COMMUNITY COLLEGE ALUMNI GIVING:

TOWARD A MULTIVARIATE MODEL

A Capstone Project

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by

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Community College Alumni Giving:Toward a Multivariate Model

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Dedication

This capstone is dedicated to community college students who come from traditionally underrepresented backgrounds and who, against the odds, pursue a college education - and to the faculty and staff who support their learning every day. You deserve the resources you need to be successful as learners, teachers, parents, employees, and model citizens of your community. It is also dedicated to those donors, now and in the future, who realize the incredible impact they can have on teaching, learning, and thriving in their communities by giving to their community college.

Abstract

The study sought to determine whether the Multivariate Causal Model of Alumni Giving, which is based upon data from alumni of a four-year institution (Sun, 2005; Sun et al., 2007), applies in the same ways and to the same degrees to alumni of a statewide community college system in the eastern United States. Specifically, the study sought to find whether the following four factors are related to alumni giving to community colleges: *student experience*, *alumni experience, alumni motivation,* and d*emographics*. A non-experimental, cross-sectional online survey study was conducted, with alumni from ten community colleges participating. The study found that the Multivariate Model of Alumni Giving applied to participating community college alumni in so far as the factors *student experience*, *alumni experience*, *alumni motivation*, and *demographics* significantly distinguished community college alumni donors from alumni nondonors. There were important differences in how these variables applied to community college alumni as compared to their original application to alumni of a four-year institution. For community college alumni in the study, the following extracted factors were shown to be significant: A*lumni communications: importance*; *Alumni involvement: frequency*; A*lumni involvement: importance*; S*tudent experience: career/life preparation*; *Proximity of residence to community college*; *Age*; and *In-state residence.* Based upon the number of completed responses, the results from the study were not generalizable to the larger population of community college alumni but demonstrated key areas where further study is needed.

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Chapter 1: Introduction & Statement of the Problem

Community colleges serve the most at-risk college students nationwide with the lowest budget per student among institutions of higher education (Baum & Kuros, 2013). Nearly 50% of college students in the United States attend community colleges (Paradise, 2015), where declining state, federal and local funds strain the institutions' ability to serve those students. In order to level the playing field and help provide educational opportunities at community colleges that are equal in value to those offered by four-year schools, more resources are needed at community colleges across the country.

Facing similar challenges with declining government funding, many four-year schools have turned to fundraising. Leadership at many four-year colleges and universities consider fundraising a primary source of revenue; fundraising comprised an average of 23% of their overall revenues in 2016-17 (Digest of Education Statistics, 2018). Community colleges have been slow to the fundraising game, with fundraising bringing in 7% or less of overall revenue for community colleges in 2017-18 ("Driving Success," 2019). In 2014, community colleges raised only 2% of all private funds given to higher education despite enrolling 41% of the nation's undergraduates (Paradise, 2015).

Four-year schools rely heavily on donations from alumni, who are responsible for approximately two-thirds of all private donations from individuals to four-year colleges and universities ("Colleges and universities raise," 2017). In contrast, contributions from individuals to community colleges primarily come from non-alumni, who constitute 85-90% of the community college donor base (Skari, 2011). Fewer than one percent of community college alumni are donors (Paradise, 2016). This begs the question, do alumni represent a missed opportunity for revenue that could help community colleges carry out their mission? Little

research exists to guide community colleges toward best practices in community college alumni fundraising.

The Opportunity Disparity

Community colleges serve higher-risk students than their four-year counterparts and do so with fewer resources. Providing education for 12 million students, community colleges enroll 73% of all college students whose income falls below the federal poverty line (Bahr & Gross, 2016; "Driving Success," 2019; Paradise, 2015). Community colleges also serve a disproportionately high number of racial minorities – nearly half (47%) of all racial minority college students in the United States attend community college. A full 48% of the community college student body is from a minority population ("Fast Facts," 2019).

As the number of students enrolled in higher education has increased, government funding for higher education has decreased, creating a hierarchy of educational opportunities with elite colleges at the high end and small four-year schools and community colleges at the low end (Taylor & Cantwell, 2018). At elite colleges, tuition paid by students covers a fraction of the cost of education, which is highly subsidized by endowments, creating a high value opportunity, or "seat," in higher education. At small four-year colleges and community colleges, institutions have a much lower budget per student. Lacking a large endowment, these colleges lean on tuition to make up a larger percentage of the cost of attendance, creating a much lower value opportunity for students. For example, at community colleges tuition has increased dramatically over the last few years to make up for the decreasing government funding (Kennamer et al., 2010). In general, students attending colleges where the seat value is low tend to be students who could use additional resources given their position in society, including students who come from financially under-resourced families and racial or ethnic minority groups; at the same time,

students who attend elite colleges tend to be white and from wealthy families (Taylor et al., 2018). State funding per pupil at community colleges is roughly one third of what it is at public four-year institutions (Bahr & Gross, 2016). Assuming that the more that is spent per student by an institution of higher education, the higher value the experience for the student, then the community college education is a comparatively poor one, served up to the students who have the least resources and are most at risk.

Funding History & Its Lasting Impact

While community colleges were initially funded in large part by localities and states, government funding for community colleges peaked in 1980 and has declined over the years, leaving tuition to make up the difference (Bahr & Gross, 2016). Between 2000-01 and 2005-06, tuition at community colleges increased between 25% and 50%; those with local funding experienced lower tuition increases (Kennamer et al., 2010). Spending per pupil at community colleges essentially froze between 1999 and 2009, increasing by only a dollar per student while at the same time rising by $4,000 per student at public four-year institutions and $14,000 per student at private four-year institutions (Baum & Kuros, 2013).

Given their history of public funding, community colleges have traditionally not been fundraising institutions; however, community colleges have slowly started to ramp up fundraising in recent years. In 2018, the average community college endowment nationwide was $19 million, as compared to an average endowment size of $771 million for four-year colleges (Finkel, 2019). In the eastern state where this study took place, in 2014-15, the average community college in that state held an endowment of four million for a total of $833 endowment dollars per full time equivalent (FTE) student while the average public four-year college held an endowment of $162 million with a total of $14,464 endowment dollars per FTE

(National Center for Education Statistics, 2014-15). In 2016, 61% of community colleges nationwide had foundations; however, not all community colleges with foundations were soliciting alumni annually (Paradise, 2016).

Key Differences in Fundraising Practice by Institution Type

In addition to the differences in the scale of their fundraising operations, four-year and two-year colleges tend to raise the majority of funds from different constituencies. Alumni give the majority of private funds raised from individuals by four-year schools (Klingaman, 2012) while non-alumni serve this purpose at community colleges. At four-year schools, alumni provide approximately 60-65% of overall contributions from individuals ("Colleges and universities raise," 2017; Klingaman, 2012), with non-alumni individuals contributing approximately another 40% ("Colleges and universities raise," 2017). In 2015, only 9.1% of all donations to community colleges were provided by alumni, up from 6.5% in 2012 (Paradise, 2016). This is not to be confused with the percentage of community college alumni who have given back to their two-year alma mater within the past year. While quite low, this percentage appears to be on the rise, increasing from 0.5% to 0.9% between 2012 and 2015 (Paradise, 2016).

The Student & Alumni Experience

Community colleges have a different relationship with students than do four-year schools, as many community college students are commuters and attend school while raising families and working one or more off-campus jobs (Cohen et al., 2014; Dadgar, 2014). Typically, four-year colleges provide a residential experience for students, creating a communal experience of shared meals and social opportunities throughout the four years of schooling. For many community college students, very little time is spent socializing, sharing meals with other

students, or exploring leadership experiences with classmates and faculty members on campus, although many community colleges offer social and enrichment experiences such as clubs and intermural sports (Cohen et al., 2014). As a result, community college students spend much less time on campus while they are enrolled than do four-year college students and may not develop as strong an affiliation with the school.

Further, many community colleges have not invested in maintaining relationships with alumni (Paradise, 2015). In contrast, many four-year schools have dedicated alumni offices that devote time and resources to events, mailings, and donor software systems where current contact information is stored in order to develop and track relationships with alumni after they graduate (Gyllin et al., 2015).

In considering other differences and similarities between two- and four-year colleges and their alumni, it is impossible to ignore degree attainment. Approximately 70% of community college students do not transfer to a four-year school within six years of entering the community college ("Tracking transfer 2019 data update," 2019), resulting in college attainment of two years or fewer and no credential, impacting lifetime earnings. Wealth, as well as degrees earned, are correlated with alumni giving (Skari, 2014; Wood, 2012). There is a dearth of literature about the potential for community college alumni to give back to their alma maters, as well as about the relationships that exist between alumni giving and institutional, demographic, and relational factors. While the Council for Advancement and Support of Education (CASE) defines a community college alumnus/a as anyone who has ever taken a class at a community college (excluding non-credit courses), the definition of *alumni* varies widely across community colleges nationally (Paradise, 2016), indicating not only a lack of unity in approaching alumni donors, but a wide variety of ways of thinking about them.

Acknowledging these differences in the student and alumni experience at the two- and four-year school, it is uncertain whether the model of alumni fundraising so successfully established at four-year schools can be transposed onto two-year schools. However, it is clear that within the fundraising enterprise at community colleges, alumni are a largely untapped resource (Klingaman, 2012; Paradise, 2016). Given the climate of increased privatization in higher education, and the relatively high level of support that alumni give their four-year institutions, there may be an opportunity to cultivate a more engaged community college alumni base that could provide much-needed support to two-year colleges. More research needs to be done to explore the potential for fundraising from community college alumni.

Why Best Practices for Alumni Fundraising at Community Colleges Matter

If best practices for community college alumni fundraising become more widely known, and fundraising efforts are successful, alumni fundraising at community colleges could increase overall revenue for colleges at a time of shrinking state education budgets, enabling institutions to spend more money on instruction and academic resources. Consequently, community colleges could offer a higher-value seat to the students of low socio-economic status who enter its doors. This study aims to examine the degree to which certain factors contribute to success in community college alumni fundraising so that community college advancement offices can use this data to strategically focus efforts in identifying, cultivating, and soliciting alumni donors.

Studies have shown that increasing the seat value for college students, that is, allocating more funding per student in specific areas such as instruction and student services, may increase persistence and graduation rates (Hester, 2016; Webber & Ehrenberg, 2010). At community colleges in particular, it has been shown that providing extensive supports to community college students, which requires spending more per student, can have a positive effect on persistence and

graduation rate (Levin & Garcia, 2018). Thus, research in the area of alumni fundraising, which could increase fundraising capacity and revenue for community colleges, has the potential to support student success.

Overarching Research Question

A survey study of community college alumni giving attempted to address a missing piece in the literature. This study is important because of the largely unresearched potential of alumni support for community colleges and the impact that increased revenue through fundraising could have for the quality of education offered by community colleges. Results from the study could directly benefit community college leaders, including college presidents and vice presidents of development, who are in a position to direct the strategy of fundraising offices. With researched best practices for alumni fundraising, colleges could increase revenue, and thus be able to allocate more funding per student. Ultimately, research-based best practices for community colleges could help colleges provide needed funds to bolster and sustain efforts to support those students with greatest need.

In order to study community college alumni, I proposed the following overarching research question: do the student experience, alumni experience, alumni motivation, and demographics predict community college alumni giving?

Definitions

The following section defines terms that will be used throughout the capstone paper. The definitions outlined here are specific to this paper and based upon the literature; however, they may vary from the ways the terms are used in other contexts. For example, the definition of "alumni" used for the purposes of this study is the most broad definition of the term found in the literature and is not used by all community colleges.

- Alumni Donor: an alumnus/a of an educational institution who has made one or more financial contributions to that institution.
- Alumni Nondonor: an alumnus/a of an educational institution who has never made a financial contribution to that institution.
- Alumni Demographic Variables: variables that may affect the experience of alumni, including gender, race/ethnicity, location of residence, years since attending an educational institution, highest degree earned from an educational institution.
- Alumni Experience: the sum of experiences that an alumnus/a has in relation to an educational institution that they have attended, including interactions with that institution (or individuals representing the institution) online, through social or print media, and in person. This includes perceptions of the educational institution through events at or representing the institution as well as relationships with faculty, staff, administrators, fundraisers, current students, and other alumni of the institution.
- Community college or two-year college: an institution of higher education that primarily offers two-year degrees (such as associates degrees), certificates, and workplace training.
- Donor: an individual who provides voluntary financial support to a charitable organization such as an educational institution.
- Four-year college: an institution of higher education that primarily offers four-year degrees such as baccalaureate degrees.
- Fundraising: the process of asking individuals for donations to a charitable entity such as an educational institution.
- Giving: financial contributions to a charitable organization such as an educational institution.

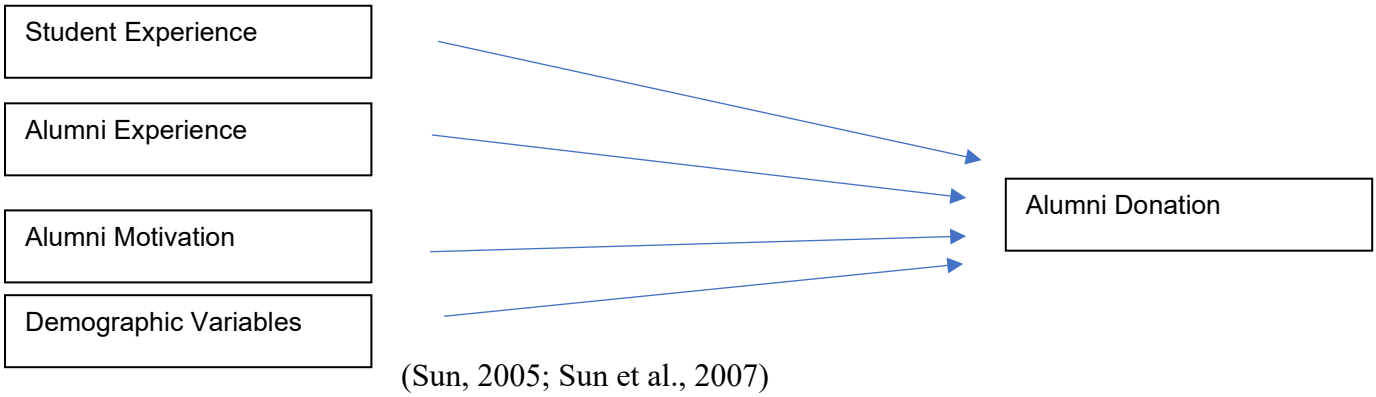
- Philanthropy: giving to one or more charitable organizations to benefit others.
- Student Experience: the sum of experiences that a student has in relation to an educational institution they attend, including relationships with other students, faculty, and staff; extracurricular activities; career preparation; and preparation for additional educational experiences. This includes perceptions of these experiences after the student has graduated.

Theoretical Framework: Multivariate Model of Alumni Giving

The overarching theory that was used in this study is the Multivariate Causal Model of Alumni Giving (Figure 1), developed and tested first by Sun (2005) in a dissertation study and later detailed in a journal article in the *International Journal of Educational Advancement* by Sun, Hoffman and Grady (2007). The Multivariate Causal Model of Alumni Giving was developed to define four major contributing factors that affect alumni giving to four-year institutions of higher education: student experience, alumni experience, alumni motivation, and demographic variables. Sun (2005) and Sun et al. (2007) used this model to develop and test four hypotheses with survey data from alumni of a four-year institution of higher education in the Midwest. Figure 1 provides a high-level view of the Multivariate Model of Alumni Giving.

Figure 1

Multivariate Causal Model of Alumni Giving



(Sun, 2005; Sun et al., 2007)

Creation of the Multivariate Model of Alumni Giving

Sun and Sun et al.'s hypotheses were as follows:

(1) Student experience significantly distinguishes alumni donors from nondonors.

(2) Alumni experience significantly distinguishes alumni donors from nondonors.

(3) Alumni motivation significantly distinguishes alumni donors from nondonors.

(4) Demographic variables significantly distinguish alumni donors from nondonors.

Hypotheses one, two, and three were supported by Sun and Sun et al.'s research and hypothesis four was partially supported: gender and years since graduation were both related to alumni giving. Overall, the study supported the model and helped establish it as a reference point in subsequent literature.

Elements of the Model: Factors & Dependent Variables

The Multivariate Causal Model of Alumni Giving includes four primary factors. Student experience, the first component, is comprised of multiple aspects, including the student's relationships with other students and with faculty; career preparation; and academic experiences. Alumni experience, the second factor, includes engagement with the alumna mater through events as well as the alumnus/a's perception of the institution through marketing and communication materials, both electronic and print. Alumni motivation, the third factor, stems from a perception of the institution's need and the alumnus/a's internal desire to give. Demographics, the final factor, involves components such as years since graduation, race, gender, and location of residence relative to the educational institution (Sun, 2005; Sun et al., 2007).

The dependent variable, alumni donor status, contained five groups. Alumni could choose from the following selection regarding their donor status: (Group 1) "Never donated/do not plan

to donate;" (Group 2) "Donated/won't continue;" (Group 3) "Never/but plan to;" (Group 4) "Donated/plan to continue;" and (Group 5) "Donated/plan to increase." The figure below provides a more detailed look at the model, including some of the factors that contribute to the dependent and independent variables.

After analyzing the data, Sun and Sun et al. determined six significant predictor variables of alumni giving: 1) *Student experience – relationships*, 2) *Student experience – extracurriculars*, 3) *Alumni experience*, 4) *Alumni motivation*, 5) *Graduation year*, and 6) *Gender*. These significant predictor variables aligned with all four of the primary factors, with the student experience predictor aligning to the greatest degree. Factor analysis was used to determine the degree to which questions were related to alumni giving, and questions with the highest significance in relation to alumni giving were highlighted. *Student experience - relationships*, *Student experience - extracurriculars*, *Alumni experience* and *Alumni motivation* were significant predictors of whether alumni fell into Group 1("never/do not plan to") or Group 5 ("Donated/will increase").

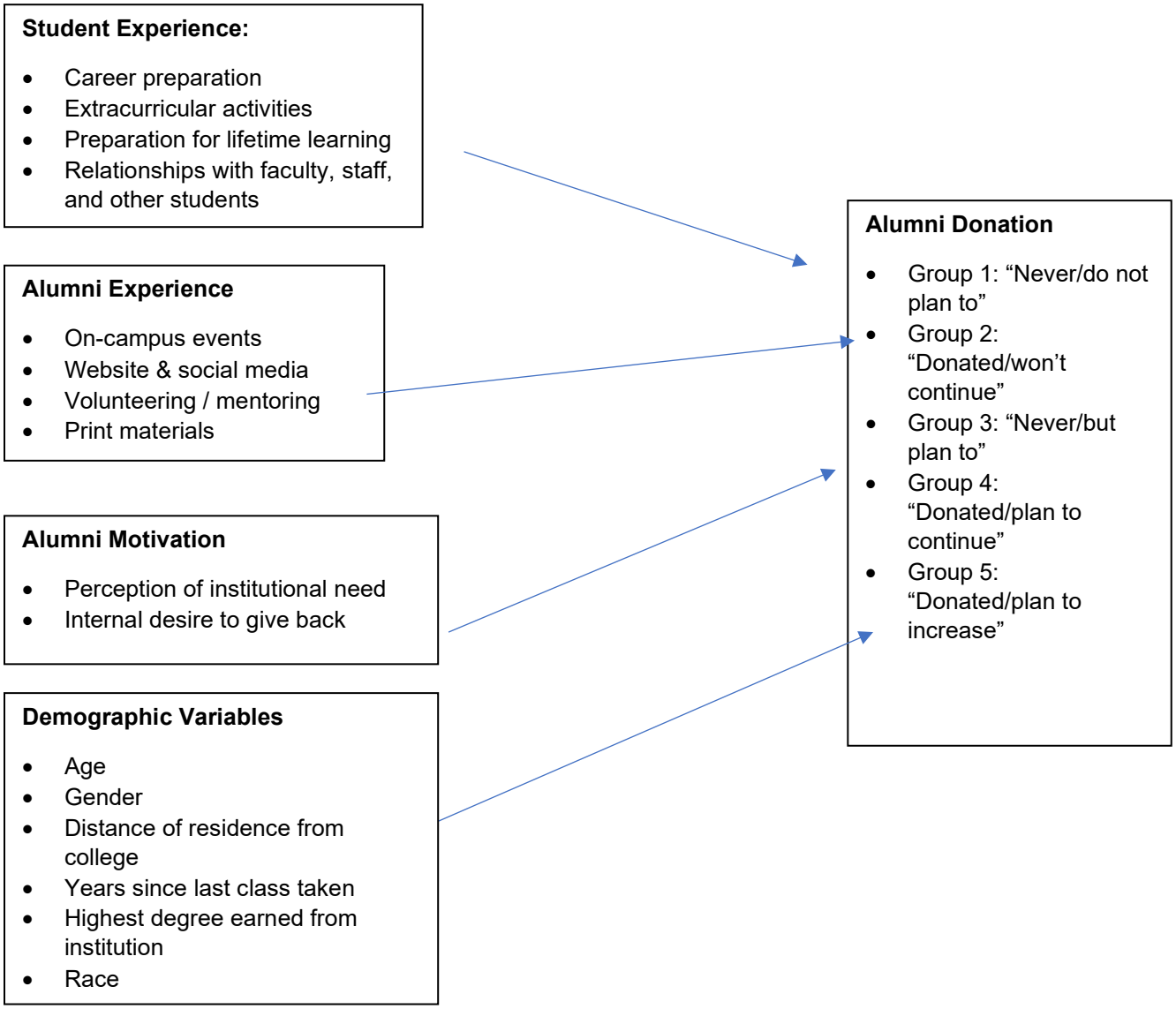
Multivariate Model of Alumni Giving in the Literature

Many studies cite the Multivariate Causal Model of Alumni Giving (Sun, 2005; Sun et al., 2007) in research connecting one or more of the individual factors in the model with alumni giving. This body of research connects alumni giving with other aspects of institutional life, such as the student experience or alumni engagement (Drezner, 2014; McDearmon, 2010; Rissmeyer, 2010). Additionally, the Multivariate Causal Model of Alumni Giving itself has directly or indirectly influenced conceptual frameworks of subsequent studies about alumni (Lertputtarak & Supitchayangkool, 2013; Skari, 2011; Skari, 2014).

Skari (2011) used the model as a basis for the Community College Alumni Giving Model, which was developed and tested in her ground-breaking research about community college alumni giving. Skari (2011) borrows the following elements of the Sun (2005) and Sun et al. (2007) Multivariate Causal Model of Alumni Giving: (1) *Student experience* and (4) *Demographics* to create the Community College Alumni Giving Model. Skari chose not to collect data about factors (2) *Alumni experience* and (3) *Alumni motivation* and excluded these factors from her model, reasoning that since community college alumni associations and alumni engagement efforts were nascent at that time, it was uncertain whether these factors would be significant to community college alumni giving (Skari, 2011). Consequently, this study was the first to test whether the entire Multivariate Causal Model of Alumni Giving can be applied to a population of community college alumni. Figure 2 shows the Multivariate Causal Model of Alumni Giving in greater detail.

Figure 2

Multivariate Causal Model of Alumni Giving (Detail)



Summary of Study Design: Multivariate Model of Alumni Giving

This study utilized the Multivariate Causal Model of Alumni Giving as well as the survey and methods of analysis used by Sun (2005) and Sun et al. (2007) to collect and analyze data about giving from community college alumni. The survey collected information from alumni of a statewide community college system in an eastern part of the United States, which I refer to as the Community College System (CCS), about their student experience, alumni experience, motivation, and demographics in order to determine whether community college alumni giving is impacted by the same factors as those that impact alumni giving to four-year colleges.

