SUSTAINING ADVANCE PROGRAMS:
A CORRELATIONAL STUDY
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EXECUTIVE SUMMARY

BACKGROUND: Since 2001, the National Science Foundation (NSF) ADVANCE program has invested more than $270 million in more than 100 institutions of higher education (IHEs) with the goal of developing systemic approaches to increasing the participation and advancement of women in academic STEM careers. A seminal program within the ADVANCE portfolio is the Institutional Transformation (IT) grant, which provides larger scale, multi-year funding to IHEs focusing on transformational changes that will broaden participation (BP) over the long-term.

Continuing ADVANCE-IT programs after grant funding has ended is crucial to achieving ADVANCE’s goals, particularly given the complexity and inherently slow pace of institutional change. And yet, how IHEs can sustain these programs effectively, especially when administrations, organizational structures, and institutional goals and priorities can rapidly (and sometimes unexpectedly) change, is under-discussed and under-analyzed. To date, there have been no comprehensive, structured investigations regarding what elements are most crucial for successful continuation of ADVANCE programs post-grant, nor any systematic evaluation of the degree of success the continued programs achieve. This is an important gap to address if investments in BP are to achieve their desired impact within awardee institutions and if best practices for BP identified within those institutions are to be disseminated within and outside of the ADVANCE community.

METHOD: With support from the NSF, we addressed this gap by examining the scope and impact of ADVANCE-related efforts among the 54 institutions whose ADVANCE-IT funding periods have ended. Our goal was to identify the factors that contribute to successful sustainability of ADVANCE-related work post-grant and to develop a best-practice sustainability model that could be implemented and tested across a range of institutions. We used a mixed method approach to this study, combining data collected prior to receiving the supplement with new data collected through surveys and interviews with ADVANCE participants, and institutional and programmatic data downloaded from publicly available sites. In Table 1, we summarize the specific data sources we employed. These are detailed further in Appendix A.
TABLE 1: SUMMARY OF DATA COLLECTED

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<tr>
<th>Method</th>
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<td>1. <strong>Sustainability Summit</strong></td>
<td>In October 2016, representatives from nine ADVANCE institutions met to discuss best practices for sustaining structure, programming, and funding post-award. The group discussed common challenges in sustaining ADVANCE initiatives and developed a set of recommendations to improve the process and to advocate for greater attention on sustainability issues.</td>
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<td>2. <strong>On-line Survey of Post-Grant Awardees</strong></td>
<td>An on-line survey was sent to representatives from 54 ADVANCE institutions in the 2001-2012 cohorts to identify factors associated with sustainability and impact.</td>
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<td>3. <strong>Structured Interviews with Post-Grant Awardees</strong></td>
<td>Following the survey administration, we selected 10 ADVANCE programs to contact for phone interviews to discuss their practices in greater detail. Of the 10 programs contacted, 5 responded for a conference call. Semi-structured interviews focused on institutional (administrative) support, accountability structure, and whether or not an explicit sustainability plan was developed.</td>
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<td>4. <strong>Sustainability Workshop with Attendees at the 2017 AWIS/NSF Meeting</strong></td>
<td>Results of the survey were disseminated at the October 2017 AWIS / ADVANCE conference. Following a presentation of results, attendees were asked to share experiences at their own institutions, including how the scope of work has or will change post-funding, where efforts will be housed, and how efforts will be supported (e.g., internal or external funding) moving forward.</td>
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<td>5. <strong>Institutional Data and Archival Records from Post-Grant ADVANCE IT Institutions</strong></td>
<td>Members of the research team accessed program information, final reports and indicator data, where available, from institutional websites.</td>
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In this report, we present our findings, including the correlates for successful ADVANCE programs post-grant, with the aim of helping to develop an evidence-based sustainability model for programs focused on broadening participation. Broadly, these findings center around four critical themes.

**I. THE PAST DOES NOT PREDICT THE FUTURE**
ADVANCE programs vary dramatically in the impact they make on their institutions during the grant funding period and post-grant. However, impact during the funding period is not a consistent predictor of impact post-grant. To be sure, many programs with documented successes during the funding period have been able to sustain those efforts longer-term. Yet, we also identified several institutions that reported only modest impact during the funding period.
but then realized more substantive, longer-term impact after NSF funding ceased. The opposite was also true of other programs that struggled to sustain efforts post-grant. As detailed on pp. 6-12, we have identified a set of factors that have helped a select group of institutions to sustain ADVANCE-related efforts more than others.

