Students Who Did and Did Not Have a Prior Enrollment, continued

Prior Enrollments	Course	M	N	SD
Yes	FREN202	0.100	10	.316
Course Total	FREN202	0.180	40	.385
No	FREN321	0.000	16	.000
Yes	FREN321	0.000	3	.000
Course Total	FREN321	0.000	19	.000
No	FREN41	0.140	273	.343
Yes	FREN41	0.320	25	.476
Course Total	FREN41	0.150	298	.359
No	FREN43	0.170	71	.377
Yes	FREN43	0.050	19	.229
Course Total	FREN43	0.140	90	.354
No	FREN51	0.140	198	.344
Yes	FREN51	0.100	39	.307
Course Total	FREN51	0.130	237	.338
No	FREN53	0.110	89	.318
Yes	FREN53	0.060	33	.242
Course Total	FREN53	0.100	122	.299
No	GARD41	0.080	26	.272
Yes	GARD41	0.250	8	.463
Course Total	GARD41	0.120	34	.327
No	GEOG101	0.220	27	.424
Yes	GEOG101	0.200	5	.447
Course Total	GEOG101	0.220	32	.420

(continues)

Summary Withdrawal Statistics for All Courses Listed by Students Who Did and Did Not Have a Prior Enrollment, continued

Prior Enrollments	Course	M	N	SD
No	GEOG120	0.120	49	.331
Yes	GEOG120	0.130	30	.346
Course Total	GEOG120	0.130	79	.335
No	GEOG130	0.050	22	.213
Yes	GEOG130	0.000	9	.000
Course Total	GEOG130	0.030	31	.180
No	GEOG250	0.070	15	.258
Yes	GEOG250	0.000	9	.000
Course Total	GEOG250	0.040	24	.204
No	GEOG41	0.030	338	.178
Yes	GEOG41	0.010	101	.100
Course Total	GEOG41	0.030	439	.163
No	GEOG43	0.070	14	.267
Yes	GEOG43	0.210	14	.426
Course Total	GEOG43	0.140	28	.356
No	GEOL101	0.110	47	.312
Yes	GEOL101	0.160	19	.375
Course Total	GEOL101	0.120	66	.329
No	GEOL103	0.100	29	.310
Yes	GEOL103	0.140	14	.363
Course Total	GEOL103	0.120	43	.324
No	GEOM41	0.060	1801	.241

(continues)

Summary Withdrawal Statistics for All Courses Listed by Students Who Did and Did Not Have a Prior Enrollment, continued

Prior Enrollments	Course	M	N	SD
Yes	GEOM41	0.100	385	.302
Course Total	GEOM41	0.070	2186	.253
No	GEOM43	0.040	963	.195
Yes	GEOM43	0.060	371	.231
Course Total	GEOM43	0.040	1334	.206
No	GERM101	0.240	37	.435
Yes	GERM101	0.220	9	.441
Course Total	GERM101	0.240	46	.431
No	GERM102	0.130	8	.354
Yes	GERM102	0.000	1	.
Course Total	GERM102	0.110	9	.333
No	GERM302	0.330	3	.577
Yes	GERM302	0.000	0	.000
Course Total	GERM302	0.330	3	.577
No	GERM303	0.000	1	.
Yes	GERM303	0.000	0	.000
Course Total	GERM303	0.000	1	.
No	GERM320	0.330	3	.577
Yes	GERM320	0.000	0	.000
Course Total	GERM320	0.330	3	.577
No	GERM321	0.000	1	.
Yes	GERM321	0.000	0	.000
Course Total	GERM321	0.000	1	.

(continues)

Summary Withdrawal Statistics for All Courses Listed by Students Who Did and Did Not Have a Prior Enrollment, continued

Prior Enrollments	Course	M	N	SD
No	GERM41	0.080	234	.267
Yes	GERM41	0.000	18	.000
Course Total	GERM41	0.070	252	.258
No	GERM43	0.100	49	.306
Yes	GERM43	0.000	23	.000
Course Total	GERM43	0.070	72	.256
No	GERM51	0.050	92	.228
Yes	GERM51	0.040	24	.204
Course Total	GERM51	0.050	116	.222
No	GERM53	0.080	39	.270
Yes	GERM53	0.080	12	.289
Course Total	GERM53	0.080	51	.272
No	GOLF41	0.060	143	.231
Yes	GOLF41	0.130	23	.344
Course Total	GOLF41	0.070	166	.249
No	GOVT41	0.070	953	.263
Yes	GOVT41	0.120	297	.327
Course Total	GOVT41	0.090	1250	.280
No	GOVT43	0.120	157	.327
Yes	GOVT43	0.100	81	.300
Course Total	GOVT43	0.110	238	.318
No	GOVT44	0.180	11	.405

(continues)

Summary Withdrawal Statistics for All Courses Listed by Students Who Did and Did Not Have a Prior Enrollment, continued

Prior Enrollments	Course	M	N	SD
Yes	GOVT44	0.000	3	.000
Course Total	GOVT44	0.140	14	.363
No	GOVT45	0.040	339	.206
Yes	GOVT45	0.120	83	.328
Course Total	GOVT45	0.060	422	.236
No	GOVT46	0.140	29	.351
Yes	GOVT46	0.330	6	.516
Course Total	GOVT46	0.170	35	.382
No	GOVT49	0.030	36	.167
Yes	GOVT49	0.080	13	.277
Course Total	GOVT49	0.040	49	.200
No	GSCI31	0.180	45	.387
Yes	GSCI31	0.180	50	.388
Course Total	GSCI31	0.180	95	.385
No	GSCI33	0.110	18	.323
Yes	GSCI33	0.140	14	.363
Course Total	GSCI33	0.130	32	.336
No	GSCI35	0.120	43	.324
Yes	GSCI35	0.070	42	.261
Course Total	GSCI35	0.090	85	.294
No	GSCI37	0.050	21	.218
Yes	GSCI37	0.070	15	.258
Course Total	GSCI37	0.060	36	.232

