VOX CLAMANTIS: ADDRESSING THE CHALLENGE OF STOP-OUTS IN
PUBLIC HIGHER EDUCATION

A Dissertation
by
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Abstract

VOX CLAMANTIS: ADDRESSING THE CHALLENGE OF STOP-OUTS IN PUBLIC
HIGHER EDUCATION

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The increase in stop-out behavior, the decision to suspend progress toward undergraduate degree attainment after maintaining a 2.00 GPA or higher and earning 90 credit hours or more, threatens to exacerbate further the recent U.S. decline in degree attainment. Furthermore, there is a large disparity in college completion rates for those at the highest and lowest levels of the socioeconomic ladder and a legitimate concern that the majority of stop-outs are low-income students. This research study examined data on stop-out behavior at University of North Carolina system postsecondary institutions for students matriculating from the 2009-10 to 2013-14 academic years in an effort to better understand the factors and circumstances that lead to a decision to suspend progress on earning an undergraduate degree as well as identify those targeted interventions and incentives most likely to reduce the number of stop-outs. The study finds that regular and significant patterns of variation in GPA, credit hours earned, percentage of Pell Grant recipients, and percentage of students who lost one or more financial aid sources immediately prior to the last semester enrolled suggest, for high-achieving students, a strong link between inadequate financial

resources and the decision to stop-out but, for low-achieving students, the factors that lead to a decision to stop-out are more complex. In addition, the study found that the percentage of low income students in the population that withdrew from school was higher than the percentage of low income students enrolled in college nationally and, in some subgroups of the population, 70% or more above the national average. Recommendations for targeted interventions and incentives as well as changes to existing higher education policies are included.

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Chapter 1: Introduction

For most Americans, the financial, social, and cultural benefits of earning a college degree include greater financial security, better professional opportunities, and increased potential for upward economic mobility. In addition, recent studies indicate that higher levels of educational attainment lead to an increase in tax revenues and a decrease in government expenditures for social services. Phillip A. Trostel's insightful study "The Fiscal Impacts of College Attainment" (2010) examines the likely benefits to municipalities and states as a result of higher levels of educational attainment. Trostel notes (1) college graduates pay more income taxes than those who did not earn an undergraduate degree and (2) over the average lifetime, government expenditures for social services for those without a college education far exceed comparable expenditures for college graduates. Trostel assumes a cost of $74,500 per degree, estimates direct savings in post-college government expenditures at $85,000 and estimated additional tax revenues at $471,000 over the average lifetime; he concludes the return on investment exceeds 600%, 6.46-to-1 (Trostel, 2010).

It is troubling to learn, based on data compiled by the World Bank, that increases in the percentage of college educated adults per capita in the U.S. has been relatively modest since 2000 while increases in the percentage of college educated adults in other industrialized nations have been dramatic (Organization of Economic Cooperation and Development, 2015). While it's true that not everyone needs a college degree, the evidence indicates that, in the U.S., far too few people are pursuing and completing a college degree: public Full Time

Equivalent (FTE) student enrollment at U.S. colleges and universities has declined slightly since 2010 (College Board, 2015).

In 2009 President Obama articulated a new educational goal for the nation: By the year 2020, the United States should once again have the highest proportion of college graduates per capita of any country (Fry, 2017). While some progress has been made, as of 2015 the U.S. ranked 10th in college degree attainment among the 35 countries in the Organization of Economic Cooperation and Development, up five places from 2009 (Organization of Economic Cooperation and Development, 2016). The U.S. now trails most other industrialized nations in several important metrics related to degree attainment (Organization of Economic Co-operation and Development, 2016). [Refer to Appendix A for a description of *Our Time, Our Future: the UNC Compact with North Carolina,* an initiative to increase funding for higher education and raise six-year graduation rates in the UNC system proposed in 2013 by the University of North Carolina Board of Governors. The proposal was rejected by the General Assembly.] Nationally, approximately 6 out of every 10 undergraduate students (61.2%) who matriculated at a four-year degree granting public college or university at the beginning of the Fall 2008 semester graduated within six years, a decline of 2.1% compared to the fall 2008 cohort (National Student Clearinghouse Research Center, 2015). Overall, according to the National Student Clearinghouse Research Center, the six-year completion rate for the members of the fall 2009 cohort who began their college careers at a postsecondary institution (including for-profit institutions) was 52.9%: slightly more than one out of every two students earned a baccalaureate degree within six years of matriculating. Furthermore, fewer than six in 100 students who begin college at a community college in 2007 completed a bachelor's degree within six years. For those who

started at a community college in 2007, only 14% transferred to a four-year institution and, of that group, less than half (42%) earned a bachelor's degree within six years of starting community college (Kolodner, 2016).

The National Center for Education Statistics (NCES) reports that, in 2013, the average six-year graduation rate at public postsecondary institutions stood at 58% (National Center for Education Statistics, 2016), however, students who transfer and complete a degree at another institution are not included as completers in these rates. The six-year graduation rate was slightly higher at U.S. private non-profit institutions (65%) compared to the overall average and significantly lower at private for-profit institutions (32%). The six-year graduation rate from four-year public postsecondary institutions was higher for females than for males (60% versus 55%). In addition, six-year graduation rates varied based on institutional selectivity: at four-year institutions with an acceptance rate of less than 25%, the average six-year graduation rate for the 2007 cohort was 89% while, at institutions with an open admissions policy, the six-year graduation rate for the 2007 cohort was 34%. In North Carolina, the six-year graduation rate for first-time, full-time students in the Fall 2009 cohort at the 16 institutions in the UNC system ranged from 93.2% at UNC-Chapel Hill to 38.5% at Fayetteville State University (UNC System Data Dashboard, 2016). The reported UNC percentages, based on the first UNC institution attended, include graduation from any university or college in the U.S. The number of students transferring from the North Carolina Community College System to UNC system postsecondary institutions has increased from 5,931 in 2006 to 9,373 in 2015, a 58% increase (UNC System Data Dashboard, 2016). The UNC system's student count in 2015 was 174,036: 5.38% were transfers from North Carolina community colleges and the percentage of transfer students from all sources (e.g.,

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private schools, other UNC system institutions, and out-of-state) was 9.30% (UNC System Data Dashboard, 2016).

Carnevale and Rose's "Socioeconomic Status, Race/Ethnicity, and Selective College Admissions" (2004) precipitated a new awareness of the lack of socioeconomic diversity in U.S. public higher education. In spite of an abundance of articles, scholarly studies, and books on economic inequality on campus (including *Equity and Excellence in American Higher Education* (2005) by William Bowen, Martin Kurzweil, and Eugene Tobin; *The Trouble with Diversity: How We Learned to Love Identity and Ignore Inequality* (2016) by Walter Benn Michaels; *Color and Money: How Rich White Kids Are Winning the War Over College Affirmative Action* (2007) by Peter Schmidt; *Tearing Down the Gates: Confronting the Class Divide in American Education* (2007) by Peter Sacks; *Economic Inequality and Higher Education* (2007) Stacy Dickert-Conlin and Ross Rubenstein (Eds.); *Crossing the Finish Line: Completing College at America's Public Universities* (2009) by William Bowen, Matthew Chingos, and Michael McPherson; and Martha J. Bailey and Susan M. Dynarski's "Inequality in Postsecondary Education" (2011) from *Whither Opportunity? Rising Inequality, Schools, and Children's Life Chances*, Greg J. Duncan and Richard J. Murnane (Eds.)), new initiatives, and renewed pleas to address the challenges faced by low-income students in pursuing an undergraduate degree, progress has been slow. For low-income students, the obstacles to undergraduate degree attainment are significant. There is a large disparity in college completion rates for those at the highest and lowest levels of the socioeconomic ladder (Dynarski, 2015). While some studies conclude that children in high-income families develop academic skills more quickly than children in low-income families (Morgan, Farkas, Hillemeier, & Maczuga, 2009), Dynarski states, based on a review of the

Education Longitudinal Study by the National Center for Education Statistics (NCES). that "educational achievement does not explain the gap in bachelor's degree attainment" (Dynarski, 2015). In an earlier study, Dynarksi identified a causal link between increased graduation rates and reduced cost (Dynarski, 2008). Bjorklund-Young, also commenting on the NCES Education Longitudinal Study, writes that the "financial burden is a significant factor in the disparity" between the college completion rates of high-income and low-income students (Bjorklund-Young, 2016). Finally, the evidence indicates that the degree attainment gap widens with each passing year (Michelmore & Dynarski, 2016).

Between 2000 and 2015, the average cost of tuition, fees, and room and board at four-year public colleges and universities increased 90.47% (National Center for Education Statistics, 2015). Over the same period, inflation-adjusted family income for most families remained stagnant and inflation-adjusted family income for those in the lowest quintile of family income fell 9%. Since 2011, federal and state funding for higher education have declined and, furthermore, the number of federally sponsored student loans has fallen. Between 1974 and 2012, the percent of average college costs covered by the maximum Pell Grant amount declined from 67% to 27%. In 2013, the gap in degree attainment between students in the highest income quartile (a 77% rate of degree completion) and lowest income quartile (a 9% rate of degree completion rate) widened to 68% (Pell Institute & Penn Ahead, 2015).

The Pell Institute and Penn Ahead report that, between 2008 and 2012, the average net price of college as a percentage of family income increased significantly. The increase was most impactful for students in the lowest quartile of family income: the average net price of college as a percentage of family income increased from 56% (2008) to 84% (2012) (Pell

Institute and Penn Ahead, 2015).

Stop-out is the term used by education professionals to describe the decision to withdraw from college in good academic standing after earning 90 or more credit hours. The story of the typical stop-out is a heartbreaking one: the majority leave school without a degree but with substantial educational debt. And, though the numbers of stop-outs each year is smaller than the numbers of those who leave college after just one or two years, a larger investment of time and resources (by federal and state governments, by individual institutions, and by the individual) has been made but without earning an undergraduate degree. The default rate for those with educational debt but no college degree is high: the federal government estimates that nearly one out of five students (18.4 %) who began making their loan payments in 2011 will default within 20 years (Bell, 2015). The combination of a larger educational debt (a debt that cannot be discharged by declaring bankruptcy), lower earning power, fewer employment benefits, and limited employment possibilities means that repayment of the educational debt may require more years compared to the repayment period of those with a comparable amount of educational debt but who hold a college degree.

Background

This study is an examination of stop-out behavior in the UNC postsecondary system in the five years following the Global Economic Recession and those factors that play a significant role in the decision by to leave school and suspend progress on undergraduate degree attainment.

Tuition at State Universities. The tradition of low or no tuition at state universities was the norm at U.S. public institutions of higher education through the late 1960s; the shift

away from the traditional policy began in 1973 with the publication of two influential reports, one issued by the Carnegie Commission on Higher Education and the second by the Committee on Economic Development. Each report contained a similar recommendation: Tuition at public institutions of higher education should reflect, at minimum, one-third of the educational costs; the rationale is that students and their families should pay for the private benefits (e.g., higher income) associated with a college degree (Hauptman, 2011).

As Donald Heller observes, from 1971 to 2009 average tuition prices at U.S. public postsecondary institutions increased 1767% (non-inflation adjusted dollars) with the largest annual increases occurring after 2002 (Heller, 2011). The average annual increase over that period was of 8%. The average increase in tuition and fees between 2007-08 and 2014-15 was 29%; the largest increase was in Arizona, where tuition at public universities increased 83.6%. In North Carolina, the average increase in tuition at public postsecondary institutions between 2007-08 and 2014-15 was 35.8%, thirteenth highest among the 50 states (Fox, 2015).

In 2008, North Carolina spent $10,019 per FTE student (State Higher Education Officers, 2009), an increase of $3024 (43.23%) above FTE spending in 2005, $6995 (State Higher Education Officers, 2006). Like many states where state support of higher education has yet to return to pre-recession levels, in North Carolina the inflation adjusted change in state spending per student between 2008 and 2015 fell 11.22%, to $8894 (State Higher Education Officers, 2016). Between the 2010-11 and 2015-16 academic years, the inflation-adjusted percentage increase in tuition and fees for in-state students at North Carolina public postsecondary institutions was 20%, well above the national average of 13% (College Board, 2015).

In North Carolina, tuition and fees at public postsecondary institution are established by the Board of Governors. In addition, North Carolina is a state where tuition revenues revert to the state treasury and are reallocated to institutions by the General Assembly. For the 2015-16 academic year, the average tuition for the 16 public postsecondary institutions that comprise the UNC system is $6,583 (in-state students) and $20,532 (out-of-state students) (College Tuition Compare, 2017).

Beginning in the Fall 2010 semester, a 50% tuition surcharge was imposed on any undergraduate in a four-year baccalaureate degree program with more than 140 credit hours and on students in a five-year baccalaureate degree program with more than one hundred ten percent (110%) of the required credit hours (University of North Carolina Greensboro, 2017). The result is, for students who changed majors after one or two semesters, that tuition for the last semester is 50% higher, a circumstance not considered in calculating financial need for the last semester.

Factors Contributing to the Decline in State Support for Higher Education.
"Understanding Differences in State Support for Higher Education across States, Sectors, and Institutions: A Longitudinal Study" (2012), by Weerts and Ronca, seeks to identify the factors that exert the greatest influence on percentage increases or decreases, year over year, in state appropriations for higher education. The research is an exhaustive quantitative study that analyzed data from 1,053 degree granting institutions over a twenty-year period beginning in 1984; variables were assigned to one of five groups: state fiscal health, demographic factors, competing state priorities, state political climate, and institutional characteristics. The authors offer a number of important conclusions: (1) state support for higher education is likely to be lower in states with a high unemployment rate; (2)

corrections budgets often compete with higher education budgets; (3) doctoral or master's degree granting institutions are more predisposed to decreases in state appropriations than those institutions that confer only associates degrees; and (4) Republican-controlled legislatures are more likely to provide increased appropriations in the form of support for two-year, rather than four-year, institutions (Weerts & Ronca, 2012).

The recent history of funding for public higher education in North Carolina is consistent with three of the factors identified by Weerts and Ronca: (1) between 2008 and 2013, the annual unemployment rate in the state was higher than the U.S. rate and, for three consecutive years (2009-11), the annual state unemployment rate was in excess of 10%; (2) the significant state obligation to Medicaid (over $300 million in the FY 2013-14 budget) has made it difficult to increase appropriations to higher education; and (3) in recent years the General Assembly has been more supportive of the state's community college system and less supportive of the UNC system postsecondary institutions.

Socioeconomic Status and Degree Attainment. The dropout rate between the first and second years of college is high: the 2010 national first-year retention rate for U.S. public four-year postsecondary institutions was 78.4%: on average; more than two out of every ten students did not return for the second year of college (National Information Center for Higher Education Policymaking and Analysis, 2016). There was great variance in first-year retention rates from state to state, from a high of 87.7% (Delaware) to a low of 67.5% (Idaho). The first-year retention rate for public postsecondary institutions in North Carolina in 2010 was 81.8%, above the national average and ninth highest of the 50 states, but lower than the 2009 North Carolina first-year retention rate of 82.5%. At four-year postsecondary institutions, drop-out rates tend to be higher for those who attend college exclusively part-time rather than

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full-time; those who started college later, between ages 20 and 24; and those students who start college at for-profit institutions (National Student Clearinghouse Research Center, 2015).

Socioeconomic status has a significant impact on the variation in six-year graduation rates. In a study of 1,202 Michigan children born between 1966 and 1970, Haveman and Wilson found strong evidence of an alarming gap in educational attainment between low-income and high-income groups (Haveman & Wilson, 2007). The researchers found that 97.9% of those in the highest income quartile graduated from high school while 63.9% of those in the lowest income quartile graduated from high school. Among the high school graduates in the sample, 75.3% of those in the highest income quartile attended college while only 37.8% in the lowest income quartile attended college. Not only are low-income high school graduates less likely to *attend* college but, relative to their medium-income and high-income peers, they are less likely to *graduate* from college (Dickert-Conlin & Rubenstein, 2007; Michelmore & Dynarski, 2016). Among the members of the Michigan study sample who attended college, 59.9% of those in the top quartile of family wealth earned college degrees while only 35.7% of those in the bottom quartile of family wealth, barely one-third, earned college degrees (Haveman & Wilson, 2007). Furthermore, predicted Haveman and Wilson, the increase in income inequality between 1970 and 2000 made it likely that, in the first decade of the 21st century, a young adult from the lowest income quartile had less than a 1-in-10 chance of earning a college degree compared to those in the highest income quartile.

As of Fall 2015, the number of low-income students (18-34 years of age, family income equal to or less than $50,000) enrolled full-time at UNC system postsecondary institutions was 39.7% of the UNC headcount, 9.6% less than the low-income population

(18-34 years of age) of the state (University of North Carolina Board of Governors, 2016). In the UNC system, the graduation rate for low-income students (60%) is 12% lower than the graduation rate for students from higher income students (72%) (University of North Carolina General Administration, 2016).

The results of a 2015 study, a joint venture between the Pell Institute and the University of Pennsylvania Alliance for Higher Education and Democracy, are consistent with Haveman and Wilson's prescient and sobering estimates of the gap in degree attainment between rich and poor. Researchers found that, between 1970 and 2013, the disparity in degree attainment between those in the top and bottom quartiles of family income increased from 34% (1970) to 68% (2013). The gap between college completion rates among those on the lowest rungs of the economic ladder and those at the highest rungs increases with each passing year (Cahalan & Perna, 2015; Duncan & Murname, 2016; Michelmore & Dynarski, 2016).

A 2014 report by the Pew Research Center, "The Rising Cost of *Not* Going to College," found the gap in economic outcomes between college graduates and those with only a high school diploma has never been larger (Taylor, Parker, Fry, Patten, & Brown, 2014). Based on 2012 data, among millennials aged 25-32, the unemployment rate for high school graduates, at 12.2%, was more than three times greater than the unemployment rate for college graduates (3.8%). In addition, the average annual earnings of high school graduates, at $28K, were only 60% of the average annual earnings of college graduates, at $45.5K. Finally, high school graduates were living in poverty at a rate nearly four times greater than college graduates (21.8% versus 5.8%). Almost nine-in-ten of the recent college

graduates surveyed reported that completing a college degree had already paid off or would pay off in the future.

A recent report by the Raisman finds that, based on an analysis of 2010-2011 data from 1,669 postsecondary institutions, the average 4-year college or university loses $9.9 million per annum to attrition (Raisman, 2014). Why do students drop out of college before completing a degree? The Harvard University Graduate School of Education's 2011 *Pathways to Prosperity: Meeting the Challenge of Preparing Young Americans for the 21st Century* reports the top five reasons are financial concerns, poor academic preparation, personal issues, lack of self-discipline and organizational skills, and a sense of disconnection from the institution ("College doesn't care") (Symonds, Schwartz, & Ferguson, 2011). More than four out of every ten first-time, full-time undergraduate students who matriculated at a U.S. four-year degree granting public colleges or universities in fall 2007 failed to graduate within six years (Shapiro, Dundar, Ziskin, Yuan, & Harrell, 2013). Over the past three decades, U.S. postsecondary institutions have made significant efforts to retain students and devoted substantial resources to helping students to earn a degree yet more than 40% do not graduate within six years.

Three programs that aim to provide additional resources to undergraduates, the federal Pell Grant Program, UNC-Chapel Hill's *Carolina Covenant*, and Appalachian State University's ACCESS program are described in the following sections.

The Pell Grant Program. The Pell Grant Program, originally titled the Basic Educational Opportunity Grant, was created as part of the Higher Education Act of 1965. Federal Pell Grants, administered by the U.S. Department of Education, are grants for undergraduate students with demonstrated financial need. In general, a Pell Grant is

considered the foundation of a student's financial aid package: other forms of aid are added based on financial need, the cost of tuition, etc. The maximum award changes yearly; the maximum award for 2015-16 was $5,775 (U.S. Department of Education, 2016). By federal law, the maximum amount of Pell Grant funds a student is eligible to receive is limited to the equivalent of six years of Pell Grant funding (U.S. Department of Education, 2017).

Pell Grant eligibility is constrained by family income: family income of $50,000 or less will qualify a student for a Pell grant but most Pell grant money is awarded to students whose family income is $20,000 or less (U.S. Department of Education, Federal Pell Grant Program, 2016). Historically, the income threshold for Pell Grant recipients has been 200% of the annual income benchmark set by the federal government to identify the number of people living in poverty (e.g., for 2017, federal poverty guideline is an annual income of $24,600 for a family of four). As a result, the percentage of Pell Grants recipients at an institution is often used as a proxy for the percentage of students of low socioeconomic status.

Nationally, approximately 35% of undergraduates received Pell Grants during the 2014-15 academic year (College Board, 2015). Recent research finds the average graduation rate gap between Pell Grant and non-Pell Grant students is 5.7% (Nichols, 2015). The University of North Carolina General Administration (UNC-GA) reports a 60% increase in UNC system Pell Grant recipients between 2004-05 and 2014-15: approximately 43,800 UNC system students were Pell Grant recipients in 2004-05; by 2014-5, the number of UNC system Pell Grant recipients, (70,100) was 40.89% of the UNC undergraduate headcount (University of North Carolina General Administration, 2016; UNC Data Dashboard, 2017).

The Carolina Covenant. Founded in 2004, *The Carolina Covenant* is a program at the University of North Carolina at Chapel Hill that seeks to assist low-income students in the effort to earn an undergraduate degree. Eligibility for the program is based on an annual family income no more than 200% of the federal poverty level (Fiske, 2010). While the program utilizes scholarships, grants, and work-study programs aimed at providing a debt-free education, it includes mentoring by faculty and staff, alumni workshops, academic support, and social and cultural events aimed at building a sense of community and connectedness (University of North Carolina at Chapel Hill, 2017). Covenant Scholars are supported for up to eight semesters; transfer students are eligible for the program. Covenant Scholars may live in-campus or off-campus. Students designated as Covenant Scholars are encouraged to accept a work-study job as a way of avoiding educational debt but it is permissible for program participants to secure educational loans.