II. **IT’S NOT HOW MUCH YOU SPEND BUT WHERE YOU SPEND IT**
The size or permanence of ADVANCE-IT budgets post-grant is not the sole predictor of post-grant success or sustainability. In fact, many programs without annual fixed budgets appear to be equally if not more successful than those with annual allocations. We surmise that this is because budgets influence the types of efforts institutions pursue. In particular, those institutions with limited funding post-grant may opt to focus on advocating for policy reform, a relatively low-cost effort that can generate real and sustained impact. Institutions with more significant funding, on the other hand, may invest in programming efforts (e.g., mentoring programs) that have been shown to have little long-term impact. We discuss these issues in more detail on pp. 12-15.

III. **MINIMIZING VULNERABILITY TO LEADERSHIP CHURN**
A common frustration expressed by many ADVANCE-IT award recipients is the seemingly perpetual ‘churn’ of top leadership at their institutions during the funding period and in the years that follow. Institutional transformation requires the buy-in and active support of upper administration, including Presidents, Provosts, and Deans, who control budgets, establish and execute institutional priorities, and set the narrative on campus. Our results suggest that institutions with more positive sustainability efforts are less dependent upon leadership and thus less susceptible to disruption when high ranking or influential administrators leave. The data suggest that most often this occurs when programming, personnel, and support are embedded across multiple units and multiple administrative layers of their institutions. As we discuss on pp. 15-16, these institutions benefit from broad-based support and shared ownership in and accountability for BP efforts.

IV. **UNDERREPRESENTED AND UNDERSERVED – MORE FOCUS ON FACULTY OF COLOR AND ISSUES OF INTERSECTIONALITY**
Indicator data and information gleaned from final reports suggests that the impact of ADVANCE-related efforts for women faculty of color in STEM remains limited. It is therefore not surprising that the NSF ADVANCE program has placed particular emphasis in efforts to impact women and URM faculty in more recent solicitations. Yet, less than half of the institutions providing survey responses indicated that they had seen improvement in terms of the recruitment, retention, and promotion of women faculty of color, their representation in leadership positions, or in the overall climate. We discuss these results in greater detail on pp. 16-18.
As the preceding themes convey, the achievement and sustainment of institutional transformation is complex and multilayered. Consistent with Rosser and Chameau’s (2006) findings more than a decade ago, we know that there are foundational elements associated with transformation, including the sustained commitment of institutional leaders and buy-in from constituents. However, the findings we report here also suggest the need for greater emphasis on policy development and targeted initiatives for faculty of color, less dependence on upper administration, and more institution-specific approaches that take into account the idiosyncratic needs and challenges of those institutions. Based on these findings, we offer the following recommendations.

RECOMMENDATIONS:

1. The collaborative agreement with NSF requires that ADVANCE institutions articulate a sustainability plan and that administration commit to support ADVANCE-related efforts after the funding period has ended. Our findings suggest that this does not happen consistently. NSF should devise a way to hold institutions more accountable and put structures in place to ensure that efforts are sustained longer-term.

2. Our data suggest that the focus of sustainability efforts need not be purely financial. Our results do suggest the need to focus efforts on more not fewer departments and to embed activities across diverse units. However, it is also true that some of the least costly investments may yield the greatest impact. These efforts include policy change focused on promotion and tenure processes or the adoption of various work-family initiatives, putting accountability structures in place that hold leadership at all levels of the institution responsible for recruiting and retaining diverse faculty and creating inclusive work environments, and engaging social scientists and evaluators in research that identifies and disseminates evidence-based practices associated with broadening participation.