Study Research Questions

As stated above, my research question is whether the student experience, alumni experience, alumni motivation and demographic variables predict alumni giving to community colleges. Put more specifically in terms of the theoretical framework, this can be re-phrased as the following question: Does the Multivariate Causal Model of Alumni Giving (Sun, 2005; Sun et al., 2007), which has been shown to apply to alumni of a large Midwest university, also apply to alumni of colleges within the studied statewide community college system (CCS)? Specifically, I set out to find answers to the following two sub-questions:

1. Do the following factors significantly distinguish CCS community college alumni donors from nondonors: student experience, alumni experience, alumni motivation, and demographic variables?
2. How do the results from this study differ from or align with those from the Sun (2005) and Sun et al. (2007) study?

Conclusion

Given the dearth of literature about community college alumni giving and the lack of established best practices for community college development offices that wish to successfully fundraise from their alumni, this study attempted to address an important gap in the literature. By finding correlations between alumni giving and variables such as the student experience, the alumni experience, alumni motivation, and demographics, this study aimed to provide insight into factors that predict a higher likelihood of giving among CCS alumni. Further, the study attempted to determine the degree to which factors that correlate with giving among CCS alumni are the same or different from those that correlate with giving among alumni of a public, four-year institution in the Midwest. Using a framework borrowed from literature about four-year institutions, the study had the potential to increase or deepen the connection between literatures about giving from alumni of four-year and two-year institutions, respectively.

Chapter 2: Literature Review

Nationwide, alumni giving to higher education is on the rise: in 2018, alumni giving totaled $12.15 billion, or 26% of total voluntary support of higher education (Council for Advancement and Support of Education, 2018). Community colleges raised only 2% of all philanthropic dollars given to higher education in 2014 (Gyllin et al., 2015). Community colleges have traditionally not been successful at fundraising; consequently, research about alumni giving to community colleges is nascent. This literature review will examine how each of these four factors are connected to alumni giving: (a) the student experience, (b) the alumni experience, (c) alumni motivation and (d) demographics. A section will be devoted to each factor. Since the theoretical framework is based upon the four-year alumni population, within each section the literature will be reviewed first concerning the connection between a particular factor and alumni giving to the four-year school, and second concerning the connection between that factor and alumni giving to the community college. Prior to this examination of four factors impacting alumni giving at the four-year and two-year college levels, a brief introductory section will be devoted to unique aspects of the two-year college student experience. The goal will be to provide a basis in the literature for utilizing the Multivariate Model of Alumni Giving and for studying the four factors involved in that model as they contribute to alumni fundraising at two-year colleges.

The Two-year College Experience

Students enrolled in two-year colleges typically have a very different experience than students enrolled at a four-year college. In contrast to the lives of four-year college students attending residential schools, community college students have not “gone away” to school; instead, they are commuters, often simultaneously balancing school, off-campus work, and

family responsibilities. As a result, very few community college students participate in on-campus activities or other extra-curricular activities such as service activities, clubs or study abroad (Cohen et al., 2014). Community colleges attract significant numbers of students who have traditionally not been served well by four-year colleges, including students from lower socio-economic backgrounds, adult students, racial and ethnic minorities (42% of all community college students in 2010), international students, and students who are not legally residing in the United States (Cohen et al., 2014). A quarter to a third of community college students are parents (Cohen et al., 2014; Lumina, 2014). Most community college students (60-65%) are enrolled part-time (Cohen et al, 2014; Lawton & Toner, 2020). This includes 61% of students under the age of 25, 22% of students ages 25-34, and 17% of students ages 35 and over (National Center for Education Statistics, 2020). Part-time community college students are at highest risk of attrition and are more likely than their full-time peers to be financially responsible for supporting their families, including their parents or guardians, while enrolled as students (Lawton & Toner, 2020).

Community college students are less likely to attain a degree than their four-year college student counterparts (Cohen et al., 2014). In 2015, 54.5% of first-time community college freshmen returned their second year, as opposed to 79.8% of four-year college students (National Center for Higher Education, 2015); in 2010, only 60% of community college students who had enrolled in degree programs returned to college, as opposed to 80% of their four-year counterparts (Cohen et al., 2014). In 2006-07, of the community college students who had enrolled for the first time in 2003-04, only 55% had either earned a certificate or degree (18%) or were still enrolled in post-secondary education without having earned a degree (37%) (National Center, 2008).

For the students who did not earn a credential or continue to take classes, it is not always clear whether they left community college because they were dropping out or because they had already accomplished their educational goals. More than one study found that about a third of community college students enroll to transfer, more than a third enroll for job related skills, and less than a third enroll for personal interest; among students who dropped out, reasons for doing so tended to center around family and personal circumstances such as financial issues, childcare, or work (Cohen et al., 2014)

Thus, the average community college student experience is very different from that of a student enrolled at a four-year school. That being said, both community college students and students at four-year schools attend classes taught by faculty members; enjoy relationships with classmates, faculty, and staff; develop academic, career, and/or life skills, and either continue to engage with their alma mater after leaving the college or disengage from it. The following sections discuss the literature linking student and alumni experiences, as well as alumni motivation and demographics, with donor status.

Student Experience

Four-year student experience and alumni giving

At four-year colleges and universities, a positive student experience while an undergraduate has been found to be connected to a greater likelihood of giving to the alma mater later (Gaier, 2005; Monks, 2003; Thomas, 2005). Participation as students in government, performing arts/music, fraternities/sororities (Monks, 2003) as well as leadership activities and social activities (Thomas, 2005) have been shown to be related to higher giving levels for alumni. Feeling highly satisfied by the student experience has been found to be one of the greatest correlates to alumni giving (Monks, 2003). There is mixed research about the impact

that participation in athletics and spiritual/religious groups has on alumni giving: some research indicates that participation in these activities is positively correlated with later giving (Holmes, 2007; Monks, 2003) and other research shows that there is no significant relationship between participation and giving (Thomas, 2005). Making calls in a phonation, being engaged on campus as an artist, or performing artist, serving in student government or participating in a sorority or fraternity have been shown to increase the likelihood of giving back as alumni; at the same time, participation in affinity groups (often race-based) negatively correlate with alumni giving (Holmes, 2007).

Being highly engaged in an internship or experiencing out-of-class engagement with faculty or staff as a student is associated with a higher probability of giving back as an alumnus (Monks, 2003). Similarly, having a mentor is positively associated with overall satisfaction with the student experience and with later giving (Clotfelter, 2003). Alumni who had positive experiences with mentors while students were more likely to be satisfied with their undergraduate experience (Clotfelter, 2003). Alumni who are satisfied with their overall academic experience were more likely to give back (Clotfelter, 2003; Gaier, 2005) and alumni who were "very satisfied" with the coursework in their major were significantly more likely to give back to their alma mater than alumni who were less satisfied (Gaier, 2005, p. 283).

Whether or not students receive scholarships, and the type of aid they receive, may impact future giving. Students who received federal Pell grants are less likely to give back (Terry et al., 2007). Need-based loans lower the likelihood that individuals will give back within the first eight years after graduation (Marr et al., 2005), and a high average debt load is negatively correlated with giving (Terry et al., 2007). Receiving need-based aid has been found to both increase the likelihood of giving back (Marr et al., 2005) and to decrease that likelihood

(Clotfelter, 2003), while merit-based grants from the institution increase the likelihood of giving back (Marr et al., 2005). Holmes (2007) found that receiving financial aid as a student has no impact on later alumni donations.

Community college student experience and alumni giving

Similar findings exist for alumni of community colleges. An overall positive student experience is correlated with alumni giving (Wood, 2012; Skari, 2011; Skari, 2014). Participating in college activities as a student, including an honors society, professional and/or career clubs and organizations, and community service, is associated with alumni giving (Skari, 2011). Alumni who hold the community college faculty in high esteem are also more likely to give back (Skari, 2011). This may be connected to the fact that alumni who had transformative experiences as students, including transformations in the way they thought about themselves as learners and individuals, developed greater affinity for the institution (Wells, 2015). At the same time, community college alumni, who are often balancing work and family with coursework, are at risk for experiencing community college as transactional, which may negatively impact their propensity to give back; nondonor alumni who were married and working while studying at a community college are less likely to feel that their community college experience was transformative (Wastyn, 2009).

The student experience is key to understanding the relationship of alumni to their four-year or two-year college. While the community college alumni experience has not been studied extensively, enough literature exists to point to a relationship between student engagement and subsequent alumni philanthropic activity. The student experience is the first of four factors in the Multivariate Causal Model of Alumni Giving.

Alumni Experience

The alumni experience is the second factor in the Multivariate Causal Model of Alumni Giving. Community colleges do not have a common definition of alumni, making it difficult to gather national data about community college alumni demographics or giving: in 2015, 38% of community colleges defined alumni as graduates or certificate holders, 37% considered an alumnus/a to be anyone who has taken one or more classes, 29% considered an alumnus/a to be anyone who has taken a certain number of classes or credits, and 9% did not have a definition of alumni (Paradise, 2016). Although it is acknowledged by CASE that alumni are defined differently across multiple contexts within higher education (Council for Support and Advancement, 2019), the fact that students come to community colleges for many different reasons (workforce training, degree attainment, certificate attainment, skills development) (Cohen, et al., 2014), makes the definition of "alumni" particularly salient for two-year colleges.

Engagement, which is often seen as a precursor to giving, may be largely missing for community college alumni. Alumni that have attended both a community college and a university engage with each type of institution differently: types of alumni engagement with universities include reading news about the institution, attending events, volunteering and providing in-kind goods, and making donations, while engagement with the community college is reported as less frequent and varied, with lack of outreach from the community college as a commonly reported reason for not being more involved (Watts, 2013).

Current efforts to engage community college alumni include reunions (Boyd, 2009) and other events (Smith et al., 2019), telephone calls and mailings (Boyd, 2009), fundraising, career assistance, and mentoring of students (Smith et al., 2019). Of the community colleges that have formalized alumni associations, the purposes of those alumni associations are mixed: some were

established for fundraising while others were put into place for "friend-raising," simply to raise awareness about the college and engage alumni (Boyd, 2009). Roughly half of community colleges have alumni boards, with a quarter of those consisting of representatives that are chosen by alumni associations (Paradise, 2016).

There is a growing body of knowledge about the role of alumni relationships to the community college as a contributing factor to alumni giving. A majority of community colleges on the eastern seaboard established foundations between 1970 and 1989 (Duncan, 2014). By 2016, approximately 61% of community colleges had charitable foundations. Community colleges have traditionally employed far fewer advancement staff than four-year schools, including fewer staff dedicated full-time to advancement (Akin, 2005); however, advancement staff at community colleges spent more time on alumni relationships in 2015 than they had in 2012, with the percentage of colleges that had full-time alumni relations staff rising from 54% to 61% between 2012 and 2015 (Paradise, 2016).

Many community colleges have not invested in fundraising infrastructure such as donor database systems (Gyllin et al., 2015) and may not have up-to-date contact information for their alumni, a significant disadvantage since frequency of communication with alumni is associated with giving (Skari et al., 2012). Only two percent of community college alumni are paying members of an alumni association (Paradise, 2016). Half of alumni had a current mailing address on file at their community colleges in 2015, with 19% having a current email address on file, up from 12% in 2012 (Paradise, 2016).

Alumni engagement is an important element in fundraising at four-year schools. While community college alumni engagement is still an emerging area of study and practice, it is an important factor to examine when considering community college alumni giving, all the more so

because it was not included in Skari's ground-breaking national study of community college alumni giving (Skari, 2011; Skari, 2014). Alumni engagement is the second factor in the Multivariate Model of Alumni Giving.

Alumni Motivation

In the Multivariate Causal Model of Alumni Giving (Sun, 2005; Sun et al., 2007), alumni motivation is the third factor, after student and alumni experience and before demographics. Sun and Sun et al. use Kleinginna and Kleinginna's (1981) definition of motivation as an internal state that leads to action. Both this internal desire to give back and the perception of the institution's need are required in order for the alumnus to give back. Werts et al. (2009) found that alumni give based upon the "value or perceived outcome of the additional support and the belief that a gift will help…achieve a certain outcome" (Werts et al., 2009, p. 114). The Multivariate Causal Model for Alumni Giving does not further define how alumni motivation is connected to alumni experience, student experience, or demographics; implied is the idea that without the inner desire to give back, the student experience, alumni experience, and demographics would not be enough to turn an alumnus/a into a donor.

Mael et al. (1992) discuss alumni motivation to give as a result of seeing the needs of an organization as entwined with one's own needs. Motivation to give grows out of the length of time the individual spends actively engaged with that organization, how recently the individual was an active member of the group, and the existence of a mentor within that organization (Ashforth et al., 1992). Sun (2005) and Sun et al.'s (2007) explication of alumni motivation, consisting of (1) perception of institutional need and (2) desire to give back, is a starting point. With just these two components, an alumnus could feel the internal motivation to give and be

aware of the needs of multiple organizations, but not choose to support any one of them. Motivation grows out of the student and alumni experience but is not simply the product of them.

Studies about Alumni Motivation

Multiple studies have found that perceived financial need is motivating to alumni donors to four-year schools (Taylor et al., 1995; Werts et al., 2007). A belief that alumni should have a role in giving back is also correlated with alumni giving (Werts et al., 2007). Alumni are also more likely to support a college that they perceive others will support, too (Terry et al., 2007).

Most community college donors are motivated by a desire to fill an institutional need (Wood, 2012) or a desire to pay back or reciprocate for a good experience in college, which may have included a scholarship (Wood, 2012; Carter, 2009; Brown, 2014). Other motivators of community college donors include valuing education, wanting to help others meet their educational goals, the idea that it makes sense to support educational opportunities within the community (Brown, 2014; Carter, 2009), feeling emotionally close to the college, feeling as if the college's success is connected to their own (Brown, 2014), and a family tradition of philanthropy that the donor wishes to carry on (Carter, 2009).

Brown (2014) found the following themes related to alumni giving: *Building Bridges*, the belief that their education provided them with opportunities they would not have had otherwise; *If You Ask*, the belief that if the college spent more time making its needs known and asking for donations, more alumni would give; *Reciprocity*, a desire to give back since the college had given something to them; *Making the Case*, an interest in knowing how the college used their donation; and *Connection*, an emotional connection with the college that formed during their time as a student, and which they hoped to sustain through a philanthropic relationship. Participation in a religion may also impact an individual's orientation toward philanthropy

(Werts et al., 2009). Most alumni donors to community colleges do not feel obligated to give, but have other sources of motivation (Brown, 2014).

Alumni who gave philanthropically to their community college fall into the following categories: wanting to fill an institutional need, wanting to make a difference, wanting to give back after having received a scholarship, and wanting to give back after having an overall positive experience at the community college (Wood, 2012). Alumni who come back to campus for events are more likely to donate to their school than alumni who do not (Skari et al., 2012). Skari (2011) found that community college alumni who give back to their four-year colleges also give back to their two-year colleges, suggesting that alumni who are philanthropic and maintain an affiliation with their two-year school are more likely to give back. In general, little research exists about the motivation of community college alumni who give back.

The degree to which alumni motivation plays a role in philanthropic support of community colleges by alumni is unclear; however, understanding the philanthropic motivation of alumni who give back to their two-year college is an important part of establishing the factors that are correlated with alumni giving. Previous literature suggests that community college alumni donors experience a wide variety of motivators, from a desire to fill a community need to an interest in paying back a service they received. Alumni motivation is the third element of the Multivariate Causal Model of Alumni Giving.

Demographics

Characteristics of Four-year College and University Alumni Donors

Alumni giving to four-year colleges and universities is correlated with wealth (Hoyt, 2004; Holmes, 2007; Werts & Ronca, 2009) and proximity of residence to the alma mater (Holmes, 2007). Graduating from, not just attending, the institution is correlated with higher

levels of giving (Holmes, 2016). Alumni are more likely to give back the older they are or the farther they are from their graduation date (Clarke, 2016; Thomas, 2005). Blacks, Hispanics, and multi-racial alumni give back to their alma maters at rates 27-39% lower than whites (Monks, 2003). Studies about the significance of gender to alumni giving are mixed, showing that both male alumni (Clarke, 2016) and female alumni (Holmes, 2007) are more likely to give back. Results are also mixed about how marital status impacts alumni giving: donating is correlated with being single (Clarke, 2016) as well as being married (Hoyt, 2004; Holmes, 2007).

Degree and business sector also impact levels of giving. Alumni with law and business degrees (Monks, 2003), those working in banking, finance, government, technology and non-profit sectors (Holmes, 2007), or those working in other high-paying industries (Hoyt, 2004) are more likely to give back.

Characteristics of Community College Alumni Donors

Characteristics of donors to community colleges are similar to characteristics of donors at four-year institutions: Overall, community college donors tend to be white and older with at least a bachelor's degree (Carter, 2009; Carter et al., 2010). Community college alumni donors also trend white and either older or with more years since attending community college (Brown, 2014; Skari, 2011; Skari, 2014). Community college donors in general have household incomes of at least $75,000 (Carter et al., 2010). The majority of community college alumni donors also have household incomes of $75,000 or above (Skari, 2011; Skari, 2014). For alumni, being female (Brown, 2014; Skari, 2014), married (Brown, 2014; Carter et al., 2010) or living with someone (Skari, 2014) are associated with giving to the community college. Having a degree from their community college (Skari, 2011; Skari, 2014) and one (or more) degrees beyond the

associates degree makes it more likely that an alumnus/a gives back (Wood, 2012; Skari, 2011; Skari, 2014).

Alumni who give back to their community college are generally philanthropic and tend to give to other charitable organizations, as well (Skari, 2011; Brown, 2014); community college alumni who have transferred to a four-year school and give back to their four-year alma mater are more likely to give back to their two-year college (Skari, 2014). Alumni donors tend to live nearer to the community college than alumni who do not give (Skari, 2011) and tend to be individuals who are from the community where the college is located and have either stayed in the community or returned to that community to live (Wood, 2012).

Understanding the demographic qualities of community college alumni donors is key to determining which groups of alumni are most likely to give back to their two-year colleges. While some information is known about community college alumni donors, additional research needs to be done to better establish trends in this area. Demographics is the fourth factor in the Multivariate Causal Model of Alumni Giving.

Summary

In this review of the literature about community college alumni giving, four factors were examined that contribute to philanthropic support of two-year colleges by alumni of those schools. Literature supporting each factor was reviewed, including literature about alumni of four-year schools as well as literature about alumni of two-year schools. In the Multivariate Causal Model of Alumni Giving established by Sun (2005) and Sun et al. (2007) to examine alumni giving to a public four-year institution, these four factors contribute to alumni giving. This study will add to the existing literature by examining how the Multivariate Causal Model of

Alumni Giving framework applies to alumni of two-year schools. In the following section, the proposed methods used for this study will be described in detail.

Chapter 3: Description of Study Methods

This section describes the study methods and procedure for the study. Included in this section is a restatement of study purpose, a description of the sample and population to be studied, a discussion of the survey instrument, a summary of data collection, a summary of the analysis of data, and limitations. A chart describing attributes of CCS colleges can be found in the appendix.

Study Purpose

The study sought to determine whether the Multivariate Causal Model of Alumni Giving developed by Sun (2005) and Sun et al. (2007) applies to CCS alumni in the same ways and to the same degrees as it does to alumni of a university. Specifically, the study sought to find whether the following four factors are related to alumni giving at public community colleges within the CCS: student experience, alumni experience, alumni motivation, and demographics. Creswell and Creswell (2018) identified survey studies as effective ways to answer research questions about the relationships between variables. Because this study sought to determine whether independent variables such as the student and alumni experience are related to alumni giving, a survey design was appropriate. Designed as a non-experimental, cross-sectional online survey study, the research sought to determine the relationship between multiple independent variables (student experience, alumni experience, alumni motivation, and demographics) and a dependent variable: alumni giving.

The following statement represents the structural logic of the study design: if CCS alumni who (a) have a positive student experience, (b) have a positive alumni experience, (c) are motivated to give, and (d) fall into particular demographic groups are more likely to provide

financial support to the (one or more) CCS college(s) they attended than alumni who do not meet these criteria, then the Multivariate Causal Model of Alumni Giving applies to CCS alumni.

Research Questions

The primary research question was as follows: Does the Multivariate Causal Model of Alumni Giving, which has been shown to apply to alumni of a large Midwest university, also apply to alumni of colleges within the CCS?

Sub-questions were as follows:

1. Do the following factors significantly distinguish CCS alumni donors from nondonors: student experience, alumni experience, alumni motivation and demographic variables?
2. How do the results from this study differ from or align with those from the Sun (2005) and Sun et al. (2007) study?

Sampling Strategy and Rationale

The population studied was alumni of 23 public community colleges that comprise a statewide system that I refer to as the community college system (CCS). Colleges within the CCS were given numbers 1-23 for the purposes of naming them in this study, with numbers 1-10 allocated to the ten colleges that participated in the study. The CCS was established in 1966, and the last of the 23 colleges was founded in the 1970s[1]. In 2018-19, CCS colleges enrolled over 225,000 students, for a total full-time enrollment equivalent (FTE) of nearly 99,000 students.

The CCS was selected because it includes a diverse mix of community colleges in terms of location type, size and number of students served. Sizes of the colleges vary widely, from 354 FTE served at CC13 to 31,707 FTE students served at CC4; the average FTE count is 4,298. Location type also varies: nine colleges, or nearly 40% of CCS schools, are considered rural; five

[1]References that contain the name of the community college system in this study have been omitted, both from within-text citations as well as from the references section, to preserve anonymity.

colleges, or just over 20%, are considered to be located in a town; five colleges, or 22%, are considered suburban; and four colleges, or 17%, are located in a city (personal correspondence, June 18, 2020). In addition to the diversity of colleges within the CCS, the fact that CCS colleges offer only two-year certificate and degree programs, rather than also offering four-year degree programs, makes them consistent with over 90% of other community colleges in the country in terms of a clear differentiation in services from four-year schools (Povich, 2018).

Fundraising & Alumni Engagement at CCS Colleges

There is a wide variety of ways in which CCS colleges engage alumni. Alumni engagement is difficult to categorize given the breadth of techniques and lack of conformity between colleges; however, below are a few ways that CCS colleges engage their alumni: handing out information about the alumni association to graduates of the college on their graduation day (personal correspondence, October 1, 2020); engaging businesses that hire large numbers of alumni, such as with on-site breakfasts at workplaces sponsored by the community college (personal correspondence, October 2, 2020); and engaging alumni around scholarship recipient selection (personal correspondence, October 2, 2020).

There is also a wide range among CCS colleges of the degree to which alumni are included in fundraising efforts. At CC2, within the last 18 months thousands of alumni names had been systematically uploaded into the donor database, so that alumni could be included in outreach and solicitation (personal correspondence, October 2, 2020). At CC10, a small rural college, alumni are not cultivated systematically; since non-alumni make up the vast majority of donors to the college, the limited resources of the advancement office, including the time of the single full-time fundraiser, are spent elsewhere (personal correspondence, October 1, 2020). At CC1, alumni are solicited in cohort groupings, for example a group solicitation of everyone who

graduated the same year from a technical program at the college, such as nursing (personal correspondence, October 14, 2020).

Two colleges that I corresponded with or spoke to during the course of the study had already done an alumni survey or planned to do one: CC13 had completed one within the last year, but had not yet been able to spare the staff time to upload alumni contact information that had been collected as a result of the survey into the donor database (personal correspondence, October 28, 2020); CC15 was about to conduct its own alumni survey in Spring 2021, a contributing factor to the college's decision not to participate in this study (personal communication, October 20, 2020). A couple of colleges were already planning to increase alumni engagement in the very near term (personal correspondence, October 2, 2020; personal correspondence, December 1, 2020) and were eager to see the results from the survey, which would guide their work with alumni moving forward (personal correspondence, December 1, 2020).