(continues)

Summary Withdrawal Statistics for All Courses Listed by Students Who Did and Did Not Have a Prior Enrollment, continued

Prior Enrollments	Course	M	N	SD
No	GUITR41	0.060	87	.234
Yes	GUITR41	0.180	49	.391
Course Total	GUITR41	0.100	136	.305
No	HEB131	0.000	7	.000
Yes	HEB131	0.000	0	.000
Course Total	HEB131	0.000	7	.000
No	HEPE105	0.100	48	.309
Yes	HEPE105	0.250	16	.447
Course Total	HEPE105	0.140	64	.350
No	HEPE129	0.100	175	.305
Yes	HEPE129	0.210	47	.414
Course Total	HEPE129	0.130	222	.333
No	HIST201	0.100	146	.295
Yes	HIST201	0.060	53	.233
Course Total	HIST201	0.090	199	.280
No	HIST202	0.080	99	.274
Yes	HIST202	0.060	66	.240
Course Total	HIST202	0.070	165	.260
No	HIST220	0.130	77	.338
Yes	HIST220	0.080	25	.277
Course Total	HIST220	0.120	102	.324
No	HIST221	0.100	68	.306

(continues)

Summary Withdrawal Statistics for All Courses Listed by Students Who Did and Did Not Have a Prior Enrollment, continued

Prior Enrollments	Course	M	N	SD
Yes	HIST221	0.210	14	.426
Course Total	HIST221	0.120	82	.329
No	HIST252	0.070	15	.258
Yes	HIST252	0.000	5	.000
Course Total	HIST252	0.050	20	.224
No	HIST302	0.000	10	.000
Yes	HIST302	0.000	11	.000
Course Total	HIST302	0.000	21	.000
No	HIST304	0.000	4	.000
Course Total	HIST304	0.000	4	.000
No	HIST319	0.200	10	.422
Yes	HIST319	0.080	12	.289
Course Total	HIST319	0.140	22	.351
No	HIST322	0.180	11	.405
Yes	HIST322	0.380	8	.518
Course Total	HIST322	0.260	19	.452
No	HIST323	0.000	8	.000
Yes	HIST323	0.000	5	.000
Course Total	HIST323	0.000	13	.000
No	HIST331	0.000	15	.000
Yes	HIST331	0.140	7	.378
Course Total	HIST331	0.050	22	.213

(continues)

Summary Withdrawal Statistics for All Courses Listed by Students Who Did and Did Not Have a Prior Enrollment, continued

Prior Enrollments	Course	M	N	SD
No	HIST340	0.000	16	.000
Yes	HIST340	0.000	9	.000
Course Total	HIST340	0.000	25	.000
No	HIST341	0.000	16	.000
Yes	HIST341	0.200	5	.447
Course Total	HIST341	0.050	21	.218
No	HIST378	0.120	17	.332
Yes	HIST378	0.000	19	.000
Course Total	HIST378	0.060	36	.232
No	HIST400	0.000	15	.000
Yes	HIST400	0.150	13	.376
Course Total	HIST400	0.070	28	.262
No	HIST404	0.200	5	.447
Yes	HIST404	0.000	5	.000
Course Total	HIST404	0.100	10	.316
No	HIST409	0.000	0	.000
Yes	HIST409	0.000	1	.
Course Total	HIST409	0.000	1	.
No	HIST41	0.070	1228	.257
Yes	HIST41	0.070	425	.248
Course Total	HIST41	0.070	1653	.254
No	HIST410	0.000	0	.000
Yes	HIST410	0.000	2	.000

(continues)

Summary Withdrawal Statistics for All Courses Listed by Students Who Did and Did Not Have a Prior Enrollment, continued

Prior Enrollments	Course	M	N	SD
Course Total	HIST410	0.000	2	.000
No	HIST413	0.000	0	.000
Yes	HIST413	0.200	5	.447
Course Total	HIST413	0.200	5	.447
No	HIST414	0.000	0	.000
Yes	HIST414	0.170	6	.408
Course Total	HIST414	0.170	6	.408
No	HIST415	0.000	5	.000
Yes	HIST415	0.000	1	.
Course Total	HIST415	0.000	6	.000
No	HIST421	0.000	7	.000
Yes	HIST421	0.000	1	.
Course Total	HIST421	0.000	8	.000
No	HIST43	0.050	662	.221
Yes	HIST43	0.080	274	.278
Course Total	HIST43	0.060	936	.239
No	HIST433	0.000	6	.000
Yes	HIST433	0.100	10	.316
Course Total	HIST433	0.060	16	.250
No	HIST481	0.000	2	.000
Yes	HIST481	0.000	2	.000
Course Total	HIST481	0.000	4	.000

(continues)

Summary Withdrawal Statistics for All Courses Listed by Students Who Did and Did Not Have a Prior Enrollment, continued

Prior Enrollments	Course	M	N	SD
No	HIST482	0.500	2	.707
Yes	HIST482	0.000	6	.000
Course Total	HIST482	0.130	8	.354
No	HIST51	0.030	280	.156
Yes	HIST51	0.070	41	.264
Course Total	HIST51	0.030	321	.174
No	HIST53	0.040	339	.206
Yes	HIST53	0.040	98	.199
Course Total	HIST53	0.040	437	.204
No	HIST55	0.000	1	.
Yes	HIST55	0.000	1	.
Course Total	HIST55	0.000	2	.000
No	HIST57	0.060	53	.233
Yes	HIST57	0.050	20	.224
Course Total	HIST57	0.050	73	.229
No	HIST61	0.040	540	.206
Yes	HIST61	0.030	210	.180
Course Total	HIST61	0.040	750	.199
No	HIST63	0.030	444	.162
Yes	HIST63	0.040	202	.207
Course Total	HIST63	0.030	646	.177
No	HIST65	0.050	282	.225
Yes	HIST65	0.050	98	.221

(continues)

