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Associations Between Higher Education Sustainability and Alumni Giving

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A Thesis in the Field of Sustainability

for the Degree of Master of Liberal Arts in Extension Studies

Harvard University

May 2018

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Abstract

Remaking higher education campuses to meet climate commitments will have real and significant costs, yet many campuses are financially constrained. For most institutions, alumni giving is a significant, yet declining, source of funding. This leads to a question of whether the presence of climate and sustainability programs might impact alumni giving. To address this question, this research examined two hypotheses predicting how campus sustainability programs might impact alumni giving rates. First, that year on year changes in the level of sustainability assessment metrics are correlated with year on year changes in alumni participation rate, a measure of giving. Second, that allowing online donors the option of restricting their gifts for "sustainability," "environment," or "green" purposes is correlated with a higher alumni participation rate.

To test these hypotheses, new and existing data were used. Alumni participation rates of American higher education institutions for the years 2007-2017 were obtained from the Council for Advancement and Support of Education (CASE). Concurrent data came from two sustainability assessment programs, the Association for the Advancement of Sustainability in Higher Education's Sustainability, Tracking, Assessment, and Ratings System (STARS) and the Sierra Club's Cool Schools. New data on options for restricted giving was collected as part of this research for institutions represented in the CASE dataset.

Sustainability assessment data from both of the programs considered were analyzed in three ways. A Spearman rank correlation showed that the Cool Schools

metrics were comparatively volatile from year to year while the STARS metrics exhibited less change from year to year. Linear regression analysis found no statistically significant correlations between changes in annual alumni participation rates and changes in the two sustainability assessment metrics on either a present or lagging basis *(STARS n= 74, Cool Schools n=129)*. This was true for both individual institutions and the overall data set.

Paired t-tests were used to compare the mean alumni giving rates for the subsets of institutions that did and did not allow restricted giving for any of the three hypothesized options. The institutions that allowed restricted online giving for "sustainability" had mean giving rates that were 41% higher than that of those that did not *($p < 0.05$)*. This contrasted with institutions allowing restrictions for "environmental" or "green" purposes; the observed differences in their mean giving rates were not statistically significant.

These results could offer higher education institutions direction on which sustainability-related paths are most likely to increase their alumni participation rate. The lack of correlation between giving rates and sustainability assessment metrics mean institutions may need to consider if alumni could be unaware of sustainability metrics or if such metrics may not resonate with alumni. In contrast, the analysis of allowing restricted giving for sustainability suggests a simple and single change institutions could consider implementing to potentially increase their giving rates. While this finding has caveats that it only considered one year of data and is not able to show causation, it implies that alumni giving rates might be increased by introducing the option for online donors to give to sustainability initiatives.

Acknowledgements

I would like to thank Vikki Rodgers and Nathan Karst for guiding me through the research process, helping me address challenges, and for encouraging me throughout the development of my paper.

I would like to thank Michelle for constantly supporting me through my degree program, especially during my thesis work.

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Chapter I

Introduction

The real costs of deep decarbonization are becoming clear at a time when many public institutions are facing declines in state funding (Foderaro, 2011). Both public and private institutions are feeling pressure to contain tuition costs for students (Marcus, 2017). To make up for financial shortfalls, many institutions are considering new ways to increase alumni giving (Foderaro, 2011). To that end, some institutions are investigating how an emphasis on sustainability might enjoin certain donors to contribute — notably, donors that had not previously given to the institution (Carroll & Spitler, 2008).

Since the launch of the American College and University Presidents' Climate Commitment in 2006, over 600 higher education institutions have made commitments to reduce their greenhouse gas emissions (Second Nature, 2018). Achieving these commitments, however, will require considerable investment by each institution at a scale that is beyond the current reach of most higher education institutions. This gap is exacerbated by the fact that the primary paths to achieving these commitments (i.e., deep energy efficiency efforts and the purchase of carbon offsets and renewable energy) do not always offer direct or immediate financial returns (National Association of College and University Business Officers [NACUBO] & Second Nature, 2012). Therefore, colleges and universities will have to find creative ways to close the fiscal gap associated with their sustainability commitments. As the largest source of voluntary support for higher education, alumni giving may offer that creative way (Council for Aid to Education

[CAE], 2017a). For this reason, there is great need to identify opportunities to successfully inspire alumni giving with sustainability initiatives.

Therefore, understanding the degree to which sustainability assessment metrics or donor engagement around sustainability might inspire alumni giving could be a critical avenue for achieving sustainability commitments. In this way, institutions might create a positive feedback loop in which more (and more visible) sustainability practices engender higher degrees of alumni participation, which then provides additional funds for achieving sustainability goals, which drives even higher alumni participation, and so on. As a review of the literature makes clear, the links between alumni giving rates and campus sustainability assessment results or the option to restrict one's gift to sustainability purposes have yet to be thoroughly studied.

Research Significance and Objectives

As institutions work to increase alumni giving, understanding the degree to which the campus sustainability efforts are correlated with increased alumni giving could be valuable information for senior campus administrators. My research will evaluate this relationship, because if a correlation is identified, administrators may be inclined to increase funding for sustainability programs with a goal of increasing alumni giving.

This research explored two potential ways for institutions to use sustainability initiatives to increase alumni giving. First, I explored the impact of changes in an institution's sustainability rating on changes in alumni giving. Second, I investigated the potential for advancement offices to increase alumni giving by allowing donors to specify their gifts for "sustainability," "green," or "environmental" purposes. A review of the

literature revealed that these two areas have not been thoroughly explored for their connections to alumni giving. As institutions struggle with financial challenges, using sustainability to connect with alumni could provide a solution.

My research objectives were to:

- Determine to what extent campus sustainability programs impact alumni giving rates
- Determine if restricted giving for sustainability is correlated with increased rates of alumni giving
- Inform institutional strategy for funding campus sustainability initiatives
- Inform donor engagement practices related to campus sustainability

Background

Literature shows that alumni giving is impacted by many factors, though the impact of campus sustainability on giving is unclear. Higher education institutions have had sustainability programs for the past decade, but many are held back by financial constraints. Campus sustainability assessment metrics prioritize climate and energy related efforts.

Alumni Giving in Higher Education

According to the Council for Aid to Education (CAE), alumni provided 24% of the total voluntary support of higher education in 2016, the second largest source of voluntary giving after foundations (CAE, 2017a). It should be noted that as a category under CAE reporting, foundations includes family foundations, which may be vehicles

for personal gifts by alumni, and so this estimate of the proportion of support provided by alumni is likely conservative. For example, the Satell Family Foundation supported sustainability research efforts at the University of Connecticut, but institutional communications about the gift also highlighted the fact that Ed Satell was a University of Connecticut alumnus (Doak-Mathewson, 2014). Similarly, the same CAE report contains a category for 'other organizations,' which includes donor-advised funds, that may also reflect donations by individual alumni (CAE, 2017a). Said another way, only 34.4% of giving to higher education came from corporations and non-alumni individuals in 2016, and so alumni provide much of the voluntary financial support for higher education (CAE, 2017a). Given the significance of alumni giving, it is worth examining the factors that impact it in general before discussing its specific relation to sustainability practices.

Factors Impacting Alumni Giving

Alumni giving is impacted by a variety of factors outside the control of an institution. For example, the financial situation of individual alumni can influence giving. A 1993 survey of one institution's alumni found that 52% of the non-donor alumni said they simply could not afford to give (Skavdahl, 1993). Financial constraints are likely still relevant two decades on, and more recent evidence shows that alumni may be uninterested in donating if they are repaying loans or are unemployed (Seltzer, 2016). Alumni giving is also known to be sensitive to both local and global economic factors. For instance, alumni living in states that allow tax deductions for charitable donations have higher giving rates (Holmes, 2009), and the overall strength of the economy has been cited by alumni as a factor in their decision to give (Akers & McDearmon, 2010).

It should be noted that some factors are beyond an institution's control in the short-term, but that over a longer horizon, an institution may be able to implement strategies to control for those factors to maximize their fundraising potential. A review of data from 1941 to 1991 for Princeton University demonstrated that Princeton's giving participation rate increased significantly for a given class of alumni when it was their 25th or 50th reunion (Willemain, Goyal, Van Deven, & Thukral, 1994). A more recently identified factor is participation in fundraising or development offices as an undergraduate student. Alumni who participated in activities, such as phonathon, as students, have shown a higher probability of giving than other alumni (Holmes, 2009). Additionally, there is a positive correlation between higher-income alumni donors and larger gifts (Holmes, 2009). Given these factors, institutions with demographic or historical information about their alumni may be able to leverage that data to increase donations or use it to target those most likely to give.

Finally, there are factors correlated with increased giving that are at least somewhat under institutional control. For example, there is a significant positive correlation between giving rates and institutional investment in the quality of the undergraduate experience (i.e., in the areas of coursework or faculty quality) (Gaier, 2005). Given that, a prolonged and serious commitment to the improvement of undergraduate education in general might pay dividends over a long time horizon. Alumni participation rates are also correlated with how the institution engages its alumni, such as by having current undergraduate students soliciting alumni for gifts (Brower, 2006). Additionally, whether an institution publishes an alumni magazine is linked with higher alumni giving rates, as is a higher frequency of publication (Levine, 2008; Lott,

2010). Success in college sports has also been linked with increased alumni giving (Baade & Sundberg, 1996). While the above factors have implications for advancement strategy, they are not as germane to this specific research.

Restricted Online Giving

The Annual Giving Network, a fundraising firm, noted in 2016 that more than half of all gifts are made online (Allenby, 2016). This figure likely varies depending on the institution, but another source, from an experimental study that emailed 10,600 alumni of one institution, found that 99% of gifts connected to the study were received online (Eckel, Herberich, & Meer, 2017). These metrics point to the importance of understanding the factors that impact online giving.

Surveys of non-donor alumni often identify a concern that a gift may not ultimately be used in a manner they would deem appropriate. This can result in alumni choosing not to give. An interview with non-donor alumni captured this sentiment by noting that alumni do not want their donations to go into a "black hole" (Skavdahl, 1993). A similar sentiment was found among young alumni. They were not interested in making "unrestricted" gifts to their alma mater as they "did not see giving to the university in a general sense as a worthwhile cause for support" (McDearmon, 2010). Instead, respondents to the survey noted that they would be willing to donate if they could decide which part of the institution would receive their gift and how it would be used (McDearmon, 2010). Interestingly, these surveys counter recent experimental research by Eckel et al. (2017) in which two similar pools of alumni from one institution were simultaneously engaged via email. For this study, one group was given the option to

restrict their gifts to an individual college within the larger university while the second group was only asked to donate to the university (Eckel et al., 2017). The same study found that participation rates were similar for each of the two groups. However, the same research found that only 2.4% of donors in the group given the option to restrict their gift actually chose to make such a restriction. Additionally, gifts from this group were, on average, larger, though the difference was not statistically significant due to sample size (Eckel et al., 2017).

The impact of allowing restricted giving may depend on situation-specific variables. While not focused in the area of higher education, work by Helms, Scott, & Thornton (2012) has shown that allowing restricted gifts for a particular program within a nonprofit organization resulted in a higher probability of giving. A year later, follow-up work by the same authors found that allowing restricted giving also significantly increased the amount given (Helms, Scott, & Thornton, 2013).