3. ADVANCE institutions should invest in efforts to reduce vulnerability to administrative churn. Too often, efforts to broaden participation are stalled or even reversed when institutions experience a change in leadership at the top. New leadership often equates to a new vision for the institution, shuffling of institutional priorities, and a resetting of the budget, all of which can undermine BP efforts. Sustainability requires that institutions inoculate themselves from leadership churn by distributing programming (oversight and administration) across multiple academic and support units, creating a broad-based group of advocates (representing diverse disciplines and diverse positions of authority) that champion ADVANCE-related work and advocate for continuous improvement, and investing time and financial resources in multiple types of need-based initiatives.
4. Our final recommendation emerged not from evidence supporting an existing practice or policy but rather from evidence regarding the lack of effective practice and policy. Specifically, greater effort is needed within and across institutions to recruit, support, and retain women of color faculty. We know from research relating to bias, climate, and intersectionality that URM women face a double-bind; that is, they are negatively stereotyped as less capable scientists and vulnerable to discrimination as a result of their status as both women and minorities. Accordingly, specific efforts that address issues and challenges directly affecting these faculty are needed. Yet, evidence suggests that such efforts are often missing or poorly executed. Further, more empirical evidence is needed to assess the efficacy of various approaches to enhancing the career outcomes and experiences of this segment of the workforce.

LIMITATIONS:

- As with any investigation of institutional practices, the findings and recommendations we offer here are not without limitations. First, we were not able to collect data from all ADVANCE-IT institutions due to non-response from the survey or to a lack of information available on website (e.g., no indicator data, final reports, or contact information for program managers or co-PIs). Thus, our data may be skewed as those with more active programs were more likely to respond or to have information publicly available.
- Particularly in terms of survey and interview responses, our data are also subject to self-report bias as well as hindsight bias. Respondents who were actively involved in their institution’s ADVANCE efforts may not be able to accurately judge the impact of their efforts. Some may overestimate impact while others may be overly critical of the degree to which transformation occurred. Likewise, depending upon how much time has lapsed since their grant ended, respondents may be vulnerable to hindsight bias such that events that occurred further in the past are likely to be remembered less accurately.

In the pages that follow, we address each theme in more detail, including evidence regarding each theme’s connection to sustainability as well as recommendations specific to each theme.
**THEME I: THE PAST DOES NOT PREDICT THE FUTURE**

*Description:* ADVANCE programs vary dramatically in the impact they make on their institutions during the grant funding period and post-grant. However, our data suggest that impact during the funding period is not a consistent predictor of impact post-grant. To be sure, many programs with documented successes during the funding period have been able to sustain those efforts longer-term. Yet, we also identified several institutions that reported only modest impact during the funding period but then realized more substantive, longer-term impact after NSF funding ceased. The opposite was also true of other programs that struggled to sustain efforts post-grant. If the ADVANCE program is to foster longer-term, more sustainable efforts among its grantee institutions, it is important to identify the factors that distinguish between these “classifications” or types of IHEs.

*Evidence.* To assess each expired ADVANCE-IT program, we reviewed final reports, information contained on program or institutional websites, responses to the on-line survey and phone interviews, and the comments generated during the Sustainability Summit. Importantly, not all programs had accessible final reports, active websites, or responded to survey questions. Nevertheless, a preliminary review of the available data across IHEs allowed us to identify a set of factors that appeared to distinguish those institutions achieving success (i.e., impact) during or after grant funding from those less successful. We describe these factors below in Table 2.

<table>
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<th>TABLE 2: FACTORS INFLUENCING IMPACT</th>
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<td><strong>Factors</strong></td>
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<tr>
<td>1. Dependence on leadership</td>
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<td>2. Commitment by leadership</td>
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<tr>
<td>3. Breadth of departments covered by grant activities</td>
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<td>4. Program requirements tied to professional milestones</td>
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<td>5. An accountability structure</td>
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<td>6. A specific focus on sustainability</td>
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After developing this list of “impact criteria,” we then re-reviewed the data available from each institution in more detail to determine whether each was present during and after the grant period. We used this information to rate each institution. For both timeframes (i.e., during and after the grant), we rated each institution on a scale of -3 to +3, where -3 indicated that none of the six impact criteria was present and +3 indicated that all were
present at that institution. We then plotted each institution along a two-dimensional graph using the “during grant” score as the point along the horizontal axis and the “after grant” score along the vertical axis. Figure 1 displays the location of each of the 54 institutions we examined. (Note: the size of the circle reflects the number of institutions in that location on the graph).