Approximately 14% of new UNC-Chapel Hill students are participants in the Covenant Scholars program; the four-year graduation rate for Covenant Scholars is 80.4% (less than 2 percentage points below the university's four-year graduation rate for the 2012 freshmen cohort) and the four-year graduation rate for black males participating in the Covenant Scholars program is 61.8%, an increase of 28.5% since the founding of the program (University of North Carolina at Chapel Hill, 2016). *The Carolina Covenant* is distinctly different from conventional financial aid programs: by providing mentoring and engagement activities as well as financial and academic support, *Carolina Covenant*, as a model for student retention programs, is based on Vincent Tinto's belief that the extent to which an individual student is integrated, socially as well as academically, in the systems of the institution determines the decision to stay in college or leave (Tinto, 1975).

In 2013, the six-year graduation rate for Pell Grant recipients at UNC-Chapel Hill was 85.9%, 4.7% lower than the university's non-Pell Grant recipient six-year graduation rate (90.6%) but 4.7% higher than the median Pell Grant recipient six-year graduation rate at UNC-CH's peer institutions (81.2%). The percentage of Pell Grant recipients among undergraduates was 20.5% (Education Trust, 2016).

Appalachian Commitment to a College Education for Student Success. Established in 2007, Appalachian State University's *Appalachian Commitment to a College Education for Student Success* (ACCESS) program is a demonstration of ASU's commitment to help low-income students earn a degree. Like the *Carolina Covenant* program, ACCESS offers academic support as well the opportunity to earn a college degree without accruing educational debt. ACCESS incorporates academic advising, mentoring, academic support services, workshops, and social events (Appalachian State University, 2017). The program's participation rate is slightly more than 1%. Eligibility requirements for the program include a family income at or below 100% of the federal poverty guidelines. Unlike the *Carolina Covenant* program, ACCESS students must live on-campus and, furthermore, lose their eligibility if they accept an educational loan.

The graduation and retention rates for participants in the ACCESS program are higher than the university's averages: overall, the retention rate for the first eight cohorts (2007-08 to 2015-16) of ACCESS participants was 74.5%; the six-year graduation rate for Pell Grant recipients in the 2008-09 ACCESS cohort was 73.8% (Appalachian State University, 2016).

In 2013, the six-year graduation rate for Pell Grant recipients at Appalachian State University was 63.3%, 6.3% lower than the university's non-Pell Grant recipient six-year graduation rate (69.6%) but 4.0% higher than the median Pell Grant recipient six-year

graduation rate at ASU's peer institutions (59.3%). The percentage of Pell Grant recipients among undergraduates was 25.9% (The Education Trust, 2016).

Assumptions

This research study is based on several important assumptions associated with stop-outs and stop-out behavior. First, based on the program's eligibility requirements, participation in the federal government's Pell Grant program in the last semester of enrollment or in one of the two semesters prior to the last semester of enrollment is an indication that a student is in one of the two lowest family income socioeconomic (SES) quintiles and has accrued an average of $9000 in educational debt (Goldrick-Rab, 2016). Second, while there are myriad reasons (e.g., poor academic preparation, personal issues, lack of self-discipline and organizational skills, a sense of disconnection from the institution, and financial concerns) why a student might leave school—and while correlation is certainly not causality—the decision to leave school with a cumulative GPA of 2.50 or higher, significant educational debt, and after earning 115 or more credit hours indicates a lack of financial resources was the primary factor, particularly for those in the two lowest family income SES quintiles. Third, if present, patterns of variation in the characteristics of the dataset point to different primary factors, or differently *weighted* primary factors, that impact the decision to suspend progress toward degree attainment. In addition, the identification of the most important primary factors for each subgroup can inform the formulation of targeted interventions, incentives, and policies designed to modify behavior.

Methodology

The focus of the research study is a data file provided by UNC-GA containing information on more than 50,000 students who attended UNC system postsecondary institutions between 2003 and 2016. The file includes information on UNC system

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institution, first and last terms enrolled, standardized test scores (if available), high school (if available), declared major, grade point average, number of credit hours earned, demographic characteristics, and financial aid types and history. For each of the 16 postsecondary institutions in the UNC system, information on the Partway Home Cohort 2 population (i.e., those who began college at a UNC system postsecondary institution between 2009 and 2014)—including four-year or transfer student status, financial aid information, gender, the race/ethnicity of each student, and major—was tabulated, converted to a subgroup percentage based on sample size, and compared across subgroups.

Significance

A better understanding of the factors that impact undergraduate persistence and degree attainment rates for students in good academic standing after completion of 90 or more credit hours has important implications for higher education policy, institutional accountability, public funding of postsecondary institutions, financial aid policies and programs, and efforts to address economic and social inequality in higher education. Addressing the complex challenge of stop-out behavior in contemporary public higher education is a difficult task for a variety of reasons. These include (a) a dearth of information on the factors most likely to lead to a decision to suspend progress toward an undergraduate degree, (b) the lack of a framework for understanding and interpreting stop-out behavior, as well as (c) formulating informed and effective higher education policies. This dissertation undertakes two significant tasks: an analysis of a large dataset of information on stop-outs who began college at a UNC system postsecondary institution between 2009 and 2014 and the development of proposals for addressing the challenge of stop-outs in public higher education.

Personal Connections to the Project

My connections to the topics of student access, admissions, persistence, and degree attainment include my experience as a member of the University of Tennessee's Faculty Senate Budget and Planning Committee (2006-2007) and as a member of the University of Tennessee's Faculty Senate Enrollment Management Committee (2007); my experiences chairing the Appalachian State University Admissions Committee (2012-2014); and my experiences as a member of the Appalachian State University Admissions Committee (2011-2014, 2015-present). In addition, during the Spring 2016 semester, I was fortunate to intern in Appalachian State University's Division of Enrollment Management under the supervision of Dr. Susan Davies, *Vice Chancellor for Enrollment Management*. The internship included preparation of a report for the Enrollment Planning Council on Appalachian State University's Partway Home Population.

Definition of Terms

Low-income students. Students whose family income is in the bottom quintile of family income, defined by family incomes at or below about $50K, by Pell Grant eligibility, or by family income at or below 200% of the federal poverty line.

Partway Home population. Partway Home is the term used by the University of North Carolina General Administration to describe students in good academic standing (a 2.00 GPA or higher) who have earned 90 credit hours or more and choose to temporarily withdraw from the university, suspending progress toward degree attainment.

Poor academic performance. In an academic context (e.g., college), the failure to meet minimum performance standards in an academic course or program. The result is a failing or marginal grade in the course. Poor academic performance is also used to describe students whose overall GPA falls below a specific threshold (e.g., 2.00) or whose GPA is in the bottom

quintile of all students in a department, college, or academic institution, or who have been placed on academic probation at any time in the past three semesters.

Stop-out. An undergraduate in good academic standing (2.00 GPA or higher) who has completed 90 or more credit hours withdraws from school, for one semester or more, suspending progress toward degree attainment.

Chapter 1 Summary

Chapter 1 offers an overview of persistence and graduation rates at U.S. public universities and describes the increasing disparity in rates of degree completion between high income and low-income students. The chapter includes descriptions of the rising cost of a postsecondary education for students and families, the financial obstacles to degree attainment, and descriptions of two successful programs, one at the federal level and one at the level of a state system flagship campus, aimed at assisting low-income students to complete the requirements for a college degree. The chapter concludes with descriptions of the proposed study, the significance of the study, the author's personal connections to the research topic, and definitions of the most important terms used in the proposal description.

Chapter 2: Review of the Literature

This chapter offers an overview of the scholarly literature on financial obstacles to degree attainment, models of college student persistence and retention, the socioeconomic stratification of public higher education, class inequality in public higher education, and the effective use of interventions and incentives in higher education.

Overview: Persistence

The studies published over the past decade on persistence and stop-out patterns at U.S. public college and universities include "Enrollment, Persistence and Graduation of In-State Students at a Public Research University: Does High School Matter?" (Johnson, 2008); "A Data Mining Approach for Identifying Predictors of Student Retention from Sophomore to Junior Year" (Yu, DiGangi, Jannasch-Pennell, & Kaprolet, 2010), and "Investigating the Impact of Financial Aid on Student Dropout Risks: Racial and Ethnic Differences" (Chen & DesJardins, 2008).

A 2008 research study by Johnson, "Enrollment, Persistence and Graduation of In-State Students at a Public Research University: Does High School Matter?" (2008) examines the impact of high school effects on persistence (Johnson, 2008). Johnson identifies three factors that influence persistence and degree attainment: *location*, i.e., students who attended high schools located within 60 miles of campus are more likely to persist to the second year of college; *SAT takers*, i.e., the odds in favor of persisting to the second year are higher for students from high schools where 50% to 70% of students take the SAT; and *income*, i.e.,

students from high schools with higher percentages of students receiving free lunch are less likely to persist to the second year (Johnson, 2008).

Several important contributions to the study of retention and persistence are manifest in an Arizona State University research study led by Chong Ho Yu and published in 2010: Yu and his colleagues used the analytical techniques of data mining (e.g., classification tress, multivariate adaptive regression splines (MARS) and neural networks) rather than parametric techniques (e.g., regression analysis) to study data on student retention (Yu, DiGangi, Jannasch-Pennell & Kaprolet, 2010). The researchers used a classification trees to determine that the number of transfer hours is a critical factor in predicting student retention. "Carrying transferred hours into the university" write the authors, "implies that the students have taken college level classes somewhere else [and therefore are]…more academically prepared for university study…" (p. 321). Furthermore, the researchers analyzed the data using a neural network and identified several interactions between the number of transfer hours and demographic characteristics: "when transferred hours are accumulated to a certain threshold, the probability of retention for Black and Native American students substantively increases" (p. 321-22).

A 2008 study by Chen and DesJardins, "Investigating the Impact of Financial Aid on Student Dropout Risks: Racial and Ethnic Differences," considered the relationship between persistence and the varying impacts of financial aid based on race and ethnicity (Chen & DesJardins, 2008). The authors conclude minority students—especially Asian students—when awarded more in Pell Grants, are less likely to drop out than their White peers. (Chen & DesJardins, 2008).

Lessons about Participation from Two HOPE Scholarship Studies. Georgia's

Helping Outstanding Pupils Educationally (HOPE) Scholarship program. seeks to increase

enrollment at in-state postsecondary institutions. The popular scholarship program, begun in

1993, awards merit-based aid to students attending in-state colleges and universities. One

goal of the program, funded by Georgia's educational lottery, is to encourage high-achieving

students to pursue a college degree at an in-state institution rather than going out of state.

High school students who graduate with a B average are eligible for the program, which

covers the costs of tuition, fees, and book expenses at Georgia public postsecondary

institutions. There are no income restrictions.

Singell and Waddell examine the question of whether merit-based aid adversely

impacts access to college for the recipients of need-based aid in the 2006 study "HOPE for

the Pell? Institutional Effects in the Intersection of Merit-Based and Need-Based Aid"

(Singell Jr., Waddell, & Curs, 2004). The study examined the impact of the HOPE

scholarship on Pell Grant recipient enrollment in the Georgia educational system and,

furthermore, aimed to address the question of whether merit-based aid, in the form of HOPE

scholarships, was crowding low-income students out of the state's most-selective

postsecondary institutions. The authors conclude: (1) HOPE scholarships improve college

access for needy students and (2) Pell Grant students are not crowded out of the most

selective post-secondary institutions by HOPE Scholarship students (Singell Jr., Waddell, &

Curs, 2004).

Cornwell, Mustard and Sridhar (2006) analyzed the enrollment impacts of the HOPE

Scholarship program. The researchers found that, since inception, the program has increased

freshmen enrollments at Georgia postsecondary institutions by approximately 5.9% each

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year; furthermore, both white and black enrollment increased as a result of the HOPE Scholarship program. An important condition of the program is that recipients must maintain a minimum 3.0 grade point average in college in order to remain eligible for the HOPE Scholarship.

The HOPE Scholarship Program offers a substantial financial incentive to Georgia high school students to (a) maintain a minimum "B" average in high school, (b) attend college in Georgia, and (c) maintain a 3.0 grade point average while enrolled in college. The researchers conclude that impact of the program on low-income students has been relatively small. The most significant effects are on two groups: recent high school graduates who intended to enroll in college out-of-state, but who now elect to enroll at an in-state four-year public postsecondary institution; and recent high school graduates who intended to enroll at an out-of-state Historically Black College or University (HBCU) but who now elect to enroll at an in-state HBCU (Cornwell, Mustard & Sridhar, 2006).

What of unexpected behavioral responses to the HOPE Scholarship incentive? Cornwell, Lee, and Mustard (2003) studied the credit-hours-attempted and course withdrawal effects of the HOPE Scholarship Program. The authors found that HOPE reduced the number of credit hours attempted by freshmen and increased the number of course withdrawals. The net result was a 12% lower probability of full-load completion during the first academic year and a 2% annual average reduction in credits completed among first year students as well as a 22% increase in summer course taking. The enrollment pattern is consistent with the hypothesis that HOPE Scholarship recipients enrolled in a smaller number of courses in order to maintain the minimum 3.0 GPA required for continued eligibility in the program. The study confirms that the students with GPAs on or just below the scholarship-retention

threshold were also the students that most often exhibited the course-taking behavior described here. The reduction in attempted credit-hours by freshmen is indicative of slower progress toward degree attainment by HOPE Scholarship recipients (Cornwell et al., 2003).

Financial Obstacles to Degree Attainment

Figure 1 (based on a similar graph by Carnevale and Strohl's in "How Increasing College Access Is Increasing Inequality, and What to Do About It" (2010)) illustrates the substantial gap in graduation rates between those in the lowest and highest SES quartiles. The gap holds true across the range of SAT scores. The graph is compelling evidence in support of the claim that the strongest predictor of degree completion is family income (Carnevale & Strohl, 2010). But a plethora of studies argue that other factors adversely impact degree attainment significantly. The landscape of persistence, retention, and degree attainment those studies present is complex and multidimensional as well as diverse. The five primary factors that influence degree attainment are academic issues, psychological and social factors, cultural capital, career development concerns, and financial obstacles (Kuh, Kinzie, Buckley, Bridges, & Hayek, 2011). In this section, I describe the financial obstacles associated with undergraduate degree attainment.

There has been extensive debate over the last two to three decades regarding the effect of financial aid on college persistence. In "Does Aid Matter? Measuring the Effect of Student Aid on College Attendance and Completion," Dynarski studied the impact of the elimination of the Social Security Benefit Program in 1982 and concludes that each $1000 increase (in 1998 dollars) in grant aid increases the probability of college attendance by 4% and increases educational attainment by approximately 0.16 years (Dynarski, 1999).

Figure 1:   Graduation Rates by Socioeconomic Status and SAT-Equivalent Score (After Carnevale & Strohl)
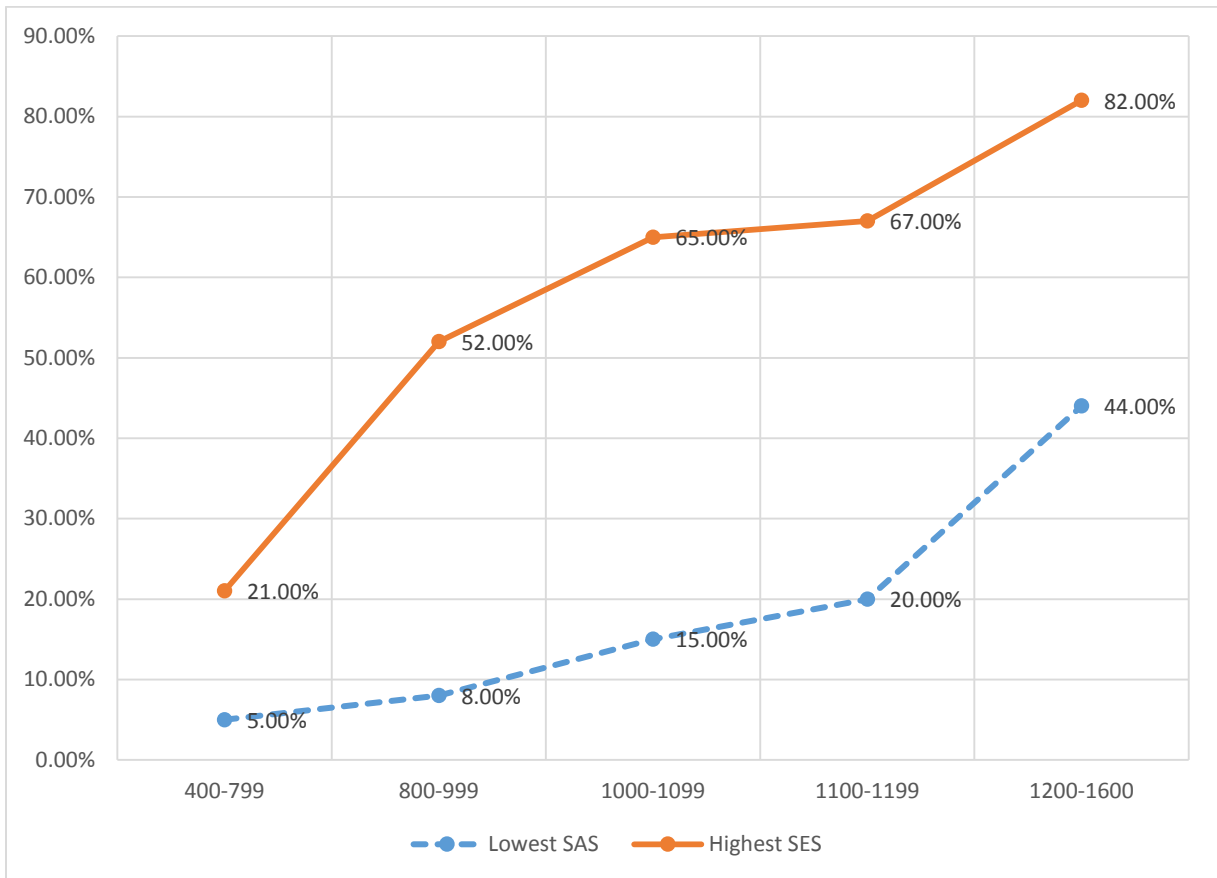
St. John, Cabrera, Amaury, and Asker (2000) propose an approach to student persistence founded on price-response theories: a primary factor influencing student persistence is institutional cost and financial aid (St. John et al., 2000). The authors propose an integrated model of student persistence, based on Vincent Tinto's model of retention (described in the next section), where student attitudes about college financing and financial

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resources influence academic and social integration processes. Student perceptions of college costs and the adequacy of financial aid, write the authors, have "a direct influence on academic integration and college grades" (p. 40). In addition, assert the authors, national studies of the relationship between persistence and college costs indicate that financial factors (e.g., tuition and fees, financial aid, and living costs) explained approximately half the total variance in persistence. St. John et al., write:

> Research on the direct effects of student aid on persistence is especially important in colleges and universities with large percentages of low-income and adult students, since they are more price sensitive than traditional undergraduates. However, it is necessary to control for income to measure the direct effects of student aid. (p. 44)

DesJardins, Ahlburg, and McCall used a hazard model to study the relationship between stopping out and changes in financial aid (DesJardins, Ahlburg, & McCall, 2002). The authors find that, with the exception of grants, all forms of financial aid are associated with decreased stop-out behavior, not all forms of aid have the same impact on retention, and the effects of a specific form of aid can vary over time. In addition, the authors conclude, contrary to Dynarski's 2009 study, that grants have no effect on stop-out behavior. Furthermore, scholarships, at every year of enrollment, have the greatest effect on retention (DesJardins, Ahlburg, & McCall, 2002).

A 2009 research study reported that almost six out of ten low-income students interviewed stated they left college before finishing because they could not rely on their families for financial assistance and had to pay all costs themselves (Johnson & Rothlind with Ott & Dupont, 2009). Furthermore, when asked why they left school, 54% of respondents said they needed to go to work and make money and 31% couldn't afford the tuition and fees (Johnson et al., 2009). The authors conclude "Students who leave college

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realize that a diploma is an asset, but they may not fully recognize the impact of dropping out of school will have on their future" (Johnson et al., p. 15). Echoing the findings of the Johnson study, Terriquez and his colleagues reviewed data from the California Young Adult Study (CYAS) and found that the most common reason for stopping out was a lack of financial resources: 41% of students reported they stopped out because they could not afford to stay in school (Terriquez, Gurantz, & Gomez., 2013). In a 2013 paper, Dynarksi and Scott-Clayton reviewed the recent literature on the impact of financial aid on persistence and graduation rates (Dynarski & Scott-Clayton, 2013). The authors find that grants tied to academic achievement have a greater impact on persistence than grants without academic performance requirements (Dynarksi & Scott-Clayton, 2013).

Over the past nine years, a combination of factors (e.g., a reduction in public support for higher education, significant increases in tuition and fees, and the stagnation of inflation-adjusted family income for most American families) has created a perfect storm for those who seek a college degree. Federal and state support for higher education has declined, family income growth has remained almost stationary, and the cost of attending a U.S. four-year public institution rose an average of 13% from the 2010-11 academic year to the 2015-16 academic year (College Board, 2015). While common sense dictates that a reasonable response to the rising cost of college is to increase financial aid for students in the lowest socioeconomic quartile, the opposite has occurred. Since the mid-1990s, as public universities have made the shift from need-based to merit-based financial aid, the amount of aid to students from families with incomes more than $100,000 has outpaced the increase to students from families of modest incomes ($20K to 40K) by a factor of 9-to-2 (Clawson & Page, 2011).