To leverage the idea that allowing restricted gifts might increase giving, many higher education institutions have allowed online donors to restrict their gifts. The opportunity to do so was noted at least as early as 2002. In 2002, the University of California, Berkeley's (UCB) online giving site allowed donors to give to “more than 100 programs and more than 300 funds” at the institution (Lajoie, 2002). In this same article, Rosemary Kim, UCB’s executive director of development operations, noted that the giving rate for the online site, which gave choices to donors, was “surprisingly strong with almost no promotion,” demonstrating the value that giving choices to donors can provide. The ease of opportunity presented by websites to facilitate donor specification was apparently compelling enough that the University of Michigan’s staff had made

plans to design custom online buttons for each unit of the university so that individual units could directly engage alumni to give (Lajoie, 2002). It is important to note that it is unclear whether UCB or the University of Michigan allowed for controls by testing sites that did not allow donor specification; thus, their giving rate may have been strong for other reasons.

Giving Factors Related to Sustainability

More relevant to this work, research done in the context of a university athletics department may provide clues as to how institutions might use sustainability to induce non-donors to begin contributing. In one survey, university athletic event attendees expressed a greater willingness to donate to the athletics department when informed of environmentally responsible initiatives being implemented by the athletics program, i.e., placing recycling containers in athletic venues (Walker, 2013). This may indicate that furnishing such information might increase giving beyond the context of athletics. However, this research was of a limited scope; it reveals what survey subjects claimed they would give as opposed to their actual donations.

Interestingly, the impact of campus sustainability programs as a factor for alumni giving does not appear to have been studied. Holmes (2009) reviewed the marginal impact of 40 different alumni characteristics (e.g., gender, income levels, and profession) to measure their correlation with alumni giving. In this study, the characteristic most related to sustainability was profession (whether the alumnus was employed in an environmentally-related field). Presumably, there are many alumni who care strongly about sustainability who are not (currently) employed in such a field, and so the measure

is somewhat lacking in the broader investigation proposed here. Further, Brower (2006) considered 37 factors related to institutional advancement offices and 16 general institutional characteristics in her review of impacts on alumni giving, but none were related to sustainability. Similarly, a review of 15 institutional characteristics considered variables such as the setting of the institution in urban, suburban, or rural locations. Like the above studies, it did not investigate the impact of sustainability initiatives on giving (Gunsalus, 2005). Given the growing visibility of sustainability both on campus and in society at large, the lack of systematic exploration of these traits as they pertain to alumni giving is a notable and widening gap in the literature.

Campus Sustainability Programs

There is increasing interest among stakeholders at higher education institutions to include sustainability practices in campus operations and growth (Emanuel & Adams, 2011). Among first-year students, longitudinal national surveys of students have shown that they are increasingly interested in environmental concerns. In 2001, 17.0% of first-year students said becoming involved in programs to clean up the environment was "essential" or "very important" to them; by 2016, it had doubled to 33.8% of students (Eagan et al., 2017; Sax, Lindholm, Astin, Kom, & Mahoney, 2002). Moreover, many higher education leaders consider sustainability leadership to be a part of institutional values (Powers, 2007). Further, government funding is increasingly contingent on environmental considerations (Emanuel & Adams, 2011).

Starting from a small number of programs in the early-2000s, campus sustainability programs have rapidly expanded in number over the past 10 years. The

Association for the Advancement of Sustainability in Higher Education (AASHE) marked its 10th anniversary in 2015, and its 2015 conference had over three times as many attendees as the inaugural conference in 2006 (Association for the Advancement of Sustainability in Higher Education, n.d.). Growth in the movement was paralleled by an increase in participation in assessment programs. For example, the number of schools reviewed in the Sierra Club's Cool Schools report grew from 10 in 2006 to over 200 in 2016 (Andrews & Stanley, 2016).

Beyond the Cool Schools report, there are a number of other reporting systems that measure or rank campus sustainability programs. Each of the systems ascribes varying weights to the broad range of topic areas related to campus sustainability. Overlap in the data collected by some of these systems inspired AASHE, the Princeton Review, the Sierra Club, and the Sustainable Endowments Institute to collaborate in 2012 and create the Campus Sustainability Data Collector, a shared data collection tool (Bullock & Wilder, 2016). Other programs include the National Wildlife Federation's State of the Campus Environment and the University of Indonesia's GreenMetric, each of which has their own areas of interest within sustainability. That said, over the past decade, two of the above assessment systems, the Sierra Club's Cool Schools ranking and AASHE's Sustainability, Tracking, Assessment, and Rating System (STARS), have gained prominence (Albis, 2017; Bullock & Wilder, 2016; Lang, 2015). I will focus on these two highly visible metrics.

Assessment Programs Prioritize Climate Action

AASHE's STARS and the Sierra Club's Cool Schools are broad in scope and both address institutional activities ranging from academics to engagement to operations. However, despite their broad scopes, both programs weight climate reporting and energy consumption heavily in their scoring and thus are good measures of progress on climate commitments. The Cools Schools ranking allocates nearly one fourth of the weight in its scoring system directly to climate reporting and energy use, with additional points awarded for areas that indirectly impact climate and energy, such as sustainable building practices and telecommuting (O'Reilly 2017). For the AASHE STARS program, about a tenth of its overall score is based on climate and energy use while areas that indirectly impact climate add nearly as much (AASHE, 2017).

Financial Considerations for Campus Sustainability

The importance of financial resources to achieving progress on climate goals has been noted via a correlation between institutional wealth, measured by the size of the endowment, and reductions in greenhouse gas emissions (Foust, 2016). Alumni that give based on successful sustainability initiatives might perpetuate this correlation in a cycle that drives further progress. Other research has found that the most influential factors in determining the success of a university's sustainability program are the variables related to financial support (Ajilian, 2014). Feedback from higher education sustainability staff shows this is a real and increasing barrier; a 2015 survey of higher education sustainability professionals by AASHE found that 22% of staff noted that a "lack of financial resources or financial security" was their biggest challenge (Urbanski, 2015).

Two years later, the 2017 version of the same survey found that the portion of respondents with that same concern increased by half, to 33% (Urbanski, 2017).

In their 2012 document *Higher Education: Leading the Nation to a Safe and Secure Energy Future*, the National Association of College and University Business Officers (NACUBO) and Second Nature noted that many institutions have already completed the energy efficiency initiatives on their campuses that offered a quick return on investment. Remaining energy efficiency projects, such as installing ground-source heating and cooling systems, which would help to provide the high level of energy use reduction generally planned for by institutional climate commitments, are of a scale and size that require an intimidating and considerable capital investment. However, there is a noted "cost feasibility gap" between available funds and the considerable capital investment required that "is simply too big for many institutions to surmount with raising student fees" (NACUBO & Second Nature, 2012). Even if the gap was small enough to address by increasing tuition, many institutions are not able to do so in the competitive undergraduate education environment, and for public institutions, government funding is fixed or declining (Selingo, 2013). Given these constraints, if institutions are unable to handle the cost of implementing sizable energy projects using existing resources and are unable to obtain more funding through tuition and government funds, they will need to rely on funding sources such as alumni giving.

Interest in sustainability among younger alumni may be a future driver of new or increased giving. Academic Impressions (2011) notes that many young alumni donors are interested in sustainability, which has caused institutions to engage alumni around sustainability or to give them opportunities to donate to sustainability programs. This

engagement could drive giving that may not have otherwise happened via general institutional fundraising efforts. Institutions have noted that focusing on sustainability initiatives has drawn in new donors (Carroll & Spitler, 2008). For example, Middlebury College reported that for their class gift, over 90% of graduating seniors gave to support campus sustainability; seniors are a key constituency that institutions engage to create a culture of giving (Carroll & Spitler, 2008). Therefore, as senior campus administrators work to increase alumni giving, it could be advantageous for them to understand the degree of correlation between highly ranked or scored sustainability programs and increases in alumni giving.

Sustainability Rankings and Ratings

Sustainability ranking programs are important for institutional marketing (Zernike, 2008). They also drive the implementation of sustainability programs on campuses as institutions seek recognition for their sustainability efforts (Delpidio, 2017). The Princeton Review, which publishes the Green Honor Roll, has noted that campuses are "eager" to earn a sustainability rating (Zernike, 2008). Rankings have also been noted for their ability to draw attention to the importance of sustainability issues (Zernike, 2008). Finally, the presence of rankings and ratings means that institutions that perhaps might not have considered sustainability questions in the past may "open the door" to institutional discussion about what sustainability programs are actually being implemented (Zernike, 2008).

Cool Schools

The *Sierra Magazine*, the national publication of the prominent American environmental non-profit The Sierra Club, reaches over one million readers and works to "convey the ideals at the heart of the Sierra Club's mission" ("About Sierra magazine," n.d.). Since 2007, Sierra has published an annual rankings list called "Cool Schools" that aims to highlight the work of colleges and universities that have prioritized sustainability (Andrews & Stanley, 2016). In turn, the Cool Schools ranking is driving institutional planning around sustainability, with institutions setting goals to improve their rankings (Johnson & Kultgen, 2016). For example, in response to poor appearances in the Sierra rankings, it has been reported that at least one institution created an office of sustainability (Bailey & LaPoint, 2016).

Cool Schools has evolved over time with respect to data collection processes, methodology, and reception by institutions. Initial data collection was based on a combination of Sierra staff's subjective assessments of the institutions and of the data reported by the institutions; all response areas (e.g., waste or energy use) were considered on 10-point scales (Carlson, 2008). The resulting rankings for 2007 and 2008 were criticized for dramatic year to year shifts in the schools that were included. They were also criticized for how they ranked institutions. Leaders featured in the 2007 ranking were excluded entirely in 2008 while others that were not present in any of the ranking lists from 2007 appeared in the 2008 ranking's top ten list (Carlson, 2008). By 2010, the data collection process had shifted to more objective multi-page questionnaires (Binshtock & Boelte, 2010). The 2010 assessment also included a switch to an assessment rubric that weighted certain response areas more highly to reflect the Sierra

Club's priorities (Binshtock & Boelte, 2010). This change resulted in further shifts in the composition of institutions in the rankings and their relative positions (Binshtock & Boelte, 2010).

The Cool Schools rankings were joined by other assessments. As early as 2008, the *New York Times* noted there were at least seven organizations rating campus sustainability efforts (Zernike, 2008). Frustration with generally redundant data collection processes, and in some instances, the opaque assessment methodology used by these assessment systems, led to resistance from several higher education institutions (Carlson, 2010). In 2012, the Sierra magazine joined with two other organizations that assessed campus sustainability, AASHE and the Princeton Review, to create the Campus Sustainability Data Collector (CSDC). This tool was intended to make the data collection process easier for institutions by allowing them to enter their data into one survey instrument and share it with all three entities (Albis, 2017). The CSDC was replaced in 2015 with AASHE's STARS, version 2.0; this tool also allowed for data sharing (Albis, 2017). Despite the shared data collection tool, each program continued to weigh each of the areas considered by their assessments differently (Albis, 2017).