There is a wide range of how alumni records are kept by CCS advancement offices. Some colleges only include in their donor database those alumni who have already given to the college (personal correspondence, July 10, 2020) while others systematically upload nondonor alumni into their donor databases (personal correspondence, October 7, 2020; personal correspondence, July 13, 2020). One college reported having a separate alumni database (personal correspondence, October 21, 2020) while another college keeps alumni lists on spreadsheets, separate from its donor database (personal correspondence, October 1, 2020). In recruiting colleges for the study, I attempted to recruit a group of colleges that represented a broad array of alumni engagement and fundraising.

Sampling of Colleges

Sampling procedure was comprised of (1) a quota sample of colleges within the CCS, followed by (2) a non-probability sample of alumni of each participating community college. This multistage sampling strategy is discussed in detail below.

Quota Sample of Colleges

A quota sample is one that is representative of the whole, in so far as the individuals in the sample include characteristics that are proportionate to those in the population being studied (Rukmana, 2014). I selected a quota sampling strategy for several reasons: first, the Office of Institutional Research at the CCS often conducts research about CCS colleges by selecting a representative sample rather than studying the entire CCS (personal correspondence, July 11, 2020). By selecting a quota sample, I followed research practices already in place within the CCS. Secondly, I could spend more time with each college to help ensure that the survey was administered in a consistent way across participating community colleges. Thirdly, a full population sample would have required working with 23 separate community colleges, including completing 23 research approval processes and coordinating distribution of surveys to alumni via 23 donor databases. Finally, not every college was interested in participating. When I sent out a preliminary request for information to advancement offices of all CCS colleges, the majority did not respond, and some of those colleges did not respond to repeated attempts at communication; thus, a full population sample was not possible. The quota sample was designed with this in mind. It included colleges that expressed interest in participating and that, together, represented the CCS as a whole.

The quota sample of community colleges was selected based upon characteristics of size, location type, and geographical distribution of community colleges across the state, three

qualities that are used by the CCS Office of Institutional Research to ensure diversity in a sample when studying program effectiveness across multiple colleges (personal correspondence, June 18, 2020). Additional qualities under consideration when selecting colleges for the sample were whether or not the college includes nondonor alumni (NDA) in their donor database and capability and interest in participating in this study.

Size. Size was determined by using the Carnegie classifications for two-year colleges in the United States, which includes very small, small, medium, large and very large, based upon total number of FTE student enrollment (Carnegie Classification, 2017). Table 1 shows the distribution of CCS community colleges by size. One goal for the sample in this study was to include at least one community college in each category, with medium and small colleges comprising the bulk of the sample.

Table 1

Distribution of CCS Colleges by Size

Very Large	2
Large	2
Medium	9
Small	9
Very Small	1

Location Type & Geographical Diversity. Location type was determined by using the United States Census Bureau definition of locale, which includes four basic categories (rural, suburban, town, city) with three possible sub-categories: small, medium, or large for cities and suburban areas and fringe, distant or remote for towns and rural areas (National Center for Education Statistics, n.d.). The CCS is comprised of four colleges in cities, five colleges in suburban areas, five colleges in towns, and nine colleges in rural areas. Table 2 shows the distribution of CCS colleges by type. One goal for the sample in this study was to include

roughly equal distributions of city, suburban, and town colleges, and to include more rural colleges than any other type.

Table 2

CCS Colleges by Location Type

City	4
Suburb	5
Town	5
Rural	9

The sample also represented the geographical diversity across the state, including one or more colleges in each of the western, northern, central, southern, and eastern portions of the state.

Definition of Alumni. Each CCS college creates its own definition of alumni. These definitions range from "anyone who has taken a course," (personal correspondence, July 10, 2020) to "all graduates who hold diplomas, certificates or degrees from the College" (personal correspondence, July 13, 2020). Among the first six community colleges to respond to a CCS-wide email asking how colleges define alumni, four defined alumni as "anyone who has taken a course" (personal correspondence, August 24, 2020; personal correspondence, July 20, 2020; personal correspondence, July 10, 2020; personal correspondence, July 13, 2020) while two held a definition that included earning a diploma, certificate or degree and/or a certain number of credit hours (30 or more) (personal correspondence, October 22, 2020; personal correspondence, July 13, 2020). The variety of ways that the term "alumni" is defined within the CCS can be seen in Table 3. In order to employ the broadest definition of alumni consistently across the data set, a question was added to the survey asking respondents whether or not they had ever taken a class at a CCS college. Those who answered "yes" were counted as alumni.

I chose the broadest definition of alumni, that is, anyone who has taken a class, to be used in this study, because I felt that it was important to be as inclusive as possible of all community

college alumni. While just having taken one class may seem like a low bar to be considered an alumnus/a, this definition allows for a sample that most represents the broader body of community college alumni. As mentioned above, individuals enroll in community college for a wide variety of reasons, including the acquisition of a new workplace skill, such as using Microsoft Excel, the earning of a workforce-oriented certificate, the enjoyment of learning a new hobby such as tennis or drawing, as well as the pursuit of a degree or a curriculum of study that will make them eligible to transfer to a four-year college or university (Cohen et al., 2014). If I had accepted a narrower definition of alumni for this study, that is, someone who had taken a certain number of credits or courses, I would have removed not only the individuals who had originally intended to complete a certificate or degree and dropped out (as many as 40% of these students do not return after the first year [Cohen et al., 2014]), but also the individuals who had come to the college all along intending to take just one or two courses. Those in the latter group may include local business professionals who have good jobs and benefitted from one or more workforce-related courses as well as retirees with who take arts and leisure classes; both business professionals and retirees, being in a relatively stable financial situation and appreciating the contribution that the college has made to their careers or the quality of their lives, may also be good prospects for giving to the college. In this study, I thought it was important to include everyone – the thousands of people who flock to community colleges for a myriad of reasons – to learn about the overarching patterns among predictor variables such as student and alumni experience and alumni giving across this population. More research needs to be done in future to determine the potentially unique predictors of alumni giving within sub-groups of alumni, including business professionals increasing skill sets, unemployed individuals re-tooling for the next career, community members taking arts and leisure classes, recent high school graduates

taking classes to earn a degree or transfer to a four-year school, international students, and other groups. It would also be useful to determine which of these sub-groups, if any, is most likely to contain alumni who give back to their two-year college.

Inclusion of Nondonor Alumni (NDA). Based upon an informal email survey of advancement offices within CCS colleges, some colleges include alumni who have never given to the college (NDA) in their alumni database while others do not. Because this study sought to determine which alumni characteristics are associated with five different donor and non-donor groups, including three "have given" groups and two "have never given" groups, an attempt was made to include as many colleges that include NDA in their donor databases as possible. One goal for the sample was to include a sufficient number of colleges that include NDA in their databases so that there would be significant numbers of alumni responding who belong to all five groups.

During the study, it became clear that some colleges kept a list or database of alumni separate from their donor database (personal correspondence, October 1, 2020; personal correspondence, October 23, 2020). In these cases, the colleges were asked to include not only everyone in their donor database but also everyone in their separate lists or shadow databases when they sent out the survey. Some colleges came up with innovative ways to include NDA in the survey. CC4, which does not include NDA in its database, pulled a list of alumni and sent the survey out to that list as well as to the individuals in the donor database (personal correspondence, November 20, 2020); another college expanded the reach of the survey by linking to it on the college's alumni Facebook page, which may have included NDA (personal correspondence, November 9, 2020). The NDA column in Tables 3 and 4 indicate whether

nondonor alumni were included among those who received the link to the survey from each college, regardless of whether NDA are included in the college's donor database.

Capability & Interest in Study Participation. All CCS colleges received an email informally requesting data about how they define alumni and who is included in their donor database and asking whether they might be interested in participating in an alumni study. Those that responded by providing information about their database and expressing interest in participating were more likely to be included in the final sample, after consideration of all the other factors above. This is because without the full participation and cooperation of advancement staff who can provide information about their donor database and collaborate throughout the data collection process, it would be impossible to accurately collect and report data from each college.

Based upon the distributions described above, a quota sample was proposed. Unfortunately, some of the colleges were unable to participate. Thus, other colleges were invited and the sample was adjusted. As noted in Table 3, a large suburban college was recruited to replace a large suburban college; a medium-sized suburban college was recruited to replace a medium-sized rural college; and a small rural college replaced a very small rural college.

Table 3

CCS Colleges in proposed study sample

College	Location Type	Size	NDA	Alumni Definition
CC4	Suburb	Very Large	No	Graduate or 30 credits
CC7+	Suburb	Large	Yes	Course taken
CC15 *	Suburb	Large	Yes	Course taken
CC2	City	Medium	Yes	Course taken
CC1	Rural	Medium	Yes	Graduate or 45 credits
CC14*	Rural	Medium	Yes	Course taken
CC5+	Suburb	Medium	Yes	Course taken
CC9	City	Medium	Yes	Course completed
CC3	Town	Small	Yes	Course taken
CC10	Town	Small	Yes	Course taken
CC8	Rural	Small	Yes	Course taken
CC6+	Rural	Small	Yes	Course taken
CC13*	Rural	Very Small	No	Course taken

***** Schools that were part of the proposed sample but not the final sample.
+Schools that were part of the final sample but not the proposed sample.

For each selected college that decided not to participate, another college of similar size and location type was invited to round out the sample. In the actual sample, CC5, a medium-sized college, substituted for CC14, another medium-sized college that was in the proposed sample, while CC7, a large college, replaced CC15, another large college. CC6, a small college, replaced CC13, a very small college. In place of the two rural and one suburban college that were part of the proposed sample but not the actual sample, there were two suburban colleges and one rural college. While every attempt was made to maintain a quota sample, in the end the sample was created based upon which colleges could participate, thus arguably making it a sample of convenience. A complete list of CCS colleges, including location type and FTE count, is in the appendix.

Sampling of Alumni

While the selection of CCS colleges was representative of the system as a whole, the sampling of CCS alumni donors of those colleges was a non-probability sample. Each college that participated in the study distributed a link to the survey by email to its own alumni. Not

every CCS college had uploaded comprehensive alumni data into its donor database; therefore, only the alumni who had a donor record or who had been included in the college's donor database for other reasons were reachable through the community college development offices. This limited the sample to a sample of convenience: community college alumni who had current electronic contact information in the participating colleges' donor databases (as well as in any corollary lists or databases) in the colleges' advancement offices.

To determine the number of survey responses needed for the study results to be generalizable, each participating college was asked to submit the total number of individuals who were coded as alumni and who had email addresses on file in the donor databases (as well as any corollary lists or databases); these individuals were emailed a link to the survey. The total number of alumni who were emailed a link to the survey from all the participating community colleges was put into the Raosoft calculation software to determine the minimum number of responses for the results to be within a 5% margin of error, with a 95% confidence rate (Raosoft, n.d.). Colleges also reported the total number of individuals they sent the survey link to, since colleges were encouraged to send the link out to everyone in their donor database with an active email address, and this larger group may have included additional alumni who were not coded as such within the database.

Instrumentation

The survey instrument, called the Alumni Attitude Study (AAS©) Questionnaire, is a proprietary instrument developed by Performance Enhancement Group, Ltg. (PEG) and has been used to survey alumni of over 300 colleges and universities (Performance Enhancement Group, n.d.). The instrument was developed by staff of PEG in partnership with alumni association professionals at 12 public and private colleges and universities through a series of focus groups

(Sun, 2005; Sun et al., 2007). The AAS© Questionnaire was developed to address four areas: the student experience, the overall experience, the alumni experience, and demographics; according to PEG, findings that result from studies using this instrument often address the following areas: loyalty, communication, programs, giving, and branding (Performance Enhancement Group, n.d.). The AAS© Questionnaire was first implemented in 2001. While the instrument is often tailored to address the needs of individual institutions, for the most part the core questions have remained the same since the instrument was developed. (R. Schoss, personal communication, June 19, 2020). I was granted permission to use the instrument for this study. (R. Schoss, personal communication, June 19, 2020).

The 2001-02 version of the AAS© Questionnaire was utilized in the study by Sun (2005) and Sun et al. (2007) in the development of the Multivariate Causal Model of Alumni Giving. In that study, the questionnaire was administered by email to alumni of a Midwest public university in 2001 and 2002. The university donor database had email addresses for 25,000 alumni, out of 175,000 total alumni. The alumni association of the university at first selected a random sample of alumni to participate; this sample was adjusted by PEG to avoid duplication of participants across the two years the questionnaire was administered (Sun, 2005; Sun et al., 2007). Selected participants in both years were sent an email that introduced the study and provided a link to access the questionnaire. A total of 5,960 alumni participated in the study in 2001, with a response rate of 24%; in 2002, 5,499 alumni participated, a response rate of 18% (Sun, 2005; Sun et al., 2007).

The instrument asks questions about the student experience, alumni experience, alumni motivation, and demographics. The validity of the survey instrument in evaluating the alumni experience, alumni motivation, and various aspects of the student experience (extra-curriculars,

impact on career, and relationships) can be seen in the way that the responses to questions in each of these categories are highly correlated with one another. Table 4 shows the correlations between responses within each of these five factors (Sun, 2005; Sun et al., 2007).

Table 4

Factor Loadings

		Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
Factor 1	Quality of alumni association web site	0.708*				
	Quality of communication regarding your services/benefits	0.702*				
	Quality of electronic newsletter	0.678*				
	Quality of monthly bulletins	0.638*				
	Quality of university web site	0.633*				
	Quality of invitations to university activities	0.624*				
	Quality of email	0.622*				
	Quality of reunion mailings	0.592*				
	Quality of alumni magazine	0.591*				
	Quality of alumni staff presentations at meetings	0.528				
Factor 2	How important it is for alumni to provide leadership by serving on boards		0.752*			
	How important it is for alumni to volunteer for the university		0.738*			
	How important it is for alumni to attend events		0.683*			
	How important it is for alumni to serve as ambassadors		0.643*			
Factor 2	How important it is for alumni to network with other alumni		0.631*			
	How important it is for alumni to recruit students		0.617*			
	How important it is for alumni to provide financial support for the university		0.584			
	How important it is to provide feedback about community perceptions		0.552*			
	How important it is for alumni to mentor students		0.457*			
Factor 3	Commitment to continuous learning			0.804*		
	Responding to new career opportunities			0.787*		
	Deepening my understanding and commitment to personal development			0.777*		
	Further graduate education			0.718*		
	Current work status			0.707*		
	Contributing to my community			0.692*		
Factor 4	What I learned about life				0.721*	
	Exposure to new things				0.717*	
	Relationships with other students				0.651*	
	Traditions or values learned on campus				0.626*	
	Relationships with faculty				0.613*	
	Academics classes				0.584*	
Factor 5	Student leadership opportunities					0.707*
	Participation in fraternity/sorority					0.641*
	Attending cultural events					0.464*
	Attending athletic events					0.424*
	Orientation for new students					0.421*

*Item with highest factor loadings.

Modifications to the Instrument

Because the Multivariate Causal Model of Alumni Giving (Sun, 2005; Sun et al., 2007) served as the framework for this study, an attempt was made to use a version of the questionnaire that most closely resembled the version of the questionnaire used in that study. The 2002-03 version of the alumni survey was the closest version to the 2001-02 version still available from PEG. The 2002-03 version of the questionnaire has a total of 22 questions. These included three questions with text box answers, and eleven questions with a list or matrix of possible responses. The questions on the 2002-03 version of the survey, as well as the possible responses in the lists and matrices of responses, were those that were used in the questionnaire for this study. However, a few slight modifications were made to the 2002-03 version of the questionnaire to bring it up to date. These updates were informed by the 2020 version of the questionnaire, which reflects the increased access that alumni currently have to electronic communications and resources at their colleges. Additionally, wording was modified to customize the instrument for a community college alumni audience. These updates are detailed below.

Modifications to Demographic Questions. There are two questions on the 2002-03 version that are not on the 2020 version and five questions that are on the 2020 version that are not on the 2002-03 version (R. Schoss, personal communication, June 19, 2020). A few additional demographic questions were added for this study. These questions include demographic questions from the 2020 version that were absent on the 2002-03 version, a question about alumni status, and a question about age. Some modifications were made to the demographic questions, including the drop-down choices in "degrees earned" to include options appropriate to community college alumni such as "Associate's degree," "Certificate," "Other," and "No Associate's degree, certificate, or other credential earned." The wording on the race and

ethnicity question was changed from, “Ethnic Origin,” to the more inclusive, “What is your race/ethnicity?” and the wording in the “gender” question was changed from simply, “Gender,” to the more open-ended, “How do you describe yourself?” Additionally, the question about gender was changed from a drop-down to a select box option, which allows for someone to fill in their own answer under the “Additional gender category.” Similarly, the race/ethnicity question was changed from a drop-down menu to a multiple-choice format so that a blank could be added for respondents to fill in if they chose the option, “some other race (please specify).”

For the question, “How close to a CCS college do you currently live?” distances of 0-24 miles, 25-49 miles, 50-74 miles, 75-99 miles, and 100 miles or more were added to scale to distances between community colleges in the state where the CCS is and to allow for distances for alumni living out of state. A question about age was added because graduation year, or most recent year that the respondent was enrolled in classes, is not necessarily correlated with age for community college students. To address the ambiguity about alumni status due to the lack of consistency in the definition of “alumni” among community colleges, a question was added to the survey to determine whether the respondent is an alumnus/a of a CCS college in the broadest definition of the term, that is, anyone who has taken a class at a CCS college. This question allowed the survey to be sent out to all individuals in the participating colleges’ donor databases, not just those coded as alumni by each college according to their own definition, to gather information from anyone who qualifies as alumni according to the definition above.

Consideration was given to the fact that some students take classes at more than one college within the CCS and thus are alumni of multiple CCS colleges. Thus, where the 2002-03 questionnaire says, “XYZ university,” the questionnaire in this study said, “a (State) community college,” or, “one or more (State) community colleges.” The question from the 2002-03 version

of the questionnaire that asked, “How well did the highest degree earned from the university prepare you for each of the following?” was changed to match the wording on the 2020 version, “How well did the education received from the college prepare you for the following?”. The wording change from “highest degree earned” to “education received” made the question more inclusive for community college alumni who may not have earned a degree as a result of attending community college.

Modifications to additional questions. In the question, “For each of the communications methods listed below, please tell us how important that method is to you and also rate the alumni association’s effectiveness in utilizing that method,” I replaced, “alumni association’s effectiveness,” with, “the effectiveness of the community college(s).” I chose to broaden this question so that alumni of community colleges that do not have formal alumni associations could still answer the question in terms of the most impactful communications from their college.

The possible list and matrix responses for all questions that are on both the 2002-03 and 2020 versions of the questionnaire were also closely compared. All responses that were on the 2002-03 version but not on the 2020 version were retained. Additional responses contained on the 2020 version that related to electronic access to alumni engagement and/or resources or to diversity and inclusion were added to the version of the survey used for this study. Examples include adding, “Participating in college online activities (social media)” as a possible response to the question, “How important is it for you and alumni in general to do the following and how well does the university do at supporting alumni in doing them? and adding “student media (newspaper, radio, TV, or yearbook)” as a possible response to the question, “In which of the following organizations/activities did you participate as a student?”

The response, “getting a job I wanted soon after graduation” from the 2020 version of the questionnaire was added to the question, “How well did the education earned from the college prepare you for each of the following?” This modification was made to make the survey more inclusive of purposes that are relevant to community college alumni, many of whom have attended community college to receive job training (Cohen et al., 2014). Additionally, the option “Fraternity/Sorority” was eliminated in the question, “In which of the following organizations/activities did you participate as a student,” and replaced by “Honor society” in the question, “How important was each of the following to your experience as a student…” The responses, “residence halls,” and, “intercollegiate athletics” were eliminated in one or more questions. I also changed the response, “attend class reunions,” to “attend community college reunions,” since community colleges may not have class-specific reunions, in the question, “In your relationship with one or more (State) community colleges, please describe how often you do or have done the following…” For this same question, I added the response option, “engage with one or more community colleges on social media,” from the 2020 version of the instrument.

Modifications to Donor Status Question. Modifications to Question 20, the donor status question, were considered carefully, as the interpretation of this question by alumni respondents was key to reliable data from the study. The donor status question asks alumni to self-identify as belonging to one of five groups. The wording that described the first three groups remained unchanged from the 2002-03 version of the survey, other than replacing “University” with “one or more (State) community colleges:”

(1) “Have never financially supported one or more (State) community colleges and do not plan to in future.”

(2) “Have financially supported one or more (State) community colleges, but do not plan to continue.”

(3) “Have never financially supported one or more (State) community colleges, but plan to in the future.”

The last two options represented a departure from the 2002-03 survey language, using modified language from the 2020 version of the survey:

(4) “Have supported one or more (State) community colleges and plan to continue.”

(5) “Have supported one or more (State) community colleges and plan to increase in the future.”

For the last two options, I changed the original language, “Currently support” to “Have supported,” the language used in the 2020 version of the survey. This change eliminated a potential confusion stemming from interpretation of the word “currently.” A respondent who had given to a CCS college ten years prior might determine that he or she is not “currently” a supporter, and thus struggle to find an appropriate category that fits their situation. The clarity provided with “have supported” allows donors who have given to one or more CCS colleges even once in their lives the opportunity to correctly self-identify in group 4 or 5.

Elimination of non-essential questions. To keep the survey as short as possible and increase the likelihood of a high survey response rate, open-ended survey questions that asked for text responses, and which were non-essential in terms of the survey analysis, were eliminated. These included the following questions in both the student and alumni categories: “Name one person who had a special impact on your experience as a student;” “Name one program or activity that had a special impact on your experience as a student and why;” “What

are the one or two things that are most important to you about being an alumnus/a?" and "What is the most meaningful thing the alumni association can do for you in the next 5-10 years?"

Other questions that were non-essential to survey data analysis were also eliminated. These included the question, "How would you most like to be contacted by the alumni association," as the content of the question overlapped with another question on the survey, "For each of the communication methods listed below, please tell us how important that method is to you…" I also removed the demographic question with a blank text box asking for the respondent's city of residence, as well as a question asking in which country the respondent resides, both of which were not important to the data analysis. Other eliminated questions included, "How would you rate your decision to attend one or more (State) community colleges?" "How often do you promote a (State) community college to others?" and, "If you have financially supported one or more (State) community colleges that you attended, please check…." Additionally, the questions, "What are barriers to your participation in alumni activities? and, "Please indicate how much each of the following impacts your overall opinion of the community college(s)," were eliminated. While these questions would have provided some interesting information, none of these questions was essential to determining the relationship of the student experience, alumni experience, or alumni motivation to the donor status of the alumnus/a.

The modifications to the 2002-03 version of the survey instrument for this study reflect updates in technology, acknowledge a greater awareness of topics related to diversity and inclusion, and accommodate key differences between the experiences of alumni of two-year and four-year schools. Where possible, changes in language related to technology or diversity and inclusion included the exact updated language used in the 2020 version of the (AAS©)

Questionnaire. Wording changes for the purpose of better reflecting the community college alumni experience were crafted to mirror the original survey language as closely as possible.

Data Collection

Prior to administering the survey, I submitted my study for approval to the University of Virginia Institutional Review Board (IRB) and then to every community college that had been selected to participate. CCS colleges had a wide variety of approval processes, from formal research review submission processes to approvals by email. Once the study was approved by all entities, I worked with the institutional research offices at the participating community colleges to administer the survey online. A link to the survey was sent out to every individual who has an email address on file in the donor database of every participating college. A random sample was not used because it was anticipated that the number of alumni with an email address on file in each college's donor database would be low enough that sending the questionnaire to the full sample rather than a random sample would be preferable in terms of receiving an overall robust response. Additionally, for the alumni of each college to be well represented in the study, it was desirable that a significant number of responses would be received from each school; sending the email to the full population of alumni with email addresses on file in each donor database, rather than a random sample, helped ensure against a low response.