Summary Withdrawal Statistics for All Courses Listed by Students Who Did and Did Not Have a Prior Enrollment, continued

Prior Enrollments	Course	M	N	SD
Course Total	HIST65	0.050	380	.224
No	HIST66	0.060	222	.235
Yes	HIST66	0.050	65	.211
Course Total	HIST66	0.060	287	.230
No	HIST67	0.040	245	.198
Yes	HIST67	0.090	65	.292
Course Total	HIST67	0.050	310	.222
No	HLTH31	0.070	43	.258
Yes	HLTH31	1.000	1	.
Course Total	HLTH31	0.090	44	.291
No	HLTH345	0.050	58	.223
Yes	HLTH345	0.000	9	.000
Course Total	HLTH345	0.040	67	.208
No	HLTH370	0.050	21	.218
Yes	HLTH370	0.050	20	.224
Course Total	HLTH370	0.050	41	.218
No	HLTH41	0.030	6338	.171
Yes	HLTH41	0.050	365	.217
Course Total	HLTH41	0.030	6703	.173
No	HLTH42	0.050	170	.225
Yes	HLTH42	0.190	32	.397
Course Total	HLTH42	0.070	202	.263

(continues)

Summary Withdrawal Statistics for All Courses Listed by Students Who Did and Did Not Have a Prior Enrollment, continued

Prior Enrollments	Course	M	N	SD
No	HLTH43	0.060	152	.237
Yes	HLTH43	0.050	96	.223
Course Total	HLTH43	0.060	248	.231
No	HLTH45	0.050	102	.217
Yes	HLTH45	0.000	41	.000
Course Total	HLTH45	0.030	143	.184
No	HLTH466	0.000	23	.000
Yes	HLTH466	0.050	21	.218
Course Total	HLTH466	0.020	44	.151
No	HUM101	0.100	59	.305
Yes	HUM101	0.130	16	.342
Course Total	HUM101	0.110	75	.311
No	HUM201	0.060	33	.242
Yes	HUM201	0.050	20	.224
Course Total	HUM201	0.060	53	.233
No	HUM202	0.090	55	.290
Yes	HUM202	0.090	35	.284
Course Total	HUM202	0.090	90	.286
No	HUM41	0.140	36	.351
Yes	HUM41	0.090	11	.302
Course Total	HUM41	0.130	47	.337
No	HUM43	0.080	13	.277
Yes	HUM43	0.000	3	.000

(continues)

Summary Withdrawal Statistics for All Courses Listed by Students Who Did and Did Not Have a Prior Enrollment, continued

Prior Enrollments	Course	M	N	SD
Course Total	HUM43	0.060	16	.250
No	I SYS100	0.040	48	.202
Yes	I SYS100	0.130	31	.341
Course Total	I SYS100	0.080	79	.267
No	I SYS101	0.150	13	.376
Yes	I SYS101	0.070	15	.258
Course Total	I SYS101	0.110	28	.315
No	I SYS41	0.000	8	.000
Yes	I SYS41	0.250	4	.500
Course Total	I SYS41	0.080	12	.289
No	I SYS43	0.250	8	.463
Yes	I SYS43	0.000	4	.000
Course Total	I SYS43	0.170	12	.389
No	INFOP41	0.030	326	.181
Yes	INFOP41	0.170	76	.379
Course Total	INFOP41	0.060	402	.237
No	INTDE41	0.130	60	.343
Yes	INTDE41	0.150	13	.376
Course Total	INTDE41	0.140	73	.346
No	INTDE43	0.000	1	.
Yes	INTDE43	0.000	3	.000
Course Total	INTDE43	0.000	4	.000

(continues)

Summary Withdrawal Statistics for All Courses Listed by Students Who Did and Did Not Have a Prior Enrollment, continued

Prior Enrollments	Course	M	N	SD
No	IP T515	0.250	12	.452
Yes	IP T515	0.000	5	.000
Course Total	IP T515	0.180	17	.393
No	IP T652	0.170	6	.408
Yes	IP T652	0.000	3	.000
Course Total	IP T652	0.110	9	.333
No	IPC41	0.070	57	.258
Yes	IPC41	0.000	7	.000
Course Total	IPC41	0.060	64	.244
No	JAPAN300	0.000	3	.000
Yes	JAPAN300	0.000	1	.
Course Total	JAPAN300	0.000	4	.000
No	JAPAN302	0.000	2	.000
Yes	JAPAN302	0.500	2	.707
Course Total	JAPAN302	0.250	4	.500
No	JAPAN41	0.080	242	.270
Yes	JAPAN41	0.220	18	.428
Course Total	JAPAN41	0.090	260	.285
No	JAPAN43	0.180	50	.388
Yes	JAPAN43	0.000	20	.000
Course Total	JAPAN43	0.130	70	.337
No	JAPAN51	0.000	16	.000
Yes	JAPAN51	0.000	3	.000

(continues)

Summary Withdrawal Statistics for All Courses Listed by Students Who Did and Did Not Have a Prior Enrollment, continued

Prior Enrollments	Course	M	N	SD
Course Total	JAPAN51	0.000	19	.000
No	JOG41	0.060	560	.236
Yes	JOG41	0.110	92	.313
Course Total	JOG41	0.070	652	.248
No	LATIN121	0.000	0	.000
Yes	LATIN121	0.000	1	.
Course Total	LATIN121	0.000	1	.
No	LATIN41	0.060	196	.240
Yes	LATIN41	0.150	20	.366
Course Total	LATIN41	0.070	216	.255
No	LATIN43	0.040	26	.196
Yes	LATIN43	0.070	15	.258
Course Total	LATIN43	0.050	41	.218
No	LATIN51	0.080	66	.267
Yes	LATIN51	0.000	21	.000
Course Total	LATIN51	0.060	87	.234
No	LATIN53	0.000	30	.000
Yes	LATIN53	0.000	4	.000
Course Total	LATIN53	0.000	34	.000
No	LIT45	0.030	86	.185
Yes	LIT45	0.070	15	.258
Course Total	LIT45	0.040	101	.196