Federal and state funding appropriations for higher education support higher education in distinctly different ways: the focus of federal government funding is to provide financial assistance to individuals and support specific research projects while the focus of state funding is to fund general operations and, to a limited extent, financial aid and research (Pew Charitable Trusts, 2015). Historically, state funding for higher education has exceeded federal funding for education however, beginning in 2010 that balance changed: federal funding for higher education exceeded state funding. While federal spending on veterans' educational benefits and the Pell Grant program increased between 2008 and 2011, state general-purpose appropriations fell by 21% (Pew Charitable Trusts, 2015).

Between 2000 and 2012, federal funding per Full Time Equivalent (FTE) student at U.S. colleges and universities increased by 32% while state funding per FTE student decreased by 37% (Pew Charitable Trusts, 2015). Beginning in the mid-1990s, public FTE enrollment increased each year until 2010; between 2010 and 2015, in the aftermath of the Great Recession, public FTE enrollment declined (College Board, 2015). A temporary boost in research funding from the federal government as a result of the American Recovery and Reinvestment Act of 2008 accounts for a portion of the increase in federal funding in 2009 and 2010. For fiscal year 2013, federal and state sources accounted for 37% of public college and university budgets while 21% of revenues were net tuition and fees. Other sources of funding were self-supporting operations (21%), private gifts and endowment income (8%), all other sources (8%), and local revenue (4%).

What of financial aid and tax credits for college students and their families? From the early 1990's, the volume of federally sponsored educational loans increased each year until 2011; since 2011, the number of loans has fallen. In 2013, the federal government made $103

billion in loans to students in support of higher education; states provided less than 1% of the federal amount. Additional federal support for higher education has come from tax credits, primarily the 2009 American Opportunity Tax Credit (Pew Charitable Trusts, 2015).

Declining state support for higher education has adversely impacted four-year public postsecondary institutions. The economic argument in favor of state support for higher education is based on the demonstrated claim that higher levels of educational attainment are positively correlated with economic growth. Baldwin and Borelli's 2008 study, "Education and Economic Growth in the United States: Cross-National Applications for an Intra-National Path Analysis," presents extensive evidence of the positive correlation between higher education spending and growth in per capita income; furthermore, the authors conclude that increases in higher education spending increase educational attainment rates, thereby indirectly increasing income growth (Baldwin & Borelli, 2008). But, over the past 15 years, many state legislatures, faced with declined tax revenues per capita and ballooning costs in other areas (e.g., health care, transportation, and law enforcement) have chosen to reduce public support for higher education. In North Carolina, the General Assembly has yet to restore higher education funding to pre-Recession levels in spite of a $522 million budget surplus (Campbell, 2017).

Models of College Student Persistence and Retention. This section describes the most significant contributions to the effort to formulate effective models of undergraduate persistence and retention. There have been myriad studies (Bowen, Chingos, & McPherson, 2009; Braxton, Doyle, Hartley III, Hirschy, Jones, & McLendon, 2013; Castleman, Schwartz, & Baum, 2015; Chen, 2012; Gifford, Briceno-Perriott, & Mianzo, 2006; Habley, Bloom, & Robbins, 2012; Haveman & Wilson, 2007; Kahn & Nauta, 2001; Kalsbeek, 2013; Kuh et al.,

2011; Lau, 2003; Morrison & Silverman, 2012; St. John, 1995; St. John et al., 2000; Scott-Clayton, 2015; Seidman, 2005; Shapiro et al., 2013; Stephens & Townsend, 2013; Summerskill, 1962; Tinto, 1975, 1987; Tinto, 2012; Zajacova, Lynch, & Espenshade, 2005) over at least six decades examining the factors and conditions related to persistence in the first and second years of college as well as the measures that might be implemented in an effort to increase retention rates in the first two years of college. However, there are few studies on conditions related to persistence and degree attainment after completing 90 or more credit hours.

In *Completing College: Rethinking Institutional Action*, Vincent Tinto (2012) distinguishes between persistence ("the student's view") and retention ("the institutional view"). *Persistence* is the rate at which a student earns, or does not earn, a degree over a defined period of time and retention is the rate at which "an institution retains and graduates students who first enter the institution as freshman at a given point in time" (Tinto, p. 127). The distinction is important, particularly because some students may persist toward degree attainment at a different institution than the one where they began their college career. Furthermore, a student may choose to *stop out*, temporarily withdrawing from college and suspending progress toward degree completion for an unspecified period.

One of the earliest studies of undergraduate persistence that analyzed a large sample was conducted by McNeely (1937). McNeely sought to determine the rate at which students withdrew from college as well as identify the factors that compelled a student to leave. He studied over 15,500 students from 25 universities (14 public and 11 private) who enrolled as freshmen in 1931-1932. Not surprisingly, given the percentage of female undergraduates at U.S. postsecondary institutions in the early 1930s, the sample included twice as many males

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as females. McNeely found that withdrawing from college and not returning (which McNeely termed "net student mortality") was positively correlated with enrollment in the arts and sciences, attending a public university, age, being male, and distance from home. McNeely also found that other factors contributing to student mortality were financial difficulties and poor academic preparation and performance (McNeely, 1937).

In a study published in 1962, Summerskill criticized McNeely's work and similar studies as disconnected, incomplete, and insignificant. Summerskill's chief contribution to the body of research on the factors that influence student was his strongly held view that not only is the subject complex but that the social sciences, primarily psychology and sociology, could provide the most appropriate theoretical framework for research into undergraduate persistence (Summerskill, 1962). In this he laid the foundation for the important research of Vincent Tinto and other scholars who focus on the motivational factors that impact student success and degree attainment.

In a landmark longitudinal study of 1975, Astin posited two primary predictors of student persistence: *personal* factors and *environmental* factors (Astin, 1975, 1985). The personal factors predictive of retention, listed by Astin in descending order of influence are: previous academic performance, educational aspiration, study habits, parents' level of education, and marital status (1975). The environmental factors predictive of retention, listed by Astin in descending order of influence are: college grades, marital status, children, residency, part-time employment, and extracurricular activities. Astin articulated an involvement theory of student persistence: direct involvement in the academic and social life of the college community was positively correlated with high levels of persistence and degree attainment.

Tinto's seminal 1975 model of college withdrawal, described in *Leaving College: Rethinking the Causes and Cures of Student Attrition*, has been widely studied and endorsed by scholars and administrators (Tinto, 1975, 1987). Tinto posits that the pre-college attributes (e.g., family background, skill and ability, prior schooling) of an individual frame and form the goals and commitments of that individual. As a college student, individual goals and commitments interact with and are influenced by the formal and informal academic and social systems of an institution. The degree to which an individual student is integrated, socially as well as academically, in the systems of the institution determines the decision to stay in college or leave. As part of the effort to increase student persistence and retention, Tinto encouraged colleges to direct their attention and efforts to those forms of departure generally understood as constituting "educational failure" (Morrison & Silverman, 2012).

Tinto (1975) developed his theory of individual departure based on studies of the process of gaining membership in tribal societies by social anthropologist Arnold Van Gennep and studies of suicide by sociologist Emile Durkheim. Tinto articulated three stages of student progression necessary for integration into the college community: (a) separation from past communities, (b) transition between communities, and (c) incorporation into the community(ies) of the college. Tinto's theory of individual departure has exerted considerable influence on postsecondary retention programs and strategies over the last forty years.

Bean and Metzner argued that many of the most popular theories on student retention contributed very little to the study of nontraditional student retention (1985). They postulated four factors tied to nontraditional student dropout decisions: academic, background, psychological, and environmental. Furthermore, according to Bean and Metzner,

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environmental factors—hours of employment, family obligations, opportunities to transfer, outside encouragement and affirmation of the decision to pursue a college degree, and finances—have the greatest influence on retention rates of nontraditional students.

Alan Seidman, strongly influenced by Tinto's model of retention and his theory of individual departure, proposed that postsecondary institutions should adopt student retention programs that include intensive interventions, potent programs likely to result in substantive transformations (Seidman, 1996). Seidman asserts retention should be defined not by degree attainment but, rather, by student success in reaching academic and personal goals (Seidman, 2005). Furthermore, hypothesized Seidman, retention interventions must be intensive and powerful in order to better align a student's academic and personal behavior to achieving individual goals. Such interventions, according to Seidman, require large amounts of time. Finally, Seidman encouraged institutions to be more proactive in identifying students in need of the kinds of support required to attain academic and personal goals.

Several studies on the retention of first year college students have sought to identify predictors of academic persistence: in an important study that appeared in 2001, Kahn and Nauta found that the *only* reliable pre-college predictor of persistence beyond the first year is academic ability/past performance (Kahn & Nauta, 2001). A 2006 study of 3000 students examined ACT scores and individual beliefs about loss of control (i.e., control over life events) as predictors of academic success during the first year of college. The researchers found a significant positive correlation between low scores on the 'loss of control' index and a high GPA at the end of the first year of college (Gifford, Briceno-Perriott, & Mianzo, 2006). Other researchers have examined other predictors of academic success, including notions of self-efficacy: A 2005 study of academic self-efficacy on the academic

performance of "nontraditional, largely immigrant students" concluded that self-efficacy is a "robust and consistent predictor" of academic success (Zajacova, Lynch, & Espenshade, 2005).

Research on college dropout behavior has also examined institutional characteristics. For example, expenditures on student services is negatively correlated with student dropout rates (Chen, 2012). Lau emphasizes the important role of administrators (funding, resource allocation, class scheduling, additional academic support) and faculty (e.g., faculty mentoring and faculty-student collaborative projects) in improving student retention (Lau, 2003).

The Socioeconomic Stratification of Public Higher Education. As noted previously, graduation rates are higher at more selective institutions with wide-ranging resources. Carnevale and Strohl assert that "the overwhelming cause [of declining college graduation rates] is the differences in resources available by level of selectivity" (Carnevale & Strohl, 2010, p. 120). In the wake of declining support for public postsecondary institutions, it is fair to ask where returns are the highest when it comes to investing public funds in postsecondary education. Carnevale and Strohl write:

> …[F]rom an equity perspective, when dollars are scarce, the downstream investment in the public institutions—especially the less selective public institutions—seems more sensible if we want to reduce both postsecondary stratification and the earning differences it encourages. (p. 121)

Goldrick-Rab led a research team that studied 3,000 Pell Grant recipients, part of the Fall 2008 freshmen cohort at the 42 public postsecondary institutions in the Wisconsin system. The findings of the Goldrick-Rab study are similar to the findings of Johnson's 2009 study described previously. Goldrick-Rab offers an insightful summary of the five primary findings of the Pell Grant recipient study—in particular, the unusual characteristics of the educational cost burden on low-income students—in a 2016 commentary in the *Chronicle of*

Higher Education: (1) the federal government's protocol for determining student financial need not only overestimates a family's ability to pay for college but understates the true cost of attending college; (2) contrary to conventional wisdom, a significant percentage of low-income students are supporting their parents, siblings, and extended families; (3) some low-income students go without adequate food or housing; (4) many students are holding down multiple part-time jobs and pulling all-nighters regularly in order to make ends meet; and (5) low-income students often feel they are forced into borrowing for college, loans that are a significant source of stress (Goldrick-Rab, 2016).

Addressing Class Inequality. Dr. Margaret Cahalan is the Director of the Pell Institute for the Study of Opportunity in Higher Education of the Council for Opportunity in Education. In a widely circulated 2015 paper, Dr. Cahalan offers sixteen strategies for widening the equity of participation in higher education in the United States (Cahalan, 2015). Three of the most pertinent approaches to the present discussion are: focus on retention and completion and increased use of student support services; incentivizing completion through conversion of loans to grants upon completion of course or program of study; and addressing the Satisfactory Academic Progress (SAP) issues through prevention and flexibility rewarding improvement (Cahalan, 2015).

Interventions and Incentives. Interventions in higher education range from the subtle nudge to more aggressive and more insistent efforts that target individuals at risk for specific outcomes, e.g., failing a course, dropping out of school, destructive behavior, drug or alcohol abuse, or losing financial aid due to a failure to complete the required paperwork before the application deadline (Bettinger, Long, Oreopoulos & Sanbonmatsu, 2012;

Boylan, 2009; Elliott, Carey, & Vanable, 2014; Mattanah, Brooks, Brand, Quimby, & Ayers, 2012; Mellor, Brooks, Gray, & Jordan, 2015; Tinto, 2012).

An increasing number of institutions are implementing new intervention programs to increase graduation rates, often based on predictive analytics, or expanding existing programs in an effort to assist students in academic or financial jeopardy (Seidman, 2012). Such interventions may be in the form of reminders, alerts, information disclosures, timely instructions, support programs, or brief announcements. At Marist College, for example, a predictive analytics model identifies students at risk of stopping out; timely and targeted academic and financial intervention programs have increased degree completion rates (Boulton, 2014).

University programs that provide funds to students within one or two semesters of degree completion or committees with the ability to expedite appeals process decisions are gaining in popularity. At Cleveland State University, the Last Mile Program provides bridge funds to seniors who are within one to two semesters of earning a degree but who've exhausted their financial aid (Cleveland State University, 2016). Portland State University's Last Mile Committee, armed with funds to offer limited tuition remission and granted the authority to quickly override graduation requirements that are typically approved via the normal appeals process, focuses on assisting students just a few courses shy of completing the requirements for a degree—since 2010, the program has helped more than 500 students graduate (Portland State University, 2017). At Georgia State, Panther Retention Grants provide financial assistance to needy students in their final semester (Rosenberg, 2014). Finally, the innovative student success programs at the University of Texas at Austin includes academic support of various types, incentivized financial aid programs, and

experiential and service learning programs (Office of Institutional Reporting, Research, and Information Systems, University of Texas, 2015; Tough, 2014).

Pertinent to the discussion of creative incentives is the City University of New York system's Accelerated Study in Associate Programs (ASAP). The goal of the program is ambitious: assist at least 50% of program participants to complete their associates degree within three years. The program, now in place at seven CUNY campuses, provides academic, social, and financial support to students pursuing a 2-year degree. Strategies include cohorts by major, block scheduling, small class sizes, and career development services. ASAP incentives include textbook costs and fees assistance, waivers of tuition and mandatory fees for financial aid-eligible students, and monthly MetroCards for all students (CUNY, 2017). Finally, the three-year graduation rate for ASAP (55%) is more than three times the national three-year graduation rate for urban community colleges of 16% (IPEDS).

Incentives should be appealing and attractive to the subject and, in order for incentives to be effective in producing a desired behavior, the subject must possess the skills or knowledge necessary to complete the incentivized behavior as well as resources and opportunities to complete the incentivized behavior (Stephens & Townsend, 2015). Moreover, incentives should (1) target behaviors that would otherwise not occur; (2) focus on short-term concrete behaviors; (3) consider the level of quality at which the task is completed; (4) be used repeatedly; (5) be delivered immediately; and (6) be meaningful to the subject: the best incentives are those that cooperative rather than adversarial (Levitt & Dubner, 2014).

A review of the literature on the effectiveness of financial incentives to improve performance or change behavior indicates that incentives work under some conditions but not

others (Akin-Little, Eckert, Lovett, & Little, 2004; Condly, Clark, & Stolovitch, 2003; Jenkins, Mitra, Gupta, & Shaw, 1998; Pierce & Cameron, 2002). Stephens & Townsend (2013) address the issue of the effectiveness of the use of financial incentives to improve the success and degree attainment of disadvantaged college students. In their discussion, the authors acknowledge the academic, social/psychological, cultural capital, motivational, and financial factors that impact (and may impede) degree attainment. They also note that the design of any incentive, financial or otherwise, must satisfy the precondition that the subject possesses the required skills or knowledge to complete the incentivized task as well as the resources and opportunities to complete the incentivized task. Stephens and Townsend cite several successful programs for achieving desired outcomes through the use of incentives, including improving community college students' GPAs with performance-based scholarships (Brock & Richburg-Hayes, 2006) and improving high school achievement with merit-based scholarships (Pallais, 2009), but cite other programs that have been less successful (Fryer, 2011; Scott-Clayton, 2011). It appears that, in all cases, the financial incentive offered was in the form of a conditional payment.

Stephens and Townsend suggest a number of strategies for incentivizing behavior or performance in response to the primary factors that influence degree attainment and conclude that "Financial incentives provide a useful tool that can be leveraged to improve the performance of disadvantaged groups and reduce achievement gaps" (Stephens & Townsend, 2013, p. 73). The preconditions for incentives, e.g., that the incentive must be perceived as attractive and appealing by the subject and the subject must possess the knowledge, ability, and resources to achieve the incentivized performance or behavior (Castleman et al., 2015) are of primary importance when considering incentives and higher education.

Chapter 2 Summary

      As a further elaboration of the introduction presented in Chapter 1, Chapter 2 provided an overview of the scholarly literature on persistence, financial obstacles to degree attainment, models of college student persistence and retention, the socioeconomic stratification of public higher education, class inequality in public higher education, and the effective use of interventions and incentives in higher education. Chapter 3 sets forth the details of the methodology of the research study.

Chapter 3: Methodology

This research investigation is a study of University of North Carolina General Administration (UNC-GA) data on students, both part-time and full-time, who matriculated at a UNC system postsecondary institution between the 2009-10 and 2013-14 academic years (inclusive) and subsequently withdrew from college in good academic standing (i.e., GPA equal to or greater than 2.00) after earning 90 or more credit hours. The group is known as Cohort 2 of the Partway Home population (Cohort 1 is the group that matriculated between the 2004-2005 and 2008-09 academic years). One emphasis of the study is the number of current and former Pell Grant recipients in the population as well as the number of students who exhausted their available financial aid resources immediately prior to the last semester of enrollment. Secondary sources of information include the College Board, the UNC System Data Dashboard, and *U.S. News and World Report* Compass data. The following research questions were of interest:

1. Is there evidence in support of the hypothesis that a lack financial resources to pay for college is the primary factor that leads high-achieving students to stop-out?

2. Is there evidence in support of the hypothesis that poor academic performance is the primary factor that leads low-achieving students to stop-out?

3. Is there evidence that supports the establishment of a pilot program of targeted incentives aimed at significantly increasing six-year graduation rates, especially among low-income high-achieving students?

4. Is there evidence that supports the establishment of a pilot program of targeted interventions aimed at significantly increasing six-year graduation rates, especially among low-income low-achieving students?

Theoretical Framework

This study examines the phenomena of stop-out behavior at UNC system postsecondary institutions to better understand the factors and circumstances that lead to the decision to suspend progress on earning an undergraduate degree as well as identify those targeted interventions and incentives most likely to reduce the number of stop-outs. As noted previously, there has been relatively little research on this subject, particularly on high-achieving low-income students who decide to stop-out.

The research presented here is grounded in the author's strong belief in the American Social Contract, in the strong link between upward social mobility and postsecondary education, and in the "crucial role that postsecondary education plays in expanding individual opportunity and increasing U.S. competitiveness" (Carnevale & Strohl, p. 84).

Context

At the beginning of the 2012-13 academic year, the UNC-GA determined that, between the academic years 2003-04 and 2008-09, 14,686 students had stopped out for more than one year and, furthermore, met the following criteria: earned at least 90 credit hours and left in good academic standing (2.0 GPA or higher). UNC-GA refers to this group as the Partway Home Students. Based on information from the National Student Clearinghouse

Research Center (NSCH) and Alumni Finder (AF), 10,326 students were identified who (a) still lacked a college degree and (b) accurate contact information was available. The lists of students were sent to each campus as part of an effort to contact the stop-outs and encourage them to re-enroll. As of Spring 2015, 570 students (5.52%) had graduated from a UNC institution and 2,578 (24.97%) were enrolled at or had graduated from a non-UNC institution (UNC-GA Partway Home Summary Statistics, September 16, 2015).

In 2015, UNC-GA used the same selection criteria to identify the Partway Home population from the 2009-10 through 2013-14 academic years: a total of 9,003 students. UNC-GA designated this group as Cohort 2 of the Partway Home Population. In addition, UNC-GA generated descriptive statistics for the group: the mean number of credit hours earned is 116; the percentage of females to males is 53% to 47%; the mean GPA is 2.72; and the five most popular majors are Business (6.8%), Psychology (5.4%), Biology/Biological Sciences (4.7%) Elementary Education and Teaching (3.1%), and Speech Communication and Rhetoric (3.0%) (UNC-GA Partway Home Summary Statistics, September 16, 2015).

While the decision of even a single student to suspend progress on attaining a college degree gives one pause, especially considering the personal and financial investment, it is fair to ask if the stop-out phenomenon constitutes a significant problem to the UNC system. Figure 1 illustrates the annual percentage change, between the 2007-08 and 2015-16 academic years, in the size of the Partway Home Population and the annual percentage change in the number of undergraduate degrees conferred by the 16 postsecondary institutions in the UNC system. (Note that data on the number of UNC baccalaureate degrees conferred during the 2015-16 academic year has not been made available as of this writing.) While the annual percentage change in the number of baccalaureate degrees conferred has

remained relatively flat, the annual percentage change in the number of stop-outs has ranged

from 3.14% (a total of 1741 stop-outs) in 2012-13 to 58.38% (a total of 3592 stop-outs) in

2015-16. The number of UNC system students who stopped out during the 2007-08 academic

year is 3.67% of the number of baccalaureate degrees conferred during the 2007-08 academic

year while the number of stop-outs during the 2015-16 academic year is approximately 10%

of the number of baccalaureate degrees conferred during 2015-16 academic year.