The questionnaire was administered in Qualtrics, an online survey platform. Individuals in the colleges' donor databases received an email signed by the college president, the vice president of advancement, or some other advancement representative, with a link to the AAS© Questionnaire. To assure the most complete data set possible, the email link was sent out not only to those who are coded as alumni in the database, but to every individual in the donor database of each participating community college. (The second question of the survey,

immediately following a question obtaining consent to participate in the study, determined whether or not the respondent was an alumnus/a by asking if the respondent had taken a class at a CCS college. If the respondent chose "no," the survey closed and the respondent was thanked for their participation; if the respondent chose "yes," then they were taken into the rest of the survey.) Since all individuals in each donor database received a link to the questionnaire, each college was responsible for emailing its own donors.

Each college sent out an email through its own communication platform (Outlook, Mailchimp, Qualtrics, etc.) that contained a link to the survey. An email template was provided that each college could customize. The email included a brief description of the study and a link to the survey. The template was modified slightly during the study period to include greater clarification about who was being asked to respond to the survey and to provide upfront information about the drawing that alumni would be entered into if they chose to participate – in total, two sentences were added. Because colleges signed onto the study on a rolling basis, the colleges that enrolled later had the benefit of using the template that had the two sentences added; at the same time, those colleges had less time for their alumni to respond to the survey since they joined after the study was underway.

Although the original plan was to open the survey in September and close it in November, with all participating colleges engaging their alumni during this time, not every college that agreed to participate was able to send out the survey during the fall timeframe. Two colleges mentioned fall events (personal correspondence, November 4, 2020) or solicitations (personal correspondence, October 21, 2020) that prevented them from participating during the fall. Thus, to achieve a quota sample of colleges, an additional data collection period, January 7-22, 2021, was established.

For the fall 2020 data collection period, not every college that had expressed interest prior to the study period was able to confirm participation and begin the study right away. The survey was live, with materials sent to the first colleges that had confirmed they would participate, by October 16, 2020. Four colleges sent the survey out within the subsequent two weeks, so their alumni had approximately a month to respond; two colleges followed shortly thereafter, allowing three weeks for alumni to respond, and one college sent the survey link out just a week and a half before the survey deadline. In Table 5 the number of weeks that the survey was open, based upon correspondence from the colleges, is rounded to the nearest half-week.

Each college that participated in the fall 2020 data collection period could chose the date that it sent out the email introducing the study to their alumni and providing the link to the (AAS©) Questionnaire. This was advantageous both to the college and to the study, as it allowed colleges to strategically space this communication before or after other fall communications from the advancement office to alumni. I encouraged colleges to send reminder emails at the one-week and two-week marks after the first communication about the study. For colleges that participated in the winter 2021 data collection period, there were fewer choices about when to send out the email. Since the winter data collection period was shorter in duration than the fall data collection period, both on account of fewer colleges participating and a nearing deadline for completing the study, colleges that participated in the second data collection period agreed to send out the survey on January 7, 2021, with reminders each of the two subsequent weeks. Among the fall 2020 colleges, those that sent out the initial email closer to the start of the study provided the longest period for alumni to respond. The survey officially closed on January 22, 2021.

Because the survey never actually closed between November 20, 2020, and January 22, 2021, the alumni of colleges that participated in the fall 2020 data collection period technically had many more weeks to participate in the study (from three to four months, depending upon when the initial email was sent from their college announcing the survey) than the alumni of the colleges that participated in the winter 2021 data collection period – although this extension of the survey deadline into another semester was never announced.

Table 5 summarizes the distribution of the survey, including the total number of individuals who were emailed a link to the survey, and the method of sending out the survey link (via Microsoft Outlook, Qualtrics, or other software). The column Total Reached indicates the total number of individuals that had email addresses on file and received the link to the survey. This number does not account for the number of emails that bounced on account of bad email addresses. Not all colleges provided numbers of bounced emails; those colleges that did provide bounce rates (CC1 and CC10) reported overall bounce rates from emails sent to all individuals in the donor database, rather than bounce rates specific to individuals coded as alumni. Of the bounce rates reported, CC1 showed a 27.4% bounce rate from the initial email sent to everyone in the donor database (personal correspondence, November 1, 2020) and CC10 showed a 6% bounce rate (personal correspondence, October, 29, 2020). The disparity in bounce rates between these community colleges, not to mention the lack of information about bounce rates specific to individuals coded as alumni, demonstrates how difficult it is to determine the number of alumni who actually received the email containing a link to the survey. This, combined with the fact that some alumni may not have been coded as alumni in the donor databases, underscore the fact that the column indicating the number of alumni reached is simply an estimate.

In Table 5, length of time the survey was open indicates the amount of time between the date that the first communication about the survey went out from that college to the deadline for participating in the survey. For the fall semester, the deadline was November 20, 2020; for the spring semester, the deadline was January 21, 2020. It is important to note, however, that the survey remained open between November 20, 2020, and January 7, 2021, and additional responses came in during that time, even though alumni were told that the survey would close by midnight on November 20, 2020. In fact, more than 70 additional responses came in between November 21, 2020, and January 3, 2021, before the colleges that were participating in the spring session sent out the survey link the week of January 4-10, 2021. Therefore, for the colleges that participated in the fall data collection session, alumni technically had an additional two months beyond the official deadline in which they could – and in some cases, did – participate in the survey. The response rate and number of completed responses by college in Table 5 reflect total surveys filled out by alumni, before incomplete responses were eliminated for the purpose of analysis, as discussed in Chapter 4. It is interesting to note that while the colleges with the largest response rates had the survey open for at least three weeks, the duration of time that the survey was open did not seem to be correlated with response rate. The weeks that saw the greatest number of surveys submitted were October 26-November 1, 2020, at a time when many of the colleges in the fall data collection period had sent out at least one email, and January 4-10, 2021, the week that the colleges in the spring data collection period sent out the initial email, with over 200 responses submitted each of those weeks.

Table 5

Distribution of survey to alumni by college

	Total Reached	Estimated Alumni Contacted	Distribution Software	Length Survey Open (Wks)	Data Collection Period	Alumni Response Rate	Total Responses
CC1	4,744	3,445	Qualtrics	4.5	Fall 2020	6.12%	211
CC2	8,432	8,401	Constant Contact	4.5	Fall 2020	0.75%	63
CC3	4,815	4,815	Constant Contact	4	Fall 2020	0.81%	39
CC4	4,992	4,110	Blackbaud	2	Winter 2021	2.07%	85
CC5	5,889	4,871	Constant Contact	2	Winter 2021	1.85%	90
CC6	2,300	2,055	Mailchimp	3.5	Fall 2020	5.50%	113
CC7	11,491	11,394	Constant Contact	2	Winter 2021	1.58%	180
CC8	6,708	5,379	Microsoft Outlook and Facebook	4	Fall 2020	1.39%	75
CC9	13,648	12,400	Mail Chimp	1.5	Fall 2020	1.05%	130
CC10	363	50	Outlook	3	Fall 2020	42.00%	84

As an incentive to complete the survey, respondents were entered into a drawing for a $100 Visa gift card. Response data was initially tied to email addresses. Confidentiality was preserved by assigning each set of response data a number and stripping the data from email addresses following the close of the survey and the drawing. Once research was completed, the list of email addresses and corresponding identification numbers was destroyed.

Data Analysis

Analysis of data closely followed the methods of analysis conducted by Sun (2005) and Sun et al. (2007). In that study, factor analysis first was performed on the response data to reduce the overall number of factors analyzed. Five factors were extracted. In the Sun and Sun et al. study, the following factors were included in the factor analysis: alumni experience, alumni motivation, student experience, student experience-relationships, student experience-extracurricular activities. Then, discriminant analysis was conducted to determine the predictive quality of those factors on the dependent variable. In order to emulate analysis done in the Sun

(2005) and Sun et al. study (2007), factor extraction was used to break down the data prior to performing logistic regression. Factor analysis permits the researcher to condense a larger number of factors to a smaller number by summarizing the underlying relationships and finding groups of related factors (Palant, 2016). In the Sun (2005) and Sun et al. (2007) study, the following five factors were extracted: *Alumni experience*; *Alumni motivation*; *Student experience – impact on career; Student experience-relationships*; and *Student experience – extracurricular activities*. As a result of factor analysis, I determined whether the same five factors were extracted as those in the Sun (2005) and Sun et al. (2007) study.

Next discriminant analysis was performed. Discriminant analysis allows the researcher to analyze the relationship that independent variables (extracted factors) have on a categorical dependent variable (Pallant, 2016). Because the dependent variable in this case was not continuous, but consisted of multiple, discrete categories (Groups 1-5), discriminant analysis was an appropriate analysis tool for this data. Discriminant analysis can be used when the independent variable is constant, dichotomous, or categorical (Buyukozturk et al., 2008).

Just as in the Sun (2005) and Sun et al. study (2007), the dependent variable was determined by responses to a single question on the survey: "Which of the following best describes your financial support of the college?" Respondents had five options to choose from:

1. Have never financially supported the college and do not plan to in the future ("never/do not plan to").
2. Have financially supported the college but do not plan to continue ("donated/won't continue").
3. Have never financially supported the college but plan to in the future ("never/but plan to").

4. Have financially supported the college and plan to continue ("donated/plan to continue").
5. Have financially supported the university and plan to increase in the future ("donated/plan to increase).

Respondents were divided into one of the five groups depending upon their response to the question above: Group 1 ("never/do not plan to"); Group 2 ("donated/won't continue"); Group 3 ("never/but plan to"); Group 4 ("donated/plan to continue"); and Group 5 ("donated/plan to increase").

In the Sun (2005) and Sun et al. study (2007), responses to questions under each of the extracted factors were considered to have a significant correlation with the dependent variable. Table 6 shows the degree of significance found by Sun (2005) and Sun et al. (2007) for each item under these five factors.

Table 6

Tests of equality of group means (results of ANOVA analysis)

	Wilks' Lambda	F	d.f.1	d.f.2	Sig
F1 Alumni experience	0.969	12.878	4	1603	0.000**
F2 Alumni motivation	0.965	14.326	4	1603	0.000**
F3 Student experience – impact on career	0.976	10.037	4	1603	0.000**
F4 Student experience - relationships	0.968	5.813	4	1603	0.000**
F5 Student experience – extracurricular	0.994	2.598	4	1603	0.035*
Graduation year	0.856***	67.206	4	1603	0.000**
Type of degree	0.996	1.568	4	1603	0.180
Gender	0.984	6.454	4	1603	0.000**
Ethnicity	0.992	3.221	4	1603	0.012
Membership status by respondent	0.998	0.977	4	1603	0.419
In or out of state from respondent filing	0.997	1.372	4	1603	0.241

*Significant at 0.05 level.
**Significant at 0.00 level.
*** Lowest *lambda* value.

A discriminant analysis was then performed on seven of the predictor variables that were identified through ANOVA (Sun, 2005; Sun et al., 2007). This analysis found five main variables that predicted the difference between Group 1 ("never/do not plan to") and Group 5

("given/will increase") (Sun, 2005; Sun et al., 2007). Table 7 shows the significance of those predictive variables.

Table 7

Structure matrix (results of discriminant analysis)

Predictors	Function			
	1	2	3	4
Graduation year	0.863[a]	0.461	-0.106	0.039
Gender	0.278[a]	0.072	0.195	0.022
Alumni motivation	-0.275	0.466[a]	-0.047	0.357
Student experience - relationships	0.008	0.386[a]	0.258	-0.211
Student experience - extracurriculars	-0.002	0.261[a]	-0.148	-0.005
Ethnicity	0.173	-0.017	0.533	0.204
Student experience – impact on career	-0.261	0.327	0.428[a]	0.289
Type of degree	-0.071	-0.003	-0.457	0.653[a]
Alumni experience	-0.296	0.388[a]	-0.177	-0.389[a]
In or out of state	-0.12	0.044	0.023	-0.332
Membership status	-0.069	0.107	-0.105	-0.315

[a] Largest absolute correlation between each variable and any discriminant function.

The factors *Alumni motivation*, *Alumni experience*, *Student experience-relationships*, and *Student experience-extracurricular activities* were predictors of the difference between Group 1 ("never/do not plan to") and Group 5 ("given/will increase") (Sun, 2005; Sun et al., 2007).

Through this study, I sought to determine whether the same five factors are significantly correlated with the dependent variable, and to the same degree, for alumni of CCS colleges.

Limitations

In this section, I discuss limitations to the way that the study was set up, and the circumstances around the study, which I was aware of before conducting the study. A second limitations section in Chapter 5 addresses additional limitations that became apparent in the process of conducting the study and analyzing the results.

Inconsistency in alumni records across the CCS

It is important to note that some community colleges have not done a mass upload of data from student records into their donor database, in which case the only alumni in the database are

those that are also donors (unless the college included alumni for other reasons, such as attending a college event). This had the potential to negatively impact the data by not having as many or any individuals who responded to the survey who belonged to Group 1 ("never/do not plan to") or Group 3 ("never/but plan to"). (Fortunately, as shown in Tables 2-5 of Chapter 5, this was not an issue, as nearly two-thirds of respondents self-identified in Groups 1 and 3.) Additionally, it was also possible that alumni who had given to their community colleges had not been coded as alumni (personal communication, June 3, 2020), which could have resulted in significant under-reporting of alumni donors. For this study, this meant some donors who were not coded correctly as alumni would not receive the alumni survey, resulting in incomplete data. This potential limitation was addressed by asking the colleges to send the survey out to all donors, not just those coded as alumni, and by adding a question to the survey about whether the individual is an alumnus/a using the broadest definition of alumni. (In some cases, it was confusing for non-alumni donors to receive a link to the survey, resulting in at least two colleges sending the reminder email out exclusively to individuals coded as alumni.)

However, since the calculated number of alumni responses needed for the results to be statistically significant were based upon the number of individuals who are coded as alumni in the database, the reported number of alumni in the database might not match the total number of alumni who received the survey. Thus, the actual number of survey responses needed for the results to be statistically significant were likely not the same as the calculated number. I attempted to mitigate this risk by collecting more responses than the number calculated for statistical significance.

Survey Programming Error on Degree Earned Question

Another limitation is the fact that the question, "What degrees have you earned from one or more community colleges," was programed as a single-response answer, rather than a multiple-response answer as intended. It is possible that there were some alumni who have earned multiple credentials (such as a certificate and a degree) who only were able to include one of them in the response and did not include in their response the highest degree earned from the community college. Thus, the fact that "degree earned" was not a significant factor in donor status could have been affected by the inability of alumni to provide multiple answers in response to the question as worded.

Covid-19

An additional limitation is the fact that a global pandemic occurred in the United States during 2020-21, the time period that the survey was distributed. The spread of COVID-19 across the state where CCS is located resulted in some schools, businesses, and government agencies having modified operations, moving to an all-online platform, or closing. There are two primary ways that COVID-19 may have impacted the collection of data: by interfering with operations within each participating college, and by disrupting the lives of alumni who were sent a link to the survey. In fall 2020 and spring 2021, CCS colleges offered almost all classes online. Additionally, CCS colleges were adjusting to virtual engagement of their donors (personal correspondence, November 16, 2020), requiring time and attention on the part of advancement staff. Alumni of CCS colleges almost certainly also experienced disruption during their daily lives as a result of COVID-19 during this timeframe. Some public school systems in the state where CCS is located did not hold in-person classes; thus, alumni who are parents of school-age children found themselves juggling work responsibilities while homeschooling during the

academic year. Additionally, due to the closure of businesses as a result of COVID-19, and the resulting higher numbers of unemployment, some alumni may have found themselves out of work and in economic hardship. Disruptions to daily life may have resulted in a lower response rate to the survey and may have impacted the results of the survey in terms of alumni feelings about philanthropy. Specifically, the very low number of individuals who self-identified in Group 5 ("given/will increase") may have been impacted by COVID-19.

Delimitations

I chose not to include alumni of all 23 CCS colleges in this study for two primary reasons: (1) working through 23 separate research approval processes and collaborating with 23 individual offices of institutional advancement would have been time intensive and created greater opportunities for differences in the timing and methods involved in survey administration across colleges. (2) The process of selecting a representative sample of CCS colleges for a study is a practice well-established within the CCS itself when evaluating the impact of programs within the system (personal communication, July 10, 2020). Following this practice allowed me to spend more time with each college to effectively gather data from alumni in a manner consistent with data collection at all other participating colleges.

Another delimitation is the way I chose to access alumni records for the study: that is, through the donor databases of the colleges' offices of institutional advancement rather than through the colleges' student records in their student information databases. An argument could be made that the student records for alumni of each college would have contained a far greater number of alumni records than the donor databases, since some colleges do not prioritize uploading alumni records into their donor databases unless the alumni are themselves donors. I made the decision to contact only the alumni in the donor databases for several reasons: (1) while

colleges' student information databases have extensive records of names and emails of alumni, in many cases those records have not been updated since the student stopped taking classes, as there would be no reason or occasion to update those records unless the student was returning to the college to take another class. In many cases, the email addresses listed in those records are CCS-specific email addresses, which are generated for students when they enroll, and which students often no longer use once they are enrolled at the college. (2) The offices of institutional advancement at each college are motivated to add and update alumni records, including contact information such as email addresses, especially for those alumni who have already given to the college; therefore, it is much more likely that the contact information listed for alumni in the donor databases, including email addresses, is more accurate than that which is listed in the student information system. (3) Additionally, the advancement offices had an incentive to participate in this study, as participating colleges received copies of the college-specific results (primarily response frequencies) which could be helpful to them. Advancement offices were more likely than other areas at the colleges to be motivated to put in the time required to participate in the study, as they were more likely to see the study as aligned with their overall mission to serve alumni. For this reason, I believe I experienced greater levels of involvement and cooperation when working directly with the offices of advancement than I would have if I had worked with staff who deal with student records.

Another delimitation is the fact that I did not send out hard copies of the (AAS©) Questionnaire, thus limiting the sample to alumni who have current email addresses on file and access to a computer or other electronic device on which they could complete the questionnaire. I chose to stick to the online format for two reasons: the logistical challenge of mailing hard copies

of the questionnaire and the fact that online alumni surveys have been conducted in the past with statistically valid survey response rates.

The only way to send out hard copy surveys is to print mailing labels; assuming the offices of advancement at each community college would not wish to share alumni mailing addresses with me, endeavoring to mail surveys to the alumni of each college would have required time and expense on the part of each participating college. Given this logistical challenge, I limited the sample to alumni for whom the advancement offices had email addresses. Past alumni survey studies have successfully been conducted 100% online. The Sun (2005) and Sun et al. study (2007) was conducted online, as was Skari's (2011) groundbreaking study of community college alumni.

Summary

The study described here attempted to discover whether, among alumni of CCS colleges, the same correlations exist between four factors (student experience, alumni experience, alumni motivation and demographics) and alumni giving as they do for alumni of a public, four-year institution in the Midwest. The following chapters describe the results of the study and analysis of results.

Chapter 4: Results and Findings

The purpose of the study is to explore factors that contribute to the likelihood of CCS alumni giving back to their two-year alma maters, using the Multivariate Causal Model of Alumni Giving (Sun, 2005; Sun et al., 2007) as a framework. This section will describe the findings of the research, based upon analysis of data gathered from the survey. The analysis follows the same steps taken by Sun (2005) and Sun et al. (2007) in the study of alumni data that led to the development of the Multivariate Causal Model of Alumni Giving.

Research Design and Instrumentation

This study utilized a non-experimental research design, with data gathered from CCS alumni using the Alumni Attitude Study (AAS©) Questionnaire. The questionnaire gathered data from alumni about their experiences as students and alumni, their motivation to be involved as alumni, and demographic information. Developed by Performance Enhancement Group, Ltg. (PEG) the instrument has been used to survey alumni of over 300 colleges and universities (Performance Enhancement Group, n.d.). It has been in use since 2001 (R. Schoss, personal communication, June 19, 2020) and was slightly modified for this study to be more relevant to the community college experience.

Research Questions

The outcomes of the analysis were used to answer the research questions of this study. The primary research question was as follows: Does the Multivariate Causal Model of Alumni Giving, which has been shown to apply to alumni of a large Midwest university, also apply to alumni of colleges within the CCS? Sub-questions were as follows:

1. Do the following factors significantly distinguish CCS alumni donors from nondonors: student experience, alumni experience, alumni motivation and demographic variables?

2. How do the results from this study differ from or align with those from the Sun (2005) and Sun et al. (2007) study?

Community College System Background

The colleges that participated in this study are all part of a statewide community college system in the eastern United States. Of the 23 colleges that comprise the system, ten colleges participated in the study. These ten represented diversity in terms of a variety of characteristics among the colleges, including size (measured by number of FTE students), geographical location, and location type (city, rural, suburban, etc.) The system enrolls over 200,000 students annually.

Population and Sample

The population for this study is alumni of CCS colleges. Due to different definitions of the term alumnus/a across the CCS (personal correspondence, July 10, 2020; personal correspondence, July 13, 2020; personal correspondence, August 24, 2020; personal correspondence, July 20, 2020; personal correspondence, July 10, 2020; personal correspondence, July 13, 2020; personal correspondence, October 22, 2020) and varying methods of tracking alumni at colleges across the system (personal correspondence, October 7, 2020; personal correspondence, July13, 2020; personal correspondence, October 21, 2020; personal correspondence, October 1, 2020), the exact number of *total* living alumni of CCS colleges is unknown. In 2019-20, CCS colleges enrolled a total of 218,985 students; depending upon how many of these students had taken CCS classes previously, the number of new CCS alumni added each year could be over 100,000.

Due to the lack of complete tracking and updated contact information for CCS alumni, the sample for this study was a convenience sample of CCS alumni with active email addresses on

file. Among the participating colleges, there were a total of 56,920 alumni with email addresses on file in the college advancement offices. A link to the survey was sent out to those 56,920 alumni, as well as an additional 6,392 individuals in the colleges' donor databases who had given to those colleges but were not coded as alumni; this was done to include as many donors as possible who might have taken a course at a CCS college but who were not coded as alumni. (Respondents to the survey who indicated they had not taken a CCS course were not given the opportunity to take the entire survey.) The majority of colleges sent the survey link primarily to individuals who were already coded as alumni, with a much smaller number to other individuals in their database. Table 8 shows the distribution of total individuals reached, including individuals already identified as alumni and individuals who are not identified as alumni.

Table 8

Individuals who received a link to the survey from each college

	Alumni reached	Other individuals reached	Total individuals survey reached
CC1	3,445	1,299	4,744
CC2	8,401	31	8,432
CC3	4,815	0	4,815
CC4	4,110	812	4,922
CC5	4,871	1,018	5,889
CC6	2,055	245	2,300
CC7	11,394	97	11,491
CC8	5,379	1,329	6,708
CC9	12,400	1,248	13,648
CC10	50	313	363
Total	**56920**	**6392**	**63312**

Of the total 63,312 individuals who received the survey, including 56,920 individuals who were already identified as alumni, a total of 1,157 alumni responded. This provided an overall response rate of 1.8% and a known alumni response rate of 2%. This rate was significantly lower than the response rate to the Alumni Attitude Study (AAS©) Questionnaire

when administered to alumni of a Midwest institution in Sun (2005) and Sun et al.'s two-year study (2007), which was 24% for the first year and 18% for the second year. However, it may be within a reasonable range for community college alumni. Response rates for alumni surveys tend to be lower than for other surveys due to incomplete alumni records and concern about being solicited (Bers & Smith, 1987), although it may be the case that the responses that are received are not less representative of the group, despite the lower rate (Lambert & Miller, 2014). Since community colleges are generally less developed in their methods of maintaining donor records and communication (Klingaman, 2012), a response rate well below 2-5% is not surprising. In her benchmark study of community college alumni, Skari (2011) cited an industry standard of 2-5% for alumni survey responses and elicited a response rate of over 5%; however, Skari's study was nationwide, and it is possible that the colleges that participated in that study were, on average, more sophisticated in their donor record-keeping and communications than the average college in the CCS.