In 2007 the Cool Schools rankings started with the following response areas: green building (or energy efficiency for those lacking new construction), energy supply, food, curriculum, purchasing policies, transportation, waste management, investment priorities, student activism, and the administration's commitment to sustainability (Carlson, 2008). This list of response areas was expanded in 2016 to include a question about institutions removing fossil fuel companies from their endowments (Cool Schools Methodology, 2016).

STARS

The first draft version of STARS was publicly released in 2007 (AASHE, 2010). After receiving public comment and stakeholder feedback, pilot versions were tested with nearly 70 institutions in 2008 (AASHE, 2010). Further stakeholder feedback was collected from the 2008 pilot participants and from another draft released in 2008 (AASHE, 2010). In 2010, STARS version 1.0 was launched (AASHE, 2010). AASHE continued to collect feedback from participants and expert advisors; version 1.1 was launched in 2011 and version 1.2 in 2012 (AASHE, 2018a). Development continued in 2013 with the release of STARS version 2.0 and 2.1 in 2016 (AASHE, 2018a).

AASHE describes STARS as "a voluntary, self-reporting framework for helping colleges and universities track and measure their sustainability progress" (AASHE, 2017). STARS was designed by considering three sources: other campus sustainability assessments (e.g., Cool Schools), business sustainability reports, and other sustainability rating and ranking systems (e.g., Leadership in Energy and Environmental Design), as described in the STARS Technical Manual (AASHE, 2017). These sources were complemented with feedback from stakeholders and experts for each topical area considered by STARS (AASHE, 2017).

Credits in the STARS program consider how initiatives at higher education institutions impact a broad range of factors, including human and ecological health, environmental impacts, secure livelihoods, a sustainable economy, social justice, equity, diversity, cooperation, and democracy (AASHE, 2017). Under the management of the STARS Steering Committee, which is made up of representatives from AASHE member

institutions, and the AASHE staff, the credits that measure each area are weighted based on the perceived impact on the factors listed previously (AASHE, 2017).

STARS scores have been earned by over 350 institutions that grant bachelor's, master's, and/or doctoral degrees in the United States and 217 institutions have submitted more than one report (AASHE, 2018b). STARS scores are considered by AASHE to be valid for up to three years, a decision made to ease the reporting burden on staff due to the extensive time it takes to collect data (Carlson, 2010). The three-year window of data validity has been a consistent part of the reporting process, dating back at least to the pilot development phase in 2008 (Moltz, 2008).

Other higher education industry organizations have recognized STARS as a tool for managing campus sustainability. APPA (formerly referring to the Association of Physical Plant Administrators) cites it as a tool for improving one's campus (Glazner & Kindt, 2017). STARS also worked to integrate input from a range of other groups in its creation, such as NACUBO, Society for College & University Planning, U.S. Environmental Protection Agency, National Wildlife Federation, and American Association of State Colleges and Universities (AASHE, 2017). Institutions themselves also actively use STARS, beyond simply submitting data to the platform. For example, the University of Richmond's 2017 Sustainability Report is modeled on the STARS scoring methodology. The report uses the institution's STARS scores to note where it is leading or falling behind in sustainability (Andrejewski, 2017).

Research Questions, Hypotheses and Specific Aims

This research examined correlations between alumni giving and campus sustainability programs at institutions that grant bachelor's, master's, and/or doctoral degrees in the United States. This was examined in two ways. First, I investigated whether institutions that demonstrate high scores or rankings in two different well-known campus sustainability assessment programs also have high rates of alumni giving. Second, I determined if the group of institutions that allows donors to specify their online gifts for sustainability has a higher mean rate of giving than the group that does not.

The first overall research question considers whether changes in sustainability rankings will induce changes in the alumni giving rate. This was tested using two sustainability assessment programs: the Sierra magazine's Cool Schools and AASHE's STARS. These two programs were chosen because they have published data on an annual basis since at least 2010, have publicly available methodologies, and release quantifiable metrics. Though technically distinct, the terms, "ranking" (an ordered list) and "rating" (a numeric score) may be used interchangeably throughout this work; for this research the differences are insignificant.

I posed two specific sub-questions related to this first question. First, using data from the Sierra Club's Cool Schools ranking and the AASHE STARS rating, I examined if changes in sustainability assessment ratings were correlated with increases in alumni giving, looking simultaneously at all institutions considered in the data sets. Second, using the same data sets, I examined if individual institutions show a correlation between changes in their sustainability assessment metrics and changes in their specific rates of alumni giving.

My hypothesis is that there will not be a statistically significant correlation between alumni giving rates and sustainability ratings or commitments. As detailed earlier, there are dozens of other factors that impact alumni giving, and the degree to which different institutions have meaningfully engaged sustainability spans a wide range (Akers & McDearmon, 2010; Baade & Sundberg, 1996; Brower, 2006; Gaier, 2005; Gunsalus, 2005; Holmes, 2009; Levine, 2008; Lott, 2010; Seltzer, 2016; Skavdahl, 1993; Walker, 2013; Willemain et al., 1994).

Despite the first hypothesis of no correlation between the overall data sets, anecdotal comments from a handful of institutions, such as Middlebury College and Furman University, point to sustainability broadening their donor base (Carroll & Spitler, 2008); so, there is a possibility that one might be able to detect significant correlations between sustainability metrics and alumni giving at some subset of schools. This drives a second hypothesis: there will be a small, but statistically significant, correlation between increases in both (1) Cool Schools and (2) STARS metrics and alumni giving for a statistically significant number of individual institutions. The correlation is hypothesized to be small, as sustainability is one of many potential drivers for changes in alumni giving (Akers & McDearmon, 2010; Baade & Sundberg, 1996; Brower, 2006; Gaier, 2005; Gunsalus, 2005; Holmes, 2009; Levine, 2008; Lott, 2010; Seltzer, 2016; Skavdahl, 1993; Walker, 2013; Willemain et al., 1994). These two hypotheses address the potential for correlations that may exist across higher education or may only exist for certain institutions.

The second overall question considers participation rates and the option of donor specification for sustainability. Two sources inform my hypothesis. One, research has

shown that, in a general sense, alumni are more willing to donate if allowed to specify how their gift is used (McDearmon, 2010). Two, anecdotal evidence points to donor interest in sustainability (Carroll & Spitler, 2008). Given these ideas, my hypothesis is that there will be a positive and statistically significant difference in the rate of participation for the institutions that allow donors to specify their gifts for sustainability.

Specific Aims

To address these questions and hypotheses, I

1. Identified data sets for alumni giving and sustainability metrics.
2. Evaluated sustainability rating system data and alumni giving data to understand the trends of each data set over the period considered.
3. Analyzed correlations between alumni giving data and sustainability metrics.
4. Collected and analyzed data on sustainability-related alumni giving specification options.

Chapter II

Methods

For the purposes of this research, "alumni giving" was defined as the percentage of the total number of alumni making gifts to their alma mater, a metric formally known as the "giving participation rate." Historically, alumni giving data are reported by individual institutions to the Voluntary Support of Education survey, which is conducted annually by the CAE (CAE, 2017b). The survey data are collected under standard parameters set by the Council for Advancement and Support of Education. The alumni giving metric was selected for this analysis for two reasons. First, it is used in national rankings for higher education to measure broad alumni support for an institution (Allenby, 2014). Second, as a "broad measure of fundraising success," it does not fluctuate considerably on an annual basis (Gunsalus, 2005). This makes the alumni giving metric a more useful measure than total donations, which can vary considerably due to large, one-time gifts.

For the analyses of correlations between alumni giving rates and sustainability assessment metrics, all data manipulation, exploration, and analysis actions were done using R. For more information, this project's R Code is available at https://github.com/alexsdavis/sustainability-giving. For the analysis of the impact on alumni participation of allowing restricted giving to sustainability-related causes, Microsoft Excel was used.

Analyses of Sustainability Assessment Metrics Correlations

The following section focuses on the methodology for analyzing correlations between sustainability assessment metrics and alumni participation rates.

Data Acquisition

Data from the Sierra Club's Cool Schools are publicly available online (Sierra Club, n.d.). For each year of the analyses, data from the complete rankings were downloaded from the Sierra magazine's website. Data from the Cool Schools reports from the years 2007 and 2008 were excluded from these analyses for three reasons. First, they lack a single ranking list that clearly delineates the relative scoring relationship between the different institutions considered in that year. The 2007 edition featured "10 That Get It" and initially explicitly excluded the "Eco League," a consortium of five schools (Alaska Pacific University, Green Mountain College, Northland College, Prescott College, and College of the Atlantic) dedicated to sustainability (Hattam, 2007). The 2008 edition again excluded the Eco League and added the exclusion of the University of California system; instead it featured 10 "Cool Schools," two "Shining Stars," and a list of "Five that Fail" (Hartog & Fox, 2008). Second, data from 2007 and 2008 had small sample sizes. The 2007 edition included only ten schools while the combined lists of the 2008 edition included just 17 schools. This contrasts to the notably larger data set available for 2009, which included 135 schools. Third, as noted in the introduction section, the 2007 and 2008 rankings were based on Sierra staff's opaque and subjective assessments, while the ranking process appears to have improved with the 2009 edition, which was the first to publish a detailed scoring key (Binshtock & Fox, 2009).

Data from the STARS program are available to AASHE members via the STARS Data Display tool (AASHE, 2018b). Data were obtained in a long-form table with institution name, STARS submission version, score, and date. The data set included all scores earned starting with the first full version of STARS, version 1.0. Data from pilot versions were not publicly available.

Alumni giving data were downloaded from the Voluntary Survey of Education's "data miner" tool (CAE, 2017b). Data were selected using the following fields on the "Sorted Lists" section:

- Comparison Group: All U.S. Higher Education
- Limit List to: All Institutions
- Starting Fiscal Year: FY2007-FY2017
- Ending Fiscal Year: FY2007-FY2017
- Variable: Alumni Giving Statistics/Alumni Participation

All institutions listed in the alumni giving data set, the Cool Schools data set, and the STARS data set were described by name. To create a common identifier for each school that would facilitate linking the data sets, all names, along with their variations, were collated into a single list and matched with their U.S. Department of Education Integrated Postsecondary Education Data System (IPEDS) identification number (U.S. Department of Education, 2018). In addition to differences in the use of commas and dashes in names, there were two other instances for which institutions had to be manually matched with their IPEDS ID. First, over the years of rankings, certain institutions had changed their names, generally from a college to a university. Context, and manually reviewing the institution's website, clarified transitions from being a college to a

university. Second, in some cases, it was unclear if the institution described by the ratings data was the main campus in a university system. There were approximately 50 examples of these two differences in naming. In both cases, the Cool Schools and STARS data sets were reviewed online for context. Generally, the ranking was referring to the main campus or it was clear that it was referring to an individual campus. Using a master list of these name variations paired with IPEDS identification numbers, the Cool Schools, and STARS data sets were separately joined with the VSE data set.