Figure 2:   Annual Percentage Change, Partway Home Population (solid line) v. UNC
              Baccalaureate Degrees Conferred (dashed line), 2007-08 to 2015-16
              Academic Years
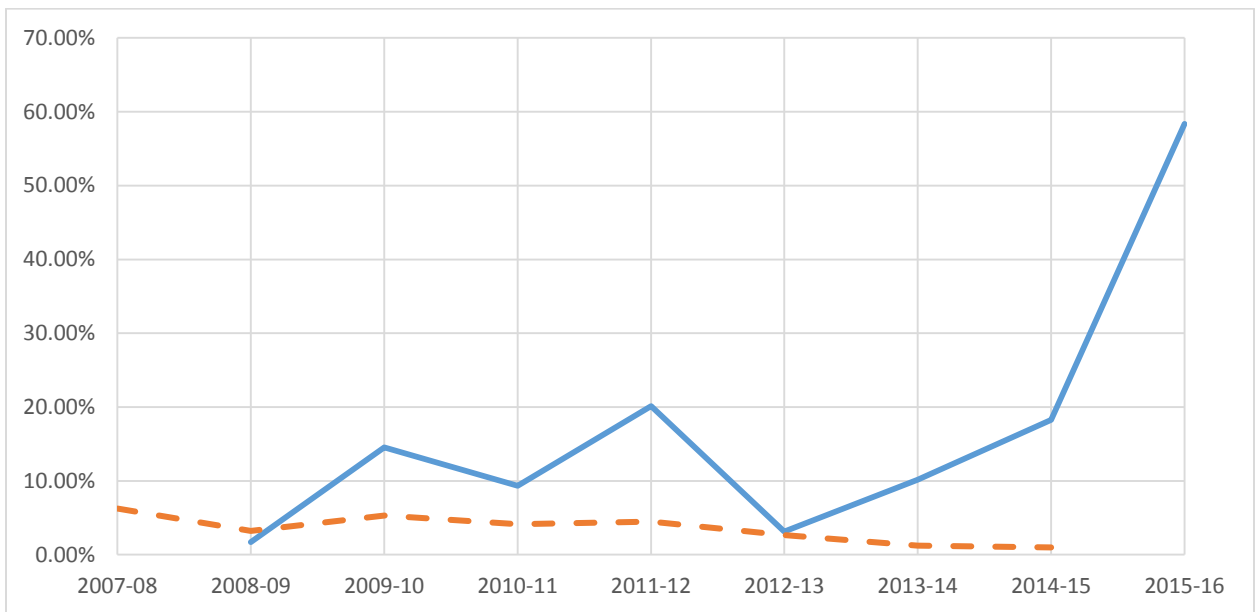
Sources: UNC System Data Dashboard, 2016, and UNC-GA Partway Home dataset, January 2017.

Figure 2 depicts, as a percentage, the ratio of each UNC institution's Cohort 2

population to the number of baccalaureate degrees conferred at the institution between the

2009-10 and 2013-14 academic years. It is clear from Figure 2 that efforts to assist a

significant portion of the Partway Home population to complete their undergraduate degrees

would positively impact 6-year graduation rates. This is particularly true for those institutions with high percentages of Partway Home students relative to the number of bachelor degrees conferred.

Figure 3:   Percentage of UNC Partway Home Population to Number of Bachelor Degrees Conferred, by Institution, 2009-10 to 2013-14 Academic Years
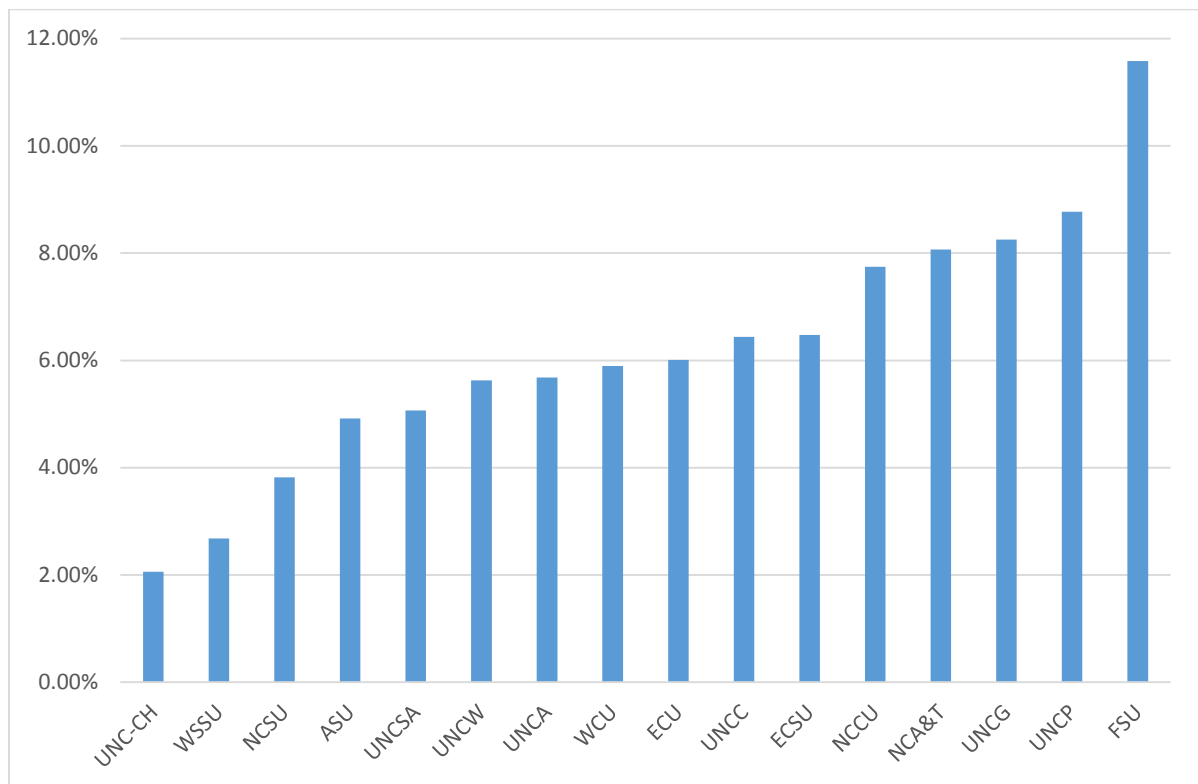
Sources: UNC System Data Dashboard, 2016, and UNC-GA Partway Home dataset, January 2017.

Research Design

The focus of the study is a data file provided by UNC-GA containing information on more than 50,000 students who attended UNC system postsecondary institutions between 2003 and 2016. The file includes information on UNC system institution, first and last terms enrolled, standardized test scores (if available), high school (if available), declared major,

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grade point average, number of credit hours earned, demographic characteristics, and financial aid types and history.

The first phase of the study required identifying those students in the data file who (1) matriculated between the 2009-10 and 2013-14 academic years; (2) withdrew from the university in good academic standing (i.e., GPA equal to or greater than 2.00) after earning 90 or more credit hours toward a baccalaureate degree; and (3) did not earn a baccalaureate degree later from another postsecondary institution. UNC-GA's Partway Home tallies of 2012 and 2015 did not include former students from out-of-state or former students for whom accurate contact information was not available, likely in anticipation of an effort to recruit and re-enroll only state residents with current contact information. The objective of this study is the study of stop-out behavior regardless of state residence or the accuracy of contact information and, therefore, those samples were not eliminated from the dataset. The result is that the population size for this study, 9745, is 8.24% larger than the one described by UNC-GA staff in the statistical summary of September 2015.

Based, in large measure, on my experiences preparing a report on the Appalachian State University Cohort 2 population in March and April 2016 and a concern about the tendency to view the Partway Home Population as a single monolithic group, I chose to organize the Partway Home Cohort 2 Population into smaller groups. I calculated the quartile boundaries of the dataset (N=9745) based on grade point average (GPA) and credit hours (CH) earned. The result, illustrated in Figure 3, is 16 distinct subgroups ($N_{AV} = 609$). In the matrix, the subgroups that begin with the same letter are consistent from the standpoint of GPA (e.g., the subgroups that begin with the letter B include all Cohort 2 students with a 2.7745 to 3.2499 GPA) and the subgroups that share the same number are consistent from the

standpoint of credit hours earned (e.g., the subgroups with the number 2 include the Cohort 2 students with 111 to 124.99 credit hours).

Table 1

Cohort 2: Sixteen Subgroups (With N Values) Based on Quartiles of Grade Point Average (GPA) and Credit Hours Earned

	Quartile A (GPA: 3.25 to 4.2071)	Quartile B (GPA: 2.7745 to 3.2499)	Quartile C (GPA: 2.40 to 2.7744)	Quartile D (GPA: 2.00 to 2.3999)
Quartile 1 (Credit Hours: 125 – 165.66)	A1 (*N*=782)	B1 (*N*=630)	C1 (*N*=558)	D1 (*N*=483)
Quartile 2 (Credit Hours: 111 – 124.99)	A2 (*N*=559)	B2 (*N*=681)	C2 (*N*=638)	D2 (*N*=625)
Quartile 3 (Credit Hours: 101 – 110.99	A3 (*N*=559)	B3 (*N*=595)	C3 (*N*=662)	D3 (*N*=628)
Quartile 4 (Credit Hours: 90 – 100.99)	A4 (*N*=544)	B4 (*N*=529)	C4 (*N*=582)	D4 (*N*=690)

At UNC system institutions, grade point average is determined by dividing the total number of quality points earned by the quality hours attempted. Quality points are based on the final letter grade earned in a course (e.g., a letter grade of A is 4.0 quality points and a letter grade of A-minus is 3.7 quality points) and quality hours are a course's number of credit hours. (Note that a small number of institutions continue to include a grade of A-plus (4.33 quality points) as a letter grade option.) Undergraduates must maintain a minimum cumulative GPA of 2.00. Failure to maintain a minimum cumulative GPA of 2.00 automatically places a student on academic probation for the fall or spring semester that

follows (UNC Policy Manual, 2013). In addition, some undergraduate degree programs

require a cumulative GPA higher than 2.00 in order to graduate (e.g., Education majors must

earn a minimum cumulative GPA of 2.70 and a major GPA of 2.70). An undergraduate

student must be enrolled in at least 12 credit hours in order to maintain full-time student

status (UNC Policy Manual, 2013); with just a few exceptions, full-time undergraduate

students are enrolled in 12 to 18 hours per semester. In most instances, full-time status is a

requisite to qualifying for financial aid. In addition, students are eligible for "Federal

financial aid for up to 150% of normal time to graduation" (UNC Policy Manual, 2013);

normal time to graduation is defined as 120 hours and 150% of normal time is defined as 180

hours.

To earn an undergraduate degree from a UNC system postsecondary institution,

completion of 120 to 128 credit hours (including General Education courses and required

courses outside the major) is mandatory (UNC Policy Manual, 2013). For example, 125

credit hours (minimum) are required to earn the Bachelor of Science in Nursing degree at

UNC-Chapel Hill, 128 credit hours (minimum) are required to earn the Bachelor of Arts in

Biology degree at Appalachian State, and 128 credit hours (minimum) are required to earn

the Bachelor of Arts in Architecture degree at UNC-Charlotte.

For each of the 16 subgroups—and for each of the 16 postsecondary institutions in

the UNC system—information on the cumulative GPA, credit hours earned, four-year or

transfer student status, financial aid information, gender, and race/ethnicity of each student

was tabulated, converted to a percentage based on sample size, and compared across

subgroups. Information on four-year versus transfer student status was not included in the

UNC-GA dataset: numbers of transfer students were estimated based on the assumption that

standardized tests scores are available to UNC-GA only for four-year students. Information

on the most popular majors for each of the 16 subgroups was also tabulated and compared.

Of the sixteen subgroups, A1 is the largest at (N=782) and D1 is the smallest

(N=483). Notably, subgroups A1, B2, C3, and D4—the subgroups arrayed from the top left

corner to the lower right corner in the matrix—are the largest of the sixteen subgroups. The

samples from subgroups A1, B2, C3, and D4 comprise 28.89% of the Cohort 2 population.

Table 2

Cohort 2: Four Quadrants (With N Values) Based on the 16 Subgroups

	Grade Point Average: 2.7745 to 4.2071	Grade Point Average: 2.00 to 2.7744
Credit Hours: 111 – 165.66	**Quadrant I** (N=2652)	**Quadrant III** (N=2304)
Credit Hours: 90 – 110.99	**Quadrant II** (N=2227)	**Quadrant IV** (N=2562)

The 4x4 subgroup matrix presented in Figure 3 emphasizes the four combinations of

characteristics at the top and bottom of the GPA and credit hours earned ranges: subgroup A1

is those students with both a high GPA and a large number of credit hours earned while

subgroup D4 is those students with both a low GPA and a small number of credit hours

earned. Furthermore, subgroup A4 is those students with a high GPA and a low number of

credit hours earned while subgroup D1 is those students with a low GPA and a high number

of credit hours earned. Of course, there are only slight differences in cumulative GPA and

credit hours earned between members of contiguous subgroups. In addition, a student with

111 credit hours or more can, in most instances, complete the requirements for an undergraduate degree in a single semester of full-time enrollment—assuming all remaining required courses are offered in that semester—while a student with less than 111 credit hours or less will, in most instances, require more than one semester of full-time enrollment to complete the requirements for an undergraduate degree. Refinement of the 4 x 4 matrix in Table 1 resulted in the 2 x 2 matrix in Table 2: Students in Quadrant I (subgroups A1, A2, B1, and B2), with GPAs of 2.7745 and higher and 111 credit hours or more, are those who, at first glance, appear closest to meeting both the GPA and credit hour requirements for earning an undergraduate degree. Students in Quadrant IV (subgroups C3, C4, D3, and D4), with GPAs between 2.00 and 2.7744 and less than 111 credit hours, are those who appear to be at the greatest disadvantage in meeting both the GPA and credit hour requirements for earning an undergraduate degree

Analysis of the UNC-GA Cohort 2 dataset aims to identify the characteristics and trends across the 16 subgroups and four quadrants that differentiate the members of a subgroup from the population as a whole. In addition, the analysis seeks to identify those targeted interventions and incentives likely to convert a potential stop-out to a college graduate. Microsoft Excel and Statistical Package for the Social Sciences (SPSS) software were utilized for the study.

The objectives of the study were:

a) to develop an accurate statistical profile of the members of Cohort 2 as well as statistical profiles of subgroups (based on GPA and credit hours earned as of the last semester of enrollment);

b) to offer an informed response to the question of the challenges to degree

completion for the members of each subgroup; and

c) to offer recommendations for interventions aimed at increasing six-year

graduation rates across the University of North Carolina system.

Chapter 4: Results

For each of the 16 subgroups that comprise the Partway Home Cohort 2 population—
and for each of the 16 postsecondary institutions in the UNC system—information on the
cumulative GPA, credit hours earned, four-year or transfer student status, financial aid
information, gender, and race/ethnicity of each student was tabulated, converted to a
percentage based on sample size, and compared across subgroups. The findings of this study
are reported and described in four sections: transfer status, institutional representation,
financial aid characteristics, and demographic characteristics. In addition, information on the
four most popular majors for each of the 16 subgroups was tabulated.

For the purposes of this study, information on cumulative GPA, credit hours earned,
four-year or transfer student status, financial aid information, gender, and race/ethnicity of
each student was tabulated and compared across four quadrants. Like the subgroup summary,
the findings of the quadrant study are reported and described in four sections: transfer status,
institutional representation, financial aid status, and demographic characteristics. Finally,
information on the most popular majors for each of the four quadrants was tabulated.

Analysis by Subgroups

Four-Year and Transfer Students. In Fall 2009, transfer students from all sources
at UNC system postsecondary institutions numbered 13,549, 8.14% of the UNC system's
total headcount of 166,515 students; in Fall 2014, transfer students at UNC system
postsecondary institutions numbered 15,884, 9.26% of the UNC system's total headcount of

171,458 students (UNC Data Dashboard, 2017).

Table 3 is a tabulation of the numbers and percentages of four-year and transfer students for each of the 16 Cohort 2 subgroups. As noted in the previous chapter, information on four-year versus transfer student status was not included in the UNC-GA dataset: numbers of transfer students were estimated based on the assumption that standardized tests scores are available to UNC-GA only for four-year students. Of the 9742 samples in Cohort 2, 6461 (66.32%) are four-year students and 3285 (33.68%) are transfer students. The percentage of transfer students in Cohort 2 is more than 4 times the percentage of transfer students in the UNC system in 2009. In addition, the numbers and percentages of four-year and transfer students vary significantly across the subgroups. The percentage of transfer students in subgroup A1 is more than 8 times the percentage of transfer students in the UNC system in 2009 and the percentage of transfer student in subgroup C4, the subgroup with the smallest percentage of transfer students, is almost twice the average percentage of transfer students in the UNC system in 2009. Subgroup C3 has the largest number of four-year students (547) followed closely by subgroup D4 (545); subgroup A1 has the smallest number of four-year students (258). Subgroup A1 has the largest number of transfer students (525) and subgroup C4 has the smallest number of transfer students (87). The numbers of four-year students for subgroups A1, A2, A3, and A4 are each more than one standard deviation lower than the average for the population. The numbers of four-year students for subgroups C3, D3, and D4 are each more than one standard deviation higher than the average for the population. Finally, the number of transfer students in subgroup A1, the subgroup comprised of students with the highest GPAs and the highest number of credit hours earned, is more than two standard deviations higher than the average for the population.

Table 3

Numbers and Percentages of Four-Year and Transfer Students by Subgroup

Subgroup	N	4-Year (%)	Transfer (%)
Subgroup A1	783	258 [a] (32.95%)	525 [c] (67.05%)
Subgroup A2	559	269 [a] (48.12%)	290 (51.88%)
Subgroup A3	559	259 [a] (46.33%)	300 (53.67%)
Subgroup A4	545	271 [a] (49.72%)	274 (50.28%)
Subgroup B1	627	347 (55.34%)	280 (44.66%)
Subgroup B2	681	482 (70.78%)	199 (29.22%)
Subgroup B3	594	448 (75.42%)	146 (24.58%)
Subgroup B4	529	397 (75.05%)	132 (24.95%)
Subgroup C1	558	350 (62.72%)	208 (37.28%)
Subgroup C2	638	499 (78.21%)	139 (21.79%)
Subgroup C3	662	547 [b] (82.63%)	115 (17.37%)
Subgroup C4	580	493 (85.00%)	87 [a] (15.00%)
Subgroup D1	484	303 (62.60%)	181 (37.40%)
Subgroup D2	625	468 (74.88%)	157 (25.12%)
Subgroup D3	628	525 [b] (83.47%)	104 (16.53%)
Subgroup D4	690	545 [b] (79.10%)	144 (20.90%)
Total	9745	6461 (66.32%)	3285 (33.68%)

[a] Value is more than one standard deviation lower than the average for the population.

[b] Value is more than one standard deviation higher than the average for the population.

[c] Value is more than two standard deviations higher than the average for the population.

Institutional Representation. Table 4 is a tabulation of the numbers and percentages of students from each of the 16 UNC system postsecondary institutions. In the Cohort 2 population ($N = 9745$), the largest number of samples are from UNC-Charlotte (UNC-C) (1281, 13.15%) and the smallest number of samples are from the North Carolina School of the Arts (NCSoA) (39, 0.39%). Every institution is represented in Cohort 2 of the Partway Home population and one might reasonably expect that the representation, on a percentage basis, of each institution in a subgroup is consistent with the size of the institution's student body relative to the UNC system total headcount. While this generally holds true, in a few instances the size of an institution's sample in a subgroup is disproportional to its enrollment. For example, each year between 2009 and 2014, the institutions with the highest Census Day student headcounts were almost always (in ranked order): North Carolina State University (NCSU), East Carolina University (ECU), UNC-Charlotte (UNC-C), UNC-Chapel Hill (UNC-CH), and Appalachian State University (ASU). The sole exception is, for the years 2012 and 2013, ECU and UNC-C switched places in the ranking. In the subgroups tabulation, the UNC-C sample size is larger than two standard deviations above the subgroup average for five of the sixteen subgroups and the UNC-G sample size is larger than two standard deviations above the subgroup average for two of the sixteen subgroups. The NCSU and ECU sample sizes are larger than two standard deviations above the subgroup average in only one instance. The sample sizes for UNC-CH and ASU were within one standard deviation of the subgroup average for each of the 16 subgroups.