**FIGURE 1: SHORT VERSUS LONG-TERM IMPACT OF ADVANCE-RELATED EFFORTS**

To further illustrate how we categorized each institution, consider the following examples:

- Institution A (3, 2.5) had very clear, targeted objectives during its grant period by focusing on developing and testing various multi-level strategies to address bias and foster cultural change. Their structure and programming, in fact, serve as a blueprint for many ADVANCE institutions. Post-grant, the office continues as its own entity and employs four FTE. They have expanded their scope to include non-STEM units and to focus on faculty of color and have funded these efforts through additional external (NIH) grants, making them less dependent upon financial support and influence from leadership.

- Institution B (1, -3), in contrast, offered several programming events during the funding period, including training for search committees and dual career initiatives. They also successfully advocated for policy changes to improve the tenure and promotion process. However, after the funding period ended, the ADVANCE program disbanded. While some programming was redistributed across existing units, other efforts, such as search committee training, ended.
From these data, we identified four tiers of institutions that varied according to the number of impact criteria they demonstrated and thus the scope of (or potential for) impact during and after the funding period:

- Tier 1: Those demonstrating most, if not all, of the criteria associated with impact and sustainability during and after the funding period (see red circles)
- Tier 2: Those demonstrating many of the impact criteria during the funding period but only some post-grant (blue circles)
- Tier 3: Those demonstrating some of the impact criteria during the funding period but little, if any, post-grant (green circles)
- Tier 4: Those with little, if any, of the impact criteria during or after the funding period (black circle)

In the space below, we discuss common themes shared among institutions in each tier.

**Tier 1: Immediate and Sustained Institutional Impact**

A total of 18 schools fell into the Tier 1 group with seven of those schools located at the (3, 3) point. As expected, Tier 1 institutions demonstrating the most impact factors also reported significant gains in representation and climate. At one institution, for instance, the PI shared that they were able to show an overall increase in women faculty promoted across the institution and this increase was particularly striking in focal departments where ADVANCE exerted its most concentrated efforts. Common themes among these institutions:

- While many are housed in the Provost’s office, six institutions report that their ADVANCE efforts are “self-sustained in an independent office.” Some, although not all, have a permanent budget and dedicated staff.

- These institutions offer a broad range of programming (e.g., mentoring, networking, training) that targets faculty in both STEM and non-STEM departments. Many offer targeted initiatives for women of color as well.

- Almost without exception, Tier 1 institutions reported a number of policy changes and additions. A majority of these policies focused on work-life integration (e.g., tenure clock extensions, part-time appointments, childcare support, dual career programming, resources for childcare during travel, and shared leave). Others focused on recruitment, such as policies to include diversity statements for faculty applicants, to require search committee training, and to provide new search guidelines. There were fewer mentions of policy reform relating to promotion and tenure issues although one school did report that performance evaluations now consider efforts (publications, curriculum, grants, service) that advance equity, diversity, and inclusion.
Many Tier 1 programs noted the formation of informal and formal structures to promote interdisciplinary collaborations amongst faculty and interdepartmental partnerships across academic and non-academic units. These structures, importantly, buffer institutions from leadership churn and promoted broad-based support for ADVANCE-related work.

An important feature of Tier 1 institutions that we did not observe as readily in other tiers is a focus on continuous improvement. As one respondent mentioned, “We have come a long way, but still have work to do, as I am reminded by the women faculty who have joined us since the conclusion of the grant. They appreciate where we are and point out where we need to be.” Added another, “Our social science research “reminds us we still have a lot of work to do.”

**Tier 2: Moderate to High Levels of Immediate Impact with Moderate Levels of Sustained Impact**

A total of 17 institutions represented the Tier 2 category. Many of the characteristics of the institutions in Tier 2 mirror those of Tier 1, including the focus of their programming efforts (e.g., training, networking, mentoring). Like Tier 1 institutions, some received permanent funding and dedicated staff post-grant, while others did not. While most reported policy changes, they focused more on getting people to use policies, rather than changing them. Other characteristics included:

- The most striking difference was that Tier 2 institutions were more likely to report that the ADVANCE program disbanded and activities were absorbed by other units. Most commonly, this was in the Provost’s office, but others noted that work went to individual colleges or to their institution’s Office for Diversity (or similar office). Only two of the 15 institutions described their ADVANCE programs as self-sustained or independent.