There was a large amount of missing data overall: of the 1,157 total responses, only 317 surveys contained complete responses to six key questions. Many educational researchers conducting survey research decide to use one of a variety of techniques to replace missing data; however, depending upon the technique used, and the characteristics of the individual data set, replacing missing data can lead to inaccurate results (Cheema, 2014). Therefore, I decided to remove cases with missing responses to key questions. Deleting cases with missing data created a much smaller sample size than the original data set. After the data was cleaned, and responses with incomplete data in key questions were removed, there were a total of 317 complete responses, down from 1,157 total responses received. This represented 0.6% of the alumni contacted and 0.5% of total individuals contacted in the study, a much lower rate.

Less important than the overall response rate, but still an important consideration, was the distribution of responses from the colleges in accordance with their size, measured by FTE per college. Table 9 shows the size of each college as a percentage of the total FTE represented by colleges participating in the study. It also shows the number of alumni contacted by each college as a percentage of the total alumni contacted in the study. This shows which colleges reached out to alumni in numbers roughly proportional to the college's size, and which ones reached out to smaller or larger numbers of alumni. Table 9 also shows the response rates of alumni from each college as a percentage of the total alumni that completed the survey. In many cases the response rate was not proportional to the size of the college. Finally, Table 9 shows what percentage of completed responses in the final sample were from each school.

By comparing the cleaned data percentage with the FTE percentage of each college, it's possible to see that there are wide disparities between the sizes of participating colleges as percentages of the sample and the participation rates of their alumni. For example, CC1 makes up 4% of the total FTE of the participating colleges but its alumni constituted 18% of the submitted responses and 21% of the final sample. In contrast, CC4 constituted 58% of FTE of the study but CC4 alumni comprised only 7% of the completed responses and 9% of the final sample. In summary, the alumni in the study sample were not proportionally representative of the colleges by size.

The percentage of alumni responses from each college in terms of raw data (submitted responses) and the final, clean sample (completed responses), were very similar, meaning that by extracting incomplete data, I altered the sample distribution by college very little. For three colleges, the percentage made up by alumni from their college stayed the same. For example, the percentage of all *submitted* surveys made up by CC9 was 11%; the percentage of all *completed*

surveys made up by CC9 was also 11%. The percentage of the raw data and cleaned data samples made up by all other colleges changed by no more than three percentage points per college. Note that two alumni who took the survey reported that a CCS college that did not participate in the study had sent them the survey. It is likely that these alumni were simply identifying the school they attended and confusing that with the school that had sent them the survey link.

Table 9

College size compared to alumni response

	FTE Total	FTE percentage (of total system)	Alumni Contacted Total	Alumni Contacted (percentage of total contacted)	Raw Data Responses Total	Raw data percentage of responses by college	Final sample total	Final sample percentage of responses by college
CC1	2,354	4%	3,445	6%	211	18%	68	21%
CC2	2,361	4%	8,401	15%	63	5%	16	5%
CC3	1,563	3%	4,815	8%	39	3%	12	4%
CC4	31,707	58%	4,110	7%	85	7%	29	9%
CC5	2,797	5%	4,871	9%	90	8%	32	10%
CC6	1,730	3%	2,055	4%	113	10%	27	9%
CC7	5,452	10%	11,394	20%	180	16%	50	16%
CC8	1,575	3%	5,379	9%	75	6%	26	8%
CC9	3,711	7%	12,400	22%	130	11%	36	11%
CC10	1,561	3%	50	0%	42	4%	20	6%
Other					2	0%		
Did not respond								
Total	**54,811**	**100%**	**56,920**	**100%**	**1157**	**100%**	**317**	**100%**

It is interesting to note that, while the percentage of respondents by college was similar between the raw data and the final sample, the percentage by college of alumni in Groups 4 and 5, those consistent donors who have given in the past and plan to give again in the future, was also somewhat similar to the percentage of respondents by college, meaning that the alumni donors per college were roughly proportional to alumni respondents per college across the CCS. As shown in Table 10, for all of the colleges, the percentage differential between the percentage

of the total sample their alumni comprised versus the percentage of the total groups 4 and 5 they comprised was off by fewer than eleven percentage points, with the percentage differential being less than five percentage points for alumni of CC1, CC2, CC3, CC6, and CC9. The college that had the closest match between the percentage of alumni respondents by college and percentage of alumni respondents in groups was CC1; its alumni comprised 21% of the total sample, while CC1 alumni comprised 22.5% of groups 4 and 5. As Table 10 shows clearly, alumni donors were spread across the CCS, not simply coming from one or a few colleges.

Table 10

Consistent Alumni Donors (Groups 4 and 5 by College)

Colleges	Alumni respondents by college - number	Alumni respondents by college - percent	Alumni respondents in Groups 4 and 5 by college - number	Alumni respondents in Groups 4 and 5 by college - percent
CC1	68	21%	23	22.5%
CC2	16	5%	3	2.9%
CC3	12	4%	3	2.9%
CC4	29	9%	20	19.6%
CC5	32	10%	2	2.0%
CC6	27	9%	7	6.9%
CC7	50	16%	7	6.9%
CC8	26	8%	17	16.7%
CC9	36	11%	7	6.9%
CC10	20	6%	13	12.7%

After the data was cleaned, the final sample included 317 individuals, of which 60% self-reported as female and 37% as male (2% declined to answer). Just over 80% were white, 8.5% were Black or African American, 2.2% were Asian, 1.3% Hispanic, and 1.9% were more than two races (4.4% declined to respond to the question). Respondents were fairly diverse in terms of age, with the largest group of respondents in their 30s, and the second largest in their 50s. Table 11 provides a break-down of respondents by age. A full 76% of respondents earned an associates degree from a CCS college, while 7.9% earned a certificate or other credential and 9.8% did not

earn a certificate, degree or other credential. In terms of proximity of residence to the community college that alumni attended, 66.6% live within 24 miles of their community college, while 12% live 25-49 miles away, and 16.7% live 100 miles or more from their community college.

Table 11

Age of Respondents

Age Range	Frequency	Percent
18-19	2	0.6%
20-29	50	15.8%
30-39	80	25.2%
40-49	43	13.6%
50-59	60	18.9%
60-69	52	16.4%
70 or older	28	8.8%
Total	315	99.4%
Missing data	2	0.6%
	317	100.0%

Overview of Analysis

I used SPSS 27 to conduct analysis for this study. Analysis involved the following steps:

1. First, I conducted factor analysis and extracted Bartlett factors (Pallant, 2016), which I used for subsequent steps in the analysis. While a total of 19 factors were extracted, the top eight were selected after I conducted parallel analysis (O'Conner, 2000; Pallant, 2016).
2. Second, one-way ANOVA analyses were conducted to determine the impact of each factor on the criterion variable.
3. Next, discriminant analysis was conducted using the eight factors along with seven demographic variables. Discriminant analysis was used to determine differences between the groups.

4. Finally, in an effort to be methodologically rigorous, I then conducted a second discriminant analysis using only the four extracted factors and three demographic variables that the ANOVA showed as significant. I found similar results in both analyses.

Variable Selection

Variables included both the criterion variable, or independent variable, and the predictor variables.

Criterion Variable

Just as in the Sun (2005) and Sun et al. study (2007), responses to Question 20 on the survey served as the criterion, or independent variable: "Which of the following best describes your financial support of one or more (State) community colleges?" Respondents had five possible choices:

1. Have never financially supported the college and do not plan to in the future ("never/do not plan to").
2. Have financially supported the college but do not plan to continue ("donated/won't continue").
3. Have never financially supported the college but plan to in the future ("never/but plan to").
4. Have financially supported the college and plan to continue ("given/will continue").
5. Have financially supported the university and plan to increase in the future ("given/plan to increase").

Respondents were placed into one of the five groups depending upon their response to the question above: "Never/do not plan to" (Group 1); "given/won't continue" (Group 2); "never/but

plan to" (Group 3); "given/plan to continue" (Group 4); "given/plan to increase" (Group 5). The goal of the study was to determine which (if any) factors were predictive of alumni donor status as defined by Groups 1-5.

Predictor Variables

The survey instrument had 21 questions, including five "grid" questions which asked alumni to rate the importance or effectiveness of a variety of elements related to the student experience, alumni experience, or alumni motivation. Among the five grid questions (Q11, Q12, Q15, Q18 and Q19) there were a total of 97 sub-questions, resulting in 113 questions on the survey overall. The responses to the 97 sub-questions were reduced through factor analysis to generate factors.

Although every effort was made to replicate the Sun (2005) and Sun et al. (2007) analysis, it was impossible to confirm every question that Sun et al. included in the factor analysis. Sun and Sun et al. refer to including 71 questions on the survey in their factor analysis. The number 71 happens to be the total number of sub questions in four out of the five grid questions, including Q11 and Q15 – *Student experience*; Q12 – *Alumni motivation*, and Q19 – *Alumni experience*. It is not clear whether Sun and Sun et al. included Q18 in their analysis, especially since none of the resulting factor loadings in the study correspond to the responses to this question. It is possible that the 2001 version of the survey instrument that Sun (2005) and Sun et al. (2007) used was slightly different and included fewer items than the 2002-03 version that I adapted for this study, which could have allowed for the inclusion of the additional 11 sub-questions in Q18. The sub questions in Q18 all relate to the frequency with which alumni are involved with the college; while the content differs from the questions about importance and efficacy of alumni communications in Q19, the content of Q18 is undoubtedly related to the

alumni experience. Since it was unclear whether it was included in the Sun and Sun et al. factor analysis, I chose to include it in my factor analysis because not only did the content relate to the alumni experience, which was one of the four components under examination in the study, the format was similar to the other four grid questions and dissimilar from the other survey questions so that it stood out and seemed to belong with the other grid questions in form as well as content.

Factor Analysis

Factor analysis is commonly used to look at similarities among variables in the field of behavioral sciences (Büyüköztürk, et al., 2008). Factor analysis is used when it is thought that individual responses to questions, such as in a survey, may be condensed into broader, underlying concepts (Tabachnick et al., 2001; Pallant, 2016). Factor analysis is often used to reduce a larger number of related factors to a smaller number prior to conducting other analyses, such as an analysis that looks at the relationship of those factors to another variable (Pallant, 2016). In their study, Sun (2005) and Sun et al. (2007) found that there were high levels of correlation between the responses to individual questions, thus they used factor analysis to reduce the number of variables being studied.

There are two types of factor analysis: exploratory factor analysis and confirmatory factor analysis (Pallant, 2016). Exploratory factor analysis, which is generally used early in the research process to gather information, was utilized in this study. As a result, 19 factors were extracted.

Once factor analysis is conducted, and the factors are extracted, there are a variety of ways to determine how many factors to include in subsequent analyses. One of these is the Kaiser's criterion method of looking at the values of the latent roots or eigenvalues of each factor (Pallant, 2016). The eigenvalues represent the amount of total variance explained by each factor. Using this method, only factors with eigenvalues of 1.0 or more should be carried forward into

subsequent analysis; however, this method may result in retaining too many factors (Pallant, 2016).

Another method of determining how many factors to retain is called the Scree test, which involves the researcher's visual inspection of a plot generated by SPSS, to see where the curve changes directions. Cattell (1966) suggests retaining all factors above the breaking point in the plot. The reliance on visual data for this test means that its interpretation tends to be more subjective (O'Connor, 2000). A third method, described by Sun (2005) and Sun et al. (2007) is one in which the number of factors retained is based upon theory and literature in the field, as well as on the researcher's personal experience. Sun et al. used this method, in conjunction with their interpretation of the Scree plot, to retain five factors, citing a body of research that supports the five factors retained, which have to do with student experience, alumni experience, and alumni motivation as related to alumni donation (Sun, 2005; Sun et al., 2007).

A fourth method, parallel analysis, is a more rigorous approach that is often required for results that will be published in journals of education or psychology (Pallant, 2016). Parallel analysis involves taking eigenvalues from random data sets that have the same number of cases and variables as the studied data set (O'Connor, 2000). The eigenvalues from the random data are compared with the eigenvalues from the studied data. As long as the *n*th eigenvalue from the studied dataset is larger than the *n*th eigenvalue from the random data, then the factors are retained (O'Conner, 2000).

Parallel analysis was used to determine the number of factors to retain in this study. Eigenvalues from random datasets that have the same number of cases and variables as the studied data set were generated in SPSS using syntax downloaded for this purpose (O'Conner, n.d.). As a result, eight factors were retained. Each factor was named based upon the qualities in

the factor groupings. Tables 12 and 13, respectively, show the top three factor loadings for each factor and the complete loadings for each factor.

Table 12

Highest Loadings for Each Factor

Factor	*Name*	Highest Loadings
F1 (11 survey items)	*Alumni communications: effectiveness*	• Invitations to alumni activities • Informational letter • Invitations to community college activities
F2 (3 items)	*Student experience: classroom learning*	• Academics/classes • Skills/training for career • Relationships with faculty
F3 (10 items)	*Alumni communications: importance*	• Invitations to alumni activities • Invitations to community college activities • Alumni magazine
F4 (6 items)	*Alumni involvement: importance*	• Serve as ambassadors or advocates for the college • Recruit students • Provide feedback to the college about how it is perceived
F5 (3 items)	*Alumni involvement: frequency*	• How often have you visited campus • How often have you visited a community college web site • How often have you volunteered to work on campus/event
F6 (5 items)	*Student experience: life preparation*	• Commitment to continuous learning • Deepening your understanding and commitment to personal development • Responding to new career opportunities
F7 (5 items)	*Athletic events and reunions*	• How often have you attended community sporting events • How important is it for you and alumni in general to attend sporting events • How important to your experience as a student was attending athletic events
F8 (3 items)	*Student experience: life lessons*	• How important was exposure to new things to your student experience? • How important was *what I learned about life* to your experience as a student? • How well did the community college provide *what I learned about life* as part of your experience as a student

Table 13

Factor Loadings

		1	2	3	4	5	6	7	8
		α	α	α	α	α	α	α	α
	Factors	0.956	0.721	0.929	0.807	0.803	0.823	0.802	0.839
Q19	Effectiveness - Invitations to alumni activities	0.761							
Q19	Effectiveness - Informational letter	0.749							
Q19	Effectiveness - Invitations to community college activities	0.728							
Q19	Effectiveness - Communication regarding services and benefits	0.701							
Q19	Effectiveness - Alumni magazine	0.673							
Q19	Effectiveness - Electronic newsletter	0.649							
Q19	Effectiveness - Monthly bulletins	0.601							
Q19	Effectiveness - Alumni staff presentations at meetings	0.599							
Q19	Effectiveness - Reunion mailings	0.592							
Q19	Effectiveness - Email	0.588							
Q19	Effectiveness - Alumni web site	0.580							
Q19	Effectiveness - Social media / online community	0.569							
Q19	Effectiveness - Community college web site	0.461							
Q15	Importance - Academics/classes		0.654						
Q15	Importance - Skills/training for career		0.545						
Q15	Importance - Relationship with faculty		0.408						
Q19	Importance - Invitations to alumni activities			-0.800					
Q19	Importance - Invitations to community college activities			-0.737					
Q19	Importance - Alumni magazine			-0.672					
Q19	Importance - Informational letter			-0.655					
Q19	Importance - Communication regarding services and benefits			-0.636					
Q19	Importance - Social media / online community			-0.616					
Q19	Importance - Alumni web site			-0.541					
Q19	Importance - Reunion mailings			-0.514					
Q19	Importance - Email			-0.494					
Q19	Importance - Alumni staff presentations at meetings			-0.418					
Q12	Importance for alumni to serve as ambassadors or advocates for the community college				-0.692				
Q12	Importance for alumni to recruit students				-0.601				
Q12	Importance for alumni to provide feedback to the community college about how it is perceived				-0.590				
Q12	Importance for alumni to mentor students				-0.585				

	Factors	1	2	3	4	5	6	7	8
Q12	Importance for alumni to provide financial support for the community college				-0.540				
Q12	Importance for alumni to Identify job opportunities for graduates				-0.488				
Q18	How often you have you visited campus					0.785			
Q18	How often have you visited a community college web site					0.777			
Q18	How often you have volunteered to work on campus / event					0.577			
Q11	Further formal education						0.812		
Q11	Commitment to continuous learning						0.788		
Q11	Deepening your understanding and commitment to personal development						0.681		
Q11	Responding to new career opportunities						0.556		
Q11	Contributing to your community						0.465		
Q11	Current work status						0.432		
Q18	How often have you attended community college sporting events							0.686	
Q12	How important is it for you and alumni in general to Attend athletic events							0.670	
Q15	How important was attending athletic events to your experience as a student							0.656	
Q15	Quality - Attending athletic events as a student							0.518	
Q18	How often have you Attended community college reunions							0.429	
Q12	Quality of support from the community colleges for alumni to attend athletic events							0.417	
Q15	How important was exposure to new things to your experience as a student								-0.716
Q15	How important was What I learned about life to your experience as a student								-0.693
Q15	Quality of What I learned about life as a student								-0.518
Q15	Performance - Exposure to new things as a student								-0.418

Extraction Method: Principal Component Analysis.
Rotation Method: Oblimin with Kaiser Normalization.[a]
a. Rotation converged in 46 iterations.

Factors extracted were similar to, but not identical with, the factors found by Sun (2005) and Sun et al. (2007), which I will refer to as Sun's Factors, or SFs. Even though some of the factor loadings for the eight factors in this study (F1-8) are similar to some of the factor loadings in the Sun et al. study, there were key differences. Therefore, it made sense to give them different names. A comparison of the eight factors extracted in this study and the five factors extracted in the Sun (2005) and Sun et al. (2007) study is contained in Table 14. Below are a few important notes about similarities and differences:

- F1 is similar to SF1 because it carries many of the same loadings. Sun and Sun et al. name this factor *Alumni experience*. I call it *Alumni communications: effectiveness* to distinguish it from subsequent factors. All of the items in F1 and SF1 are from the same survey question (Q19) that asks about alumni communications.
- F3 has similar loadings to F1 (all items are from the same survey question) but contains responses about the importance, rather than the quality, of alumni communications.
- In the Sun (2005) and Sun et al (2007) study, *relationships with other students* loaded with *relationships with faculty*, and *relationships with administrators and staff*, in SF4. In this study, *relationships with faculty* showed up in the same factor as *academics/classes*, in F2. In this study, *relationships with other students* and *relationships with administrators and staff* did not show up in the eight extracted factors.

Table 14 shows a side-by-side comparison of the eight extracted factors in this study with the Sun (2005) and Sun et al. (2007) factors.

Table 14

Factors cross-referenced with Sun (2005) and Sun et al. (2007) factors

Factor Number	Factor Name	Sun and Sun et al. equivalent (SF)
1	Alumni communications: effectiveness (11 items)	SF1: *Alumni experience*
2	Student experience: classroom learning (3 items)	SF4: *Student experience - relationships*
3	Alumni communications: importance (10 items)	SF1: *Alumni experience*
4	Alumni involvement: importance (6 items)	SF2: *Alumni motivation*
5	Alumni involvement: frequency (3 items)	N/A
6	Student experience: career/life preparation (5 items)	SF3: *Student experience – impact on career*
7	Athletic events and reunions (5 items)	SF5: *Student experience – extracurricular activities*
8	Student experience: life lessons (3 items)	SF4: *Student experience - relationships*

Discriminant Analysis

Discriminant analysis is used when a researcher wishes to build a model that predicts group membership (Bean, n.d.; IBM, n.d.). The relationship of multiple independent variables is examined with regards to a single dependent variable with two or more values (groups), in this case alumni donor status. Other types of analysis that can also be used to perform similar functions include multiple regression; however, multiple regression requires that the dependent variable is continuous (Pallant, 2016). With a categorical dependent variable such as alumni status, discriminant analysis is appropriate (Bian, n.d.; Büyüköztürk et al., 2008, IBM, n.d.). Sun (2005) and Sun et al. (2007) used discriminant analysis to identify predictors of alumni donor status. This study followed that procedure to determine whether the same model applies to alumni of CCS colleges.

Discriminant analysis is used to maximally separate groups and to determine functions that maximally separate group membership (Bian, n.d.; Büyüköztürk, 2008). As a result of discriminant analysis, linear combinations of the predictor variables create what are known as functions. These functions come from a set of cases for which group membership is already

determined; once the functions are known, they can be used to predict group membership for new cases (Bian, n.d.; IBM, n.d.). The number of functions is always one less than the number of groups. For example, since the question determining alumni donor status has five possible responses, or groupings, there will be a total of four functions. The first function provides a dimension that shows the greatest separation between the groups in the dependent variable. Subsequent functions control for the first function and may also describe dimensions that show separations between groups (Bian, n.d.).

Assumptions of discriminant analysis include the following:

- Cases are independent.
- Independent variables have multivariate normal distribution; within-group variance-covariance matrices are equal across groups.
- Every case belongs to a group, and to only one group (Bian, n.d.; Holdnack et al, 2013; IBM, n.d.).
- The number in every group of the dependent variable is greater than the total number of independent variables (Buyukozturk et al., 2008).

Tests of significance include Wilk's lambda and Box's M, which are used to test for significant differences between groups and equal variance-covariances among the five groups, respectively.

Discriminant analysis works best when the number of variables is greater than the number of cases in the smallest group (Buyukozturk et al., 2008; Tabachnick et al., 2001). In the Sun (2005) and Sun et al. (2007) study, researchers used five extracted factors as well as seven demographic variables, for a total of 12 variables. Twelve was well below the number of members, or cases, in each of the alumni groups being analyzed. However, in this study, I

extracted eight factors and had seven demographic variables for a total of 15 variables. The smallest grouping (Group 5) contained only 11 members. To avoid violating the guideline that the number of variables should be fewer than the number of cases in each group, I had several options:

1. Run the analysis as Sun et al. ran it, with all the extracted factors and demographic variables, and address the issue as a limitation.
2. Combine Groups 4 and 5 so that the number of cases in the combined Group 4/5 was well above the number of variables.
3. Reduce the number of variables.
4. Run the analysis once as Sun and Sun et al. ran it, and once with a reduced number of variables, and provide the results from both analyses.

I rejected (1), running the analysis just as Sun (2005) and Sun et al. (2007) did. It seemed important to the findings of the study not to ignore one of the parameters of discriminant analysis. At the same time, it was important to follow the methodology of the Sun (2005) and Sun et al. (2007) study as closely as possible.

I rejected (2), combining Groups 4 and 5, because, if I went with this option, my results would no longer be comparable to those in the Sun (2005) and Sun et al. (2007) study; specifically, key findings related to significant differences between alumni in Groups 1 and 5 would no longer be comparable to my study if I collapsed Groups 4 and 5. Additionally, preliminary analyses had suggested that one of the functions in my study expressed a dimension between Groups 1 and 5, and that at least two variables were showing up as significant predictors of whether alumni placed in Group 1 or 5. I did not want to jeopardize those results.

I was intrigued by option (3) because, through the one-way ANOVAs that I had run prior to the discriminant analysis, I had found that seven of the variables (four extracted factors and three demographic variables) were significant. In an effort both to follow the methodology of the model study, as well as to honor the parameters of the statistical analyses I was using, I opted for option (4). That is, first I ran the analysis with all 15 variables, violating the guideline that the number of variables be at least two fewer than 11, but complying with the Sun (2005) and Sun et al. (2007) methodology. Secondly, I ran it again with only the seven significant variables, departing from the Sun et al. methodology but complying with the guidelines about the number of variables. In providing the results of both the 15-variable analysis, which I will refer to as Analysis A, and the 7-variable analysis, which I will refer to as Analysis B, I hope to synthesize findings that are both nuanced and accurate.