Data Manipulation

After importing the collated data sets, the data were readied for analysis by eliminating institutions with too few data points for analysis and by infilling missing data for the remaining institutions. To determine the cutoff point of the number of acceptable missing data points for institutions with incomplete data, the tests were completed with a variety of exclusion rates to determine if different exclusion rates materially impacted the results; they did not. For alumni giving rates, institutions with less than six out of 11 years were removed from the data set. Cool Schools institutions with less than five out of nine years were also removed from the data set. After excluding institutions that lacked enough data, those that remained had missing data points infilled to facilitate analysis. To achieve this, missing data points in the alumni giving data set were replaced with the mean of the existing data points, calculated individually for each institution. Then, as the Cool Schools ranking is technically an ordinal categorical metric, missing data points in the Sierra Club data set were replaced using the median of each institution's rankings, rather than the associated mean which would be statistically appropriate for cardinal

numeric variables. The STARS data set was infilled by forward filling rankings for up to three years, the term that AASHE considers the score to be valid (unless an institution had submitted another STARS submission before the expiration of the prior report). After forward filling, STARS institutions with less than five out of eight years of data were removed from the data set.

Giving Data Exploration

To provide context to the main analysis, the alumni giving data were initially explored in two ways. First, data were normalized to a base year of 2007 to demonstrate relative trends over time. Second, a regression analysis was applied to each institution in the data set to determine the average annual change in giving.

To understand the trends in variability from year to year, the annual participation rate was normalized to the first year of data and plotted. Normalization was done individually for each institution against its own first year of data. This meant that for each institution, the annual giving rates for 2007 through 2017 were divided by the annual giving rate of the first year in the data set, 2007. This created a series of data points indexed to one for each institution, with increasing giving rate data appearing as a number greater than one and decreasing rates appearing as numbers less than one. This normalized data set was graphed to illustrate the magnitude of year on year changes compared to the first year's giving rates.

The magnitude of year to year trends in alumni giving was reviewed in two ways. First, three schools were selected, representing institutions with increasing rates of giving, steady rates in giving, and declining rates in giving. Giving rates were plotted

over time for visual review. Second, the average annual giving rate was calculated for each institution. The change in each institution's annual giving rate (mathematically the slope of the best fit line of the data points for each year's annual giving rate) was calculated using linear regression. This annual change in giving was used to create a histogram that visually displayed the distribution of trends in alumni giving. Displaying the binned counts of the average annual change in alumni giving for each institution provided a visual way to understand how the giving rates for the majority of institutions were, on average, changing from year to year, as well as how smaller numbers of institutions were trending.

Rating and Ranking Data Exploration

Prior to the main analysis, quantitative review of the assessment data was done to better understand the data sets. The adjusted Cool Schools data set and STARS data set were each reviewed using Spearman's rank order correlation, a statistical tool that analyzes how different instances (in this case years) of an ordinal list of numbers are correlated with each other, even if the correlation is nonlinear (Scheff, 2016). This analysis broadly showed how much the order of the rankings changed from year to year. A high rate of correlation means that year to year, institutions are ranked similarly, while a low rate of correlation means that institutions have notably different changes in their rankings from year to year. Significant changes the rankings can point either to institutions making dramatic changes to their sustainability efforts or to a change in the methodology used in determining the rankings. The data from the Spearman's rank order correlation was plotted on a pair of heat map graphs, one for each data set.

Regression Analyses for Sustainability Assessments and Alumni Giving

To identify correlations between alumni giving and sustainability assessment metrics, four sets of multiple regression analysis were performed. First, for both the Sierra and STARS data, separate regression analyses were performed using the two overall data sets. Then, as a follow-up, separate regression analyses were done for each individual institution in the two data sets. The framework below applies to both the overall analyses and individual institution analyses.

For each of the regression analyses, the year of alumni giving in consideration was analyzed with that year's assessment metrics as well as the preceding two years of Cool Schools rankings or STARS ratings. This was done because assessment metrics may not impact alumni giving on an instantaneous basis, or said another way, it might take some time for assessment data to impact alumni perceptions. Figure 1 illustrates how the analysis considered multiple years of data.

The regression analyses also consider the preceding two years of alumni giving data to control for spurious results. Mathematically, the analysis could be represented as:

$$G(t) = \beta_0 + \beta_1 R(t-1) + \beta_2 R(t-2) + \beta_3 G(t-1) + \beta_4 G(t-2),$$

where $G(t)$ and $R(t)$ are the alumni giving rate and Sierra Club rank or STARS rating of a given school in year t, respectively. The observed differences were determined to be significant if the p-value of the test was less than 0.05.

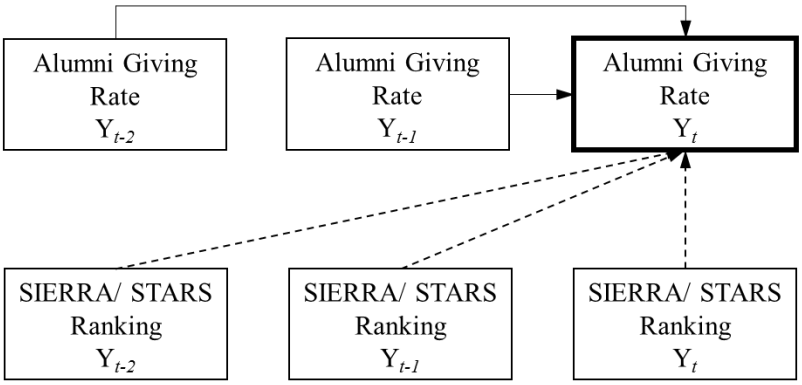

Figure 1. Flow diagram modeling potential paths for factors to impact alumni giving rate.

Analysis of Allowing Restricted Giving for Sustainability

To study the impact of allowing donors to restrict their gifts for sustainability-related purposes, I paired existing data on alumni giving rates from 2017 with data collected by reviewing the current (February 2018) online institutional giving sites. Each site was reviewed to see if either it did or did not allow donors to specify their gift for sustainability initiatives. Specifically, I asked if, as a group, do institutions that allow donors using the institution's online giving site allow donors to specify their gifts be used to support sustainability, have a higher mean rate of giving as compared with institutions that do not allow that specification. This analysis is focused on those made online; gifts made by mail were not considered. Phonathon-based giving also was not considered as it is declining as a driver of giving and some phonathon program do not even bring in enough donations to cover their operating costs (Allenby, 2016).

Data Acquisition

As with the earlier analyses, alumni giving data were downloaded from the Voluntary Survey of Education's "data miner" tool (Council for Aid to Education,

2017b). However, this analysis focused on fiscal year 2017, which included data for 827 institutions. Two institutions, University of Texas MD Anderson Cancer Center and East Georgia College, were listed with giving rates of "N/A" and thus were excluded from the analysis. This resulted in 825 institutions that were reviewed during the data collection process.

To collect data on institutional allowance for donor specification of sustainability, each institution's online giving site was manually reviewed. Institutional giving pages were found using the Google search engine, by searching the phrase "donate online" paired with the institution's name and location as listed in the giving data by the Voluntary Survey of Education. From the main institutional giving site, the specific online donation page was located by visually scanning the site for phrases such as "Give Now" or "Make an online gift." The specific online donation page URL was recorded in case additional review was needed.

Sites were determined as allowing donors to specify their gift for sustainability if they included the following words as possible gift designations: "green," "sustainability," "sustainable," "environment," and "environmental." "Green" was included as it is regularly used to describe sustainability initiatives, as in the "Greenest Universities," the "Green College Honor Roll," and the Cool Schools ranking of "America's greenest colleges." (BestColleges.com, 2017; The Princeton Review, 2018; Andrews & Stanley, 2016). However, when "Green" was used to describe a family name, generally in the context of endowed financial aid funds, it was ignored. The word "environment," and its variant "environmental," was also used, as the Sierra magazine describes the ranking as an evaluation of schools' "environmental practices" (O'Reilly, 2017). "Environment"

was also used historically to describe campus sustainability programs, as noted by the 2005 salary survey report that considered roles with titles similar to "Sustainability or Environmental Coordinator" (Kester, 2005). Instances where the word "environment" was clearly used with a different definition than in the above contexts were excluded from this survey (this primarily occurred in named scholarship funds for programs such as "civil and environmental engineering"). The final keyword, "sustainability," and its variant "sustainable," was selected for two reasons: the regular use of the term, such as in the organizational name "Association for the Advancement of Sustainability in Higher Education" or the "Sustainability Tracking, Assessment, and Rating System" and because it is frequently used to identify those working in the field, as noted by the fact that 63% of AASHE survey respondents worked in an office with "sustainability" in its name (Urbanski, 2017). Observations were made on each page to note which of the above terms were included on the site, as well as the format of how the page allowed donor specification.

The data for donor specification options were collected by multiple people. To ensure that the observations were done in a manner that was consistent with the planned methodology, each institution's page was examined by at least two reviewers. For each instance where the two reviewers did not have the same observations, a third reviewer conducted an observation to determine the final observation.

Following initial data collection, six schools were excluded from the data set, meaning 819 institutions were considered in the analysis. While the data provided by the Voluntary Survey for Education (VSE) was intended to exclude community colleges, Ivy Tech Community College of Indiana was part of the data set. SUNY Polytechnic Institute

and Covenant College both required the creation of an account to make donations online. Neither University of Hawaii Maui College nor South Georgia State College provided any way to donate online. Finally, Columbia University's giving page did not allow for analysis under this methodology as it forced donors to search for their designation with no option for simply donating to an unrestricted general fund.

Analysis

The combination of alumni giving rates and the collected data about online donation pages was analyzed based on the recorded keywords of "sustainability," "sustainable," "green," "environment," and "environmental." For each keyword, the data set was divided into two sample populations: institutions that allowed donors to give to a fund under one of those three designations, and institutions that did not. Instances where institutions included multiple keywords in their online donation site, such as Mount Holyoke College's option to direct one's gift to "sustainability/Green Mount Holyoke" were included under both instances of the keywords in question.

To determine if the differences in means of the giving rates at the institutions that made up the two sample populations were statistically significant, a two-sample t-test was done using Microsoft Excel. The program describes this test as a "t-Test: Two-Sample Assuming Unequal Variances." The test output listed as "P(T<=t) one-tail" was used to determine if the mean of one of the sample populations was greater than that of the other. The observed differences were determined to be significant if the p-value of the test was less than 0.05.

Chapter III

Results

This section details the results of the tests described in the Methods chapter, divided into sections that reflect the research questions considered. The first section focuses on the correlations between alumni giving rates and sustainability assessment metrics. The second section focuses on the outcomes of the analysis of allowing restricted giving for sustainability-related specifications.

Analyses of Sustainability Assessment Metrics Correlations

The following section focuses on the results of the analyses of correlations between sustainability assessment metrics and alumni participation rates.

Normalized Giving

Plotting the results from normalizing the giving data to a base year of 2007 showed that most (n = 144) institutions experienced declines every year in their average annual giving participation rates (Figure 2). Only two institutions showed increasing rates in giving for every year over the period captured in the data set and are clearly not reflective of the overall data set. The remaining institutions (n = 112) showed mixed trends of increasing and decreasing rates over the period considered.