Table 4   *Numbers and Percentages of Students from UNC Institutions by Subgroup*

Subgr.	ASU		ECU		ECSU		FSU		NCAT		NCCU		NCSU		NCSoA	
A1	55	7.03%	106	13.55%	3	0.38%	75	9.59%	17	2.17%	51	6.52%	68	8.70%	1	0.13%
A2	52	9.30%	75	13.42%	4	0.72%	41	7.33%	23	4.11%	11	1.97%	41	7.33%	2	0.36%
A3	49	8.77%	83	14.85%	7	1.25%	31	5.55%	19	3.40%	4	0.72%	38	6.80%	1	0.18%
A4	46	8.46%	76	13.97%	8	1.47%	33	6.07%	21	3.86%	14	2.57%	32	5.88%	4	0.74%
B1	42	6.67%	82	13.02%	6	0.95%	38	6.03%	48	7.62%	25	3.97%	84	13.33%	2	0.32%
B2	53	7.78%	99	14.54%	6	0.88%	37	5.43%	65	9.54%	13	1.91%	67	9.84%	8	1.17%
B3	52	7.78%	99	14.54%	6	0.88%	37	5.43%	65	9.54%	13	1.91%	67	9.84%	8	1.17%
B4	52	8.74%	80	13.45%	8	1.34%	19	3.19%	56	9.41%	26	4.37%	43	7.23%	5	0.84%
C1	43	8.13%	57	10.78%	11	2.08%	17	3.21%	25	4.73%	25	4.73%	47	8.88%	2	0.38%
C2	59	9.25%	72	11.29%	10	1.57%	28	4.39%	67	10.50%	21	3.29%	72	11.29%	3	0.47%
C3	52	7.85%	76	11.48%	10	1.51%	29	4.38%	39	5.89%	41	6.19%	67	10.12%	4	0.60%
C4	47	8.08%	73	12.54%	18	3.09%	23	3.95%	36	6.19%	21	3.61%	47	8.08%	2	0.34%
D1	45	9.32%	75	15.53%	9	1.86%	29	6.00%	31	6.42%	9	1.86%	89	18.43%	1	0.21%
D2	60	9.60%	70	11.20%	14	2.24%	37	5.92%	47	7.52%	18	2.88%	83	13.28%	0	0.00%
D3	46	7.32%	54	8.60%	9	1.43%	36	5.73%	47	7.48%	24	3.82%	84	13.38%	0	0.00%
D4	58	8.41%	72	10.43%	18	2.61%	29	4.20%	43	6.23%	36	5.22%	69	10.00%	1	0.14%

Table 4   *Numbers and Percentages of Students from UNC Institutions, by Subgroup*

Subgr.	UNC-A		UNC-CH		UNCC		UNCG		UNC-P		UNC-W		WCU		WSSU	
A1	6	0.77%	15	1.92%	52	6.65%	208	26.60%	15	1.92%	43	5.50%	63	8.06%	4	0.51%
A2	8	1.43%	13	2.33%	67	11.99%	89	15.92%	20	3.58%	52	9.30%	53	9.48%	8	1.43%
A3	13	2.33%	38	6.80%	81	14.49%	63	11.27%	20	3.58%	59	10.55%	47	8.41%	6	1.07%
A4	23	4.23%	38	6.99%	87	15.99%	39	7.17%	26	4.78%	36	6.62%	44	8.09%	17	3.13%
B1	12	1.90%	12	1.90%	56	8.89%	108	17.14%	18	2.86%	51	8.10%	35	5.56%	10	1.59%
B2	18	2.64%	29	4.26%	80	11.75%	81	11.89%	19	2.79%	61	8.96%	37	5.43%	8	1.17%
B3	18	2.64%	29	4.26%	80	11.75%	81	11.89%	19	2.79%	61	8.96%	37	5.43%	8	1.17%
B4	10	2.84%	33	6.24%	98	18.53%	48	9.07%	27	5.10%	48	9.07%	26	4.91%	7	1.32%
C1	15	1.79%	10	1.79%	65	11.65%	62	11.11%	24	4.30%	47	8.42%	23	4.12%	9	1.61%
C2	16	2.51%	15	2.35%	92	14.42%	66	10.34%	23	3.61%	54	8.46%	31	4.86%	9	1.41%
C3	14	2.11%	37	5.59%	113	17.07%	63	9.52%	30	4.53%	46	6.95%	22	3.32%	19	2.87%
C4	10	1.72%	40	6.87%	80	13.75%	62	10.65%	26	4.47%	55	9.45%	29	4.98%	13	2.23%
D1	11	2.28%	18	3.73%	46	9.52%	52	10.77%	26	5.38%	25	5.18%	11	2.28%	6	1.24%
D2	8	1.28%	27	4.32%	102	16.32%	58	9.28%	24	3.84%	55	8.80%	13	2.08%	9	1.44%
D3	16	2.55%	48	7.64%	89	14.17%	59	9.39%	32	5.10%	47	7.48%	21	3.34%	16	2.55%
D4	11	1.59%	52	7.54%	103	14.93%	69	10.00%	34	4.93%	42	6.09%	29	4.20%	24	3.48%

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On a percentage basis, 26.60% of samples from subgroup A1, the subgroup comprised of students with the highest GPAs and the highest number of credit hours earned, are from UNC-G. No other institution had a sample size larger than 18.50% of a subgroup population. In subgroup D4, the subgroup comprised of students with the lowest GPAs and the lowest number of credit hours earned, 14.93% of the subgroup sample is from UNC-C. UNC-C also had the highest percentages in subgroups D2 (16.32%) and D3 (14.17%), subgroups where the cumulative grade point average is less than 2.40.

Financial Aid Status. Table 5 is a tabulation of the financial aid characteristics for each of the Cohort 2 subgroups. Column headings *1s*, *2s*, and *3s* refer to the number of different sources of aid received (i.e., 1 source, 2 sources, and 3 sources). The financial aid source types are Pell Grants, subsidized or unsubsidized loans, and a miscellaneous category for all other financial aid source types. Heading *PG* refers to the number of Pell Grant recipients and heading *PG** refers to the number of those who were Pell Grant recipients in previous semesters but who exhausted that resource prior to the last semester enrolled. Heading PG^T is the sum of Pell Grant recipients in the last semester enrolled or in previous semesters. Heading *Any** refers to the number of those who have had a reduction or elimination in the number of financial aid source types (not including exhausting a Pell Grant) in the last semester enrolled relative to the two previous semesters.

In the Cohort 2 Population, 337 students (3.46%) received financial aid from one source during the last semester enrolled, 2757 students (28.29%) received financial aid from two sources during the last semester enrolled, and 2591 students (26.59%) received financial aid from three sources during the last semester enrolled. In addition, 3274 students (33.60%) were Pell Grant recipients and 1838 (18.86%) were Pell Grant recipients previously but

exhausted that resource prior to the last semester enrolled. In the Cohort 2 population, the total number of Pell Grant recipients in the last semester enrolled or in previous semesters was 5111 students (52.45%); 3740 students (38.38%) saw a reduction or elimination in the number of financial aid source types in the last semester enrolled relative to the two previous semesters.

The percentage of Cohort 2 students in each subgroup with a single source of financial aid varied between 1.61% in subgroup C1 to 7.24% in subgroup A4. The percentage of students in each subgroup with two sources of financial aid varied between 24.90% (subgroup D1) to 31.88% (subgroup B3). The percentage of students in each subgroup with three sources of financial aid varied between 11.49% (subgroup A1) to 38.84% (subgroup D4). A pattern is apparent in the relationship between cumulative GPA and the number of financial aid sources: a lower percentage (14.98%) of students in the four subgroups with the highest GPA range had three source of financial aid while a higher percentage (33.76%) of students in the four subgroups with the lowest GPA range had three sources of financial aid.

Table 5

Financial Aid Characteristics by Subgroup

Subgroup	N	$1s$	$2s$	$3s$	PG^T	PG	PG^*	Any^*
A1	783	31 (3.96%)	245 (31.29%)	90 (11.49%)	300 (38.31%)	131 (16.73%)	169 (21.58%)	159 (20.33%)
A2	559	29 (5.20%)	149 (26.70%)	79 (14.16%)	216 (38.71%)	124 (22.22%)	92 (16.49%)	126 (22.54%)
A3	559	30 (5.38%)	145 (25.99%)	108 (19.35%)	240 (43.01%)	145 (25.81%)	96 (17.20%)	96 (17.17%)
A4	545	39 (7.24%)	135 (25.05%)	89 (16.51%)	263 (48.79%)	147 (27.27%)	116 (21.52%)	102 (18.75%)
B1	627	18 (2.93%)	175 (28.50%)	154 (25.08%)	334 (54.40%)	187 (30.46%)	147 (23.94%)	140 (22.22%)
B2	681	18 (2.65%)	190 (27.98%)	184 (27.10%)	342 (50.37%)	228 (33.58%)	114 (16.79%)	126 (18.50%)
B3	594	30 (5.03%)	190 (31.88%)	147 (24.66%)	300 (50.34%)	200 (33.56%)	100 (16.78%)	100 (16.81%)
B4	529	14 (2.67%)	156 (29.71%)	142 (26.84%)	274 (52.19%)	182 (34.67%)	92 (17.52%)	113 (21.36%)
C1	558	9 (1.61%)	157 (28.09%)	179 (32.02%)	340 (60.82%)	213 (38.10%)	127 (22.72%)	105 (18.82%)
C2	638	13 (2.01%)	167 (25.81%)	218 (33.69%)	385 (59.51%)	254 (39.26%)	131 (20.25%)	138 (21.63%)
C3	662	20 (2.97%)	199 (29.57%)	205 (30.46%)	360 (53.49%)	259 (38.48%)	101 (15.01%)	107 (16.16%)
C4	580	23 (3.95%)	172 (29.50%)	177 (30.36%)	304 (52.14%)	220 (37.74%)	84 (14.41%)	104 (17.87%)
D1	484	10 (2.06%)	121 (24.90%)	140 (28.81%)	295 (60.70%)	168 (34.57%)	127 (26.13%)	105 (21.74%)
D2	625	14 (2.25%)	170 (27.20%)	189 (30.39%)	374 (60.13%)	230 (36.98%)	144 (23.15%)	123 (19.68%)
D3	628	19 (3.00%)	176 (27.76%)	222 (35.02%)	363 (57.26%)	263 (41.48%)	100 (15.77%)	131 (20.86%)
D4	690	20 (2.90%)	210 (30.44%)	268 (38.84%)	421 (61.02%)	323 (46.81%)	98 (14.20%)	127 (18.41%)

The number of Cohort 2 students who were recipients of a Pell Grant during the last semester of enrollment is 3260 (33.45%). The percentage of Cohort 2 Pell Grant recipients in each subgroup varied between 16.73% in subgroup A1 to 46.81% in subgroup D4. In general, there is a smaller percentage of Pell Grant recipients in the subgroups with high GPAs and a higher percentage of Pell Grant recipients in the subgroups with lower GPAs: 22.38% of those in subgroups A1, A2, A3, and A4 (3.25 to 4.2071 GPA) were Pell Grant recipients, 32.73% of those in subgroups B1, B2, B3, and B4 (2.7745 to 3.2499 GPA) were Pell Grant recipients, 38.77% of those in subgroups C1, C2, C3, and C4 (2.40 to 2.7744 GPA) were Pell Grant recipients, and 40.56% of those in subgroups D1, D2, D3, and D4 (2.00 to 2.399 GPA) were Pell Grant recipients. The percentage of Pell Grant recipients is inversely related to the number of credit hours earned: 28.50% of those in subgroups A1, B1, C1, and D1 (125 to 165.66 credit hours) were Pell Grant recipients, 33.40% of those in subgroups A2, B2, C2, and D2 (111 to 124.99 credit hours) were Pell Grant recipients, 35.47% of those in subgroups A3, B3, C3, and D3 (101 to 110.99 credit hours) were Pell Grant recipients, and 37.19% (90 to 100.99 credit hours) of those in subgroups A4, B4, C4, and D4 were Pell Grant recipients.

The number of Cohort 2 students who were recipients of a Pell Grant in at least one of the three semesters prior to withdrawing from school is 5098 (52.31%). The PG^T percentage ranged from 38.31% (subgroup A1) to 61.02% (subgroup D4). There was little variation in the PG^T percentages relative to the number of credit hours earned: PG^T was 51.73% in subgroups A1, B1, C1, and D1; PG^T was 52.62% in subgroups A2, B2, C2, and D2; PG^T was 51.68% in subgroups A3, B3, C3, and D3; and PG^T was 53.82% of those in subgroups A4, B4, C4, and D4. There was a strong and clear pattern in the relationship

between GPA and PG^T percentages, with high GPA inversely related to PG^T percentages: 41.69% of those in subgroups A1, A2, A3, and A4 (3.25 to 4.2071 GPA) were Pell Grant recipients in at least one of the three semesters prior to withdrawing from school; 51.33% of those in subgroups B1, B2, B3, and B4 (2.7745 to 3.2499 GPA) were Pell Grant recipients in at least one of the three semesters prior to withdrawing from school; 56.93% of those in subgroups C1, C2, C3, and C4 (2.40 to 2.7744 GPA) were Pell Grant recipients in at least one of the three semesters prior to withdrawing from school; and 56.89% of those in subgroups D1, D2, D3, and D4 (2.00 to 2.399 GPA) were Pell Grant recipients in at least one of the three semesters prior to withdrawing from school.

The number of Cohort 2 students who saw a reduction or elimination in the number of financial aid source types (not including exhausting a Pell Grant) in the last semester enrolled relative to the two previous semesters is 1902 (19.52%). The *Any** percentage ranged from 16.16% (subgroup C3) to 22.54% (subgroup A2). There is little correlation in the *Any** percentages and the number of credit hours earned or GPA.

The number of subgroup A1 students with more than 139.99 credit hours—and who, therefore, faced a 50% tuition surcharge—was 354, 45.21% of the Cohort 2 subgroup A1 samples. Of that group of 354, 52 (14.69%) were Pell Grant recipients during the last semester of enrollment, 66 (18.64%) exhausted their Pell Grant prior to the last semester of enrollment, 12 (3.39%) who were not Pell Grant recipients had at least one other source of financial aid, and 34 (9.60%) lost at least once source of financial aid other than a Pell Grant before the last semester of enrollment. Of the 429 members of subgroup A1 that had earned less than 140 credit hours, 185 (43.12%) were Pell Grant recipients during the last three semesters of enrollment, 20 (4.66%) who were not Pell Grant recipients had at least one other

source of financial aid, and 37 (8.62%) lost at least once source of financial aid other than a Pell Grant before the last semester of enrollment.

Demographic Characteristics. In Fall 2009, enrollment at UNC system postsecondary institutions was 158,857 females (56.9%) and 120,371 males (43.1%) (UNC Statistical Abstract, Table 1, 2009-10). Of the Fall 2009 enrollment, 139,758 students were white (62.9%); 49,319 were black (22.2%); 6,734 were Hispanic (3.0%); and 6,909 were Asian (3.1%) (UNC Statistical Abstract, Table 19, 2009-10). In Fall 2014, enrollment at UNC system postsecondary institutions was 166,339 females (56.1%) and 130,054 males (43.9%) (UNC Statistical Abstract, Table 1, 2014-15). Of the Fall 2014 enrollment, 133,369 students were white (61%); 45,729 were black (21%); 10,424 were Hispanic (5%); and 7,950 were Asian (34%) (UNC Statistical Abstract, Table 19, 2014-15).

Table 6 is a tabulation of the demographic characteristics for each of the 16 Cohort 2 subgroups. Of the 9742 samples in Cohort 2, 5365 (55.07%) are female and 4382 (44.98%) are male, however, the numbers and percentages of females and males vary significantly across the 16 subgroups. Subgroup A1 has the highest number of females (498) and subgroup D1 has the lowest number of females (203). Subgroup D4 has the highest number of males (359) and subgroup A4 has the lowest number of males (204). The number of females in subgroup A1 is more than two standard deviations greater than the average value of 335. The number of females in subgroup B2 is more than one standard deviation greater than the average value of 335. The number of males in subgroups D3 and D4 is more than one standard deviation greater than the average value of 274. The number of males in subgroups A3, A4, and B4 is more than one standard deviation less than the average value of 274.

Table 6

Demographic Characteristics by Subgroup

Subgroup	*N*	*Female*	*Male*	*White*	*Black*	*Hispanic*	*Asian*	*Other*
A1	783	498 (63.60%)	284 (36.27%)	521 (66.54%)	121 (15.45%)	44 (5.62%)	37 (4.73%)	59 (7.54%)
A2	559	329 (58.86%)	230 (41.14%)	386 (69.05%)	76 (13.60%)	30 (5.37%)	20 (3.58%)	47 (8.41%)
A3	559	337 (60.29%)	222 (39.71%)	393 (70.30%)	63 (11.27%)	27 (4.83%)	16 (2.86%)	60 (10.73%)s
A4	545	340 (62.39%)	204 (37.43%)	362 (66.42%)	71 (13.03%)	43 (7.89%)	10 (1.83%)	58 (10.64%)
B1	627	398 (63.48%)	231 (36.84%)	332 (52.95%)	174 (27.75%)	35 (5.58%)	23 (3.67%)	65 (10.37%)
B2	681	416 (61.09%)	265 (38.91%)	384 (56.39%)	166 (24.38%)	44 (6.46%)	23 (3.38%)	64 (9.40%)
B3	594	343 (57.74%)	252 (42.42%)	351 (59.09%)	138 (23.23%)	30 (5.05%)	19 (3.20%)	57 (9.60%)
B4	529	310 (58.60%)	219 (41.40%)	322 (60.97%)	117 (22.12%)	27 (5.10%)	17 (3.21%)	46 (8.70%)
C1	558	293 (52.51%)	265 (47.49%)	265 (47.49%)	201 (36.03%)	23 (4.12%)	20 (3.58%)	49 (8.78%)
C2	638	330 (51.72%)	308 (48.28%)	331 (51.88%)	195 (30.56%)	42 (6.58%)	17 (2.66%)	53 (8.31%)
C3	662	350 (52.87%)	312 (47.13%)	324 (48.94%)	216 (32.63%)	38 (5.74%)	14 (2.11%)	70 (10.57%)
C4	580	303 (52.24%)	279 (48.10%)	330 (56.90%)	153 (26.38%)	33 (5.69%)	14 (2.41%)	52 (8.97%)
D1	484	203 (41.94%)	281 (58.06%)	236 (48.76%)	159 (32.85%)	26 (5.37%)	22 (4.55%)	41 (8.47%)
D2	625	307 (49.12%)	318 (50.88%)	290 (46.40%)	225 (36.00%)	31 (4.96%)	23 (3.68%)	56 (8.96%)
D3	628	277 (44.04%)	353 (56.12%)	306 (48.65%)	218 (34.66%)	38 (6.04%)	16 (2.54%)	52 (8.27%)
D4	690	331 (48.04%)	359 (52.10%)	357 (51.81%)	239 (34.69%)	25 (3.63%)	19 (2.76%)	50 (7.26%)

Of the 9742 samples in Cohort 2, 5490 (56.35%) are white, 2532 (25.99%) are black, 536 (5.50%) are Hispanic of Any Race, 310 (3.18%) are Asian, and 879 (9.02%) are American Indian, Alaskan Native, Native Hawaiian, Pacific Islander, Two or More Races, Non-Resident Aliens, or Race and Ethnicity Unknown. Subgroup A3 has the largest percentage of whites (70.30%) and subgroup D2 has the lowest percentage of whites (46.40%); Subgroup C1 has the largest percentage of blacks (36.02%) and subgroup A3 has the lowest percentage of blacks (11.27%); Subgroup A4 has the largest percentage of Hispanics of Any Race (7.89%) and subgroup D4 has the lowest percentage of Hispanics of Any Race (3.63%); Subgroup A1 has the largest percentage of Asians (4.73%) and subgroup A4 has the lowest percentage of Asians (1.83%).

The Most Popular Majors. Table 7 lists the most popular majors in the Cohort 2 Partway Home population by subgroup. Business Administration ranks as one of the top four majors in each of the 16 subgroups. In subgroups with a high GPA, Nursing and Elementary Education/Early Childhood Studies rank as one of the top four majors in each of the four subgroups (A1, A2, A3, and A4). In addition, Biology ranks as one of the top four majors in three of the four high GPA subgroups (A1, A2, and A4). In subgroups with a low GPA, Biology and Psychology rank as one of the top four majors in each of the four subgroups (D1, D2, D3, and D4). In addition, Criminal Justice ranks as one of the top four majors in two of the four low GPA subgroups (D2 and D3).

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Table 7

The Most Popular Majors by Subgroup

Subgroup	*Most Popular Majors*
Subgroup A1 (N=782)	Biology (12.02%) Nursing (8.76%) Elementary Educ./Early Childhood (4.13%) Business Admin. (3.75%)
Subgroup A2 (N=559)	Elementary Educ./Early Childhood (6.98%) Nursing (6.44%) Biology (6.26%) Business Admin. (6.26%)
Subgroup A3 (N=559)	Business Admin. (6.62%) Elementary Educ./Early Childhood (5.73%) Psychology (5.01%) Nursing (4.83%)
Subgroup A4 (N=544)	Business Admin. (7.71%) Elementary Educ./Early Childhood (7.34%) Nursing (6.42%) Biology (3.85%)
Subgroup B1 (N=635)	Biology (7.24%) Business Admin. (7.24%) Nursing (6.61%) Elementary Educ./Early Childhood (5.04%)
Subgroup B2 (N=681)	Business Admin. (6.90%) Psychology (6.61%) Biology (5.43%) Elementary Educ./Early Childhood (5.28%)
Subgroup B3 (N=594)	Psychology (7.07%) Business Admin. (6.40%) Communications/Comm. Studies. (6.40%) Biology (6.06%)
Subgroup B4 (N=529)	Business Admin. (7.18%) Elementary Educ./Early Childhood (6.24%) Nursing (4.35%) Communications/Comm. Studies (4.35%)

Subgroup C1 (N=564)	Biology (7.27%)
	Business Admin. (6.38%)
	Psychology (4.43%)
	Computer Science (3.72%)
Subgroup C2 (N=638)	Business Admin. (7.68%)
	Psychology (6.11%)
	Communications/Comm. Studies (4.86%)
	Biology (4.55%)
Subgroup C3 (N=662)	Psychology (6.80%)
	Business Admin. (5.89%)
	Communications/Comm. Studies (4.53%)
	Biology (4.23%)
	Criminal Justice (4.23%)
Subgroup C4 (N=580)	Business Admin. (9.48%)
	Psychology (7.59%)
	Communications/Comm. Studies (5.52%)
	Biology (5.52%)
Subgroup D1 (N=490)	Biology (9.59%)
	Business Admin. (6.94%)
	Psychology (6.94%)
	Sociology (3.67%)
Subgroup D2 (N=625)	Psychology (9.28%)
	Business Admin. (7.36%)
	Biology (6.08%)
	Criminal Justice (4.48%)
Subgroup D3 (N=631)	Psychology (8.56%)
	Criminal Justice (6.34%)
	Business Admin. (5.39%)
	Biology (5.39%)
Subgroup D4 (N=689)	Business Admin. (9.00%)
	Psychology (6.53%)
	Biology (5.66%)
	Communications/Comm. Studies (4.35%)

Analysis by Quadrants

In the final phase of the study, information on cumulative GPA, credit hours earned, four-year or transfer student status, financial aid information, gender, and race/ethnicity of each student was tabulated and compared based on the four quadrants described in the previous chapter. Like the subgroup summary, the findings of the quadrant study are reported and described in four sections: transfer status, institutional representation, financial aid status, and demographic characteristics. Finally, information on the most popular majors for each of the four quadrants was tabulated.