(continues)

Summary Withdrawal Statistics for All Courses Listed by Students Who Did and Did Not Have a Prior Enrollment, continued

Prior Enrollments	Course	M	N	SD
No	LIT47	0.030	78	.159
Yes	LIT47	0.130	15	.352
Course Total	LIT47	0.040	93	.204
No	LIT51	0.140	29	.351
Yes	LIT51	0.000	11	.000
Course Total	LIT51	0.100	40	.304
No	LIT61	0.070	97	.260
Yes	LIT61	0.130	23	.344
Course Total	LIT61	0.080	120	.278
No	M COM320	0.150	33	.364
Yes	M COM320	0.060	18	.236
Course Total	M COM320	0.120	51	.325
No	MANEC300	0.000	14	.000
Yes	MANEC300	0.500	4	.577
Course Total	MANEC300	0.110	18	.323
No	MANEC453	0.130	23	.344
Yes	MANEC453	0.000	3	.000
Course Total	MANEC453	0.120	26	.326
No	MATH110	0.220	805	.414
Yes	MATH110	0.260	204	.440
Course Total	MATH110	0.230	1009	.420
No	MATH111	0.140	114	.349
Yes	MATH111	0.100	21	.301

(continues)

Summary Withdrawal Statistics for All Courses Listed by Students Who Did and Did Not Have a Prior Enrollment, continued

Prior Enrollments	Course	M	N	SD
Course Total	MATH111	0.130	135	.341
No	MATH112	0.160	207	.367
Yes	MATH112	0.190	36	.401
Course Total	MATH112	0.160	243	.372
No	MATH119	0.280	108	.450
Yes	MATH119	0.300	33	.467
Course Total	MATH119	0.280	141	.452
No	MATH300	0.130	93	.337
Yes	MATH300	0.200	10	.422
Course Total	MATH300	0.140	103	.344
No	MATH31	0.070	54	.264
Yes	MATH31	0.110	18	.323
Course Total	MATH31	0.080	72	.278
No	MATH313	0.090	87	.291
Yes	MATH313	0.000	6	.000
Course Total	MATH313	0.090	93	.282
No	MATH33	0.150	39	.366
Yes	MATH33	0.100	10	.316
Course Total	MATH33	0.140	49	.354
No	MATH334	0.300	27	.465
Yes	MATH334	0.000	3	.000
Course Total	MATH334	0.270	30	.450

(continues)

Summary Withdrawal Statistics for All Courses Listed by Students Who Did and Did Not Have a Prior Enrollment, continued

Prior Enrollments	Course	M	N	SD
No	MATH343	0.130	53	.342
Yes	MATH343	0.140	7	.378
Course Total	MATH343	0.130	60	.343
No	MATH42	1.000	1	.
Yes	MATH42	0.000	0	.000
Course Total	MATH42	1.000	1	.
No	MATH43	0.000	1	.
Yes	MATH43	0.000	1	.
Course Total	MATH43	0.000	2	.000
No	MATH44	0.000	0	.
Yes	MATH44	0.000	1	.
Course Total	MATH44	0.000	1	.
No	MATH47	0.030	59	.183
Yes	MATH47	0.070	15	.258
Course Total	MATH47	0.040	74	.199
No	MATH49	0.130	8	.354
Yes	MATH49	0.290	7	.488
Course Total	MATH49	0.200	15	.414
No	MATH97	0.110	312	.308
Yes	MATH97	0.090	46	.285
Course Total	MATH97	0.100	358	.305
No	MMBIO221	0.130	171	.342
Yes	MMBIO221	0.040	25	.200

(continues)

Summary Withdrawal Statistics for All Courses Listed by Students Who Did and Did Not Have a Prior Enrollment, continued

Prior Enrollments	Course	M	N	SD
Course Total	MMBIO221	0.120	196	.329
No	MUSIC101	0.140	29	.351
Yes	MUSIC101	0.330	24	.482
Course Total	MUSIC101	0.230	53	.423
No	MUSIC113	0.060	18	.236
Yes	MUSIC113	0.140	7	.378
Course Total	MUSIC113	0.080	25	.277
No	MUSIC114	1.000	1	.
Course Total	MUSIC114	1.000	1	.
No	MUSIC204	0.090	11	.302
Yes	MUSIC204	0.250	12	.452
Course Total	MUSIC204	0.170	23	.388
No	MUSIC399	0.130	15	.352
Yes	MUSIC399	0.250	8	.463
Course Total	MUSIC399	0.170	23	.388
No	MUSIC41	0.040	85	.186
Yes	MUSIC41	0.060	47	.247
Course Total	MUSIC41	0.050	132	.209
No	NDFS100	0.070	212	.257
Yes	NDFS100	0.000	30	.000
Course Total	NDFS100	0.060	242	.242
No	NURS102	0.070	114	.257

(continues)

Summary Withdrawal Statistics for All Courses Listed by Students Who Did and Did Not Have a Prior Enrollment, continued

Prior Enrollments	Course	M	N	SD
Yes	NURS102	0.000	12	.000
Course Total	NURS102	0.060	126	.245
No	OCCUP41	0.110	167	.318
Yes	OCCUP41	0.030	29	.186
Course Total	OCCUP41	0.100	196	.303
No	OJT41	0.010	96	.102
Yes	OJT41	0.140	7	.378
Course Total	OJT41	0.020	103	.139
No	OJT43	0.000	11	.000
Yes	OJT43	0.000	1	.
Course Total	OJT43	0.000	12	.000
No	ORG B320	0.100	42	.297
Yes	ORG B320	0.140	14	.363
Course Total	ORG B320	0.110	56	.312
No	ORG B327	0.070	29	.258
Yes	ORG B327	0.000	14	.000
Course Total	ORG B327	0.050	43	.213
No	ORG B347	0.000	12	.000
Yes	ORG B347	0.000	8	.000
Course Total	ORG B347	0.000	20	.000
No	ORG B400	0.070	54	.264
Yes	ORG B400	0.050	19	.229
Course Total	ORG B400	0.070	73	.254