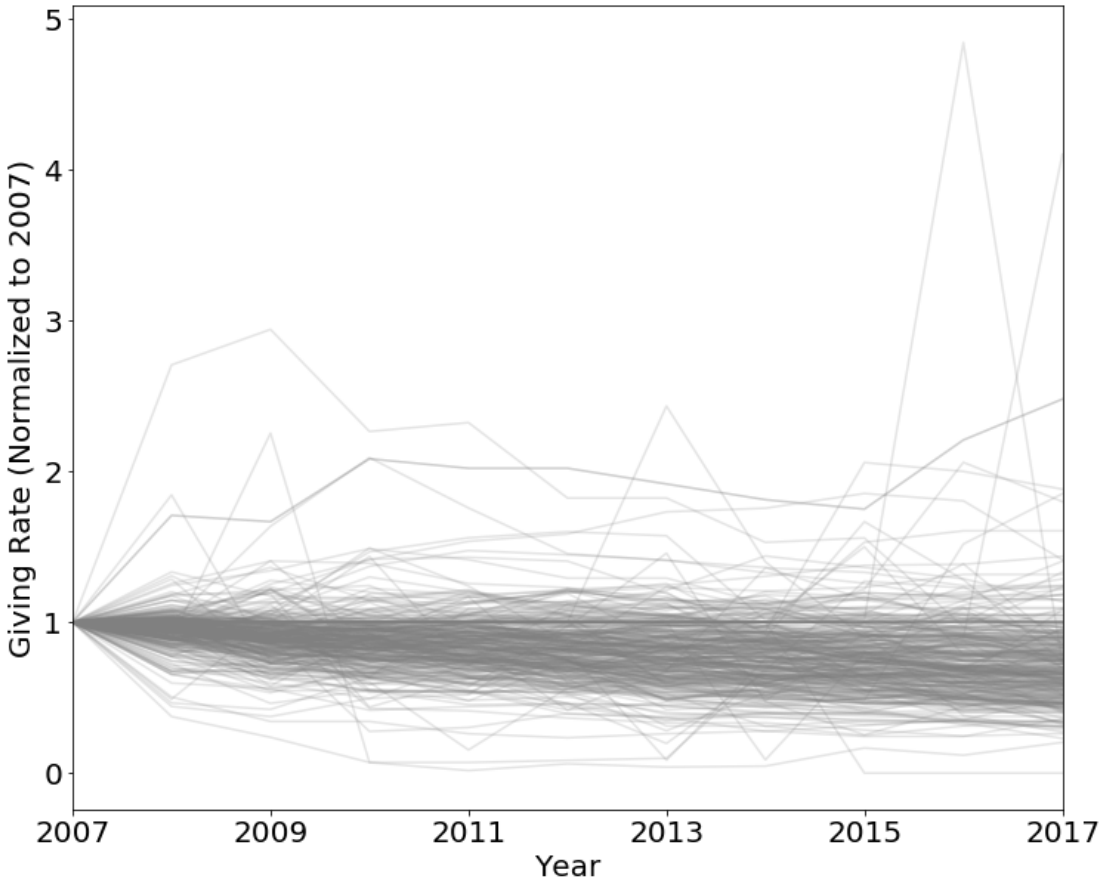

Figure 2. Alumni giving rate of 311 schools normalized to 2007. Normalized giving rates greater than one indicate higher rates increased giving relative to the 2007 baseline.

Three individual schools were selected to demonstrate very different alumni giving trends: Middlebury College, Villanova University, and Fairfield University (Figure 3). They were selected because they did not have any missing data points and were representative of the two ends and middle of the spectrum of giving trends. Middlebury College (IPEDS ID: 230959) had giving participation declining over time, by an average of 3.7% per year. Villanova University (IPEDS ID: 216597) had giving participation rates increasing in all but one year, with its average participation rate increasing by 0.7% per year. Fairfield University (IPEDS ID: 129242) represents an

effectively steady rate of giving as its giving rate has moved up and down slightly over time, but on average has declined by 0.01%. The variability observed both within one school's trendline, in the case of Middlebury, and between each of the schools, may indicate that the hypothetically small effect of sustainability on alumni participation rates may be difficult to detect given the large levels of ambient background noise.

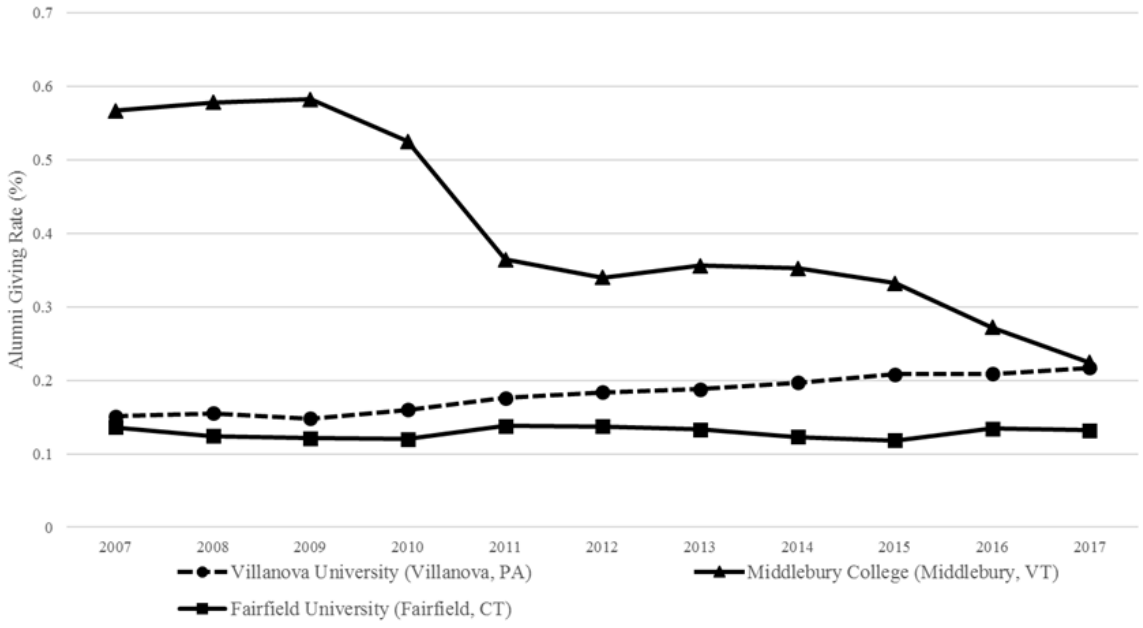

Figure 3. Absolute (non-normalized) giving rates for three schools.

Annual Change in Alumni Giving

Average annual alumni giving rates, based on the 2007-2017 period, indicate the majority (n = 269) of institutions experienced a decline in their giving participation rate. The most frequently occurring average annual change in giving rates was a slight decline of between -0.5% and 0.0% (n = 163), with the remainder (n = 106) of institutions showing an average annual change of up to -4.0% (Figure 4). A small number (n = 42) of institutions demonstrated an average annual increase in giving (Figure 4).

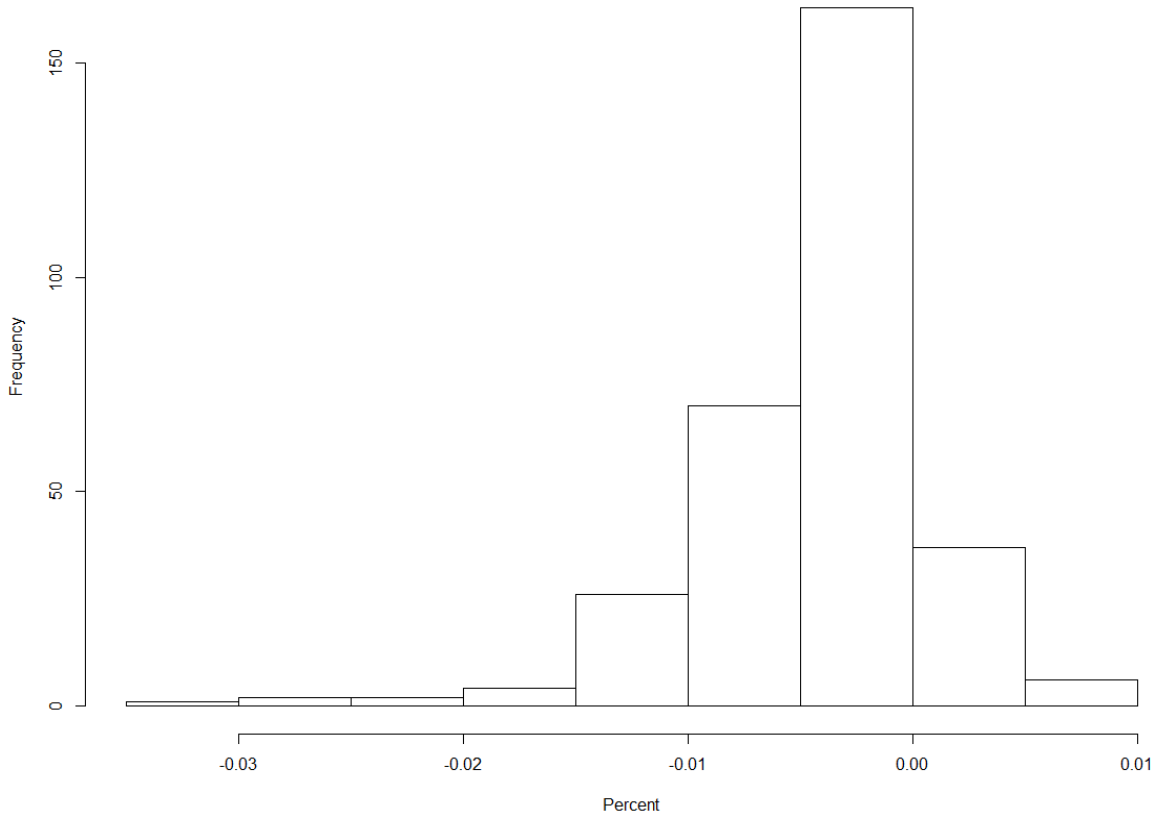

Figure 4. Histogram of changes in average annual alumni giving for all institutions in the data set over 2007 - 2017. Each data point in this plot represents the slope of an individual trace in Figure 2.

Spearman Rank Order Correlation

The Spearman rank order correlation analyses of the Cool Schools rankings (right) and STARS ratings (left) highlights differing volatility in year to year changes for each assessment program (Figure 5). In both panels of Figure 5, correlation is indicated by color, with lighter shades indicating higher correlation. In this figure, sharp changes in color represent sharp changes in the order of the rankings from year to year. The Cool Schools plot (on the right pane of Figure 5) illustrates two key results. First, the rankings from 2009-2011 show a low correlation with each other. Second, there is a distinct lack

of correlation between rankings from 2009-2011 as compared to rankings from 2012-2017. In contrast, the STARS plot (on the left in Figure 5) shows a more gradual trend of change in the assessment scores over time. The one change that stands out in the STARS plot is the transition from 2015 to 2016, which is less gradual than the other annual transitions.