Analyses A and B

In this study, the criterion variable consisted of one question that sorted alumni into five different groups related to donor status. The independent variables consisted of both factors that had been extracted from a much larger data set to reduce collinearity, and demographic variables, all of which had come from responses to the survey instrument. As mentioned above, in order to follow guidelines about the number of variables used in discriminant analysis in relationship to the number of cases in each group, while simultaneously following the methodology laid out in the Sun (2005) and Sun et al. (2007) study, two analyses were run. In Analysis A, there were eight extracted factors and seven demographic variables, for a total of 15 variables. In Analysis B, there were a total of four extracted factors and three demographic variables, for a total of seven variables. Table 15 shows the criterion variable and the predictor variables used in

discriminant Analysis A while Table 16 shows the criterion variable and predictor variables used in discriminant Analysis B.

Table 15

List of Predictors in the Discriminant Analysis (Analysis A)

	Variables	Origination of Variable
Criterion variable	Donation Status	Survey question #20 – choice 1: "never/do not plan to" Survey question #20 – choice 2: "donated/won't continue" Survey question #20 – choice 3: "never/but plan to" Survey question #20 – choice 4: "donated/don't plan to" Survey question #20 – choice 5: "donated/plan to continue"
Predictor variables	Most recent year you took a class at a (State) community college	Survey question
	Degree(s) or certificate(s) earned from one or more (State) community college(s)	Survey question
	How close to a (State) community college (campus that you attended) do you currently live?	Survey question
	Which category below includes your age?	Survey question
	Gender	Survey question
	What is your race/ethnicity?	Survey question
	In State Residence	Survey question
	F1: Alumni communications: effectiveness	Factor extracted through factor analysis
	F2: Student experience: classroom learning	Factor extracted through factor analysis
	F3: Alumni communications: importance	Factor extracted through factor analysis
	F4: Alumni involvement: importance	Factor extracted through factor analysis
	F5: Alumni involvement: frequency	Factor extracted through factor analysis
	F6: Student experience: life preparation	Factor extracted through factor analysis
	F7: Athletic events and reunions	Factor extracted through factor analysis
	F8: Student experience: life lessons	Factor extracted through factor analysis

For Analysis (B), variables which did not show as significant in the one-way ANOVAs were removed, and only seven variables were included. The variables that were removed were (F1) *Alumni communications: effectiveness*, (F2) *Student experience: classroom learning, (*F7) *Athletic events and reunions,* (F8) *Student experience: life lessons*, *Most recent year you took a*

class at a (State) community college, *Degree(s) or certificate(s) earned from one or more (State) community college(s)*, *Gender, Race/ethnicity*.

Table 16

List of Predictors in the Discriminant Analysis (Analysis B)

	Variables	Origination of Variable
Criterion variable	Donation Status	Survey question #20 – choice 1: "never/do not plan to" Survey question #20 – choice 2: "donated/won't continue" Survey question #20 – choice 3: "never/but plan to" Survey question #20 – choice 4: "donated/don't plan to" Survey question #20 – choice 5: "donated/plan to continue"
Predictor variable	How close to a (State) community college (campus that you attended) do you currently live?	Survey question
	Which category below includes your age?	Survey question
	In State residence	Survey question
	F3: Alumni communications: importance	Factor extracted through factor analysis
	F4: Alumni involvement: importance	Factor extracted through factor analysis
	F5: Alumni involvement: frequency	Factor extracted through factor analysis
	F6: Student experience: life preparation	Factor extracted through factor analysis

The demographic variables in the Sun (2005) and Sun et al. (2007) study included *graduation year, type of degree, gender, race, state of residence,* and *membership in an alumni association*. The demographic variables in this study included *most recent year you took a class at a community college, graduation year, degree obtained, proximity of residence to community college, in state/out of state, gender, race/ethnicity*. Analysis (A) included all of those variables, while analysis (B) included only the demographic variables that were found to be significant after the first analysis, that is, *Age, proximity of residence to community college,* and *in-state residence.* Note that in this study, *Most recent year class taken* and *Age* were chosen as community college equivalent variables for the *graduation year* variable in the Sun (2005) and Sun et al. (2007). Table 17 shows all the variables, including extracted factors and demographic

variables that were included in Analysis A and B of this study, as compared to those included in the Sun (2005) and Sun et al. (2007) study.

Table 17

Factors in this study vs Sun et al. study

Analysis A	Analysis B	Sun et al.
Extracted factors 1-8	Extracted factors F3, F4, F5, F6	Extracted factors 1-5
Most recent year class taken		Gradation year
Age	Age	
Degree obtained		Degree obtained
Proximity of residence to community college	Proximity of residence to community college	Proximity of residence to University
Gender		Gender
Race/Ethnicity		Ethnic Origin
In state residence	In state residence	State of residence
		Member of alumni association

Description of Output Statistics and Diagnostics

In the section that follows, I will describe the output statistics and diagnostics, including tests of the key assumptions of discriminant analysis.

Assumption Test

Since one of the assumptions of discriminant analysis is that there is equal variance-covariance across groups, it is important to examine whether this is the case before moving forward. The test Box's M assesses the assumption of homogeneity of variances. If the test is significant, then we have violated this assumption (Bian, n.d.). In both Analyses A and B, Box's M test showed a significance value of 0.00, indicating that the variance-covariances among the five groups in each analysis were not equal. Since the significance value was zero, Box's M shows that there is a different standard deviation among each group in relation to the predictor variable. Tables 18 and 19 show the results of Box' M test in both analysis (A) and (B), respectively.

Table 18

Box's M (Analysis A)

Box's M		712.701
F	Approx.	1.678
	df1	360
	df2	21446.756
	Sig.	0.000

Table 19

Box's M (Analysis B)

Box's M		210.864
F	Approx.	1.652
	df1	112
	df2	7047.188
	Sig.	0.000

One way to look at Box's M is to interpret that test along with the log determinants (Bian, n.d.), which are part of the output for Box's M. The log determinants provide a measure of covariance. If the log determinant is larger, the group's covariance matrix differs more from those of the other groups. Since homogeneity of covariance is one of the assumptions of discriminant analysis, the ideal situation is for the log determinants to be close to each other numerically (Bian, n.d.).

- For Analysis A, log determinants ranged from 1.624 (Group 5 – "given /will continue") to -5.178 (Group 2 – "given /won't continue")
- For Analysis B, log determinants ranged from -8.443 ("Group 5 – "given /will continue") to -1.741 (Group 1 "never/do not plan to").

In both cases, the log determinants seemed fairly far apart from each other, indicating there may be significant differences in the covariance matrices between groups. Since Sun (2005) and Sun et al. (2007) did not interpret the log determinants in conjunction with Box's M, I was not able to compare my log determinants with Sun et al.'s findings.

Another approach to failing the Box's M test is to run separate variance-covariance matrices for each group (IBM, n.d.) This was the approach that Sun (2005) and Sun et al. (2007) took, so I ran a variance-co-variance matrix for each of the five groups. By looking at the matrices, it is clear that there is some amount of covariance. Following recommended procedure (IBM, n.d.), I compared the classification of results in each analysis.

- For analysis (A), 44.7% of original grouped cases were correctly classified; when I re-ran the analysis with the variance/co-variance matrix, 43.4% were correctly classified.
- For analysis (B), 40.1% of original grouped cases were correctly classified; when I re-ran the analysis with the variance/co-variance matrix, 37.5% of grouped cases were correctly classified.

The fact that the number did not change very much in either case signifies that it may not be worth using the separate covariance matrices. Box's M is sometimes too discriminating when it comes to larger data sets (IBM, n.d.; Bian, n.d.); this may be one of those cases.

Significant Test of Discriminant Functions

This study included eight extracted factors and seven demographic variables, for a total of 15 variables, which were analyzed twice: (A) once with all eight factors and seven demographic variables for a total of 15 variables, and (B) four extracted factors and three demographic variables. In both analyses, the criterion variable included five separate groups.

Given the five groups, there can be up to four discriminant functions generated by the process of discriminant analysis (Bian, n.d.; IBM, n.d.). The Eigenvalues values show the degree to which the four different functions predict group membership. The higher the eigenvalues, the more that group membership is predicted by that discriminant function. The canonical correlation shows the relationship between the function and the dependent variable (Bian, n.d.). As we see in Tables 20 and 21, in both analyses the first two functions account for over 95% of the variance. The third and fourth function in both analyses are not significant and will be disregarded.

Table 20

Eigenvalues (Analysis A)

Function	Eigenvalue	% of Variance	Cumulative %	Canonical Correlation
1	.641[a]	71.0	71.0	0.625
2	.217[a]	24.0	95.1	0.422
3	.030[a]	3.3	98.4	0.170
4	.014[a]	1.6	100.000	0.119

a. First 4 canonical discriminant functions were used in the analysis.

Table 21

Eigenvalues (Analysis B)

Function	Eigenvalue	% of Variance	Cumulative %	Canonical Correlation
1	.600[a]	76.5	76.5	0.612
2	.165[a]	21.1	97.6	0.377
3	.017[a]	2.2	99.8	0.130
4	.001[a]	.2	100.000	0.035

a. First 4 canonical discriminant functions were used in the analysis.

Wilk's lambda measures how well the function separates cases into groups; in fact, it represents the proportion of total variance in the discriminant scores that is not explained by differences among groups. The lower the value of Wilk's lambda, the higher the discriminatory ability of the function (IBM, n.d.). Wilk's lambda values can range from 0 to 1 (Bian, n.d). The

related chi square value tests the null hypothesis that the means of the functions are equal across groups. The small significance value shows that the discriminant function does better than chance at separating the groups (Bian, n.d). In both analyses, Function 1 and Function 2 are both significant at the $p < 0.001$ level while Function 3 and 4 are not significant. The Wilk's lambda tests shown in Tables 22 and 23 confirm that functions 1 and 2 have higher discriminatory power than Functions 3 and 4.

Table 22

Wilks' Lambda (Analysis A)

Test of Function(s)	Wilks' Lambda	Chi-square	df	Sig.
1 through 4	0.479	208.788	60.000	0.000
2 through 4	0.787	68.171	42.000	0.006
3 through 4	0.957	12.449	26.000	0.988
4	0.986	4.077	12.000	0.982

Table 23

Wilks' Lambda (Analysis B)

Test of Function(s)	Wilks' Lambda	Chi-square	df	Sig.
1 through 4	0.527	193.712	28	0.000
2 through 4	0.842	51.764	18	0.000
3 through 4	0.982	5.546	10	0.852
4	0.999	0.360	4	0.986

Interpretation of Significant Discriminant Functions

Having determined that the first two functions are significant, it is important to determine what those functions can tell us about the data. The tables of Group Centroids, Tables 24 and 25, show more about the dimensions represented by each function. The group centroids are the mean

discriminate score for each group (Bian, n.d.). We look at the highest and lowest mean value for each function to determine which groups that function maximally separates.

In analysis (A), for example, for Function 1 the smallest value is -0.656 “Never/do not plan to” (Group 1) and the largest value is 1.350 “Given/will increase” (Group 5). Thus, Function 1 maximally separates alumni in the two groups 1 and 5, those who have responded, “Never/do not plan to” and “Given/will increase.” For Function 2, the smallest value is -0.711 “Never/but plan to” (Group 3) and the largest value is 0.460 “Given/won’t continue” (Group 2). Thus, Function 2 maximally separates alumni in the two Groups 2 and 3. Since Functions 3 and 4 were not significant, I will not discuss them here.

In Analysis (B), for Function 1 the smallest value is -0.621 “Never/do not plan to” (Group 1) and the largest number is 1.264 “Donated/will increase” (Group 5). Thus, Function 1 maximally separates alumni in the two Groups 1 and 5, as it does in Analysis (A). For Function 2, the smallest value is -0.067 “Never/but plan to” (Group 3) and the largest value is 0.416 “Donated/won’t continue” (Group 2). Thus, Function 2 maximally separates alumni in Groups 2 and 3, as it does in Analysis (A).

It is interesting to note that both analyses (A) and (B) show that the first and second discriminant function are significant while the second two functions are not. Additionally, in both analyses, Function 1 maximally separates Groups 1 and 5 while Function 2 maximally separates Groups 2 and 3.

Table 24

Function at Group Centroids (Analysis A)

Functions at Group Centroids				
Which of the following best describes your financial support of one or more (State) community colleges?	Function			
	1	2	3	4
Never/do not plan to	-0.656	0.389	0.094	0.057
Donated/won't continue	-0.444	0.460	-0.526	-0.156
Never/but plan to	-0.392	-0.711	0.005	-0.031
Donated/will continue	1.145	0.131	0.066	-0.064
Donated/will increase	1.350	-0.323	-0.367	0.540
Unstandardized canonical discriminant functions evaluated at group means				

Table 25

Function at Group Centroids (Analysis B)

Functions at Group Centroids				
Which of the following best describes your financial support of one or more (State) community colleges?	Function			
	1	2	3	4
Never/do not plan to	-0.621	0.350	0.086	0.011
Donated/won't continue	-0.305	0.416	-0.425	-0.007
Never/but plan to	-0.462	-0.617	0.011	-0.011
Donated/will continue	1.091	0.086	0.032	-0.021
Donated/will increase	1.264	-0.396	-0.069	0.165
Unstandardized canonical discriminant functions evaluated at group means				

Assessment of the Significance of Each Predictor Variable

ANOVA Tests

One-way analyses of variance were run on each of the five extracted factors and the demographic variables to determine whether there was a significant relationship with the dependent variable (donor status), just as in the Sun (2005) and Sun et al. (2007) analysis. Analysis of variance compares the variance in mean scores between the different groups, which

could be caused by chance (Pallant, 2016). An F ratio, which represents the relationship between variance between groups and variance within groups, is generated: the larger the F ratio, the more the variance between groups, which is thought to be caused by the independent variable. If the F test is significant, the null hypothesis, which is that the means of all the groups are equal, is rejected (Pallant, 2016). If the significance level is above a 0.05, it is unlikely that this variable is predictive of donor status.

The results of the ANOVA showed a number of variables to be significant. In Analysis (A), *Age, Proximity to a community college campus, Alumni involvement: importance, Alumni experience: frequency, and Student experience: career/life preparation* were all significant at the $p < 0.001$ level. *Alumni communications: importance* and *In-state residence* were significant at the $p < 0.05$ level. In Analysis B, *Alumni involvement: importance, Alumni involvement: frequency, Student experience: career/life preparation, Age, and proximity of residence to community college* were all significant at the $p < 0.001$ level. *Alumni communications: importance, and In-state residence* were significant at the $p < 0.05$ level.

Wilks' lambda is a test that shows the ability of a contributing factor to differentiate between groups. The lower the number, the greater the differentiation between groups.
In both Analyses A and B, the variable (F5) A*lumni involvement: frequency* was the most likely to differentiate between groups.

Table 26

Test of Equality of Group Means (Analysis A)

	Wilks' Lambda	F	df1	df2	Sig.
(F1) Alumni communications: effectiveness	0.984	1	4	290	0.316
(F2) Student experience: classroom learning	0.998	0	4	290	0.973
(F3) Alumni communications: importance	0.943	4	4	290	0.002
(F4) Alumni involvement: importance	0.909	7	4	290	0.000
(F5) Alumni involvement: frequency	0.755	24	4	290	0.000
(F6) Student experience: career/life preparation	0.931	5	4	290	0.000
(F7) Athletic events and reunions	0.998	0	4	290	0.976
(F8) Student experience: life lessons	0.975	2	4	290	0.116
Which category below includes your age?	0.821	16	4	290	0.000
How close to a (State) community college (campus that you attended) do you currently live?	0.933	5	4	290	0.000
In state resident	0.954	4	4	290	0.008
Please select the most recent year you took a class at a (State) community college:	0.975	2	4	290	0.113
Degree(s) or certificate(s) earned	0.971	2	4	290	0.069
Gender	0.991	1	4	290	0.634
What is your race/ethnicity?	0.973	2	4	290	0.980

Table 27

Test of Equality of Group Means (Analysis B)

	Wilks' Lambda	F	df1	df2	Sig.
(F3) Alumni communications: importance	0.938	5.040	4	304	0.001
(F4) Alumni involvement: importance	0.921	6.544	4	304	0.000
(F5) Alumni involvement: frequency	0.741	26.580	4	304	0.000
(F6) Student experience: career/life preparation	0.935	5.258	4	304	0.000
Which category below includes your age?	0.813	17.438	4	304	0.000
How close to a (State) community college (campus that you attended) do you currently live?	0.933	5.435	4	304	0.000
In state resident	0.956	3.464	4	304	0.009

The variables were then analyzed to determine their correlation with each of the four functions.

An asterisk denotes the function with which each variable is most correlated.

Function 1. In both Analyses A and B, *Alumni involvement: frequency* and *Age* were the factors most highly correlated with Function 1, which distinguishes between Groups 1 and 5.

Function 2. In Analysis A, *Alumni communications: importance, Alumni involvement: importance, Student experience: career/life preparation,* and *Most recent year class taken at a (State) community college* were most highly correlated with Function 2, which maximally separates Groups 2 and 3. In Analysis B, *Alumni communications: importance* and *Alumni involvement: importance* were most highly correlated with Function 2, which maximally separates Groups 2 and 3. While *Student experience: career/life preparation,* and *Most recent year you took a class at a (State) community college* were highly correlated with Function 2 in Analysis A, they were not highly correlated with Function 2 in Analysis B.

Functions 3 and 4. In Analysis A, *Proximity to a (State) community college you attended*, *Race/ethnicity*, *In state residence, Student experience: life lessons* and *student experience: classroom learning* were the most highly correlated with Function 3. For Function 4, *Alumni communications: effectiveness*, *Degree or certificate*, *Gender* and *Athletic events and reunions* were most significant. In Analysis B, *Proximity to community college* and *In-state residence* are the most highly correlated with Function 3, while *Student experience: life preparation* was most highly correlated with Function 4. Because Functions 3 and 4 explain very little of the total variance in both analyses, these functions will not be discussed further. Tables 28 and 29 show the relationships between the functions and the variables in both analyses.

Table 28

Structure Matrix (Analysis A)

	Function			
	1	2	3	4
(F5) Alumni involvement: frequency	0.710*	0.003	-0.140	-0.173
Age	0.517*	0.452	0.214	0.306
(F3) Alumni communications: importance	-0.176	0.426*	0.197	0.096
(F6) Student experience: life preparation	0.224	-0.425*	0.210	0.366
(F4) Alumni involvement: importance	-0.322	0.385*	-0.193	-0.181
Most recent year took class	-0.112	-0.284*	-0.035	-0.201
Proximity to college	-0.238	-0.365	0.455*	0.188
race/ethnicity	-0.123	0.227	0.442*	0.203
In state residence	0.166	0.350	-0.358*	-0.175
(F8) student experience: life lessons	-0.138	0.220	0.305*	-0.123
(F2) Student experience: classroom learning	-0.011	-0.076	0.107*	0.064
(F1) Alumni communications: effectiveness	0.097	-0.061	-0.448	0.496*
Degree or certificate	0.167	0.172	0.313	-0.467*
Gender	-0.090	-0.102	0.160	0.217*
(F7) Athletic events and reunions	0.016	-0.069	-0.085	-0.125*

*Largest absolute correlation between each variable and any discriminant function.

Table 29

Structure Matrix (Analysis B)

	Function			
	1	2	3	4
(F5) Alumni involvement: frequency	0.761*	-0.067	-0.285	-0.457
Age	0.562*	0.465	0.492	0.362
(F3) Alumni communications: importance	-0.185	0.509*	0.400	-0.412
(F4) Alumni involvement: importance	-0.305	0.424*	-0.182	0.120
Proximity to college	-0.270	-0.338	0.709*	-0.284
In state residence	0.181	0.359	-0.518*	0.309
(F6) Student experience: life preparation	0.202	-0.512	0.215	0.583*

*Largest absolute correlation between each variable and any discriminant function.

Classification Results

As discussed above, one function of discriminant analysis is to predict group membership. Tables 30 and 31 show how well group membership in the five donor groups was predicted. In Analysis A, a total of 44.7% of original grouped cases were correctly classified. This includes 40.6% of alumni in Group 1, 27.3% of group 2, 58.8% of Group 3, 39.0% of Group 4, and 60.0% of Group 5, In Analysis B, a total of 40.1% of original grouped cases were correctly classified. This includes 36.2% of alumni in Group 1, 25% of Group 2, 54.3% of Group 3, 35.2% of Group 4, and 45.5% of Group 5.

A substantial percentage of incorrectly classified cases were only off by only one group, signifying that when the analysis did not correctly classify cases, it was not far off in its classification. For example, in Analysis A, 25% of alumni that were in Group 1 were predicted to be in Group 2; 49% of alumni that were in Group 2 were predicted to be in either Group 1 (18%) or Group 3 (31%), and 32% of alumni in Group 4 were predicted to be in Group 5. A similar phenomenon exists in Analysis B. This phenomenon was not as prevalent in the Sun analysis.

In the Sun study, 56.3% of cases were correctly classified, but for Sun higher percentages of alumni in the consistent donor categories were correctly classified. In Sun's analysis, however, individuals in Groups 1 and 2 were not classified correctly at as high rates as they were in my study.

Table 30

Predicted Group Membership (Analysis A)

		Group 1	Group 2	Group 3	Group 4	Group 5	Total
Count	Group 1	41.0	26.0	17.0	12.0	5.0	101.0
	Group 2	4.0	6.0	7.0	3.0	2.0	22.0
	Group 3	11.0	8.0	47.0	7.0	7.0	80.0
	Group 4	8.0	7.0	9.0	32.0	26.0	82.0
	Group 5	1.0	0.0	2.0	1.0	6.0	10.0
%	Group 1	40.6	25.7	16.8	11.9	5.0	100.0
	Group 2	18.2	27.3	31.8	13.6	9.1	100.0
	Group 3	13.8	10.0	58.8	8.8	8.8	100.0
	Group 4	9.8	8.5	11.0	39.0	31.7	100.0
	Group 5	10.0	0.0	20.0	10.0	60.0	100.0

44.7% of original grouped cases correctly classified

Table 31

Predicted Group Membership (Analysis B)

		Group 1	Group 2	Group 3	Group 4	Group 5	Total
Count	Group 1	38.0	27.0	21.0	13.0	6.0	105.0
	Group 2	5.0	6.0	8.0	5.0	0.0	24.0
	Group 3	9.0	17.0	44.0	5.0	6.0	81.0
	Group 4	10.0	5.0	8.0	31.0	34.0	88.0
	Group 5	1.0	0.0	2.0	3.0	5.0	11.0
%	Group 1	36.2	25.7	20.0	12.4	5.7	100.0
	Group 2	20.8	25.0	33.3	20.8	0.0	100.0
	Group 3	11.1	21.0	54.3	6.2	7.4	100.0
	Group 4	11.4	5.7	9.1	35.2	38.6	100.0
	Group 5	9.1	0.0	18.2	27.3	45.5	100.0

40.1% of original grouped cases correctly classified.

Chapter 5: Discussion

In the following section, I will discuss the results of the study, focusing on answers to the research questions. I will also discuss the implications of the study for community college advancement offices. Additionally, I will describe the limitations of the findings and make recommendations for further study.

Research Question

The overall research question guiding this study was as follows: Does the Multivariate Causal Model of Alumni Giving (Sun, 2005; Sun et al., 2007), which has been shown to apply to alumni of a large Midwest university, also apply to alumni of colleges within the studied statewide community college system (CCS)? In brief, the study found that the Multivariate Causal Model of Alumni Giving does apply to alumni of CCS colleges.