Table 8

Numbers and Percentages of Four-Year and Transfer Students by Quadrant

Quadrant	*N*	*4-Year (%)*	*Transfer (%)*
Quadrant I	2652	1356 (51.13%)	1296 (48.87%)
Quadrant II	2227	1375 (61.74%)	852 (38.26%)
Quadrant III	2304	1620 (70.31%)	684 (29.69%)
Quadrant IV	2562	2110 (82.36%)	452 (17.64%)
Total	9745	6461 (66.32%)	3285 (33.68%)

Four-Year and Transfer Students. Table 8 is a tabulation of the numbers and percentages of four-year and transfer students for Quadrants I, II, II, and IV. As noted in the previous chapter, information on four-year versus transfer student status was not included in the UNC-GA dataset: numbers of transfer students were estimated based on the assumption that standardized tests scores are available to UNC-GA only for four-year students. Of the 9742 samples in Cohort 2, 6481 (66.32%) are four-year students and 3281 (33.68%) are transfer students, however, the numbers and percentages of four-year and transfer students

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vary significantly across the quadrants. Quadrant IV has the highest number of four-year students (2110) and Quadrant I has the lowest number of four-year students (1356); Quadrant I has the highest number of transfer students (1296) and Quadrant IV has the lowest number of transfer students (452).

Quadrant I, comprised of subgroups A1, A2, B1, and B2, includes 20.92% of the Cohort 2 four-year students and 39.50% of the Cohort 2 transfer students. Quadrant IV, comprised of subgroups C3, C4, D3, and D4, includes 32.56% of the Cohort 2 four-year students and 13.78% of the Cohort 2 transfer students.

Institutional Representation. Tables 9 and 10 summarize the numbers and percentages of students from each of the 16 UNC system postsecondary institutions by quadrant.

On a numbers and percentage basis, 485 (18.33%) of samples in Quadrant I, the quadrant comprised of students with higher GPAs and higher numbers of credit hours earned, are from UNC-G. No other institution had a sample size larger than 15.09% of a quadrant population. The institution with the smallest representation in Quadrant I is the NCSoA (13, 0.49%). On a numbers and percentage basis, 385 (15.03%) of samples in Quadrant IV, the quadrant comprised of students with lower GPAs and lower numbers of credit hours earned, are from UNC-C. The institution with the smallest representation in Quadrant IV is the NCSoA (7, 0.27%). On a numbers and percentage basis, 296 (13.29%) of samples in Quadrant II, the quadrant comprised of students with higher GPAs and lower numbers of credit hours earned, are from ECU. The institution with the smallest representation in Quadrant II is the NCSoA (12, 0.54%). On a numbers and percentage basis, 305 (13.24%) of samples in Quadrant III, the quadrant comprised of students with lower GPAs and higher

numbers of credit hours earned, are from UNC-C. The institution with the smallest

representation in Quadrant III is the NCSoA (6, 0.26%).

Table 9

Numbers and Percentages of Students from UNC Institutions by Quadrant, Part A

Quad.	N	ASU	ECU	ECSU	FSU	NCAT	NCCU	NCSU	NCSoA
I	2652	202 (7.62%)	362 (13.65%)	19 (0.72%)	191 (7.20%)	153 (5.77%)	100 (3.77%)	260 (9.80%)	13 (0.49%)
II	2227	190 (8.53%)	296 (13.29%)	34 (1.53%)	100 (4.49%)	121 (5.43%)	69 (3.10%)	160 (7.18%)	12 (0.54%)
III	2304	203 (8.81%)	284 (12.33%)	38 (1.65%)	133 (5.77%)	201 (8.72%)	71 (3.08%)	321 (13.93%)	6 (0.26%)
IV	2562	203 (7.92%)	275 (10.73%)	55 (2.15%)	117 (4.57%)	165 (6.44%)	122 (4.76%)	267 (10.42%)	7 (0.27%)
Total	9745	798 (8.19%)	1217 (12.49%)	146 (1.50%)	541 (5.55%)	640 (6.57%)	362 (3.71%)	1008 (10.34%)	38 (0.39%)

Table 10

Numbers and Percentages of Students from UNC Institutions by Quadrant, Part B

Quad.	N	UNC-A	UNC-CH	UNCC	UNCG	UNC-P	UNC-W	WCU	WSSU
I	2652	44 (1.66%)	69 (2.60%)	255 (9.62%)	486 (18.33%)	72 (2.71%)	207 (7.81%)	188 (7.09%)	30 (1.13%)
II	2227	61 (2.74%)	151 (6.78%)	336 (15.09%)	208 (9.34%)	107 (4.80%)	188 (8.44%)	156 (7.00%)	38 (1.71%)
III	2304	45 (1.95%)	70 (3.04%)	305 (13.24%)	238 (10.33%)	97 (4.21%)	181 (7.86%)	78 (3.39%)	33 (1.43%)
IV	2562	51 (1.99%)	177 (6.91%)	385 (15.03%)	253 (9.88%)	122 (4.76%)	190 (7.42%)	101 (3.94%)	72 (2.81%)
Total	9745	201 (2.06%)	467 (4.79%)	1281 (13.15%)	1185 (12.16%)	398 (4.08%)	766 (7.86%)	523 (5.37%)	173 (1.78%)

Financial Aid Status. Table 11 is a tabulation of the financial aid characteristics for each of the Cohort 2 quadrants. Column headings *1s*, *2s*, and *3s* refer to the number of different sources of aid received (i.e., 1 source, 2 sources, and 3 sources). The financial aid source types are Pell Grants, subsidized or unsubsidized loans, and a miscellaneous category for all other financial aid source types. Heading *PG* refers to the number of Pell Grant recipients and heading *PG** refers to the number of those who were Pell Grant recipients in previous semesters but who exhausted that resource prior to the last semester enrolled. Heading PG^T is the sum of Pell Grant recipients in the last semester enrolled or in previous semesters. Heading *Any** refers to the number of those who have seen a reduction or elimination in the number of financial aid source types (not including exhausting a Pell Grant) in the last semester enrolled relative to the two previous semesters.

The percentage of Cohort 2 students in each quadrant with a single source of financial aid varied between 3.20% in Quadrant IV to 5.07% in Quadrant II. The percentage of students in each subgroup with two sources of financial aid varied between 26.69% (Quadrant III) to 29.55% (Quadrant IV). The percentage of students in each quadrant with three sources of financial aid varied between 19.11% (Quadrant I) to 34.04% (Quadrant IV).

The number of Cohort 2 students who were recipients of a Pell Grant during the last semester of enrollment is 3260 (33.45%). The percentage of Cohort 2 Pell Grant recipients during the last semester of enrollment in each quadrant varied between 25.22% in Quadrant I to 41.26% in Quadrant IV. In general, the number of Pell Grant recipients in the last semester enrolled was lower in those quadrants where GPAs were higher and higher in those quadrants where GPAs were lower.

Table 11

Financial Aid Characteristics by Quadrant

Quadrant	N	1s	2s	3s	PG^T	PG	PG*	Any*
I	2653	96 (3.62%)	759 (28.61%)	507 (19.11%)	1191 (44.89%)	669 (25.22%)	522 (19.68%)	551 (20.77%)
II	2227	113 (5.07%)	626 (28.11%)	486 (21.82%)	1079 (48.45%)	675 (30.31%)	404 (18.14%)	411 (18.46%)
III	2304	46 (2.00%)	615 (26.69%)	726 (31.51%)	1388 (60.24%)	859 (37.38%)	529 (22.96%)	471 (20.44%)
IV	2562	82 (3.20%)	757 (29.55%)	872 (34.04%)	1440 (56.21%)	1057 (41.26%)	383 (14.95%)	471 (20.44%)
Total	9745	337 (3.46%)	2757 (28.29%)	2591 (26.59%)	5098 (52.31%)	3260 (33.45%)	1838 (18.86%)	1902 (19.52%)

The number of Cohort 2 students who received a Pell Grant in at least one of the three semesters prior to withdrawing from school is 5,098 (52.31%). The PG^T percentage ranged from 44.89% (Quadrant I) to 60.24% (Quadrant III).

The number of Cohort 2 students who saw a reduction or elimination in the number of financial aid source types (not including exhausting a Pell Grant) in the last semester enrolled relative to the two previous semesters is 1,902 (19.52%). The *Any** percentage ranged from 18.46% (Quadrant II) to 20.77% (Quadrant I).

The number of Quadrant I students with more than 139.99 credit hours—and, therefore, faced a 50% tuition surcharge—was 674, 25.41% of the students in Quadrant I.

Demographic Characteristics. Table 12 is a tabulation of the demographic

characteristics for each of the four Cohort 2 quadrants. Of the 9742 samples in Cohort 2,

5365 (55.05%) are female and 4380 (44.95%) are male, however, the numbers and

percentages of females and males vary significantly across the quadrants. Quadrant I had the

highest percentage of females (61.88%), well above the UNC system averages for Fall 2009

(56.9% female) and Fall 2014 (56.1% female). The percentage of females in Quadrant III

(49.18%) and Quadrant IV (49.22%) are nearly identical. The percentage of males in

Quadrant III (50.82%) and Quadrant IV (50.78%) are nearly identical and are well above the

UNC system averages for Fall 2009 (43.1% male) and for Fall 2014 (43.9% male).

Table 12

Demographic Characteristics by Quadrant

Quadrant	N	Female	Male	White	Black	Hispanic	Asian	Other
I	2652	1641 (61.88%)	1011 (38.12%)	1623 (61.20%)	537 (20.25%)	153 (5.77%)	103 (3.88%)	235 (8.86%)
II	2227	1330 (59.72%)	897 (40.28%)	1428 (64.12%)	389 (17.47%)	127 (5.70%)	62 (2.78%)	221 (9.92%)
III	2304	1133 (49.18%)	1171 (50.82%)	1122 (48.70%)	780 (33.85%)	122 (5.30%)	82 (3.56%)	199 (8.64%)
IV	2562	1261 (49.22%)	1301 (50.78%)	1317 (51.41%)	826 (32.24%)	134 (5.23%)	63 (2.46%)	224 (8.74%)
Total	9745	5365 (55.05%)	4380 (44.95%)	5490 (56.34%)	2532 (25.98%)	536 (5.50%)	310 (3.18%)	879 (9.02%)

Of the 9742 samples in Cohort 2, 5490 (56.34%) are white, 2532 (25.98%) are black, 536 (5.50%) are Hispanic of Any Race, 310 (3.18%) are Asian, and 879 (9.02%) are American Indian, Alaskan Native, Native Hawaiian, Pacific Islander, Two or More Races, Non-Resident Aliens, or Race and Ethnicity Unknown. Quadrant II has the largest percentage of whites (64.12%) and Quadrant III has the lowest percentage of whites (48.70%); Quadrant III has the largest percentage of blacks (33.85%) and Quadrant II has the lowest percentage of blacks (17.47%); Quadrant I has the largest percentage of Hispanics of Any Race (5.77 %) and Quadrant III has the lowest percentage of Hispanics of Any Race (5.23%); Quadrant I has the largest percentage of Asians (3.88%) and Quadrant IV has the lowest percentage of Asians (2.46%).

The Most Popular Majors. Table 13 lists the most popular majors in the Cohort 2 Partway Home population by quadrant. Business Administration ranks as one of the top four majors in each quadrant. Biology, and Psychology rank among the top four most popular majors in three of the quadrants. The most popular majors in Quadrant I, the group with higher GPAs and higher numbers of credit hours, are Biology, Nursing, Business Administration, and Elementary Education/Early Childhood Studies. The most popular majors in Quadrant IV, the group with lower GPAs and lower numbers of credit hours, are Business Administration, Psychology, Biology, and Communications/Communications Studies.

Table 13

The Most Popular Majors by Quadrant

Quadrant	*Most Popular Majors*
Quadrant I: Subgroups A1, A2, B1, and B2 (N=2657)	Biology (8.00%) Nursing (6.62%) Business Admin. (5.91%) Elementary Educ./Early Childhood (5.24%)
Quadrant II: Subgroups A3, A4, B3, and B4 (N=2226)	Business Admin. (6.96%) Elementary Educ./Early Childhood (5.93%) Psychology (4.94%) Nursing (4.71%)
Quadrant III: Subgroups C1, C2, D1, and D2 (N=2317)	Business Admin. (7.12%) Psychology (6.74%) Biology (6.69%) Communications/Comm. Studies (3.67%)
Quadrant IV: Subgroups C3, C4, D3, and D4 (N=2562)	Business Admin. (7.38%) Psychology (7.34%) Biology (5.20%) Communications/ Comm. Studies (4.80%)

Responses to the Research Questions

Question 1: Is there evidence in support of the hypothesis that a lack financial resources to pay for college is the primary factor that leads high-achieving students to stop-out?

Analysis of the data indicates that, for high-achieving low-income students within one or two semesters of completing the requirements for a baccalaureate degree, exhaustion of a Pell Grant (often in combination with the reduction or elimination of at least one other source of financial aid) likely results in a decision to stop-out. For those with a high number of earned credit hours, the impact of the loss of financial aid is exacerbated by the 50% tuition surcharge imposed on students who have earned 140 credit hours or more.

Question 2: Is there evidence in support of the hypothesis that poor academic performance is the primary factor that leads low-achieving students to stop-out?

Analysis of the data indicates that, for low-achieving students, poor academic performance is only one of several factors that likely results in a decision to stop-out. Other significant factors include exhaustion of a Pell Grant (often in combination with a reduction in financial aid or the loss of at least one other source of financial aid) and, for those with a high number of earned credit hours, the impact of the loss of financial aid is exacerbated by the 50% tuition surcharge imposed on students who have earned 140 credit hours or more.

Question 3: Does the evidence support the establishment of a pilot program of targeted incentives aimed at significantly increasing six-year graduation rates, especially among low-income high-achieving students?

Analysis of the data indicates that, for high-achieving low-income students within one or two semesters of completing the requirements for a baccalaureate degree, two significant

obstacles to degree completion are the exhaustion or elimination of financial aid resources and the 50% tuition surcharge that impacts approximately 23% of the students in Quadrant I. The findings of the research study support the establishment of a pilot program to test the effectiveness of two instruments directly related to the cost of attaining a degree: (1) an educational loan (forgiven upon degree completion) to cover tuition and fees for one or two semesters and (2) suspension of the 50% tuition surcharge.

Question 4: Is there evidence that supports the establishment of a pilot program of targeted interventions aimed at significantly increasing six-year graduation rates, especially among low-income low-achieving students?

Analysis of the data indicates that, for low-achieving low-income students, the obstacles to degree attainment include (1) the exhaustion, reduction, or elimination of financial aid and (2) the threat of academic suspension (or the failure to meet the minimum GPA requirements for some degree programs) due to mediocre academic performance. In addition, those with 90 to 101 credit hours may require two or more additional semesters to complete the requirements for a degree while those with more than 139 hours are faced with the additional financial burden of the 50% tuition surcharge. Based on the record of success of programs that aim to assist low-income students in degree attainment at the University of North Carolina at Chapel Hill, Appalachian State University, and the University of Texas at Austin, the results of the research study support the establishment of a pilot program to test the effectiveness of similar student success programs at other UNC system institutions.

Chapter 5: Conclusions

The Challenge of Stop-outs

For most Americans, the financial, social, and cultural benefits of earning a college degree include greater financial security, better professional opportunities, and increased potential for upward economic mobility. Yet, Full Time Equivalent (FTE) student enrollment at U.S. public colleges and universities has declined slightly since 2010 and the U.S. now trails most other industrialized nations in several important metrics related to degree attainment. In 2015, the average six-year graduation rate at public postsecondary institutions stood at 61.2%: barely six out of every ten first-time, full-time undergraduate students who matriculated at a four-year degree granting public college or university at the start of the Fall 2009 semester graduated within six years (National Student Clearinghouse Research Center, 2015).

Especially for low-income students, the obstacles to undergraduate degree attainment are significant. There is a large disparity in college completion rates for those at the highest and lowest levels of the socioeconomic ladder (Carnevale & Strohl, 2010). The gap between college completion rates among those on the lowest rungs at the economic ladder and those at the highest rungs increases with each passing year (Cahalan & Perna, 2015; Duncan & Murname, 2016; Michelmore & Dynarski, 2016).

While there has been extensive study of the factors that lead students to drop out of college after a few semesters, until recently there was less attention on *stop-out* behavior, the

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decision to withdraw from college in good academic standing after earning 90 or more credit hours and suspend progress toward degree completion.

While there are myriad reasons (e.g., personal issues, a sense of disconnection from the institution, a lack of self- discipline and organizational skills, poor academic preparation) why a student would choose to withdrawal from college after earning 75% or more of the credit hours required for a degree, this research study focused on the hypothesis that financial factors explained approximately half the total variance in persistence (Johnson, 2009; St. John et al., 2000).

This research study examined UNC-GA data on students, both part-time and full-time, who chose to suspend progress on attaining an undergraduate degree and withdrew from college in good academic standing and after earning 90 or more credit hours. The study finds that regular and significant patterns of variation in GPA, credit hours earned, percentage of Pell Grant recipients, and percentage of students who lost one or more financial aid sources immediately prior to the last semester enrolled suggest, for high-achieving students, a strong link between inadequate financial resources and the decision to stop-out but, for low-achieving students, the factors that lead to a decision to stop-out are more complex. In addition, the percentage of transfer students in Quadrant I, average to high-achieving students with earned credit hours of 125 or more, is more than five times the average percentage of transfer students enrolled at UNC system postsecondary institutions in Fall 2014. Finally, the study found that the percentage of low-income students in the Partway Home Cohort 2 population was higher than the UNC and national averages and, in some subgroups of the cohort, the percentage of low-income students was significantly higher than the UNC and national averages.

Discussion of the Study Results

  Quadrant I: Subgroups A1, A2, B1, and B2. Examination and analysis of the

Cohort 2 data indicates that the members of subgroup A1, high-achieving students with

cumulative GPAs in the B-plus to A range and earned credit hours of 125 or more, are

predominantly transfer students (67.05%). While two-thirds of the Cohort 2 population are 4-

year students, transfer students outnumber 4-year students in subgroup A1 by a ratio of

greater than 3 to 1. Furthermore, the number of transfer students in subgroup A1 is more than

two standard deviations higher than the average for the Cohort 2 population. The majority of

students in subgroup A1 are female (63.60%) and white (66.54%). More than one out of four

attended UNC-G during the last semester of enrollment and more than one out of four

majored in Biology, Nursing, Elementary Education, or Early Childhood Studies. It should

be noted that several of the most popular majors have selective admissions and have

established stringent minimum GPA requirements for transfer students (e.g., the UNC-

Greensboro Nursing Program requires transfer students to have a 3.00 GPA or higher).

  The percentage of students in subgroup A1 who were Pell Grant recipients in at least

one of the three semesters prior to withdrawing from school (38.31%) is the smallest of any

of the 16 subgroups. Slightly more than 20% of the eligible students in the subgroup

exhausted their Pell Grant prior to the last semester of enrollment and slightly more than 20%

lost at least one other source of financial aid in the last three semesters of enrollment.

  Why might a student in subgroup A1, in all likelihood within one semester of

completing the requirements for an undergraduate degree, withdraw from school? At least

two probable causes are (1) the exhaustion of a Pell Grant and other financial aid resources,

and (2) the 50% tuition surcharge imposed once a student earns 140 credit hours. The data

indicate that 354 (45.21%) members of subgroup A1 earned more than 139.99 credit hours during the last semester of enrollment—a third of that group, based on the Pell Grant data, had incomes of less than $50,000 for a family of four. A 50% tuition surcharge is untenable for a student with few financial resources. Of those who had earned fewer than 140 credit hours, more than two in five had incomes of less than $50,000 for a family of four.

The components of subgroup B1, strong students with cumulative GPAs in the B-minus to B-plus range and earned credit hours of 125 or more, 55% are 4-year students and 45% transfer students. The majority of students in subgroup B1 are female (63.48%) and white (52.95%). Nearly one out of five attended UNC-G during the last semester of enrollment and nearly one out of five majored in Biology, Nursing, Elementary Education, or Early Childhood Studies.

The percentage of students in subgroup B1 who were Pell Grant recipients in at least one of the three semesters prior to withdrawing from school (54.40%) is near the average for the Cohort 2 population. The percentage of students who exhausted a Pell Grant in the last three semesters of enrollment (23.94%) is the second highest of the 16 subgroups and the percentage of students who saw a reduction or elimination in the number of financial aid source types (not including exhausting a Pell Grant) in the last three semesters of enrollment (22.22%) is the second highest of the 16 subgroups.