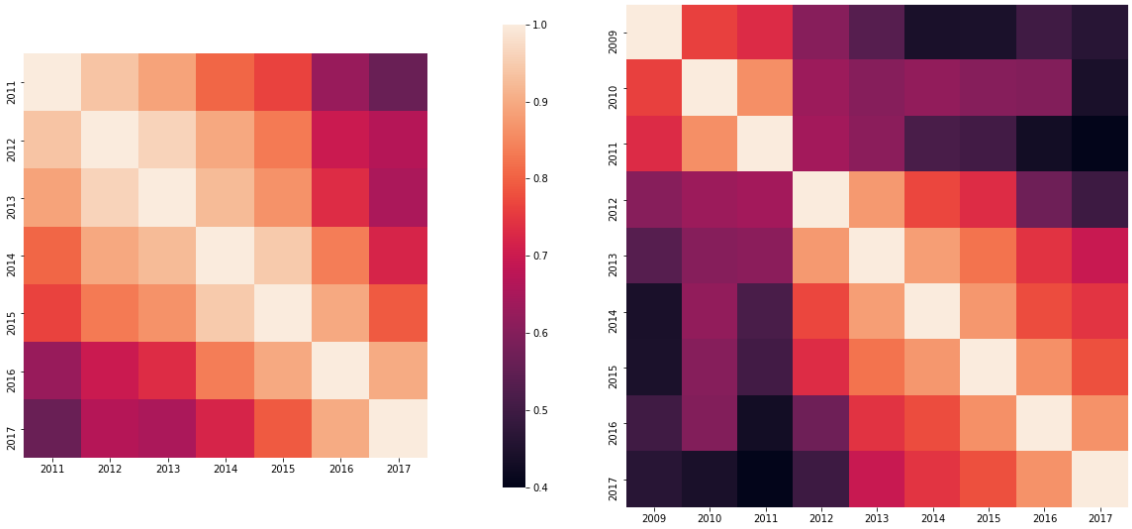

Figure 5. Spearman rank order correlation for STARS ratings for years 2011-2017 (left) and Cool Schools for years 2009-2017 (right). The narrow range of colors shown in the STARS ratings (left) contrasts with the wide range of colors used in the Cool Schools rankings (right).

Regression Analyses for Sustainability Assessments and Alumni Giving

Cool Schools rankings (for the current, prior, and two years prior) had almost no overall correlation with alumni giving rates (Table 1). Similarly, STARS ratings showed there was almost no overall correlation between a given year's alumni giving rate and STARS scores for that year and either of the two prior years (Table 1). There were only three instances, in the analysis for alumni giving in 2014, that showed statistically

significant correlations between both the Cool Schools and STARS metrics of that year. It should be noted that the coefficient, which is a measure of the factor's impact, is positive for Cool Schools but is negative for STARS and that it is negligible for all three instances.

Table 1. Regression analyses for assessment metrics and alumni giving.

Y_t ($G(t)$)		Intercept (β_0)		Metric Y_{t-2} (β_1)		Metric Y_{t-1} (β_2)		Metric Y_t (β_2)		Alumni Giving Y_{t-2} (β_3)		Alumni Giving Y_{t-1} (β_4)	
		Sierra	***STARS***	Sierra	***STARS***	Sierra	***STARS***	Sierra	***STARS***	Sierra	***STARS***	Sierra	***STARS***
2011	***β***	0.001	***NA***	<0.001	***NA***	<0.001	***NA***	<0.001	***NA***	-0.118	***NA***	1.085	***NA***
	p	0.750	***NA***	0.482	***NA***	0.652	***NA***	0.472	***NA***	0.089	***NA***	<0.001	***NA***
2012	***β***	<0.001	***NA***	<-0.001	***NA***	<0.001	***NA***	<-0.001	***NA***	-0.032	***NA***	1.000	***NA***
	p	.977	***NA***	0.759	***NA***	0.605	***NA***	0.568	***NA***	0.657	***NA***	<0.001	***NA***
2013	***β***	<-0.001	***0.006***	<-0.001	***<-0.001***	<0.001	***<0.001***	<0.001	***<-0.001***	-0.120	***-0.081***	1.103	***1.130***
	p	0.821	***0.533***	0.384	***0.849***	0.713	***0.546***	0.694	***0.288***	0.172	***0.615***	<0.001	***<0.001***
2014	***β***	-0.002	***-0.009***	<-0.001	***<-0.001***	<-0.001	***0.002***	<0.001	***-0.001***	0.258	***0.091***	0.730	***0.882***
	p	0.575	***0.582***	0.667	***0.731***	0.273	***0.049***	0.044	***0.021***	0.021	***0.656***	<0.001	***<0.001***
2015	***β***	<-0.001	***0.006***	<0.001	***<-0.001***	<-0.001	***<0.001***	<0.001	***<-0.001***	0.071	***0.215***	0.912	***0.729***
	p	0.885	***0.712***	0.851	***0.849***	0.766	***0.804***	0.679	***0.644***	0.403	***0.080***	<0.001	***<0.001***
2016	***β***	<-0.001	***0.014***	<0.001	***<0.001***	<-0.001	***<-0.001***	<0.001	***<-0.001***	0.110	***-0.006***	0.845	***0.956***
	p	0.885	***0.335***	0.851	***0.673***	0.737	***0.798***	0.544	***0.713***	0.130	***0.960***	<0.001	***<0.001***
2017	***β***	0.001	***-0.047***	<-0.001	***<0.001***	<0.001	***<0.001***	<-0.001	***<0.001***	0.183	***0.759***	0.768	***0.226***
	p	0.764	***0.032***	0.889	***0.587***	0.905	***0.820***	0.581	***0.735***	0.065	***<0.001***	0.003	***0.234***

Coefficients (β) of each factor and p-values for the regression analysis of rankings and alumni giving from 2011 - 2017, represented mathematically as $G(t) = \beta_0 + \beta_1 R(t-1) + \beta_2 R(t-2) + \beta_3 G(t-1) + \beta_4 G(t-2)$. Significant results underlined.

As might reasonably be expected, the annual giving data for the year prior was found to be correlated with the current year's annual giving at a level that was

statistically significant. While not directly related to the analysis, this result does demonstrate that there are many factors that impact alumni giving that are consistent from year to year.

Individual School Regression Analysis

Considering the correlation between alumni giving participation rates and Cool School rankings for individual schools, no clear correlations emerge. Out of the 129 schools in the data set, eight showed a statistically significant correlation between alumni giving rates and the Sierra rankings from the year prior, with coefficients ranging from -0.0011 to 0.0018. Another seven showed a statistically significant correlation between alumni giving rates and the Sierra rankings from two years previously, with coefficients ranging from -0.0101 to 0.0010.

Turning to the STARS ratings, it was not possible to complete the analysis due to the small size of the data set, which unlike the Cool Schools data set, does not have data for 2009 or 2010.

Impacts of Allowing Restricted Giving

The data show that as a group, institutions that allow donors to specify their online gifts for a purpose that contains the words “sustainability” or “sustainable” were found to have significantly ($p < 0.05$) higher rates of overall alumni giving participation than institutions that do not (Table 2). In contrast, the differences between the mean giving rates of institutions that allowed donors to specify for a purpose that contains the

keywords “green,” “environment,” or “environmental” were not found to be statistically significant (Tables 3 & 4).

Table 2. Comparison of mean giving rates for “sustainability,” “sustainable” with t-test.

	"Sustainability"	All Others
Mean	13.4%	9.5%
Variance	0.53%	0.74%
Observations	26	793
P(T<=t) one-tail	0.0068	

Table 3. Comparison of mean giving rates for “green” with t-test.

	"Green"	All Others
Mean	21.6%	9.5%
Variance	5.58%	0.70%
Observations	6	813
P(T<=t) one-tail	0.1327	

Table 4. Comparison of mean giving rates for “environment,” “environmental” with t-test.

	"Environment"	All Others
Mean	11.1%	9.6%
Variance	0.87%	0.74%
Observations	28	791
P(T<=t) one-tail	0.2061	

Institutions that allow specification for “sustainability” or “sustainable,” do not fall into one single Carnegie classification (Table 5).

Table 5. Carnegie classifications of institutions featuring “sustainability,” “sustainable.”

Carnegie Classification	Number of Institutions
Baccalaureate Colleges: Arts & Sciences Focus	9
Master's Colleges & Universities: Larger Programs	2
Doctoral Universities: Moderate Research Activity	2
Doctoral Universities: Higher Research Activity	2
Doctoral Universities: Highest Research Activity	11

Chapter IV

Discussion

Analyses to answer the overall question of how institutional sustainability efforts might engender more alumni to donate to their alma maters produced mixed results. The lack of correlation found between alumni giving rates and sustainability assessment metrics could be caused by several reasons, which is investigated below. The positive correlation between mean alumni giving rates and the option of restricted giving for sustainability hints at potential conclusions, though caveats should be noted and further research may be merited to better understand the correlation.

Sustainability Assessment Metrics Correlations

The Cool Schools and STARS sustainability metrics showed no significant correlation with alumni giving rates. The inability to reject the null hypothesis in this case could mean several variables are at play: data quality issues, impacts of institutional attributes, and the prevalence of alternative factors.

Shifting Methodologies and Missing Data Points

The data sets used in these analyses had three main weaknesses. First, the Cool Schools and STARS assessment programs both experienced methodological changes during the period considered in these analyses. Second, none of the data sets was large. Third, all three were missing numerous data points, which meant that it was not possible

to consider certain institutions in the analysis. The combined presence of these three weaknesses likely intensified their impacts.

The methodology for collecting data and assigning quantitative metrics to create the Sierra Club's Cool Schools ranking has varied over the program's life. This was borne out by the Spearman rank analysis that showed multiple sharp shifts in the numerical rankings from 2009 to 2017. The first major break in correlation, in 2012, lines up with a major methodology change. 2012's "noticeable shift" stems from the switch from Sierra's proprietary survey questions to Campus Sustainability Data Collector, a shared tool hosted by AASHE (Cuttino, 2012). Following the 2012 break, the Spearman correlation test also pointed to lack of correlation within the 2012 to 2017 period. This may be explained by contrasting the scoring key from 2012 to that of 2017, which shows two significant methodological changes. First, the "Tier Two" credits captured by the STARS-based survey instrument were incorporated into the 2012 scoring key, but they were no longer part of the scoring key starting with the 2014 rankings. Second, the weighting of different areas shifted between rankings. For example, the "student sustainability outreach campaign" credit was awarded up to four points in 2012, up to seven points in 2014, and up to ten points in 2017 ("Scoring key," 2012; "Scoring key," 2014; "Cool schools 2017 scoring key," 2017). Criteria were also removed, such as "sustainability materials and publications," which was dropped from the analysis between 2012 to 2014. These changes are somewhat explained by Sierra in commentary published alongside the 2016 rankings. Sierra noted that their methodology was "updated to reflect trends in campus sustainability;" namely that institutions who simply responded to a given survey question no longer merited earning points ("Cool school 2017

methodology," 2017). Instead, the Sierra scoring system looked for "measurable progress." These changes likely impacted the ease of identifying any correlation between the data sets. Institutions that had implemented partial measures which would have previously impacted their Cool Schools scores would no longer see a corresponding increase in their actual rankings. If increases in rankings are a signal to alumni that their alma mater is improving its sustainability program, that connection between implementing new practices and a higher ranking could break down. This would then result in alumni who are not inspired to give.