Research Sub-Question 1

Research Sub-question 1 was as follows: Do the following factors significantly distinguish CCS community college alumni donors from nondonors: student experience, alumni experience, alumni motivation, and demographic variables? This study found that equivalents to the Sun (2005) and Sun et al. (2007) factors *Alumni Experience, Alumni Motivation, Student Experience* and demographic variables did significantly distinguish CCS alumni donors from nondonors.

Factors were extracted and parallel analysis was performed to determine the number of factors that should be maintained. Discriminant analysis was performed to determine whether any of the extracted factors, as well as the demographic variables, showed a significant between-groups difference in association with the predictor variable. To comply with both the

methodology used in the Sun (2005) and Sun et al. (2007) study and the guideline that the number of total variables in the discriminant analysis be less than the number of cases in any of the groups, two analyses were performed. In compliance with the Sun (2005) and Sun et al. (2007) methodology, Analysis A used all eight factors and seven demographic variables. In order to include fewer variables than the smallest group, which contained 11 cases, Analysis B used only the four factors and three demographic variables that were found to be significant as a result of one-way ANOVAs.

In both Analyses A and B, the following factors were shown to have a significant between-groups difference at the $p < 0.001$ level: (F4) A*lumni involvement: importance;* (F5) *Alumni involvement: frequency,* (F6) S*tudent experience: career/life preparation*. In both analyses (F3) A*lumni communications: importance* was significant at the $p < 0.05$ level. Factors F3, F4, F5, and F6 correspond to Sun's variables called *Alumni experience, Alumni motivation, and Student experience – impact on career*. The study also found several demographic variables to have a significant between-groups difference*: Proximity of residence to community college* ($p < 0.001$), *Age* ($p < 0.001$), and *In-state residence* ($p < 0.05$). Table 32 shows each of those factors and their equivalents in the Multivariate Model of Alumni Giving established by Sun (2005) and Sun et al. (2007) study.

Table 32

Factors that are related to donor status

Analyses A/B	Sun et al.'s Multivariate Model of Alumni Giving
Student Experience	
(F6) *Student experience: career/life preparation*	*Student experience (SF3) – impact on career*
N/A	*Student experience (SF4) – relationships*
N/A	*Student experience (SF5) – extracurricular activities*
Alumni Experience	
(F3) *Alumni communications: importance*	*Alumni experience* (SF1)
F5) Alumni involvement: frequency	N/A
Alumni Motivation	
(F4) *Alumni involvement: importance*	*Alumni motivation* (SF2)
Demographic Variables	
Age *Proximity to community college* *In-state residence*	*Graduation Year (Unclear)* *State of Residence* *Gender* *Ethnicity*

Research Sub-Question 2

Research Sub-Question 2 is as follows: How do the results from this study differ from or align with those from the Sun (2005) and Sun et al. (2007) study?

While the study found that the student experience, alumni experience, alumni motivation, and demographic variables distinguish donors from nondonors among CCS alumni, as it did among alumni of a four-year institution, there are some key differences between the outcomes of this study and the results of the Sun (2005) and Sun et al. (2007) study. A discussion of each of the factors found to be significant in this study and their relationship to the factors *Student Experience, Alumni Experience, Alumni Motivation,* and *Demographics* in the Sun (2005) and Sun et al. (2007) study is below. (Variables found to be key to explaining the differences

between alumni donors and nondonors as found in both Analyses A and B are followed by an asterisk below.)

Student experience

(F6) Student experience - career/life preparation. One of the questions in the survey was "How well did the education received from one or more (State) community colleges prepare you for each of the following?" CCS alumni donors were more likely than nondonors to positively rate the following responses: "further formal education," "commitment to continuous learning," "deepening your understanding and commitment to personal development," "responding to new career opportunities," "contributing to your community," and "current work status." This is similar to a finding in the Sun (2005) and Sun et al. (2007) study, in which alumni donors were more likely than nondonor alumni to respond that the degree they received at a four-year institution contributed to their commitment to continuous learning, responding to new career opportunities, deepening their understanding and commitment to personal development, further graduate education, current work status, and contributing to their community. (These findings were consolidated in (SF3) *Student experience – impact on career*.)

Skari's (2011) study included the same questions from the PEG Alumni Giving Questionnaire in this study and the Sun (2005) and Sun et al. (2007) study and used descriptive statistics to determine differences between alumni donors and nondonors. Skari found that alumni donors had overall positive feelings toward their community college. This makes sense in terms of other research that shows that, in general, alumni who are satisfied with their overall academic experience were more likely to give back to their alma mater (Clotfelter, 2003; Gaier, 2005). It is interesting that in this study the portion of the student experience that contributes to giving for community college alumni relates not specifically to academics but to how well the

overall experience contributed to later success in life, including career, continuing education, and a commitment to personal development.

Student experience - relationships and extracurriculars. Although many of the factors extracted by this study and those extracted in the Sun (2005) and Sun et al. (2007) study overlap, of equal interest are those that do not overlap. This category includes two student experience variables found in the Sun et al. study but missing in this study. Those are the factors *Student experience – relationships* and *Student experience – extracurriculars*.

Factor loadings in Sun et al.'s *Student experience – relationships* loading included, "what I learned about life," "exposure to new things," "relationships with other students," "traditions or values learned on campus," "relationships with faculty, "academics classes," "relationships with administrators and staff." Using the same survey questions in her study, Skari found that alumni donors considered relationships with faculty as very or critically important, while relationships with staff were also important, but less so (2011).

While "academics/classes" and "relationships with faculty" showed up as factor loadings in this study, as well, they loaded not with other relationships-oriented factors, but with "skills/training for career," comprising the only student experience-related factor in the study. "relationships with administrators and staff" and "relationships with other students" did not show up in the factor analysis at all.

Factor loadings in Sun et al.'s *Student experience – extracurriculars* loading included "student leadership opportunities," "participation in a fraternity/sorority," "attending cultural events," "attending athletic events," and "orientation for new students." In this study, while "attending athletic events" showed up on a factor loading that ended up not being significant, none of the other responses listed here loaded in this study. Using the same survey questions,

Skari used descriptive statistics to find that that alumni donors were more likely than nondonor alumni to participate in extracurricular activities (2011).

The fact that this study did not find that those variables to be significant predictors of donor status seems to indicate that attending cultural events, athletic events, orientation for new students, and student leadership opportunities were not important precursors to giving back for community college alumni in this sample. It is not clear whether these things do not play a role in donor status for CCS alumni donors because CCS students and alumni have different priorities than students and alumni of four-year institutions, or because leadership opportunities, cultural and athletic events are not a large part of the community college student experience for CCS students (or both). Thus, it is not clear whether offering more of these kinds of opportunities to CCS students could eventually lead to more alumni becoming donors.

Alumni Experience

(F3) Alumni communications - importance.* This study found that (F3) *Alumni communications: importance* is a significant predictor of whether an alumnus/a is a donor. Unlike almost all the other factors under discussion, *Alumni communications – importance* negatively correlated with alumni donor status. This means that alumni donors who placed a greater deal of importance on the alumni magazine, informational letters, and other communications from the community college, were *less* likely to donate in the future.

This finding may be best understood in terms of Function 2, with which this factor is highly correlated. Function 2 maximally separates Group 2 ("given/won't continue") with Group 3 ("never/but plan to"). Incidentally, (F4) *Alumni involvement – importance,* the other factor that most highly correlated with Function 2 in both Analyses A and B, was also negatively correlated with donor status. *Alumni communications – importance,* and *Alumni involvement* -

importance, had the highest correlations with Function 2 in both Analyses A and B. The more importance alumni placed on communications and involvement, the more likely they were to be in Group 2 instead of Group 3.

To understand this fully, it is important to note that the donor status scale used in this study begins with Group 1 ("never/do not plan to") and ends at 5 ("given/will increase"). In between are presumably incremental steps of donor commitment between Group 1 and Group 5, those individuals who have never given and don't plan to give; and those who have given and plan to increase. The interesting thing about the relationship between Groups 2 and 3 is that Group 2, the "lower" group, is comprised of individuals who are donors but do not plan to continue to give, while Group 3 includes people who are not donors now but indicate they will be in the future. One could argue that the order of Groups 2 and 3 should be reversed, that in fact Group 3, which is comprised of nondonors, should be "below" Group 2, which comprises donors. The fact that the "order" of Groups 2 and 3 seem reversed in terms of their placement in the donor hierarchy could help explain why the factors *Alumni communications – importance* and *Alumni Involvement – importance* are negatively correlated with donor status and maximally separate Groups 2 and 3. The more importance alumni place on communications and involvement, the less likely they are to be in Group 3, as alumni who simply *plan* to give but who have never given, and the more likely they are to be in Group 2, as individuals who have donated to the college, even if they do not ever *plan* to do so again. Thus, we can interpret the finding in this way: valuing alumni communications and believing in the importance of being involved as an alumnus/a is enough to get someone from *planning to give* to *making a gift*, but not enough to sustain that individual's motivation to *keep giving* over time. Once an individual has become a donor, they must be engaged with the college frequently (coming on campus,

volunteering, visiting the web site, etc.), in order for them to want to continue to give (see *Alumni Involvement – frequency*).

Sun (2005) and Sun et al. (2007) found something different when they concluded that alumni donors of a four-year university rated the quality (rather than the importance) of the web site, alumni magazine, electronic newsletter, monthly bulletins and invitations to university activities more highly than alumni nondonors, and that these factor loadings, which comprised the factor they named *Alumni Communications*, was one of the factors most highly correlated with Function 2, which explained the difference between Groups 1 ("never/do not plan to") and 5 ("given/will increase").

While it is not surprising that communications from the community college would play some role in alumni donor status, few studies have drawn a clear connection between types of alumni engagement, including alumni communications, and donor status for community college alumni. Skari's (2011) study of community college alumni giving largely followed the Multivariate Model established by Sun (2005) and Sun et al. (2007) but explicitly excluded questions related to the alumni experience in her survey instrument, citing nascent efforts on the part of community colleges to engage alumni systematically (Skari, 2011). More research needs to be done in this area to fully understand the impact of alumni communications on donor status for alumni of community colleges.

(F5) Alumni Involvement- Frequency.* CCS alumni donors were engaged with the college more frequently than nondonor alumni. One of the factors that made a significant between-groups difference in terms of donor status was (F5) *Alumni Involvement-frequency*. This factor, along with *Age*, were the two variables most highly correlated with Function 1, which distinguished between Group 1, individuals who have never given and do not plan to give, and

Group 5, individuals who have given and plan to increase their support. Alumni donors more often visited campus, volunteered at events, and visited the college web site than nondonor alumni. The finding that frequency of engagement with the college is tied to philanthropy for community college alumni is not only an important finding but a departure from the Sun (2005) and Sun et al. (2007) findings, which did not include frequency of alumni involvement as a factor. As discussed in Chapter 4, it is not clear whether Sun et al. included the responses to a survey question about frequency of alumni involvement in the factor analysis. However, the finding in this study dovetails with other findings in the literature about alumni giving in general.

When alumni believe that they should have a role in giving back they are more likely to do so (Werts et al., 2007). Community college donors are motivated by valuing education, wanting to help others meet their educational goals, the belief that it is important to support educational opportunities within the community (Brown, 2014; Carter, 2009) as well as feeling that the college's success is connected to their own (Brown, 2014). Given this background, it makes sense that CCS alumni who are involved philanthropically with their community college are more likely to believe it is important to be involved in many ways, including through attending events and volunteering their time.

It makes sense on an intuitive level that alumni who have a more robust relationship with the college, including coming onto campus, engaging virtually, and volunteering, are more likely to give philanthropically; however, there are not many studies showing this connection for community college alumni. While this study did not look at the motivations of alumni who give back, the fact that alumni donors placed a high value on their involvement with the college suggests that alumni donors give back financially when they believe they have a dynamic role to play in the community college's success.

Alumni Motivation

Alumni Involvement – importance.* This study found that (F3) *Alumni involvement – importance* was negatively correlated with alumni donor status. (F4) *Alumni Involvement – importance* along with (F3) *Alumni communications: importance*, was most highly correlated with Function 2, which maximally separated Group 2, individuals who have given but do not plan to continue and Group 3, individuals who have not given but plan to in the future. As discussed in the section concerning *Alumni Communications - importance*, one finding of this study is that alumni who are lower on the donor status hierarchy tend to place a higher level of importance on their own involvement and the involvement of alumni in general with the community college than do nondonor alumni. The loadings in this factor include serving as ambassadors or advocates for the community college, recruiting students, providing feedback to the community college about how it is perceived, recruiting and mentoring students, providing financial support to the college, and identifying job opportunities for graduates.

Sun et al. found something quite different: alumni donors to a four-year institution were more likely than nondonor alumni to consider the following to be important: alumni providing leadership by serving on boards, volunteering for the university, attending events, serving as ambassadors, recruiting students, providing feedback about community perceptions, mentoring students, and networking with other alumni.

In a study about alumni motivation to give back to community colleges, Carter (2009) found that alumni donors who had given in a previous year but were not current donors were not influenced to renew their giving by communications from the college. Furthermore, the study found that alumni who gave once or twice but did not sustain their giving to a community college over years tended to be motivated by peer pressure from friends or a sense of obligation.

Neither the peer pressure nor the sense of obligation was enough to help those alumni sustain their support of the college over time.

The finding in this study about *Alumni involvement: importance* negatively correlating with donor status dovetails well with Carter's (2009) finding: alumni in this study who placed a high importance on their own involvement as well as the involvement of other alumni with the community college may be motivated by a sense of obligation stemming from a belief that as alumni they should be involved. As Carter's study finds, alumni motivated by a sense of obligation tend to approach their giving to a community college as transactional, and that giving relationship tends to be short-lived (Carter, 2009). This could well be the case for alumni in Group 2 ("given/won't continue") who say they place a higher value on alumni involvement than do individuals in Group 3 but are ultimately unmoved by their values to continue to donate.

Demographic Variables

Just as in the Sun et al. study, this study found that certain demographic variables distinguished alumni donors from nondonors. This study found three demographic variables to have a significant between-groups difference, *Age, In-state residence*, and *Proximity to community college*, while Sun found *Gender, Graduation Year*, and *Ethnicity* to have a significant between-groups difference.

Age* and Graduation Year. One factor that distinguishes CCS alumni donors from nondonors is *Age*. Alumni donors are, on average, older than nondonor alumni. It is important to note that community college alumni are no different from alumni in general in this respect, as alumni in general are more likely to give back the older they are or the farther they are from graduation (Clarke, 2016; Thomas, 2005). Table 33 shows the relationship of alumni age with donor status. As alumni get older, the percentage of donors in Groups 4 ("given/will continue")

and 5 (“given/will increase”) increases. The increase in the percentage of alumni in each age group that falls into Group 4 or 5 grows from 8% of alumni in their 20s to over 60% of alumni in their 60s. For example, among alumni in their 40s, 25.6% are in Group 4 and 9.3% are in Group 5, for a total percentage of 34.9% in Groups 4 and 5. It is worth noting that alumni in their 40s is the group with the largest percentage of alumni in Group 5 (“given/will increase”), which could be indicative of financial stability and a long horizon for future support. Alumni aged 60-69 have the highest combined total of Groups 4 and 5: (61.6%), including 55.8% in Group 4 and 5.8% are in Group 5. A similar distribution exists for alumni in their 70s, with 53.6% in Group 4 and 7.1% in Group 5.

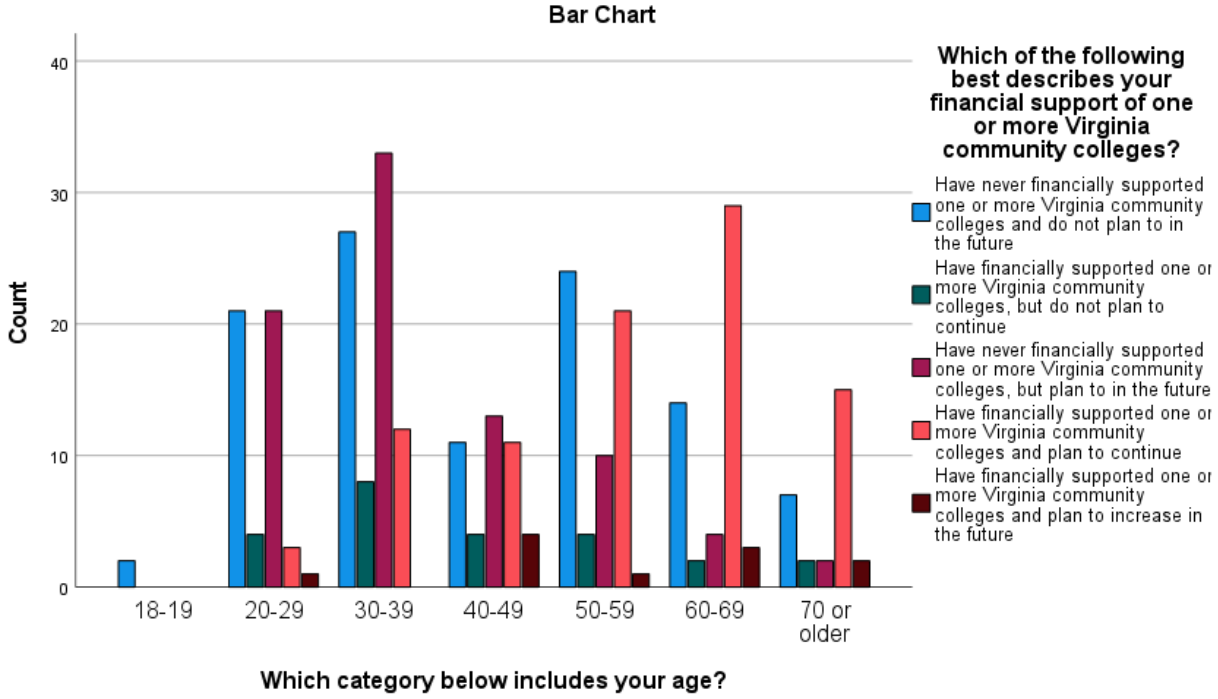
Table 33

Age of Alumni in Donor Groups 1-5

			Never / do not plan to	Given /won’t continue	Never / but plan to	Given / will continue	Given / will increase	Totals
Which category below includes your age?	18-19	Count	2	0	0	0	0	2
		%	100.0%	0.0%	0.0%	0.0%	0.0%	100.0%
	20-29	Count	21	4	21	3	1	50
		%	42.0%	8.0%	42.0%	6.0%	2.0%	100.0%
	30-39	Count	27	8	33	12	0	80
		%	33.8%	10.0%	41.3%	15.0%	0.0%	100.0%
	40-49	Count	11	4	13	11	4	43
		%	25.6%	9.3%	30.2%	25.6%	9.3%	100.0%
	50-59	Count	24	4	10	21	1	60
		%	40.0%	6.7%	16.7%	35.0%	1.7%	100.0%
	60-69	Count	14	2	4	29	3	52
		%	26.9%	3.8%	7.7%	55.8%	5.8%	100.0%
	70 or older	Count	7	2	2	15	2	28
		%	25.0%	7.1%	7.1%	53.6%	7.1%	100.0%
Total		Count	106	24	83	91	11	315
		%	33.7%	7.6%	26.3%	28.9%	3.5%	100.0%

Figure 3

Donor status of alumni by age group



In this study, *Age*, along with *Alumni Involvement - importance*, significantly distinguishes between Groups 1 and 5, that is between individuals who have not given and do not plan to give and individuals who have given and plan to increase their support. This matches a similar finding in the Sun (2005) and Sun et al. (2007) study, as the significant variable *Graduation year* in the Sun (2005) and Sun et al. (2007) study was considered by the researchers as a substitute for age. Sun et al. found that *Graduation Year*, along with *Gender*, significantly distinguished between Groups 3 and 4, that is, between individuals who had never given but planned to give in future, and individuals who had given and planned to continue.

In-State Residence and Proximity of Residence to College. Alumni who live in the same state as the community college they attended are more likely to give back than alumni who currently live in another state. Additionally, alumni who live closer to the community college

are more likely to give than those who live farther away. Table 34 shows the relationships between donor status and proximity of residence to the community college attended by an alumnus/a. The group of alumni that has the highest percentage of donors (39.8%) who have supported the college and either plan to continue or increase their support is the group that lives within 25 miles of the colleges they attended. This percentage drops to 21% for alumni living 25-49 miles from the college attended, and to 12% for alumni living 50-74 miles from the college. The group of alumni with the lowest percentage (0%) of individuals who are donors that plan to continue or increase their giving is the group that lives 75-99 miles away. Interestingly, this percentage increases to 17% for alumni who live more than 100 miles away from the college they attended.

Table 34

Alumni donor status compared to proximity of residence to community college

			Never /do not plan to	Given /won't continue	Never/but plan to	Given / will continue	Given /will increase	
How close to a state community college (campus that you attended) do you currently live?	0-24 miles	Count	64	19	44	75	9	211
		%	30.3%	9.0%	20.9%	35.5%	4.3%	100.0%
	25-49 miles	Count	16	3	11	7	1	38
		%	42.1%	7.9%	28.9%	18.4%	2.6%	100.0%
	50-74 miles	Count	3	1	3	1	0	8
		%	37.5%	12.5%	37.5%	12.5%	0.0%	100.0%
	75-99 miles	Count	3	0	3	0	0	6
		%	50.0%	0.0%	50.0%	0.0%	0.0%	100.0%
	100 miles or more	Count	21	1	22	8	1	53
		%	39.6%	1.9%	41.5%	15.1%	1.9%	100.0%
Total		Count	107	24	83	91	11	316
		%	33.9%	7.6%	26.3%	28.8%	3.5%	100.0%

This confirms an earlier finding that community college alumni tend to live nearer to the community college they attended than alumni who do not give (Skari, 2011; Skari, 2014). It is

not clear whether a demographic question related to proximity of residence to alma mater was included in the version of the survey used by Sun (2005) or Sun et al. (2007).

Alumni who live in the same state as the college they attended were more likely to be donors to their two-year alma mater. Table 35 shows the distribution of CCS donors to CCS colleges among in-state and out-of-state residents. While only 16.7% of alumni who live out of state have given to their community college and either plan to continue or increase their support (Groups 4 and 5), 35% of alumni who live in the same state fall within one of those two donor categories.

Table 35

Alumni donor status - in-state or -out-of-state residence

			Never /do not plan	Given /won't continue	Never /but plan to	Given / will continue	Given /will increase	
In-State Indicator	Out of State	Count	18	1	21	7	1	48
		%	37.5%	2.1%	43.8%	14.6%	2.1%	100.0%
	In State	Count	89	23	62	84	10	268
		%	33.2%	8.6%	23.1%	31.3%	3.7%	100.0%
Total		Count	107	24	83	91	11	316
		%	33.9%	7.6%	26.3%	28.8%	3.5%	100.0%

The finding that alumni who live in state are more likely to be donors differs from Sun and Sun et al.'s finding that state of residence did not significantly distinguish between alumni donors and nondonors (Sun, 2005; Sun et al., 2007).

Gender. In this study, *Gender* was not a predictor variable of donor status. Sun et al. found that *Gender* made a significant between-groups difference on donor status. In Skari's study of community college alumni donors, *Gender* was not predictive of donor status (2011). In the broader literature about alumni giving, there are mixed results about the impact of gender on donor status. Studies have shown that both male alumni (Clarke, 2016) and female alumni (Holmes, 2007) are more likely to give back.