(continues)

Summary Withdrawal Statistics for All Courses Listed by Students Who Did and Did Not Have a Prior Enrollment, continued

Prior Enrollments	Course	M	N	SD
No	PDBIO120	0.180	38	.393
Yes	PDBIO120	0.140	7	.378
Course Total	PDBIO120	0.180	45	.387
No	PDBIO205	0.140	14	.363
Course Total	PDBIO205	0.140	14	.363
No	PDBIO210	0.120	138	.330
Yes	PDBIO210	0.070	15	.258
Course Total	PDBIO210	0.120	153	.323
No	PHIL110	0.070	98	.259
Yes	PHIL110	0.160	25	.374
Course Total	PHIL110	0.090	123	.287
No	PHIL205	0.140	37	.347
Yes	PHIL205	0.200	10	.422
Course Total	PHIL205	0.150	47	.360
No	PHIL305	0.000	6	.000
Yes	PHIL305	0.000	1	.
Course Total	PHIL305	0.000	7	.000
No	PHIL41	0.130	85	.338
Yes	PHIL41	0.150	13	.376
Course Total	PHIL41	0.130	98	.341
No	PHSCS105	0.180	121	.387
Yes	PHSCS105	0.120	17	.332
Course Total	PHSCS105	0.170	138	.380

(continues)

Summary Withdrawal Statistics for All Courses Listed by Students Who Did and Did Not Have a Prior Enrollment, continued

Prior Enrollments	Course	M	N	SD
No	PHSCS106	0.150	34	.359
Yes	PHSCS106	0.130	8	.354
Course Total	PHSCS106	0.140	42	.354
No	PHSCS107	0.000	1	.
Course Total	PHSCS107	0.000	1	.
No	PHSCS121	0.390	121	.489
Yes	PHSCS121	0.260	34	.448
Course Total	PHSCS121	0.360	155	.482
No	PHSCS123	0.070	46	.250
Yes	PHSCS123	0.070	29	.258
Course Total	PHSCS123	0.070	75	.251
No	PHSCS127	0.130	38	.343
Yes	PHSCS127	0.200	20	.410
Course Total	PHSCS127	0.160	58	.365
No	PHSCS137	0.130	24	.338
Yes	PHSCS137	0.300	10	.483
Course Total	PHSCS137	0.180	34	.387
No	PHSCS41	0.130	306	.334
Yes	PHSCS41	0.150	91	.363
Course Total	PHSCS41	0.130	397	.341
No	PHSCS43	0.070	68	.263
Yes	PHSCS43	0.050	40	.221

(continues)

Summary Withdrawal Statistics for All Courses Listed by Students Who Did and Did Not Have a Prior Enrollment, continued

Prior Enrollments	Course	M	N	SD
Course Total	PHSCS43	0.060	108	.247
No	PHY S100	0.090	102	.285
Yes	PHY S100	0.080	40	.267
Course Total	PHY S100	0.080	142	.279
No	PHYS41	0.090	186	.281
Yes	PHYS41	0.090	54	.293
Course Total	PHYS41	0.090	240	.283
No	PIANO41	0.110	36	.319
Yes	PIANO41	0.110	19	.315
Course Total	PIANO41	0.110	55	.315
No	PL SC110	0.120	66	.329
Yes	PL SC110	0.110	27	.320
Course Total	PL SC110	0.120	93	.325
No	PL SC170	0.060	18	.236
Yes	PL SC170	0.200	10	.422
Course Total	PL SC170	0.110	28	.315
No	PL SC201	0.260	23	.449
Yes	PL SC201	0.200	10	.422
Course Total	PL SC201	0.240	33	.435
No	PL SC202	0.100	29	.310
Yes	PL SC202	0.170	12	.389
Course Total	PL SC202	0.120	41	.331

(continues)

Summary Withdrawal Statistics for All Courses Listed by Students Who Did and Did Not Have a Prior Enrollment, continued

Prior Enrollments	Course	M	N	SD
No	PL SC316	0.000	25	.000
Yes	PL SC316	0.130	16	.342
Course Total	PL SC316	0.050	41	.218
No	PL SC321	0.050	44	.211
Yes	PL SC321	0.000	33	.000
Course Total	PL SC321	0.030	77	.160
No	PL SC351	0.000	4	.000
Yes	PL SC351	0.000	3	.000
Course Total	PL SC351	0.000	7	.000
No	PPNT41	0.000	0	.000
Yes	PPNT41	0.000	1	.
Course Total	PPNT41	0.000	1	.
No	PSYCH111	0.100	202	.306
Yes	PSYCH111	0.210	48	.410
Course Total	PSYCH111	0.120	250	.330
No	PSYCH210	0.360	11	.505
Yes	PSYCH210	0.000	2	.000
Course Total	PSYCH210	0.310	13	.480
No	PSYCH301	0.130	23	.344
Yes	PSYCH301	0.080	13	.277
Course Total	PSYCH301	0.110	36	.319
No	PSYCH306	0.080	39	.270
Yes	PSYCH306	0.050	37	.229

(continues)

Summary Withdrawal Statistics for All Courses Listed by Students Who Did and Did Not Have a Prior Enrollment, continued