In contrast to the Cool Schools data, the STARS data set provided a more consistent base for analysis. Quantitatively, the Spearman analysis of STARS data produced notably different results than Spearman analysis of the Cool Schools data. The gradual change of the STARS data set is a sharp contrast to the somewhat choppy Sierra data set. Part of this can be attributed to the strategy of forward filling of data due to STARS scores' three-year validity, which reduced volatility in the data underlying the analysis. Another reason for this gradual trend is likely attributable to the small changes over time in the STARS rating methodology paired with temporarily allowing submissions under previous methodologies when new methodologies had been released. Since the public launch of STARS in 2010, new versions of STARS were released in 2011, 2012, 2013, and 2015 (AASHE, 2018a); however, institutions that had started data collection under a previous version were allowed time to complete their submission under the older version. The most noticeable shift in the plot of the Spearman data for STARS ratings is from 2013 to 2014. It correlates with the most significant change in the rating

methodology, when version 1.2 ended and version 2.0 started in late 2013 (Urbanski & Filho, 2015).

The second and third weaknesses are intertwined. Each data set was limited in size, but this was exacerbated by the fact that all three of the data sets were missing a number of data points. Some institutions were missing too many individual data points across the data sets to be considered in the analysis while others were simply missing entirely from a given data set, e.g., an institution with alumni giving data but no Cool Schools data. Looking at the alumni giving data, the number of schools that reported giving rates ranged from a high of 1,045 in 2008 to a low of 824 in 2017. Similarly, the Sierra data set was especially constrained by incomplete participation. Despite having 374 institutions contributing data for the Cool Schools rankings at least once from 2009 to 2017, 218 were rejected for missing too many alumni giving data points or Cool Schools data points, 117 had data infilled and only 12 were not missing any data points from either data set. Turning to the STARS data set, it presented fewer challenges in addressing missing data points as the three-year validity of the scores meant that they were intended to be extended across a longer time frame and the data set, as analyzed per the methodology, included 157 institutions.

Missing data in the alumni giving data set was particularly problematic due to the notable year to year variability in giving rates, as documented by Figures 2 and 3. Despite having a long time series of data for this analysis, infilling missing values from data sets with a high amount of variability can be challenging at best. In the absence of longer records that would provide context for the overall giving distribution and the giving trends within each institution, the infill strategy used the institution's mean as a measure

of central tendency for the infill value. While this choice was methodologically sound and the best available given the data, it was far from ideal, as infilling with a constant value in a noisy time series can lead to an underestimation of variability and a blurring of trends. An example of the challenge infill strategy causes is demonstrated by Champlain College (IPEDS ID: 230852). The methodology allowed Champlain to be included due to having at least six out of 11 years of data. However, because Champlain's missing annual giving data were grouped together at the beginning of the data period, Champlain's actual giving rates for 2012-2017 were used to infill Champlain's giving rates for 2007-2011. Considering the general downward trends in annual giving that were observed earlier in this paper, this may have been problematic for the analysis.

Methodological changes for the sustainability assessments may have also impacted the validity of the infill tactics used in this analysis. The process for infilling the Cool Schools data considered the entire data set for each institution. This meant that the infill strategy was applied across rankings data points that were determined using different methodologies. To understand why this could be problematic, consider the case of institutions that were missing rankings data clustered to 2009-2011 or 2012-2017. By infilling data for these institutions, the methodology used by Cool Schools to determine that institution's ranking was at least partially extended to a time period when other institutions were being ranked by Cool Schools under a different methodology.

Regression Analyses Using Assessment Data

All of the regression analyses that compared alumni giving data with either Cool Schools or STARS data provided results that were broadly inconclusive; almost every p-

value showed that no claims could be made with statistical significance. In the case of the regression analyses that considered the overall STARS and Cool Schools data sets, there were three instances with a statistically significant result. Considered in the context of all of the other results (15 for STARS and 21 for Cool Schools) that were not found to be statistically significant, these individual instances of significance appear to be specious. For the regression analysis that considered the Cool Schools rankings of individual institutions and their alumni giving rates, the number of statistically significant correlations was itself of questionable significance, representing less than 6% of the sample.

Even if the results of the individual regression analysis for the institutions in the Cool Schools data set are statistically significant, the regression coefficients are not large (most are less than one-tenth of a percentage point), and they are not consistently positive or negative. For example, two of the institutions that appear to have statistically significant betas are the University of Massachusetts, Amherst (IPEDS ID: 166629) and the University of California, Channel Islands (IPEDS ID: 441937). The coefficient for the University of Massachusetts, Amherst's two-year lagging Sierra ranking was 0.0003, meaning that giving participation would increase by 0.03 percentage points for every corresponding increase in Cool Schools rankings. Considering the alumni giving participation rate in 2017 of 9.8% and total alumni giving in 2017 of $10,795,655, every single increase in a Cool Schools ranking level would result in an incremental $34,892 in alumni giving. This amount is hardly enough to fund the "intimidating and considerable capital investment" alluded to in Chapter I. Further, considering the same scenario for the University of California, Channel Islands, with its 2017 total alumni giving of $49,676

and a participation rate of 3.0%, and its two-year lagging coefficient of -0.0101 (-1.01 percentage points), an increase in its Cool Schools ranking by one would apparently result in a decrease of $168 of total alumni giving funds.

Impact of Institutional Attributes on Giving

There may be a connection between alumni giving and sustainability rankings for some institutions but not for others. Higher education in the United States contains a diverse range of institutions, from small liberal arts schools to large research institutions. These institutions have differing levels of wealth and can be labeled with other factors such as religious affiliation and geographic location. Certain institutions may have a combination of attributes that, when paired with a level of sustainability practices and with a strategy of alumni engagement around sustainability, they are able to leverage into increases of alumni giving.

Impact of External Factors on Giving

Interest in sustainability may not be the primary factor for alumni making a decision about giving to their alma mater. It is important to recognize that this data set includes 2007-2009, the years of the recent economic downturn (National Bureau of Economic Research, n.d.). Economic cycles impact, and may supersede, any interest in giving (List & Peysakhovich, 2011). Additionally, as shown in the normalization of alumni giving rates, the majority of institutions in the data set presented declining giving rates. However, other research was not able to tie the decline during the recent economic downturn directly to changes in income or wealth and instead noted that the economic

downturn may have triggered "broader shifts in attitudes towards giving or increased uncertainty" (Meer, Miller, & Wulfsberg, 2017). These changes may have changed how alumni, as a type of donor, think about donating to their alma maters, and may be changes that overwhelmed any impacts of campus sustainability efforts.

Gauging Alumni Interest in Sustainability

Several studies of alumni giving use online surveys or focus groups of alumni to receive direct feedback on what influences their decisions to give (McDearmon, 2010; Skavdahl, 1993). Future research in this area could include a survey or focus group around alumni interests in sustainability as a motivating factor for their giving. However, data from this type of research may be of limited value. As with work done by Walker (2013), surveys may only reveal study subject intentions, not actual donor behavior. The Hawthorne effect, in which study subjects act differently when they are aware they are being observed, has been applied to sustainability-related situations, so it is reasonable to consider that it may be a factor in any observation-based research of alumni interest in sustainability (Schwartz, Fischhoff, Krishnamurti, & Sowell, 2013).

Surveying alumni about their interest in sustainability has been suggested elsewhere. Although McNulty (2015) considered correlations between an institution's sustainability ranking and the environmental attitudes or behaviors of an institution's alumni, a correlation was not identified. As a way to address this, McNulty (2015) suggested that future campus sustainability assessments might consider collecting information from graduates to see if their experiences while students have had a longer-term impact on their behaviors (McNulty, 2015). Incorporating alumni perspectives about

sustainability into rankings could make them better indicators of alumni perceptions of their alma maters' sustainability leadership.

Alumni Perceptions May Differ from Assessment Metrics

There may be a number of reasons why metrics published by the STARS and Cool Schools assessments do not reflect alumni opinions of their alma maters' sustainability leadership. First, the Cool Schools and STARS assessments may not be a true measure of an institution's sustainability efforts. Some institutions elect not to participate in these assessments, but they may still be known to their alumni as leaders in sustainability (Carlson, 2010). Research into the performance of STARS-rated institutions has shown increased environmental performance over time, but it did not consider non-rated institutions and thus was unable to link performance to participation (Lang, 2015). Second, the shifting methodologies, the negative impact of missing data points, and the combination of multiple areas of campus sustainability into one metric may mean that the assessments do not provide data that should be used as an indicator of sustainability program success. For example, a comparison of the Cool Schools and STARS criteria noted that Cool Schools "does not penalize schools for failing at achieving academic criteria to the degree that STARS does" (Albis, 2017). Alternately, alumni may not be interested in academic criteria for sustainability, and thus a STARS score may not be reflective of alumni interest in sustainability. Finally, alumni may not even be aware of these assessment programs or may not differentiate between appearing on a list versus ranking highly on a list. Urbanski and Filho (2015) noted in their work that the campus sustainability movement was still "quite young" and that STARS could

"mature" alongside the movement, pointing to the potential that alumni may not yet be conscious of these rankings.

Impact of Allowing Restricted Giving for Sustainability

The results of this analysis partly bear out the potential noted by Lajoie (2002), McDearmon (2010), and Skavdahl (1993) for "restricted" giving to better engage alumni and increase giving rates. Institutions that allow donors to specify their gifts for a use described as "sustainability" or "sustainable" have quantifiably higher mean giving participation rates than institutions that do not allow that designation. While determining the impact of generally allowing donor specification was outside the scope of this work, the fact that mean giving rates were not significantly higher for the institutions that allowed specification for the terms "green," "environment," or "environmental" indicates that merely allowing specification at all does not necessarily lead to higher giving rates.

It is important to keep in mind that this analysis demonstrated a correlation and not a causation between the allowance of donor restriction for "sustainability" or "sustainable" and higher giving rates. This is for two reasons. First, this methodology is unable to claim that all variables were controlled for, so there may be other factors that caused this correlation. Second, this research only represents one year of worth of data, and thus there is no opportunity to observe the impact of an institution making a change in its restricted giving around sustainability. However, the demonstration of correlation shows that future research to test for causation may be merited.

This analysis considered a diverse range of institutions, but those that allow donors to specify for "sustainability" or "sustainable" could share some other trait that

leads to the observed higher mean giving rate for those institutions. Detailed data on the sector and Carnegie Classification of each institution that was identified as using any of the keywords are available in the Appendix, but those variables are reviewed here for the "sustainability" or "sustainable" keyword institutions. Considering the sector of the institutions that allowed donor specification for "sustainability" or "sustainable," the group was split between 16 private schools and 10 public schools. Additionally, the Carnegie Classifications of the "sustainability" or "sustainable" institutions, are varied, with five different institution classifications represented (Table 5). Within those two attributes, there were no casually observable similarities for this group, but again, that does not mean there were none.