Why might a student in subgroup B1 withdraw from school? From a financial aid standpoint, nearly one in four exhausted a Pell Grant in the last three semesters of enrollment and more than one in five saw a reduction or elimination in the number of financial aid source types (not including exhausting a Pell Grant) in the last three semesters of enrollment. Like subgroup A1, the probable causes are (1) the exhaustion of a Pell Grant and other

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financial aid resources, and (2) the 50% tuition surcharge imposed once a student earns 140 credit hours. The data indicate that 261 (41.63%) members of subgroup B1 earned more than 139.99 credit hours by the completion of the last semester of enrollment—51.34% of that group, based on the Pell Grant data, had incomes of less than $50,000 for a family of four. Of those who had earned fewer than 140 credit hours, 54.20% had incomes of less than $50,000 for a family of four.

Examination and analysis of the Cohort 2 data indicates that the members of subgroup A2, high-achieving students with cumulative GPAs in the B-plus to A range and earned credit hours in excess 125 hours, are nearly evenly divided between 4-year (48.12%) and transfer (51.88%) students. Almost 16% attended UNC-G during the last semester of enrollment and nearly one in four majored in Biology, Nursing, Elementary Education, or Early Childhood Studies.

The percentage of students in subgroup A2 who were Pell Grant recipients in at least one of the three semesters prior to withdrawing from school (38.71%) is one of the lowest of any of the 16 subgroups. Slightly less than 17% of the eligible students in the subgroup exhausted their Pell Grant prior to the last semester of enrollment and slightly more than 22.5% lost at least one other source of financial aid in the last three semesters of enrollment.

Why might a student in subgroup A2, likely within one semester of completing the requirements for an undergraduate degree, withdraw from school? One possible cause is the exhaustion of a Pell Grant and other financial aid resources, though the evidence in subgroup A2 is less compelling than many other subgroups. From a financial aid standpoint, 39.03% exhausted a Pell Grant in the last three semesters of enrollment and/or saw a reduction or

elimination in the number of financial aid source types (not including exhausting a Pell Grant) in the last three semesters of enrollment.

The members of subgroup B2, strong students with cumulative GPAs in the B-minus to B-plus range and earned credit hours in excess of 125, are predominantly 4-year students (70.78%). Almost 15% attended ECU during the last semester of enrollment and nearly one in five majored in Business Administration, Psychology, or Biology.

The percentage of students in subgroup B2 who were Pell Grant recipients in at least one of the three semesters prior to withdrawing from school (50.37%) is slightly below the average for the Cohort 2 population but substantially higher than the national average of 35%. Slightly less than 17% of the eligible students in the subgroup exhausted their Pell Grant prior to the last semester of enrollment and 18.50% lost at least one other source of financial aid in the last three semesters of enrollment.

Why might a student in subgroup B2, in all likelihood within one semester of completing the requirements for an undergraduate degree, withdraw from school? Like subgroup A2, at least one possible cause is the exhaustion of a Pell Grant and other financial aid resources, though the evidence in subgroup B2 is less compelling than many other subgroups. From a financial aid standpoint, 35.39% exhausted a Pell Grant in the last three semesters of enrollment and or saw a reduction or elimination in the number of financial aid source types (not including exhausting a Pell Grant) in the last three semesters of enrollment.

The Quadrant I population, strong students with cumulative GPAs in the B-minus to A range and earned credit hours between 111 and 165.66, are evenly split between 4-year (51.13%) and transfer (48.87%) students—however, the percentage of transfer students is more than five times the average percentage of transfer students enrolled at UNC system

postsecondary institutions in Fall 2014. The majority of students in Quadrant I are female (61.88%) and white (61.20%). In the Quadrant I population, 18.33% of students attended UNC-G during the last semester of enrollment and almost 20% majored in Biology, Nursing, Elementary Education, or Early Childhood Studies.

The percentage of students in Quadrant I who were Pell Grant recipients in at least one of the three semesters prior to withdrawing from school (44.89%) is the smallest of the four quadrants but substantially higher than the national average of 35%. More than 19.5% of the eligible students in the subgroup exhausted their Pell Grant prior to the last semester of enrollment and slightly less than 21% lost at least one other source of financial aid in the last three semesters of enrollment.

Why might a student in Quadrant I withdraw from school? At least two probable causes are (1) the exhaustion of a Pell Grant and other financial aid resources, and (2) the 50% tuition surcharge imposed once a student earns 140 credit hours. The data indicate that 615 (23.19%) members of the Quadrant I population earned more than 139.99 credit hours during the last semester of enrollment and were subject to the tuition surcharge.

Quadrant II: Subgroups A3, A4, B3, and B4. Examination and analysis of the Cohort 2 data indicate that the members of subgroup A3, high-achieving students with cumulative GPAs in the B-plus to A range and earned credit hours between 101 and 111, are nearly evenly split between 4-year (46.33%) and transfer (53.67%) students. The majority of students in subgroup A3 are female (60.29%) and white (70.30%). In subgroup A3, 14.49% of students attended ECU during the last semester of enrollment and 17.36% majored in Business Administration, Elementary Education, Early Childhood Studies, or Psychology.

The percentage of students in subgroup A3 who were Pell Grant recipients in at least one of the three semesters prior to withdrawing from school (43.01%) is fourteenth of the 16 subgroups. Slightly more than 17% of the eligible students in the subgroup exhausted their Pell Grant prior to the last semester of enrollment and slightly more than 17% lost at least one other source of financial aid in the last three semesters of enrollment.

Why might a student in subgroup A3 withdraw from school? The chief cause is likely financial: the exhaustion of a Pell Grant and other financial aid resources coupled with the realization that more than one additional semester is probably required in order to complete the remaining course requirements for a degree.

The members of subgroup B3, strong students with cumulative GPAs in the B-minus to B-plus range and earned credit hours between 101 and 111, are predominantly 4-year students (75.42%). The majority of students in subgroup B3 are female (57.74%) and white (59.09%). In subgroup B3, 14.54% of students attended ECU during the last semester of enrollment and 19.87% majored in Psychology, Business Administration, or Communications/Comm. Studies.

The percentage of students in subgroup B3 who were Pell Grant recipients in at least one of the three semesters prior to withdrawing from school (50.34%) is near the average for the Cohort 2 population. The percentage of students who exhausted a Pell Grant in the last three semesters of enrollment (16.78%) ranks twelfth in the 16 subgroups and the percentage of students who saw a reduction or elimination in the number of financial aid source types (not including exhausting a Pell Grant) in the last three semesters of enrollment (16.81%) is low: 15th in the 16 subgroups.

Why might a student in subgroup B3 withdraw from school? The chief cause is likely financial: the exhaustion of a Pell Grant and other financial aid resources coupled with the realization that more than one additional semester is probably required to complete the remaining course requirements for a degree.

Examination and analysis of the Cohort 2 data indicate that the members of subgroup A4, high-achieving students with cumulative GPAs in the B-plus to A range and earned credit hours between 90 and 101, are evenly divided between 4-year (49.72%) and transfer (50.28%) students. The majority of students in subgroup A4 are female (58.60%) and white (60.97%). Almost 16% attended UNC-C during the last semester of enrollment and more than one in five majored in Business Administration, Elementary Education, Early Childhood Studies, or Nursing.

The percentage of students in subgroup A4 who were Pell Grant recipients in at least one of the three semesters prior to withdrawing from school (48.79%) is low: 13th of the 16 subgroups. Slightly more than 21.5% of the eligible students in the subgroup exhausted their Pell Grant prior to the last semester of enrollment and 18.75% lost at least one other source of financial aid in the last three semesters of enrollment.

Why might a student in subgroup A4 withdraw from school? The chief cause is likely financial: the exhaustion or imminent exhaustion of a Pell Grant and other financial aid resources coupled with the realization that more than one additional semester (and possibly more than two additional semesters) is probably required to complete the remaining course requirements for a degree.

The members of subgroup B4, strong students with cumulative GPAs in the B-minus to B-plus range and earned credit hours between 90 and 101, are predominantly 4-year

students (75.05%). The majority of subgroup B4 members are female (58.60%) and white (60.97%). Almost 19% attended UNC-Charlotte during the last semester of enrollment and nearly 18% majored in Business Administration, Elementary Education, Early Childhood Studies, or Nursing.

The percentage of students in subgroup B4 who were Pell Grant recipients in at least one of the three semesters prior to withdrawing from school (52.19%), close to the average for the Cohort 2 population. Slightly less than 18% of the eligible students in the subgroup exhausted their Pell Grant prior to the last semester of enrollment and 21.36% lost at least one other source of financial aid in the last three semesters of enrollment.

Why might a student in subgroup B4 withdraw from school? The chief cause is likely financial: the exhaustion or imminent exhaustion of a Pell Grant and other financial aid resources coupled with the realization that more than one additional semester (and possibly more than two additional semesters) is probably required to complete the remaining course requirements for a degree.

The Quadrant II population, strong students with cumulative GPAs in the B-minus to A range and earned credit hours between 90 and 111, is comprised predominantly of 4-year students (61.74%). The majority of students in Quadrant II are female (59.72%) and white (64.12%). In the Quadrant II population, 15.09% of students attended UNC-C during the last semester of enrollment and 17.83% majored in Business Administration, Psychology, Elementary Education, or Early Childhood Studies.

The percentage of students in Quadrant II who were Pell Grant recipients in at least one of the three semesters prior to withdrawing from school (48.45%) is less than the average of the Cohort 2 population but substantially higher than the national average of 35%. More

than 18% of the eligible students in the subgroup exhausted their Pell Grant prior to the last semester of enrollment and slightly less than 18.5% lost at least one other source of financial aid in the last three semesters of enrollment.

Why might a student in Quadrant II withdraw from school? At least two probable causes are the exhaustion of a Pell Grant and other financial aid resources coupled with the realization that more than one additional semester (and possibly more than two additional semesters) is required to complete the remaining course requirements for a degree.

Quadrant III: Subgroups C1, C2, D1, and D2. The composition of subgroup C1, average to below average students with cumulative GPAs in the C-plus to B-minus range and earned credit hours in excess of 125, is 63% 4-year students and 37% transfer students, close to the average for the Cohort 2 population. The majority of students in subgroup C1 are female (52.51%); 47.49% are white. More than one out of five attended UNC-G or UNC-C during the last semester of enrollment. More than one in ten major in either Biology or Business Administration.

The percentage of students in subgroup C1 who were Pell Grant recipients in at least one of the three semesters prior to withdrawing from school (60.82%) is the second highest of the 16 subgroups of Cohort. The percentage of students who exhausted a Pell Grant in the last three semesters of enrollment (22.72%) is fourth highest of the 16 subgroups and the percentage of students who saw a reduction or elimination in the number of financial aid source types (not including exhausting a Pell Grant) in the last three semesters of enrollment (18.82%) is close to the average for the Cohort 2 population.

Why might a student in subgroup C1 withdraw from school? From a financial aid standpoint, more than one in four exhausted a Pell Grant in the last three semesters of

enrollment and nearly one in four saw a reduction or elimination in the number of financial aid source types (not including exhausting a Pell Grant) in the last three semesters of enrollment. Like subgroup A1, the probable causes leading to a decision to suspend progress on an undergraduate degree are (1) the exhaustion of a Pell Grant and other financial aid resources, and (2) the 50% tuition surcharge imposed once a student earns 140 credit hours. The data indicate that 193 (34.59%) members of subgroup C1 earned more than 139.99 credit hours during the last semester of enrollment—58.55% of that group, based on the Pell Grant data, had incomes of less than $50,000 for a family of four. Of those who had earned less than 140 credit hours, 61.92% had incomes of less than $50,000 for a family of four.

The composition of subgroup D1, below average students with cumulative GPAs in the C to C-plus range and earned credit hours in excess of 125, is 63% 4-year students and 37% transfer students, close to the average for the Cohort 2 population. The majority of students in subgroup D1 are male (58.06%); 48.76% are white. Nearly one in five attended NCSU during the last semester of enrollment. Nearly one in four majored in Biology, Business Administration, or Psychology.

The percentage of students in subgroup D1 who were Pell Grant recipients in at least one of the three semesters prior to withdrawing from school (60.70%) is third highest of the 16 subgroups of Cohort and 73% higher than the national average of 35%. The percentage of students who exhausted a Pell Grant in the last three semesters of enrollment (26.13%) is the highest of the 16 subgroups and the percentage of students who saw a reduction or elimination in the number of financial aid source types (not including exhausting a Pell Grant) in the last three semesters of enrollment (21.74%) is the 3rd highest of the 16 subgroups.

Why might a student in subgroup D1 withdraw from school? From a financial aid standpoint, three out of five students in the subgroup are present or former Pell Grant recipients, more than one in four exhausted a Pell Grant in the last three semesters of enrollment, and more than one in five saw a reduction or elimination in the number of financial aid source types (not including exhausting a Pell Grant) in the last three semesters of enrollment. Like subgroups A1, B1, and C1, the probable causes for withdrawing from school include (1) the exhaustion of a Pell Grant and other financial aid resources, and (2) the 50% tuition surcharge imposed once a student earns 140 credit hours. A third factor, the threat of academic suspension as a result of mediocre academic performance, is also a possible cause for withdrawing from school. The data indicate that 154 members (31.88%) of subgroup D1 earned more than 139.99 credit hours by the completion of the last semester of enrollment—73.38% of that group, based on the Pell Grant data, had incomes of less than $50,000 for a family of four. Of those who had earned fewer than 140 credit hours, 68.69% had incomes of less than $50,000 for a family of four.

The members of subgroups C2 and D2, average to below average students with earned credit hours in excess of 111, are similar in a number of respects: in both subgroups, 4-year students outnumber transfer students by a margin of three to one. Three of the four most popular majors in each subgroup are Business Administration, Psychology, and Biology.

The percentage of students in subgroups C2 and D2 who were Pell Grant recipients in at least one of the three semesters prior to withdrawing from school is approximately 60%, just below the highest value for the Cohort 2 population. Approximately 20% of the students in the two subgroups exhausted their Pell Grant prior to the last semester of enrollment and

approximately 20.6% lost at least one other source of financial aid in the last three semesters of enrollment.

Why might a student in subgroups C2 or D2, in all likelihood within one semester of completing the requirements for an undergraduate degree, withdraw from school? Like subgroups A2 and B2, at least one possible cause is the exhaustion or imminent exhaustion of a Pell Grant: three out of five students were Pell Grant recipients in at least one of the three semesters prior to withdrawing from school. A second factor, at least for the members of subgroup D2, is the threat of academic suspension due to mediocre academic performance, another possible reason for withdrawing from school.

The Quadrant III population, weak to average students with cumulative GPAs in the C to C-plus range and earned credit hours between 111 and 165.66, is predominantly 4-year students (70.31%). The majority of students in Quadrant III are male (50.82%); 48.70% are white. In the Quadrant III population, 13.93% of students attended NCSU during the last semester of enrollment and 20.55% majored in Business Administration, Psychology, or Biology.

The percentage of students in Quadrant III who were Pell Grant recipients in at least one of the three semesters prior to withdrawing from school (60.24%) is the highest among the four quadrants and substantially higher than the national average of 35%. Almost 23% of the eligible students in the subgroup exhausted their Pell Grant prior to the last semester of enrollment and slightly less than 20.5% lost at least one other source of financial aid in the last three semesters of enrollment.

Why might a student in Quadrant III withdraw from school? The students in Quadrant III face a number of significant challenges to attaining an undergraduate degree: (1) the

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exhaustion of a Pell Grant and the reduction or elimination of other financial aid resources, (2) a 50% tuition surcharge for credit hours in excess of 140, and (3) the threat of academic probation or suspension (or the inability to meet the minimum GPA requirements in some degree programs) for mediocre academic performance.

Quadrant VI: Subgroups C3, C4, D3, and D4. The members of subgroup C3, average to below average students with cumulative GPAs in the C-plus to B-minus range and earned credit hours between 101 and 111, are predominantly 4-year students (82.63%). The majority of students in subgroup C3 are female (52.87%); 48.94% and white. More than 17% attended UNC-C during the last semester of enrollment. More than 17% majored in Psychology, Business Administration, or Communications/Comm. Studies.

The percentage of students in subgroup C3 who were Pell Grant recipients in at least one of the three semesters prior to withdrawing from school (53.49%) is near the average of the Cohort 2 population. The percentage of students who exhausted a Pell Grant in the last three semesters of enrollment (15.01%) ranks fourteenth in the 16 subgroups and the percentage of students who saw a reduction or elimination in the number of financial aid source types (not including exhausting a Pell Grant) in the last three semesters of enrollment (16.16%) is the lowest of the 16 subgroups.

Why might a student in subgroup C3 withdraw from school? The chief cause is likely financial: the exhaustion of a Pell Grant and other financial aid resources coupled with the cost of two or more additional semesters of school.

The members of subgroup D3, below average students with cumulative GPAs in the C to C-plus range and earned credit hours between 101 and 111, are predominantly 4-year students (83.47%). The majority of students in subgroup D3 are male (56.12%); 48.65% are

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white. In subgroup D3, 14.17% of the students attended NCSU during the last semester of enrollment; 20.29% majored in Psychology, Criminal Justice, or Business Administration.

The percentage of students in subgroup D3 who were Pell Grant recipients in at least one of the three semesters prior to withdrawing from school (57.26%) is the 6th highest of the 16 subgroups of Cohort 2. The percentage of students who exhausted a Pell Grant in the last three semesters of enrollment (15.77%) ranks twelfth in the 16 subgroups and the percentage of students who saw a reduction or elimination in the number of financial aid source types (not including exhausting a Pell Grant) in the last three semesters of enrollment (20.86%) is close to the Cohort 2 average.

Why might a student in subgroup D3 withdraw from school? A significant factor is likely financial: the exhaustion of a Pell Grant and other financial aid resources coupled with the likelihood that more than one additional semester is required to complete the remaining course requirements for a baccalaureate degree. A second factor leading to a decision to withdraw from school is the threat of academic suspension due to mediocre academic performance.

The members of subgroups C4 and D4, average to below average students with earned credit hours between 90 and 101, are similar in a number of respects: in both subgroups, 4-year students outnumber transfer students by a margin of four to one. Three of the four most popular majors in each subgroup are Business Administration, Psychology, and Biology.

The percentage of students in subgroups C4 and D4 who were Pell Grant recipients in at least one of the three semesters prior to withdrawing from school is approximately 56%, in the upper quartile of the Cohort 2 population. Approximately 14.3% of the two subgroups

exhausted their Pell Grants prior to the last semester of enrollment and approximately 18.1% lost at least one other source of financial aid in the last three semesters of enrollment.

Why might a student in subgroups C4 or D4 withdraw from school? The chief cause is likely financial: the exhaustion or imminent exhaustion of a Pell Grant and other financial aid resources coupled with the realization that more than one additional semester (and possibly more than two additional semesters) is probably required to complete the remaining course requirements for a degree. A second factor, at least for the members of subgroup D4, is mediocre academic performance.

The Quadrant IV population, weak students with cumulative GPAs in the C to C-plus range and earned credit hours between 90 and 111, is comprised predominantly of 4-year students (61.74%). The majority of students in Quadrant IV are female (59.72%) and white (64.12%). In the Quadrant IV population, 15.09% of students attended UNC-C during the last semester of enrollment and 17.83% majored in Business Administration, Psychology, Elementary Education, or Early Childhood Studies.

The percentage of students in Quadrant IV who were Pell Grant recipients in at least one of the three semesters prior to withdrawing from school (48.45%) is less than the average of the Cohort 2 population but substantially higher than the national average of 35%. More than 18% of the eligible students in the subgroup exhausted their Pell Grant prior to the last semester of enrollment and slightly less than 18.5% lost at least one other source of financial aid in the last three semesters of enrollment.

Why might a student in Quadrant IV withdraw from school? At least three probable causes are: (1) the exhaustion of a Pell Grant and other financial aid resources; (2) the realization that more than one additional semester (and possibly more than two additional

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semesters) is required to complete the remaining course requirements for a degree; and (3) the threat of academic probation (or the inability to meet the minimum GPA requirements in some degree programs) for mediocre academic performance.

Student Success Programs. Two of the largest postsecondary institutions in the UNC system, The University of North Carolina at Chapel Hill and Appalachian State University, are rarely mentioned in the results and findings presented here. UNC-CH's representation in the 16 subgroups varies from 1.59% to 6.99% and ASU's representation varies from 6.67% to 9.32%, considerably smaller than other UNC system postsecondary institutions of comparable size (see Table 4).

As noted earlier, the *Carolina Covenant* program, the ASCCESS program, and similar initiatives (e.g., University of Texas at Austin's *University Leadership Network* (ULN) program) are exemplars of successful and effective models of student retention. For example, what is the estimated impact on the size of Cohort 2 if the *Carolina Covenant* program did not exist? Based on an estimated new student participation rate in the *Carolina Covenant* program of 14%, an estimated 2008 entering class size of 4400, and an increase of 23.7% in the four-year graduation rate for Covenant Scholars since inception, the *Carolina Covenant* program has increased the number of UNC-CH graduates by an estimated 146 students per annum or 730 students over a five-year period, a figure equivalent to 7.5% of the Cohort 2 population.

Limitations of the Study

This study, like all studies, has a number of limitations that call into question the applicability of the findings to other contexts. In particular, it is important to note that the window for Cohort 2 includes a major global economic catastrophe, the Great Recession, as

well as the aftermath of that event. In addition, the Cohort 2 window coincides with significant declines in federal and state funding for higher education, a decline in federal funding of educational loans, and a record breaking economic recovery.

Like any research study that analyzes a few variables in a specific window of time, this study is limited by what has been excluded as well as what has been included. For example, a primary exclusion (or oversight) is one or more variables that would offer a portrait of individual self-efficacy, an attribute that several scholars assert is a strong indicator of persistence and a predictor of degree attainment. The inclusion of such a variable would offer additional insights into stop-out behavior within and between the various subgroups: I had even considered creating a rough estimate of self-efficacy inspired by an image of a low-income transfer student in a major that has selective admissions.