Race and Ethnicity. In this study, *Race/ethnicity* was not a predictor variable of donor status. This confirms Skari's (2011) finding that race was not a predictive variable of donor status; however, it differs from Sun et al.'s finding that race/ethnicity is correlated with donor status (2007). The overall literature about the role of race/ethnicity in donor status shows that donors tend to be white, including in charitable giving in general (Bryant, 2003), alumni giving to higher education (Le Blanc et al., 2009; Meer et al., 2007; Sun, et al., 2007) and alumni and non-alumni giving to community college (Carter & Duggan, 2010). This study also finds that donors in the sample tend to be white; however, the percentage of white alumni donors is almost exactly the same as the percentage of white alumni in the sample overall.

Table 36 shows the percentage of alumni that self-identified in each of the five donors status groups by race. It also shows the number and percent of alumni donors in Group 4 ("given/will continue") and Group 5 ("given/will increase") by race. It is interesting to note that Whites comprise 84% of Groups 4 & 5 and 81% of the overall sample, meaning that they are over-represented in the donor categories by only three percentage points. African American alumni comprise 7% of Groups 4 and 5 and 8% of the overall sample, so they are only underrepresented by 1%; similarly with individuals identifying as two or more races. The side-by-side comparison of the racial make-up of Groups 4 & 5 as compared to the overall sample shows visually what the ANOVA found: that race was not a significant predictor of donor status. This could have to do with the fact that community colleges have been more inclusive of minorities and that alumni of color consider the community college to be a cause that provides advancement for individuals in their community.

Table 36

Overall sample and donor status by race/ethnicity

		Group 1:	Group 2:	Group 3:	Group 4:	Group 5:	Groups 4 & 5 by race - number	Groups 4 & 5 by race - percent	Overall Sample by race - percent	Totals
White	Count	85	19	66	77	9	86	84%	81%	256
	%	33.2%	7.4%	25.8%	30.1%	3.5%	33.6%			100.0%
African American	Count	3	4	13	6	1	7	7%	8%	27
	%	11.1%	14.8%	48.1%	22.2%	3.7%	25.9%			100.0%
American Indian/Alaskan	Count	1	0	0	0	0	0.0%		0%	1
	%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%			100.0%
Asian	Count	1	0	2	4	0	4	4%	2%	7
	%	14.3%	0.0%	28.6%	57.1%	0.0%	57.1%			100.0%
Hispanic/Latinx	Count	4	0	0	0	0	0.0%			4
	%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%			100.0%
Two or more races	Count	4	0	1	1	0	1	1%	1%	6
	%	66.7%	0.0%	16.7%	16.7%	0.0%	16.7%			100.0%
Decline to answer	Count	9	1	1	3	0	3	3%	4%	14
	%	64.3%	7.1%	7.1%	21.4%	0.0%	21.4%			100.0%
Some other race	Count	0	0	0	0	1	1	1%	4%	1
	%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%			100.0%
Total	Count	107	24	83	91	11	102			316
	%	33.9%	7.6%	26.3%	28.8%	3.5%	32.3%	100%	101%	100.0%

While race was not predictive of donor status within the study sample, it is important to note that the group of alumni who completed the survey was not representative of CCS alumni, as roughly 40% of CCS enrollment is of individuals from minority groups, suggesting that roughly 40% of alumni are, as well. This is in contrast with the study sample, which included only 15% individuals who self-reported as a racial/ethnic minority. Thus, it is clear that the alumni who are engaged enough to respond to the survey and had the means to do so via an electronic platform were disproportionally white as compared to the alumni population. Within this more engaged group that did respond, however, race does not play a role in determining who

is a donor, as it did in the Sun (2005) and Sun et al. (2007) study. More research needs to be done to understand how the distribution of alumni giving by race to community colleges, and the motivations of those alumni donors, differs from those of alumni givers to four-year institutions of higher education.

Recommendations for Community College Practice Based upon Findings

Primary recommendations for colleges.

The most significant finding of this study is that *Age* and *Alumni involvement* – frequency are the two variables that most explain the difference between individuals who have never given and have no plans to give back (Group 1) and individuals who have given back and plan to increase their support (Group 5). This means that the group of individuals who are most likely to give back are both older and more frequently engaged with the college in terms of coming onto campus, volunteering at events, and visiting the college web site. Given this information, I have three recommendations for colleges around building relationships with alumni who fall into one or both of these categories.

Alumni who are older and already involved in the college. Alumni who fall into both of these categories may already be giving to their community college and planning to increase their support, but this group should still be solicited for gifts and advancement staff should make a point to build relationships with individuals in this group, thank them for their involvement, and cultivate them for larger gifts. Since the results of this study are based upon a relatively small number of alumni who fell into each of the five categories, it is possible that there are many alumni who fall into both of these categories, being older and already involved with the college, who are not giving at all. Community college advancement offices should look through

their databases to determine who falls into these categories and determine appropriate cultivation strategies for everyone in this group.

In light of the recommendation above, it is important to consider who should fall into the "older" category. In Table 33, it is clear that the group of alumni in their 40s has the highest percentage of alumni who have given back to a community college and plan to increase their support in the future, while the group of alumni in their 60s has the highest percentage of individuals who have given to the college and either plan to continue or increase. Community colleges would do well to solicit individuals in their 40s who are already engaged with the college, being careful to continue to cultivate those individuals for larger gifts in the future. Additionally, community colleges should thoughtfully steward, cultivate, and solicit alumni in their 50s, 60s, and 70s, as these individuals are in prime giving years.

Alumni who are older and not already involved in the college. Another group of alumni that is important to cultivate is alumni who are older but not frequently involved at the college. It may be prudent to go after the segment of older alumni who live relatively close to the college, since proximity to the college is a predictor in alumni giving, and since alumni who live nearby can more easily engage on campus and at other in-person events near the college. Community college advancement offices may do well to start to engage older alumni who live closer to the college by inviting them to events, asking them to campus, and recruiting them as mentors. As long as community colleges have the bandwidth to successfully engage alumni with events and volunteer opportunities, these individuals may ultimately be good prospects to cultivate and solicit for gifts to the college.

Alumni who are already involved in the college but not older. Many community colleges are fortunate to have alumni who live nearby and engage frequently with the college,

such as attending arts events or serving as mentors. Even if these individuals do not yet fall into an older age category, they are an important group to build relationships with, as they will eventually reach an age that is associated with giving back to the college. Younger individuals who are involved at the college in other ways may not have the financial resources to give back or they may be focusing their financial resources on other projects. While making smaller gifts in the near-term may be feasible for these alumni, community colleges would do well to cultivate them as longer-term prospects who may be capable of significant giving in the future.

Secondary Recommendations for colleges.

In the second function, for both Analysis A and B, *Alumni communications – importance* and *alumni involvement – importance* explained the difference between Group 2 ("given/won't continue") and Group 3 ("never/but plan to"). In an ideal world, no advancement director wants many alumni in either of these categories – either feeling dissatisfied with their active donor status or planning to give but not taking action. Thus, I consider the factors that distinguish Groups 2 and 3 as helpful guidelines that may embolden advancement directors to figure out how to move alumni forward in their relationships to the college, rather than as ways to help donors move directly into Group 4 ("donated/will continue") or Group 5 ("donated/will increase").

Alumni who place a high importance on communications. Alumni who read communications from the college, such as the alumni magazine, newsletter, and other communications may be good prospects to cultivate in other ways, such as getting them involved on campus and getting to know them as prospective donors. If the alumnus/a becomes frequently engaged by the college as described by the *Alumni Involvement – frequency* factor, then Function 1 applies, and the focus can become on moving that donor into Group 5 ("given/will increase").

Alumni who place a high importance on involvement. Alumni who place a high importance on involvement may already be engaged as volunteers on campus (see sections above related to *Alumni engagement – frequency*). Others may believe that it is the right thing to be involved at the college but may need a more specific invitation to become involved. Placing information about events and volunteer opportunities in alumni communications and talking about the impact that other alumni have already had as volunteers could be effective ways of drawing in alumni who have the potential to be great volunteers, event attendees, mentors to students, and resources for job opportunities for students. Once alumni are actively engaged on campus, they are more likely to become donors to the college.

Alumni who have had a positive experience with career /life preparation as students. In Analysis A, Student experience – career/life preparation was one of the factors that most highly correlated between Groups 2 ("given/won't continue") and Group 3 ("never/but plan to"). Alumni who feel that their experience at the community college prepared them for further formal education, a commitment to continuous learning, deepening their understanding and commitment to personal development, responding to new career opportunities, contributing to their community, and current work status, were more likely to plan to give back to the college in the future. Although advancement offices may not have any knowledge about how alumni in their database feel about their student experience, there are a couple of ways they could use this information to their advantage: (1) sending out a survey to alumni in their database and (2) exploring this topic with individual alumni with whom they are already building relationships. Additionally, in alumni communications, community colleges could share stories of other alumni who felt that their student experience laid the foundation for their future learning and career

opportunities as a way of getting alumni to think about their own story and relationship to the college.

Additional Findings, Limitations, and Recommendations for Future Study

At the end of Chapter 3, I discussed limitations to the study design. In this section, I will discuss limitations as a result of the implementation of the study, which also provide additional findings for discussion. These include alumni contact rate as compared to college size, overall response rate, and response rate by college.

Missing responses to the "grid" questions on the survey

One limitation to this study was that so many alumni did not answer every single question on the survey. A huge number of missing responses were on one of the "grid" questions, many of which asked alumni to rate the importance and effectiveness of various elements of their student or alumni experience. These questions had between 11 and 27 sub-questions; a total of 765 alumni, or 66% of alumni who submitted the survey, did not fully respond to every one of the sub-questions, which led to removing those responses from the sample. (Another 83 individuals did not respond to the donor status question, which required removing those responses from the sample, as well). A recommendation for future study is to conduct another community college alumni survey that provides simpler questions related to the student and alumni experience.

Cleaned Data Sample Size & Low Response Rate

The overall rate of response for the survey study was 2%, with a total of 1157 submitted responses. This was significantly lower than the response rate to the Sun (2005) and Sun et al. (2007) study (24% and 18% across two years) and the response rate to Skari's national study of community college alumni (5.9%). After I deleted responses with missing data in key questions,

a total of 840 responses, this turned into a 0.5% response rate, with a total of 317 responses that had complete data for all six key questions (five grid questions about alumni/donor experiences and one donor status question). This low response rate is a significant limitation, as it greatly reduces the chances that the responses of those 317 alumni are representative of the estimated 56,920 alumni who received a link to the survey. In fact, this number fell below the total number of 382 responses needed for the results of the study to be generalizable with a 95% confidence rate and a 5% margin of error (Raosoft, n.d.) Instead, the margin of error was 5.49% and the confidence rate was 92.5% (Raosoft, n.d.) It is highly likely that the alumni who responded are, as a group, more engaged with the college than those who did not, and that their views about the college and donor status are reflective of that.

In addition to being a limitation, the low response rate is also a finding. Especially in light of this, why did less than 1% of alumni take the time to fully complete the survey in this study? One potential explanation is that there are too many "grid" questions in the survey instrument: (five grid questions with a total of 97 sub-questions) and that the grid questions created respondent exhaustion, both preventing some alumni from completing and submitting the survey, and preventing others from answering all the key questions on the survey. (In contrast, Skari's survey only included one grid question with a total of 10 sub-questions). However, the same number of grid questions were included in the Sun (2005) and Sun et al. (2007) study, which had a much higher response rate. Another possible explanation is that the average level of engagement with alumni prior to the study is lower in this study than in Skari's (2001) or Sun's (2005) and Sun et al.'s (2007) study, which could have influenced response rate. In the Sun et al (2007) study, alumni of the Midwest university may have been more engaged than the average CCS alumnus/a. In Skari's study, colleges were invited to participate as part of a national

sample; it is possible that the colleges that accepted the invitation to participate engaged with their alumni more on average than CCS colleges, or that the colleges in the national sample had, on average, better donor records and more current email addresses than did the CCS colleges.

As discussed above, another potential explanation is the fact that the study took place during the Covid-19 pandemic, with surveys being emailed out to alumni during the fall and winter of 2020-2021. While it is not possible to know all the ways that this circumstance could have affected response rate, here are a few possibilities: alumni could have been overwhelmed by taking care of or educating children at home while juggling a job; alumni could have lost their job during the pandemic and been unable to focus on extraneous emails; alumni whose jobs became virtual may have become burned out on the amount of time they were spending on screens and were unwilling to take the time to take a computer-based survey.

Small number of alumni in key demographic groups

One limitation that is particularly salient given the findings of this study is the fact that there were small numbers of respondents in subgroups within the categories of age and race. For example, of the seven different age groups in which alumni could self-identify, no group had more than 27 respondents; further, there were only two respondents ages 18-19, seven individuals in the 70+ age group, and 11 respondents in the 40-49 -year-old group. In the race/ethnicity category, there were relatively few respondents who self-identified in race/ethnicity groups other than "White." For example, there were 27 African American or Black respondents, 14 that indicated they were two or more races; seven that responded as Asian, four that indicated they were Hispanic or LatinX, one respondent who self-identified as American Indian or Alaskan native, and one that indicated being "some other race." Given the fact that race/ethnicity did not correlate with giving in this study, which can be viewed as an important

finding because it contradicts the broader alumni giving literature, it is important to understand how few alumni responded who self-identified as belonging to a minoritized group. Thus, the findings that age correlates with giving and race does not correlate with giving should be understood within the context of these limitations.

Ratio of alumni in smallest donor group to total predictor variables

For discriminant analysis, which was used in this study, it is important that the total number of predictor variables be greater than the number of individuals in the smallest group (Buyukozturk et al., 2008; Tabachnick et al., 2001). Because there were only 11 individuals in Group 5 ("given/will increase), and a total of 15 predictor variables in my original analysis, Analysis A, I accomplished this by conducting a second set of analyses, Analysis B, which included only seven predictor variables. This meant that the total number of predictor variables was four less than the number of individuals in the smallest group. While this technically met the criterion for discriminant analysis, the fact that there were only 11 individuals in Group 5 ("given / will increase") was undoubtedly a limitation. If this study were replicated or a similar study conducted, it would be important to reach a much larger total number of alumni, to format the survey with fewer grid questions, or both, so as to allow for a larger number of individuals who answer all key questions and self-identify in each of the five groups. Another option for increasing the completion rate would be to include in the survey only the key questions that are necessary for data analysis within the Multivariate Model of Alumni Giving, so alumni are able to focus on completion of those questions, and to incentivize completion (rather than simply submission) of the survey.

Number of variables in factor analysis given overall sample size

According to Pallant (2016), factors extracted from smaller samples are generally not as generalizable as factors extracted from larger ones. Researchers have different opinions about the ratio of variables that should be used in factor analysis given a particular sample size. Recommended ratios of total cases to number of items to be factor analyzed range from 1:5 to 1:10 (Pallant, 2016); with 97 total items to be factor analyzed in this study, a 1:5 ratio would have meant 485 cases and a 1:10 ratio would have meant 970 cases; instead, I had 317 cases. Tabachnick and Fidell (2000) suggest that 300 total cases may be enough. My low ratio of cases to items to be factor analyzed was a limitation.

At the same time, several statistical values pointed to the strength of the factor analysis. The Cronbach alpha value for each factor was fairly high. The Cronbach alpha is a measure of reliability and is generally considered good when it is at 0.70 or above (Institute for Digital Research & Education, n.d.). The Cronbach alpha value came in at 0.8 or above for each of the eight factors in this study. Bartlett's test of sphericity, which should be significant at the $p < 0.05$ level (Pallant, 2016), was significant at the $p < 0.001$ level and the KMO measure of sampling adequacy, which has a suggested minimum value of 0.6 (Pallant, 2016), was 0.930.

Response rates by College

Another limitation is that the numbers of completed responses from individual colleges were not always proportional to the sizes of the college (as measured by FTE of currently enrolled students). For example, CC1, which represented 4% of the total FTE of the colleges in the sample, had enough alumni complete the survey that they comprised 22% of the final sample, while CC4, which represented 58% of the total FTE of colleges in the sample, had very few

alumni responses, comprising only 9% of the final sample. This was a limitation in terms of how representative of the system as a whole the alumni were that responded.

A portion of this can be explained by the uneven numbers of alumni the colleges reached with a link to the survey. For example, a couple of colleges reached out to more than 10,000 alumni, while a number of colleges reached out to fewer than 5,000 alumni. The college that reached out to the most alumni (CC9) was the third largest college in the sample, and the college that was the largest, came in fifth in terms of the number of alumni contacted. The outreach by the colleges was not proportional to the size of the colleges, and likely contributed to the lack of proportionality in responses from alumni of those colleges.

Additionally, the response rates of alumni from each college were not proportional to college size within the sample. If responding to a survey from one's alma mater represents some level of engagement, then alumni across the CCS are not engaged proportionally to the size of their college. The response rates for alumni of each college varied between 0.29% (CC9) to 1.97% (CC1), with many of them falling below 1%. Table 37 shows the numbers of alumni reached by each college in comparison to their completed survey response rate while Table 38 compares the proportional sizes of the college, alumni reached, and donors in Groups 4 and 5. There does not appear to be a relationship between the number of surveys sent out proportional to the college's size and the number of donors among that college's alumni.

Table 37

College size, alumni reached, total responses and response rate

College	FTE	Total (estimated) alumni survey reached	Completed responses	Completed response rate
CC1	2,354	3,445	68	1.97%
CC2	2,361	8,401	16	0.19%
CC3	1,563	4,815	12	0.25%
CC4	31,707	4,110	29	0.71%
CC5	2,797	4,871	32	0.66%
CC6	1,730	2,055	27	1.31%
CC7	5,452	11,394	50	0.44%
CC8	1,575	5,379	26	0.48%
CC9	3,711	12,400	36	0.29%
CC10	1,561	50	20	40.00%
Total	54,811	56,920	316	

Table 38

Percentage by college of total sample, alumni reached, and alumni in Groups 4 and 5

College	Percentage of FTE in total sample	Percentage of total alumni reached in study	Percentage of completed survey responses	Percentage of alumni in Groups 4 & 5
CC1	4%	6%	22%	23%
CC2	4%	15%	5%	3%
CC3	3%	8%	4%	3%
CC4	58%	7%	9%	20%
CC5	5%	9%	10%	2%
CC6	3%	4%	9%	7%
CC7	10%	20%	16%	7%
CC8	3%	9%	8%	17%
CC9	7%	22%	11%	7%
CC10	3%	0%	6%	13%
	100%	100%	100%	100%

The wide range of alumni contacted, numbers of alumni that responded, and alumni response rates across the CCS would be worth following up with an examination of the practices and culture related to alumni engagement within each community college advancement office. For example, CC10 reached out to relatively few alumni (50), had a very strong response rate

(40%), and had a disproportional percentage of alumni responders in Groups 4 and 5 (13%). In correspondence with that college, it was clear that alumni fundraising had traditionally not been a priority given the limited bandwidth of the advancement office in that college, yet clearly there was a group of alumni that was very responsive. It would be interesting to know more about how CC10 had engaged the alumni in their portion of the sample. As discussed above, CC1 emerged as a leader in numbers of alumni responses proportional to college size, as well as proportional to the responses of alumni from any other college. Based upon correspondence with staff at CC1, segments of CC1 alumni had already been engaged systematically for years, and CC1 had a sophisticated method of emailing alumni that allowed them to identify bounced emails so they could continuously update their database as part of the communications process. A greater examination of the practices of CC1 could yield useful information about ways to systematically engage alumni. At the same time, it is important to note that CC1 did not have a significantly higher rate of alumni donors than percentage of alumni who participated in the study. In contrast, CC4 contacted a much smaller number of alumni than many other colleges proportional to its size yet had a very high rate of alumni respondents in Groups 4 and 5. If its sample size is indicative of the number of alumni frequently engaged by CC4, it seems possible that this college is able to cultivate more donors per alumni engaged than some of the other colleges. Again, learning more about the alumni engagement practices of each college, in conjunction with information about the culture and demographics of the colleges and their alumni, could yield useful information about best practices for engaging alumni so that they become donors.

Study Summary

This study found that the Multivariate Model of Alumni Giving (Sun, 2005; Sun et al., 2007), which is based upon survey data from alumni of a Midwest four-year institution applies to

alumni of a community college system in the eastern United States - with a few key differences. The factors *student experience*, *alumni experience*, *alumni motivation*, and *demographic variables* significantly distinguished alumni donors from nondonors. Specifically, the following extracted factors were shown to be significant: in the *alumni experience* category, A*lumni communications: importance* and *Alumni involvement: frequency*; in the *alumni motivation* category, A*lumni involvement: importance*; in the *student experience* category, S*tudent experience: career/life preparation*; and in the demographics category, variables such as *Proximity of residence to community college*, *Age*, and *In-state residence.*

The study results differed from those of the Sun (2005) and Sun et al. (2007) study in a few keys ways: the student experience factor that was found to be significant to alumni donor status for community college alumni was related to career and life preparation; this is in contrast to the three separate *student experience* factors in the Sun and Sun et al. study, including *impact on career, relationships,* and *extracurricular activities.* Another key difference was in the Alumni experience category. This study found that the alumni experience factor that positively correlated with donor status for community college alumni related to frequency of involvement, while the Sun and Sun et al. study did not include an equivalent factor. Demographics presented additional differences. This study found that gender and ethnicity were not significant factors to donor status among community college alumni while the Sun (2005) and Sun et al. study (2007) found they were significant for alumni of a four-year institution. The finding that ethnicity was not significant to donor status aligned with findings from Skari's (2011, 2014) community college-specific alumni research.

Additional research needs to be conducted to understand the context behind the findings in this study and to determine whether the results from this study can be replicated among alumni

of other community college systems. Qualitative research following up on the motivations of alumni to CCS colleges, as well as additional research in the alumni engagement practices of CCS colleges, would allow for greater understanding of the results of this study. Additional research using a similar survey instrument with alumni of other community college systems would be helpful in exploring whether the factors identified in this study as contributing to donor status apply to other community college alumni, as well. In a future study, it could be advantageous to add income level to the survey instrument, as Skari (2011) did in her adaptation of the Multivariate Causal Model of Alumni Giving, finding that income level and giving were positively associated for community college alumni. Additionally, given the relative diversity of community college alumni, more needs be done to explore the role of race in donor status among community college alumni as compared to the role that race plays in alumni giving to four-year schools.

Community college alumni may represent a potential funding source for community colleges moving forward. More research needs to be conducted to help guide community college advancement offices in determining not only which alumni are most likely to become donors in the future, but also how to best engage those alumni as they deepen their relationship with the college. Based up on these preliminary findings, focusing on ways to engage alumni on campus and virtually with the community college may be one good place to start.

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Appendix

Table A1

CCS Institutional Characteristics (participating colleges in bold)

College	Urbanization	Size	(FTE)
CC1	Rural: Fringe	Medium	2,354
CC2	City: Small	Medium	2,361
CC11	Rural: Fringe	Small	602
CC12	Town: Distant	Small	1,757
CC13	Rural: Remote	Very small	354
CC14	Rural: Fringe	Medium	4,343
CC7	Suburb: Large	Large	5,452
CC15	Suburb: Large	Large	5,429
CC16	Rural: Fringe	Medium	3,956
CC3	Town: Distant	Small	1,563
CC17	Town: Fringe	Medium	2,664
CC4	Suburb: Large	Very large	31,707
CC18	Rural: Fringe	Small	1,701
CC19	Town: Distant	Small	798
CC5	Suburb: Small	Medium	2,797
CC6	Rural: Distant	Small	1,730
CC20	Rural: Distant	Medium	2,033
CC8	Rural: Fringe	Small	1,575
CC21	City: Midsize	Medium	4,962
CC22	City: Midsize	Very large	13,980
CC23	Suburb: Small	Small	1,469
CC9	City: Small	Medium	3,711
CC10	Town: Distant	Small	1,561