Future research to address the question of causation could take two paths. One path would be to replicate the data collection process after one year. Over the course of one year, institutions may elect to add or remove the option to specify gifts for "sustainability" or "sustainable" purposes, allowing for the observation of the impact of this change. Additionally, an additional year of data will provide the opportunity to consider if this correlation is durable or temporary. The second path to consider causation could use an A/B testing method similar to Eckel et al. (2017), in which large pools of alumni would be offered the opportunity to give, where the only variable is the "A" or "B" option being tested, in this case, the allowance of restricted giving for "sustainability" purposes. Testing this at institutions with varying Carnegie Classifications and sectors would address the question of whether the results might be consistent across different types of institutions.

Conclusion

Remaking higher education campuses to address their climate commitments will have real and significant costs. Nonetheless, current sources of funding for colleges are unable to meet these costs. With tuition capped by government and market demand, and government funding declining in most American jurisdictions, institutions are increasingly turning to their alumni as a source of funding. To achieve their climate commitments while continuing to meet their institutional missions, colleges and universities will need to secure a new source of funding. Many of the variables that impact alumni's decisions to give have been well researched, but to-date non-anecdotal evidence of the impact of institutional sustainability initiatives on alumni giving has been scarce.

This need drove an overall question of how of campus sustainability programs might impact giving rates. This was addressed in two ways. First, by considering if year on year changes in the level of sustainability ratings or rankings were correlated with year on year changes in alumni participation rate. Second, by analyzing the impact on mean giving rates of allowing online restricted giving for "sustainability," "environmental," or "green" purposes. Analysis to answer these two questions produced mixed results.

Using data from AASHE's STARS and Sierra Club's Cool Schools sustainability assessments, I was unable to demonstrate any correlation between annual alumni participation rates and changes in assessment metrics for higher education as a whole. Using the same data, I also was unable to identify any statistically significant or meaningful correlation between changes in rankings or ratings and alumni giving at individual institutions. Despite being unable to reject the null hypotheses in both

scenarios, I was able to observe the challenges posed by the assessment programs' multiple methodological changes over the data period, as well as the negative impact of missing data points.

Addressing the historical changes in methodologies was significantly outside the scope of this work. However, the negative impact of the missing data for alumni giving and sustainability assessments could have been mitigated by changing this work's methodology in two ways. First, to attempt to fill missing values, individual institutions could have been contacted to ask for missing alumni giving data (on the assumption that the data may exist, but not was reported), but with 100 schools from the combined STARS and Sierra data set missing at least one alumni giving data point, this would not have been practical. Second, if the data set was larger, then identifiable overall trends in the data may have enabled more sophisticated infill techniques that considered historical trends. To address the challenge of missing data, the *Sierra* magazine could more actively engage institutions. Instead of simply considering only institutions that submit by a certain deadline, the Cool Schools assessment might consider following-up with institutions that have historically submitted but did not in a given year.

This research only considered overall school rankings data for Cool Schools and overall scores for STARS. However, both assessments publish scoring for the dozens of metrics that are used to determine the final score. Future research might consider correlations with alumni giving and specific assessment sections (e.g., only the score an institution received on the greenhouse gas reduction section). The actions behind these subcategories may be of more interest to alumni, and as such, they may prove to drive correlations that the overall score misses. Despite the potential for further research on this

topic, given the myriad of factors that could impact alumni giving, there simply may not be a correlation between these variables.

The analysis of the impact of allowing restricted giving for sustainability looked at 825 institutions and considered three potential terms that online donors might select for a sustainability-related gift. Based on the results of this analysis, I rejected the null hypothesis that allowing donors to specify their gifts for "sustainability or "sustainable" would not be correlated with a higher mean giving rate. Instead, the mean giving rate at those institutions was shown to be higher than that of institutions that did not allow such a specification, a difference that was statistically significant. I was unable to reject the null hypothesis in testing whether allowing giving restricted to "environmental" or "green" purposes was associated with higher mean giving rates. This may be because the words "green" and "environment" might not provide as clear of a signal to alumni as the other keyword considered, but it remains unclear precisely why the results were different for the different keywords.

Jointly, these results demonstrate a need for more research to better answer the question of how campus sustainability programs might impact giving rates. Future years of data for alumni giving and sustainability assessments may feature fewer missing data points, which could facilitate stronger analysis of a correlation between those data sets. Additionally, experimental "A/B" testing of pools of alumni offered the option to specify their gift for "sustainability" purposes and a control group, would be better able to demonstrate causation instead of correlation. Further, contacting similar groups of alumni and allowing some alumni the option to restrict their gift to sustainability and others no such option would provide new data that could support stronger conclusions. These

opportunities could serve to bring together faculty, campus sustainability staff, and institutional fundraising professionals for collaborative research.

The need for additional research to refine our understanding of potential connections between alumni giving and campus sustainability should not necessarily stop institutions from potentially acting on this research. The identified correlation offers support for institutional advancement offices considering allowing restricted giving for "sustainability" purposes to begin to do so. Making this change may be able to increase the funding available for higher education institutions, both specifically for sustainability via direct gifts and overall via a higher alumni giving rate. Together, this increased funding will help higher education institutions achieve their commitments to climate neutrality.

Appendix

Educational Institutions Allowing Donations Earmarked for Sustainability

Table 6. Institutions identified as allowing restricted gifts for a sustainability keyword.

Institution	IPEDS ID	Sector	Carnegie Classification	Giving Rate	Word
Albion College	168546	Private	Baccalaureate Colleges: Arts & Sciences Focus	12.6%	Sustainability, Environment
Allegheny College	210669	Private	Baccalaureate Colleges: Arts & Sciences Focus	20.3%	Sustainability
Boise State University	142115	Private	Doctoral Universities: Higher Research Activity	4.6%	Environment
Boston University	164988	Private	Doctoral Universities: Highest Research Activity	9.9%	Sustainability
Bowdoin College	161004	Private	Baccalaureate Colleges: Arts & Sciences Focus	42.4%	Environment
California State University-Channel Islands	441937	Public	Doctoral Universities: Higher Research Activity	3.0%	Environment
California State University-Northridge	110608	Public	Master's Colleges & Universities: Larger Programs	3.2%	Sustainability
Catawba College	198215	Public	Doctoral Universities: Higher Research Activity	10.9%	Environment
Central Washington University	234827	Public	Doctoral Universities: Higher Research Activity	2.0%	Environment
Clarkson University	190044	Private	Doctoral Universities: Moderate Research Activity	15.4%	Sustainability, Environment
Dickinson College	212009	Private	Baccalaureate Colleges: Arts & Sciences Focus	24.9%	Sustainability
Duke University	198419	Private	Doctoral Universities: Highest Research Activity	26.0%	Environment
Earlham College	150455	Private	Baccalaureate Colleges: Arts & Sciences Focus	16.8%	Sustainability
Emory and Henry College	232025	Private	Baccalaureate Colleges: Arts & Sciences Focus	20.0%	Sustainability
Franklin W. Olin College of Engineering	441982	Private	Special Focus Four-Year: Engineering Schools	65.0%	Green
George Washington University	131469	Private	Doctoral Universities: Highest Research Activity	6.1%	Sustainability
Indiana University	151351	Public	Doctoral Universities: Highest Research Activity	7.1%	Environment
Louisiana State University and Agricultural & Mechanical College	159391	Public	Doctoral Universities: Highest Research Activity	11.3%	Sustainability
Mount Holyoke College	166939	Private	Baccalaureate Colleges: Arts & Sciences Focus	28.5%	Sustainability, Green
Northern Arizona University	105330	Public	Doctoral Universities: Higher Research Activity	2.5%	Sustainability
Northland College	239512	Private	Baccalaureate Colleges: Arts & Sciences Focus	10.6%	Environment
Nova Southeastern University	136215	Public	Doctoral Universities: Moderate Research Activity	1.1%	Environment
Oberlin College	204501	Private	Baccalaureate Colleges: Arts & Sciences Focus	21.8%	Green
Ohio Wesleyan University	204909	Private	Baccalaureate Colleges: Arts & Sciences Focus	15.5%	Sustainability, Environment

Penn State University	214777	Public	Doctoral Universities: Highest Research Activity	11.8%	Sustainability, Environment
Saint Louis University-Main Campus	179159	Private	Doctoral Universities: Higher Research Activity	6.2%	Sustainability
Santa Clara University	122931	Private	Master's Colleges & Universities: Larger Programs	12.6%	Sustainability
Southern Illinois University Carbondale	149222	Public	Master's Colleges & Universities: Larger Programs	3.5%	Environment
St. Lawrence University	195216	Private	Baccalaureate Colleges: Arts & Sciences Focus	19.0%	Sustainability
Stanford University	243744	Private	Doctoral Universities: Highest Research Activity	23.5%	Environment
Stetson University	137546	Public	Master's Colleges & Universities: Larger Programs	6.3%	Environment
Tusculum College	221953	Private	Master's Colleges & Universities: Medium Programs	3.3%	Environment
University of Arizona	104179	Public	Doctoral Universities: Highest Research Activity	5.9%	Environment
University of Arkansas	106397	Public	Doctoral Universities: Highest Research Activity	17.4%	Sustainability
University of California-Berkeley	110635	Public	Doctoral Universities: Highest Research Activity	7.5%	Environment
University of California-Los Angeles	110662	Public	Doctoral Universities: Highest Research Activity	7.8%	Sustainability
University of California-Santa Barbara	110705	Public	Doctoral Universities: Highest Research Activity	2.8%	Sustainability
University of Chicago	144050	Private	Doctoral Universities: Highest Research Activity	21.9%	Environment
University of Delaware	130943	Public	Doctoral Universities: Highest Research Activity	6.6%	Environment
University of Hawaii at Manoa	141574	Public	Doctoral Universities: Highest Research Activity	4.2%	Sustainability
University of Houston-Clear Lake	225414	Private	Master's Colleges & Universities: Medium Programs	0.7%	Environment
University of Louisville	157289	Public	Doctoral Universities: Highest Research Activity	6.9%	Green
University of Maryland Eastern Shore	163338	Public	Doctoral Universities: Moderate Research Activity	1.9%	Green
University of Michigan	170976	Public	Doctoral Universities: Highest Research Activity	9.5%	Sustainability, Environment
University of North Carolina at Chapel Hill	199120	Public	Doctoral Universities: Highest Research Activity	15.5%	Environment
University of St. Thomas	174914	Private	Doctoral Universities: Moderate Research Activity	6.8%	Sustainability
University of Utah	230764	Public	Doctoral Universities: Highest Research Activity	20.1%	Sustainability
University of Wyoming	240727	Public	Master's Colleges & Universities: Small Programs	8.1%	Environment
Utah State University	230728	Private	Baccalaureate Colleges: Diverse Fields	3.1%	Environment
Vassar College	197133	Private	Baccalaureate Colleges: Arts & Sciences Focus	20.2%	Sustainability
Virginia Polytechnic Institute and State University	233921	Public	Doctoral Universities: Highest Research Activity	9.6%	Environment
Washington University in St. Louis	179867	Private	Doctoral Universities: Highest Research Activity	21.8%	Sustainability, Environment
Western Kentucky University	157951	Public	Master's Colleges & Universities: Larger Programs	5.7%	Green

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