Prior Enrollments	Course	M	N	SD
Course Total	PSYCH306	0.070	76	.250
No	PSYCH320	0.030	34	.171
Yes	PSYCH320	0.000	15	.000
Course Total	PSYCH320	0.020	49	.143
No	PSYCH321	0.000	53	.000
Yes	PSYCH321	0.000	30	.000
Course Total	PSYCH321	0.000	83	.000
No	PSYCH330	0.130	16	.342
Yes	PSYCH330	0.130	15	.352
Course Total	PSYCH330	0.130	31	.341
No	PSYCH338	0.050	42	.216
Yes	PSYCH338	0.060	17	.243
Course Total	PSYCH338	0.050	59	.222
No	PSYCH341	0.070	131	.254
Yes	PSYCH341	0.130	40	.335
Course Total	PSYCH341	0.080	171	.275
No	PSYCH342	0.100	134	.307
Yes	PSYCH342	0.070	30	.254
Course Total	PSYCH342	0.100	164	.298
No	PSYCH350	0.140	21	.359
Yes	PSYCH350	0.000	6	.000
Course Total	PSYCH350	0.110	27	.320

(continues)

Summary Withdrawal Statistics for All Courses Listed by Students Who Did and Did Not Have a Prior Enrollment, continued

Prior Enrollments	Course	M	N	SD
No	PSYCH358	0.020	114	.132
Yes	PSYCH358	0.040	28	.189
Course Total	PSYCH358	0.020	142	.144
No	PSYCH361	0.080	12	.289
Yes	PSYCH361	0.000	1	.
Course Total	PSYCH361	0.080	13	.277
No	PSYCH365	0.000	12	.000
Yes	PSYCH365	0.220	9	.441
Course Total	PSYCH365	0.100	21	.301
No	PWS103	0.170	6	.408
Yes	PWS103	0.130	8	.354
Course Total	PWS103	0.140	14	.363
No	PWS150	0.000	21	.000
Yes	PWS150	0.000	4	.000
Course Total	PWS150	0.000	25	.000
No	PWS225	0.000	8	.000
Yes	PWS225	0.000	2	.000
Course Total	PWS225	0.000	10	.000
No	PWS275	0.300	27	.465
Yes	PWS275	0.250	4	.500
Course Total	PWS275	0.290	31	.461
No	PWS282	0.000	7	.000
Yes	PWS282	0.000	2	.000

(continues)

Summary Withdrawal Statistics for All Courses Listed by Students Who Did and Did Not Have a Prior Enrollment, continued

Prior Enrollments	Course	M	N	SD
Course Total	PWS282	0.000	9	.000
No	READ33	0.060	36	.232
Yes	READ33	0.000	7	.000
Course Total	READ33	0.050	43	.213
No	READ35	0.000	1	.
Yes	READ35	0.000	2	.000
Course Total	READ35	0.000	3	.000
No	READ41	0.040	70	.204
Yes	READ41	0.060	33	.242
Course Total	READ41	0.050	103	.216
No	READ45	0.140	78	.350
Yes	READ45	0.000	22	.000
Course Total	READ45	0.110	100	.314
No	READ49	0.030	39	.160
Yes	READ49	0.400	5	.548
Course Total	READ49	0.070	44	.255
No	READ51	0.050	38	.226
Yes	READ51	0.080	13	.277
Course Total	READ51	0.060	51	.238
No	REAL41	0.030	1735	.164
Yes	REAL41	0.090	251	.289
Course Total	REAL41	0.040	1986	.186

(continues)

Summary Withdrawal Statistics for All Courses Listed by Students Who Did and Did Not Have a Prior Enrollment, continued

Prior Enrollments	Course	M	N	SD
No	REL A121	0.120	74	.329
Yes	REL A121	0.110	19	.315
Course Total	REL A121	0.120	93	.325
No	REL A122	0.010	75	.115
Yes	REL A122	0.050	20	.224
Course Total	REL A122	0.020	95	.144
No	REL A211	0.050	95	.224
Yes	REL A211	0.000	33	.000
Course Total	REL A211	0.040	128	.195
No	REL A212	0.180	17	.393
Yes	REL A212	0.060	16	.250
Course Total	REL A212	0.120	33	.331
No	REL A301	0.070	43	.258
Yes	REL A301	0.060	18	.236
Course Total	REL A301	0.070	61	.250
No	REL A302	0.000	1	.
Yes	REL A302	0.000	2	.000
Course Total	REL A302	0.000	3	.000
No	REL A304	0.100	10	.316
Yes	REL A304	0.000	3	.000
Course Total	REL A304	0.080	13	.277
No	REL A327	0.000	14	.000
Yes	REL A327	0.130	8	.354

(continues)

Summary Withdrawal Statistics for All Courses Listed by Students Who Did and Did Not Have a Prior Enrollment, continued

Prior Enrollments	Course	M	N	SD
Course Total	REL A327	0.050	22	.213
No	REL A395	0.170	6	.408
Yes	REL A395	0.000	5	.000
Course Total	REL A395	0.090	11	.302
No	REL C130	0.040	24	.204
Yes	REL C130	0.000	11	.000
Course Total	REL C130	0.030	35	.169
No	REL C234	0.100	41	.300
Yes	REL C234	0.100	20	.308
Course Total	REL C234	0.100	61	.300
No	REL C261	0.130	23	.344
Yes	REL C261	0.000	14	.000
Course Total	REL C261	0.080	37	.277
No	REL C324	0.040	73	.200
Yes	REL C324	0.000	32	.000
Course Total	REL C324	0.030	105	.167
No	REL C325	0.000	22	.000
Yes	REL C325	0.050	22	.213
Course Total	REL C325	0.020	44	.151
No	REL C333	0.000	17	.000
Yes	REL C333	0.000	14	.000
Course Total	REL C333	0.000	31	.000

(continues)

Summary Withdrawal Statistics for All Courses Listed by Students Who Did and Did Not Have a Prior Enrollment, continued