There are at least three major limitations in the study which, in the future, I hope can be addressed. The first is a lack of more detailed financial aid information, in particular, the amount of each student's unmet financial need. The second is information on whether a student is a first-generation college student. The third is tied to Vincent Tinto's notion of the importance of student engagement: my desire to operationalize a particular institution's success, or lack thereof, in constructing and reinforcing a culture that promotes a strong sense of connectedness to the campus community.

Finally, there are some minor issues related to the way that information was organized: for example, it is likely that the information on the most popular majors would have been slightly different if the various engineering disciplines were combined in a single CIP code.

Recommendations

The results of this research study are the strong impetus for three recommendations for policy makers, elected officials, analysts, and higher education administrators. Each of the recommendations seeks to reduce the number of stop-outs at UNC system postsecondary institutions:

Eliminate the 50% tuition surcharge imposed on students after 140 credit hours. Nearly one quarter of the high achieving students in Quadrant I face the imposition of the 50% tuition surcharge. For a student with limited financial means, the surcharge is a nearly insurmountable obstacle to degree completion. Establish a pilot program to test the effectiveness of suspending the 50% tuition surcharge for those in the upper quartile of cumulative grade point average and who have earned 125 credit hours or more.

Establish a new North Carolina Educational Loan Program for high achieving students at risk of stopping out. Provide high achieving students with demonstrated financial need an educational loan (to be forgiven after degree completion) to cover the costs of tuition and fee for the final one or two semesters. Half of the students in Quadrant I and Quadrant II are low income students who have exhausted or nearly exhausted their Pell Grants. Approximately 20% saw the reduction or elimination of at least one source of financial aid (other than a Pell Grant) prior to the last semester of enrollment.

Establish a pilot program to test the effectiveness of the educational loan program described in the previous paragraph. The number of UNC system stop-outs was 3592 during the 2015-16 academic year: A reasonable estimate is that 976 (27.21%) of those who stopped out are part of the Quadrant I population and 821 (22.86%) are part of the Quadrant II population. Based on tuition and fees of $3500 per semester, a one-semester educational

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loan/grant to 75% of the Quadrant I population would cost $2.56M and raise the six-year graduation rate 2%. A two-semester educational loan/grant to 75% of the Quadrant II population would cost $4.31M and raise the six-year graduation rate an additional 1.7%%. The estimated cost to raise the six-year UNC system graduation rate by 3.7% is $6.87M.

Replicate the successful student success programs at UNC-CH and ASU at those UNC system institutions where a program that focuses on medium-to-high achieving low-income students does not exist currently. Based on recent scholarship regarding effective models of student retention and the record of success of the *Carolina Covenant* program and of ACCESS, expand the network of student success programs throughout the UNC system.

Establish a pilot program to test the effectiveness of student success programs, programs modeled on ACCESS and *Carolina Covenant* at three other UNC system institutions. The synthesis of a debt-free college education for low-income students and a support system that includes mentoring, academic support, leadership and organizational skills workshops, and community building events would directly address the concerns most often cited by students who stop-out.

Future Research

Questions for future research include: Are the primary factors that impact persistence in the first years of college (i.e., academic preparation, psychological and social factors, career development concerns, and financial obstacles) significant for *stop outs*? What factors (e.g., increased family responsibilities and obligations) are of special significance to students who have earned 90 or more credit hours and are in good academic standing?

There has been relatively little study of the effectiveness of specific measures that might be taken (e.g., academic support, academic advising, career counseling, faculty or peer

mentoring programs, financial support, incentives, etc.) in increasing persistence across a range of other characteristics (e.g., age) for those who withdraw from college after earning 90 credit hours or more. A more detailed analysis of the measures that might be taken to improve degree attainment rates is required. Furthermore, it is important to determine if the concerns and needs of the various subsets of the stop-out group (e.g., high-achieving versus low-achieving students) are distinctly different. Finally, further research must address the question of how the principles of other disciplines (e.g., behavioral economics) might be used to better understand stop-out behavior as well as inform higher education policy and develop targeted incentives and interventions that result in improved rates of degree attainment.

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APPENDIX A: *Our Time, Our Future: the UNC Compact with North Carolina*

In February 2013, the Board of Governors of the University of North Carolina system, led by Tom Ross, approved "Our Time, Our Future: the UNC Compact with North Carolina," the system's strategic plan for 2013-18. The proposal was ambitious as well as visionary: if it had been implemented, North Carolina would have been among the ten most educated states by 2025, with 36% of the population holding an undergraduate degree or higher. "Our Time, Our Future: the UNC Compact with North Carolina" set forth five core goals; one of the most important was the goal of increasing the number of college graduates in the state from 26% to 32% by 2018.   The Board of Governors aimed to dramatically increase the number of college degrees conferred each year by the UNC system, an objective based, in large part, on current projections for the number of North Carolina jobs that will require an undergraduate degree as a minimum qualification in the decades ahead (UNC Board of Governors Strategic Directions Initiative, 2013).

The strategic initiative's five-year goal called for a 20,208 increase per annum in the number of undergraduate degrees conferred each year by 2018, an increase of 56.7% when compared to number of degrees conferred in 2010-11 ("Estimated Degree Growth Through 2018"). The authors of the strategic initiative wrote that the plan to improve efficiency, productivity, and quality in the UNC system and increase the number of degrees conferred each year would result in an estimated $259.7 million in savings. Implementation of the plan would have required an increase in the state's appropriation to higher education: the Board of Governors called on the General Assembly to provide $650.5 million over five years to support the initiative.

The General Assembly was unable to agree on a budget by June 30, 2013, and passed a temporary measure to allow state agencies to continue to operate. However, it was already evident to observers that the FY 2013-14 budget would neither include increases in funding for education nor additional funding for a variety of critical social programs.

In late July, the North Carolina General Assembly passed the FY 2013-14 budget. The recommendation of the Board of Governors to fund the strategic directions initiative ("Our Time, Our Future: the UNC Compact with North Carolina") for higher education was ignored: the 2013-14 appropriation for higher education was $2.583 billion (S.L. 2013-360), a 3.25% *decrease* compared to the previous year and a 6.27% decrease compared to the 2008-09 appropriation. While some in Raleigh noted that the urgent need to address the $308 million shortfall in Medicaid reduced allocations to education, transportation, health and social services, critics fired back that the state legislature reduced anticipated revenues by enacting tax cuts for the wealthiest North Carolinians.

APPENDIX B: Institutional Research Board Exemption

To: Charles Debelius
Sustainable Technlgy & Built Envirn cadebelius@gmail.com
CAMPUS EMAIL

From: Monica Molina, IRB Associate Administrator
Date: 10/05/2016
RE: Notice of IRB Exemption

STUDY #: 17-0002
STUDY TITLE: ADDRESSING THE CHALLENGE OF STOP-OUTS IN PUBLIC HIGHER EDUCATION

Exemption Category: (4) Collection or Study of Existing Data, If Public or Unable to Identify Subjects

This study involves minimal risk and meets the exemption category cited above. In accordance with 45 CFR 46.101(b) and University policy and procedures, the research activities described in the study materials are exempt from further IRB review.

All approved documents for this study, including consent forms, can be accessed by logging into IRBIS. Use the following directions to access approved study documents.

1. Log into IRBIS
2. Click "Home" on the top toolbar
3. Click "My Studies" under the heading "All My Studies"
4. Click on the IRB number for the study you wish to access
5. Click on the reference ID for your submission
6. Click "Attachments" on the left-hand side toolbar
7. Click on the appropriate documents you wish to download

Study Change: Proposed changes to the study require further IRB review when the change involves:

- an external funding source,
- the potential for a conflict of interest,
- a change in location of the research (i.e., country, school system, off site location),
- the contact information for the Principal Investigator,
- the addition of non-Appalachian State University faculty, staff, or students to the research team, or

of changes which affect the basis of the determination of exemption on page 3.

Investigator Responsibilities: All individuals engaged in research with human participants are responsible for compliance with University policies and procedures, and IRB determinations. The Principal Investigator (PI), or Faculty Advisor if the PI is a student, is ultimately responsible for ensuring the protection of research participants; conducting sound ethical research that complies with federal regulations, University policy and procedures; and maintaining study records. The PI should review the IRB's list of PI responsibilities.

To Close the Study: When research procedures with human participants are completed, please send the Request for Closure of IRB Review form to irb@appstate.edu.

If you have any questions, please contact the Research Protections Office at (828) 262-2692 (Robin).

Best wishes with your research.

Websites for Information Cited Above

Note: If the link does not work, please copy and paste into your browser, or visit https://researchprotections.appstate.edu/human-subjects.

1. Standard Operating Procedure #9:
http://researchprotections.appstate.edu/sites/researchprotections.appstate.edu/files/IRB20SOP920Exempt%20Review%20Determination.pdf

2. PI responsibilities: http://researchprotections.appstate.edu/sites/researchprotections.appstate.edu/files/PI20Responsibilities.pdf

3. IRB forms: http://researchprotections.appstate.edu/human-subjects/irb-forms

CC:
Sara Zimmerman, Curriculum & Instruction

APPENDIX C: UNC-GA Memorandum of Understanding (MOU)

MEMORANDUM OF UNDERSTANDING

Between

The University of North Carolina General Administration and

C. A. Debelius

CONCERNING THE TRANSFER AND USE OF STUDENT DATA

October 18, 2016

This is to confirm the understanding and arrangements between the University of North Carolina General Administration (UNCGA) and C. A. Debelius concerning the transfer and use of student data on students at North Carolina public universities.

Background:

C. A. Debelius, a doctoral candidate in Higher Education at Appalachian State University's Reich College of Education, is conducting a research study to address the following questions:

1. Is there evidence in support of the hypothesis that a lack financial resources to pay for college is the primary factor that leads high-achieving students to stop-out?
2. Is there evidence in support of the hypothesis that poor academic performance is the primary factor that leads low-achieving students to stop-out?
3. Does the evidence support the establishment of a pilot program of targeted incentives aimed at significantly increasing six-year graduation rates, especially among low-income high-achieving students?
4. Does the evidence support the establishment of a pilot program of targeted interventions aimed at significantly increasing six-year graduation rates, especially among low-income low-achieving students?

Debelius wishes to analyze the data as part of his dissertation research. To carry out this study, UNCGA agrees to give UNC student data to C. A. Debelius. The particular data that UNCGA agrees to provide and/or match and the purpose of the proposed study, including the specific exception under FERPA that allows release of the requested data to C. A. Debelius, are described in the attached Data Request Form, which is incorporated into this Memorandum of Understanding by reference as if fully set out herein. UNCGA will transmit the student-level data using a secure FTP server. C. A. Debelius agrees to handle the data in a manner that is fully compliant with FERPA.

The UNCGA and C. A. Debelius agree to the following:

1. UNCGA gives its consent for C. A. Debelius to access the detailed student data listed in the Data Request Form in a manner that is consistent with State and Federal law solely for the purpose of the research project described above.

2. Project Scope. C. A. Debelius agrees not to amend or alter the scope, design, format, or description of the project(s) and/or question(s) described in this Memorandum of Understanding, except as consistent with this Memorandum of Understanding, without prior written notice to and approval by UNCGA.

3. Data Security Agreement. Prior to accessing any data, all C. A. Debelius researchers and individuals with access to the data on this project will sign a UNCGA Data Security Agreement indicating his/her understanding and agreement to abide by the conditions of the MOU and Agreement, and all laws, regulations, and policies regarding the use and security of data. Any additional researchers or persons later added to the project and given access to the data shall be required to sign the Data Security Agreement.

4. Publication. In order to protect the confidentiality of the data, C. A. Debelius will provide UNCGA with copies of any proposed reports, presentations or publications resulting from the use of the data. Such copies will be provided to the UNCGA for review as least thirty (30) days prior to submission of a manuscript or abstract for publication or presentation.

5. Institutional Review Boards. Where appropriate, use of confidential data in research will also be governed by relevant Institutional Review Board policies.

6. Publicity. Neither party will, without the prior written consent of the other party, use the name of any employee or agent, any trade-name, trademark, trade device, service mark, symbol, or any abbreviation, contraction or simulation of the other party, for any purpose.

7. Assignment. No party may assign or otherwise transfer any of its rights or obligations under this Memorandum of Understanding without the prior written consent of the other parties hereto.

8. Right to Audit. UNCGA reserves the right to conduct periodic audits of C. A. Debelius's policies, procedures and systems to ensure compliance.

9. Termination. UNCGA specifically reserves the right to terminate this Agreement should UNCGA, in its sole discretion, determine that data has been released in a manner inconsistent with this Agreement, or has not been maintained in a secure manner. Failure to abide by applicable security measures and disclosure restrictions may result in the interruption, suspension and/or termination of the relationship with Requestor for a period of at least five (5) years from date of violation.

10. Domestic Use Only. C. A. Debelius shall not allow the transmission of the data outside the United States.

11. Indemnification. In the event a claim is brought against UNCGA for data or identity loss or appropriation caused by the negligence or willful acts of Requestor, Requestor agrees to indemnify and hold UNC harmless from and against any lawsuit, claim, damage, liability, or expense (including reasonable attorneys' fees and the cost of notification of affected persons) incurred by UNCGA as a result of the claim.

12. Authority. By entering into this Memorandum of Understanding, the representatives of each party hereto specifically acknowledge and warrant that they execute this Memorandum of Understanding with the requisite authority to bind their respective institutions.

13. Governing Law. Any action related to this Memorandum of Understanding shall be governed by the laws of the State of North.

14. Relationship of the Parties. This Memorandum of Understanding is not intended to create a relationship such as a partnership, franchise, joint venture, agency or employment relationship among the parties. No party may act in a manner which expresses or implies a relationship with any other party other than that of independent contractor, nor bind any other party hereto.

15. Nonexclusive Nature. The parties hereby understand and agree that this Memorandum of Understanding is non-exclusive, and that either party may enter into similar agreements with other individuals or entities.

16. Miscellaneous. This Memorandum of Understanding, including all exhibits attached or incorporated by reference, constitute the parties' entire Memorandum of Understanding relating to its subject matter. It supersedes all prior or contemporaneous oral or written communications, representations or warranties pertaining to the Program. All modifications to this Memorandum of Understanding must be in writing signed by authorized representatives of each of the parties hereto.

17. Change in Law. The parties agree to negotiate in good faith to amend this Agreement to comport with changes in federal or state law and regulations that materially alter either or both parties' obligations under this Agreement. Provided however, that if the parties are unable to agree to mutually acceptable amendment(s) by the compliance date of the change in applicable law or regulations, either Party may terminate this Agreement.

18. Injunction. The Requestor acknowledges and agrees that the University will suffer irreparable damage upon the Requestor's breach of this Agreement and that

damages would be an inadequate remedy for such breach. The Requestor acknowledges and agrees that UNCGA may seek an action for an injunction to enforce the terms of this Agreement against the Requestor, in addition to any other remedy in law or in equity.
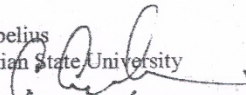
19. Ownership of Data and Information. The Requestor acknowledges that data provided is and remains the sole property of UNCGA, including any and all forms developed by the Requestor in the course of its fulfillment of its activities under this Agreement.

20. Duration. This Memorandum of Understanding will cover the period starting, October 18, 2016 through the date on which the identified data will be destroyed, December 31, 2017, unless C. A. Debelius gives prior written notice to and receives approval from UNCGA for an extension of specified duration.

21. Cost reimbursement. If UNCGA expends more than minimal resources processing the data requests, it reserves the right to request reimbursement for those costs from C. A. Debelius. UNCGA will provide advanced notice of such charges where practical.
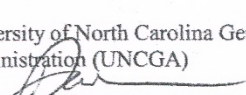
All inquiries should be addressed to the following individuals:

University of North Carolina General Administration
Attn: Dr. Daniel R. Cohen-Vogel
Associate Vice President for Research at UNCGA
910 Raleigh Road
P.O. Box 2688
Chapel Hill, NC 27514
Phone: (919) 962-4554

C. A. Debelius
P.O. Box 1388
Blowing Rock, NC 28605
Phone: (408) 500-5611 (c)

IN WITNESS THEREOF, C. A. Debelius and UNCGA execute this Memorandum of Understanding with the intent that it is effective as of October 18, 2016.

C. A. Debelius
Appalachian State University
By: _____
Title: _____ EVO, AMY/RESEARCH _____
Date: ___ 10 / 18 / 16 ___

University of North Carolina General
Administration (UNCGA)
By: _____
Dr. Daniel Cohen-Vogel
Associate Vice President for Institutional
Research
Date: ___ 11/8/16 ___

UNCGA DATA SECURITY AGREEMENT

The confidentiality of information available through the University of North Carolina General Administration (UNCGA) is protected by federal and state law, and shall be used only for the authorized purposes, as established by the Memorandum of Understanding (MOU) and Data Request. Data released by the UNCGA is in compliance with the provisions of Federal and State laws and regulations, including the Family Educational Rights and Privacy Act (FERPA), 20 U.S.C. § 1232g, 34 C.F.R Part 99; N.C.G.S. §115C-401 and 402; and N.C.G.S. §132-1.10. Other protections and restrictions may also apply to the data, including Export Administration Regulations (EAR), International Traffic in Arms Regulations (ITAR), Health Insurance Portability and Accountability Act (HIPAA), the Gramm-Leach-Bliley Financial Services Modernization Act (GLB), Federal Trade Commission Red Flags Rule, the Social Security Act, Payment Card Industry Data Security Standards (PCI-DSS), and personnel laws in the General Statutes of North Carolina. The party receiving data acknowledges its separate obligations in compliance with the requirements of these provisions, and its duties of confidentiality, privacy, and nondisclosure.

The information released by the UNCGA will be used by the party receiving data for the purpose of generating aggregate statistics that will be used to evaluate educational policies, programs, or needs. Deliberate or accidental misuse of information may result in loss of access, disciplinary action dismissal by the individual's employer, or prosecution under all applicable federal and state laws and regulations.

Requestor/User Requirements

All persons who gain access to information from the UNCGA in any form must adhere to the provisions below. As specified in the Memorandum of Understanding, prior to accessing any confidential data, all researchers and all others having access to the data used for this project will sign this document indicating his/her understanding and agreement to abide by these conditions and all laws, regulations, and policies regarding the use and security of data. Any additional researchers or persons later added to the project and given access to the data shall be required to sign this document.

For purposes of this project and to ensure compliance with the terms of the MOU, this Agreement, and all applicable state and federal laws, the parties designate [NAME OF DESIGNEE] as the temporary custodian of the data provided. UNCGA shall release all data and information for this project to the named temporary custodian only, who shall be responsible for transmitting all data requests and maintaining a log or other record of all data requested and received pursuant to the project, including confirmation of the completion of the project and the return or destruction of data.

The Requestor(s) and/or User(s) shall:
1. Use data provided under the MOU and this Agreement for no purpose other than the research project described in the MOU and this Agreement, and as authorized under applicable federal and state laws and regulations.

2. Use individual records or anything that could generate personally identifiable information for no purpose other than the validation of queries/programming;
3. Destroy unit record data provided by the UNCGA (in the Memorandum of Understanding) on or before the date assigned by the UNCGA and provide certification to the UNCGA staff that such records have been destroyed, in compliance with recognized guidelines, such as NIST 800-88 Purging or Physical Destruction;
4. Prior to publication or release, provide any documents generated as a result of using data received from the UNCGA to the UNCGA points of contact, identified in the MOU, for review and verification that the intended purpose has been adhered to;
5. Store each electronic file sent by UNCGA that contains data, and each hard copy of such information, in a secure location except when in use for the purposes for which it was provided. Electronic files shall be stored in secured computer facilities with strict access controls, limiting access only to those individuals who have signed this agreement;
6. Maintain all data received pursuant to the MOU and Agreement separate from all other data files and not copy, reproduce, or transmit data obtained except as necessary to fulfill the purpose of the project described in the MOU.
7. Retain only one copy and one backup copy of the data provided. In the event the destruction of data is required, user must provide written confirmation that all copies are properly destroyed;
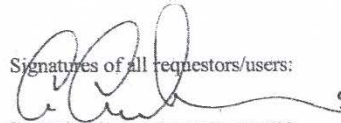
The Requestor(s) and/or User(s) may not, and must ensure that no other individuals:
1. Share data with any other individual or organization without the express written consent of UNCGA;
2. Use data for any purpose other than that approved by UNCGA in writing;
3. Allow any unauthorized use of information provided or generated;
4. Use the results of information provided or generated in an effort to determine the identity of any student or employee for whom data is included by the UNCGA, or to make contact with an individual;
5. Use the data to make a decision about the rights, benefits, or privileges of individuals identified through the data elements or data matching process;
6. Use the data in any outside activities for pay or consulting agreements;
7. Publicly disseminate reports containing identifiable data or aggregate cell sizes of less than 5 individuals. (Reports must mask these cells so that results are not revealed.)

Printed names of all requestors/users: Signatures of all requestors/users:

1. __C. A. Debelius__

2. _____

3. _____

4. _____

Vita

Charles Alan Debelius Jr. holds degrees from Dartmouth College (AB, 1979; double major in Engineering Sciences and Visual Studies (architecture emphasis)) and the Harvard Graduate School of Design (M. Arch I, 1983). He is a registered architect in California, a member of the American Institute of Architects, a LEED AP (2009), and a tenured associate professor in the Department of Sustainable Technology and the Built Environment at Appalachian State University. The Knoxville Museum of Art presented a solo exhibition pf design projects by Mr. Debelius in 2007.