Prior Enrollments	Course	M	N	SD
No	REL C341	0.080	12	.289
Yes	REL C341	0.000	6	.000
Course Total	REL C341	0.060	18	.236
No	REL C342	0.000	9	.000
Yes	REL C342	0.200	5	.447
Course Total	REL C342	0.070	14	.267
No	REL C343	0.330	3	.577
Yes	REL C343	0.000	4	.000
Course Total	REL C343	0.140	7	.378
No	REL C393	0.100	20	.308
Yes	REL C393	0.100	20	.308
Course Total	REL C393	0.100	40	.304
No	REL C431	0.000	3	.000
Yes	REL C431	0.000	1	.
Course Total	REL C431	0.000	4	.000
No	RUSS41	0.110	99	.316
Yes	RUSS41	0.000	9	.000
Course Total	RUSS41	0.100	108	.304
No	RUSS43	1.000	1	.
Yes	RUSS43	0.000	2	.000
Course Total	RUSS43	0.330	3	.577
No	RUSS51	0.000	6	.000
Yes	RUSS51	0.500	2	.707

(continues)

Summary Withdrawal Statistics for All Courses Listed by Students Who Did and Did Not Have a Prior Enrollment, continued

Prior Enrollments	Course	M	N	SD
Course Total	RUSS51	0.130	8	.354
No	RUSS53	0.000	1	.
Course Total	RUSS53	0.000	1	.
No	SC ED515	0.090	92	.283
Yes	SC ED515	0.080	26	.272
Course Total	SC ED515	0.080	118	.280
No	SELFG41	0.000	34	.000
Yes	SELFG41	0.100	39	.307
Course Total	SELFG41	0.050	73	.229
No	SELFG43	0.130	32	.336
Yes	SELFG43	0.120	25	.332
Course Total	SELFG43	0.120	57	.331
No	SELFG47	0.050	58	.223
Yes	SELFG47	0.020	51	.140
Course Total	SELFG47	0.040	109	.189
No	SELFG49	0.080	48	.279
Yes	SELFG49	0.180	78	.386
Course Total	SELFG49	0.140	126	.351
No	SELFG51	0.080	36	.280
Yes	SELFG51	0.150	33	.364
Course Total	SELFG51	0.120	69	.323
No	SELFG55	0.090	67	.288

(continues)

Summary Withdrawal Statistics for All Courses Listed by Students Who Did and Did Not Have a Prior Enrollment, continued

Prior Enrollments	Course	M	N	SD
Yes	SELFG55	0.000	76	.000
Course Total	SELFG55	0.040	143	.201
No	SELFG57	0.060	148	.240
Yes	SELFG57	0.160	62	.371
Course Total	SELFG57	0.090	210	.288
No	SELFG61	0.120	33	.331
Yes	SELFG61	0.160	25	.374
Course Total	SELFG61	0.140	58	.348
No	SFL100	0.130	23	.344
Yes	SFL100	0.040	28	.189
Course Total	SFL100	0.080	51	.272
No	SFL110	0.040	45	.208
Yes	SFL110	0.050	38	.226
Course Total	SFL110	0.050	83	.215
No	SFL160	0.110	28	.315
Yes	SFL160	0.000	24	.000
Course Total	SFL160	0.060	52	.235
No	SFL210	0.130	30	.346
Yes	SFL210	0.070	15	.258
Course Total	SFL210	0.110	45	.318
No	SFL224	0.000	2	.000
Yes	SFL224	0.000	5	.000
Course Total	SFL224	0.000	7	.000

(continues)

Summary Withdrawal Statistics for All Courses Listed by Students Who Did and Did Not Have a Prior Enrollment, continued

Prior Enrollments	Course	M	N	SD
No	SFL240	0.030	31	.180
Yes	SFL240	0.000	9	.000
Course Total	SFL240	0.030	40	.158
No	SFL260	0.050	38	.226
Yes	SFL260	0.060	36	.232
Course Total	SFL260	0.050	74	.228
No	SFL331	0.250	8	.463
Yes	SFL331	0.110	9	.333
Course Total	SFL331	0.180	17	.393
No	SFL333	0.200	10	.422
Yes	SFL333	0.000	6	.000
Course Total	SFL333	0.130	16	.342
No	SFL335	0.250	8	.463
Yes	SFL335	0.000	3	.000
Course Total	SFL335	0.180	11	.405
No	SFL351	0.000	1	.
Course Total	SFL351	0.000	1	.
No	SOC W200	0.070	29	.258
Yes	SOC W200	0.500	2	.707
Course Total	SOC W200	0.100	31	.301
No	SOC111	0.110	62	.319
Yes	SOC111	0.190	21	.402

(continues)

Summary Withdrawal Statistics for All Courses Listed by Students Who Did and Did Not Have a Prior Enrollment, continued

Prior Enrollments	Course	M	N	SD
Course Total	SOC111	0.130	83	.341
No	SOC112	0.000	11	.000
Course Total	SOC112	0.000	11	.000
No	SOC318	0.000	3	.000
Yes	SOC318	0.290	7	.488
Course Total	SOC318	0.200	10	.422
No	SOC350	0.130	15	.352
Yes	SOC350	0.330	3	.577
Course Total	SOC350	0.170	18	.383
No	SOCSC41	0.030	118	.182
Yes	SOCSC41	0.000	18	.000
Course Total	SOCSC41	0.030	136	.170
No	SOCSC45	0.070	120	.250
Yes	SOCSC45	0.040	47	.204
Course Total	SOCSC45	0.060	167	.238
No	SOCSC51	0.030	234	.182
Yes	SOCSC51	0.040	71	.203
Course Total	SOCSC51	0.040	305	.187
No	SOCSC55	0.130	183	.338
Yes	SOCSC55	0.100	30	.305
Course Total	SOCSC55	0.130	213	.333
No	SOCST33	0.140	28	.356

(continues)

Summary Withdrawal Statistics for All Courses Listed by Students Who Did and Did Not Have a Prior Enrollment, continued

Prior Enrollments	Course	M	N	SD
Yes	SOCST33	0.100	10	.316
Course Total	SOCST33	0.130	38	.343
No	SOCST34	0.000	5	.000
Yes	SOCST34	0.330	6	.516
Course Total	SOCST34	0.180	11	.405
No	SOCST35	0.060	31	.250
Yes	SOCST35	0.000	8	.000
Course Total	SOCST35	0.050	39	.223
No	SOCST36	0.260	19	.452
Yes	SOCST36	0.430	7	.535
Course Total	SOCST36	0.310	26	.471
No	SOCST37	0.150	13	.376
Yes	SOCST37	0.200	5	.447
Course Total	SOCST37	0.170	18	.383
No	SOCST38	0.000	3	.000
Yes	SOCST38	0.000	3	.000
Course Total	SOCST38	0.000	6	.000
No	SPAN41	0.070	715	.258
Yes	SPAN41	0.170	60	.376
Course Total	SPAN41	0.080	775	.269
No	SPAN43	0.100	317	.302
Yes	SPAN43	0.070	127	.258
Course Total	SPAN43	0.090	444	.290

(continues)

Summary Withdrawal Statistics for All Courses Listed by Students Who Did and Did Not Have a Prior Enrollment, continued

Prior Enrollments	Course	M	N	SD
No	SPAN441	0.140	35	.355
Yes	SPAN441	0.000	8	.000
Course Total	SPAN441	0.120	43	.324
No	SPAN51	0.070	656	.253
Yes	SPAN51	0.090	118	.292
Course Total	SPAN51	0.070	774	.259
No	SPAN53	0.070	375	.250
Yes	SPAN53	0.080	100	.273
Course Total	SPAN53	0.070	475	.255
No	SPAN61	0.090	320	.292
Yes	SPAN61	0.200	56	.401
Course Total	SPAN61	0.110	376	.312
No	SPAN63	0.150	102	.356
Yes	SPAN63	0.110	47	.312
Course Total	SPAN63	0.130	149	.342
No	SPELL41	0.030	136	.170
Yes	SPELL41	0.020	42	.154
Course Total	SPELL41	0.030	178	.166
No	STAT221	0.120	492	.320
Yes	STAT221	0.090	137	.294
Course Total	STAT221	0.110	629	.315
No	STDEV100	0.030	286	.184

(continues)

Summary Withdrawal Statistics for All Courses Listed by Students Who Did and Did Not Have a Prior Enrollment, continued

Prior Enrollments	Course	M	N	SD
Yes	STDEV100	0.000	27	.000
Course Total	STDEV100	0.030	313	.176
No	STDEV115	0.060	16	.250
Yes	STDEV115	0.400	10	.516
Course Total	STDEV115	0.190	26	.402
No	STDEV317	0.000	4	.000
Yes	STDEV317	0.000	4	.000
Course Total	STDEV317	0.000	8	.000
No	STDEV490	0.000	13	.000
Yes	STDEV490	0.020	63	.126
Course Total	STDEV490	0.010	76	.115
No	SWIM43	0.070	107	.248
Yes	SWIM43	0.000	6	.000
Course Total	SWIM43	0.060	113	.242
No	TECH41	0.090	35	.284
Yes	TECH41	0.130	8	.354
Course Total	TECH41	0.090	43	.294
No	TECH43	0.330	3	.577
Yes	TECH43	0.000	4	.000
Course Total	TECH43	0.140	7	.378
No	TEN41	0.020	146	.142
Yes	TEN41	0.040	25	.200
Course Total	TEN41	0.020	171	.152

(continues)

Summary Withdrawal Statistics for All Courses Listed by Students Who Did and Did Not Have a Prior Enrollment, continued

Prior Enrollments	Course	M	N	SD
No	TMA101	0.050	19	.229
Yes	TMA101	0.000	11	.000
Course Total	TMA101	0.030	30	.183
No	TMA150	0.040	316	.191
Yes	TMA150	0.050	42	.216
Course Total	TMA150	0.040	358	.194
No	TMA251	0.000	8	.000
Yes	TMA251	0.000	5	.000
Course Total	TMA251	0.000	13	.000
No	TMA352	0.190	21	.402
Yes	TMA352	0.130	8	.354
Course Total	TMA352	0.170	29	.384
No	TRIG41	0.090	345	.282
Yes	TRIG41	0.110	70	.320
Course Total	TRIG41	0.090	415	.289
No	TRIG43	0.060	51	.238
Yes	TRIG43	0.110	27	.320
Course Total	TRIG43	0.080	78	.268
No	USA41	0.070	244	.262
Yes	USA41	0.120	97	.331
Course Total	USA41	0.090	341	.284
No	USA43	0.040	114	.185

(continues)

Summary Withdrawal Statistics for All Courses Listed by Students Who Did and Did Not Have a Prior Enrollment, continued

Prior Enrollments	Course	M	N	SD
Yes	USA43	0.100	39	.307
Course Total	USA43	0.050	153	.223
No	VASTU109	0.290	7	.488
Yes	VASTU109	0.090	11	.302
Course Total	VASTU109	0.170	18	.383
No	WRIT41	0.110	123	.319
Yes	WRIT41	0.090	22	.294
Course Total	WRIT41	0.110	145	.314
No	WRIT45	0.060	195	.241
Yes	WRIT45	0.230	39	.427
Course Total	WRIT45	0.090	234	.286
No	WRIT47	0.060	53	.233
Yes	WRIT47	0.060	16	.250
Course Total	WRIT47	0.060	69	.235
No	WRIT49	0.040	69	.205
Yes	WRIT49	0.100	10	.316
Course Total	WRIT49	0.050	79	.221
No	WTRNG41	0.030	205	.182
Yes	WTRNG41	0.050	40	.221

(continues)

Course Total	WTRNG41	0.040	245	.188
No	XPLR41	0.040	1989	.192
Yes	XPLR41	0.060	353	.242
Course Total	XPLR41	0.040	2342	.200
No	XPLR43	0.020	89	.149
Yes	XPLR43	0.090	151	.281
Course Total	XPLR43	0.060	240	.243
No	XPLR45	0.070	29	.258
Yes	XPLR45	0.050	37	.229
Course Total	XPLR45	0.060	66	.240
No	Total	0.070	66510	.254
Yes	Total	0.090	17197	.292
Grand Total	Total	0.070	83707	.263