- While many Tier 1 institutions realized gains in recruitment, retention, and promotion of women faculty in STEM, broad success was not as evident in Tier 2 institutions. Instead, survey and interview respondents from several Tier 2 schools reported less tangible successes, such as “raising awareness” and “increasing literacy” on issues of diversity and inclusion. Stated one respondent, “Our award has primarily raised awareness of the need to attend to issues of diversity, equity and inclusion for women (and to some extent URM) faculty in STEM. In addition, it has increased communities/networking among women on our campus in ways that support their productivity and reduce isolation.” Other institutions were able to show pockets of success – with gains in representation or mobility in some departments, but no gains or even backtracking in others. Thus, Tier 2 institutions appear to have had a lower institutional impact than those in Tier 1.
• The sporadic or inconsistent gains across Tier 2 institutions likely reflects the fact that support for ADVANCE-related efforts within their institutions was equally mixed. While some reported “little support” from the university, others noted variability in support across departments. According to one Tier 2 co-PI, there was “overall forward momentum, but considerable variability between departments in what has actually been achieved, with significant progress in certain areas, but lack of progress in others.”

• Relating to the proceeding points, it is noteworthy that many Tier 2 institutions received external funding to continue or supplement their ADVANCE-IT work. While it is possible that these efforts were fueled by a desire to affect their institutions more broadly, it appears that several of these grants focused on cross-institutional work.

• There were more mentions of leadership churn and the impact it had among Tier 2 institutions as compared to Tier 1.

• Tier 2 institutions were also more likely to share challenges associated with programming that underscore why some of these efforts may be more efficacious than others. For instance, they reported that long workshops were ineffective, and workshops or events that did not seem to hit multiple roles of an individual were also poorly attended. Further, they observed that inviting speakers had little impact because “only the choir would attend.” More generally, programming efforts that focus on the individual faculty member (e.g., mentoring programs) were less effective than efforts focused on changing the institution.

 Tier 3: Little to moderate impact during grant, but little (if any) sustainable impact

Tier 3 included the 12 institutions deemed to demonstrate little to moderate impact during their IT grant, but little (if any) sustainable impact. Of the six Tier 3 institutions for which we have survey or interview data, it appears that most of their programs disbanded when the grant period ended. In many cases, programming was distributed to other units but in at least one case, programming essentially ceased. Only one institution has a permanent budget with dedicated staff to support post-grant work and only two received external funding to support this work – one through NSF and one through a private donor. Programming efforts in Tier 3 institutions during the grant again mirrored those of Tier 1 and Tier 2 institutions; yet, Tier 3 institutions were less likely to sustain those efforts after the grant ended. Virtually all reported policy changes, but these were largely limited to work-life integration policies like those described in Tier 1 and Tier 2. Other observations of Tier 3 institutions:

• Tier 3 institutions were more likely to report that, post-grant, they expanded their scope to include post-docs and graduate students in addition to non-STEM faculty.
• Clear successes emerged in these institutions during the grant period, although differences existed in terms of where the impact occurred. Some respondents noted, for instance, that their institution experienced a “profound” change in climate. Others noted improvements to tenure and promotion processes as well as increased numbers of female faculty (generally) and full professors (more specifically).

• There exists a clear and undoubtedly frustrating disconnect between impact achieved during the funding period and the ability of many of the ADVANCE teams in Tier 3 to continue this work after the funding period ended due to lack of support or leadership churn. These observations underscore why “the past does not predict the future.” Consider the following comments from former ADVANCE Tier 3 PI's:

  o We were very enthusiastically involved in creating a model for dual career hiring for the first four years of the grant. We were able to secure tenure track positions for quite a few dual career couples, and that was awesome. The upper administration made it clear in year 5 that we would not continue that effort, so ultimately it doesn't matter that a number of faculty on campus are now inclined to encourage dual career hiring. Without the resources, there is not much to be done. I do not know why this recruiting and retention tool was not perceived by administration as effective, but our efforts to persuade them (with ample data from the scholarly literature as well as from our campus) was not [sic] successful.

  o My impression is that several of our administrators felt hemmed in by ADVANCE and didn't like having faculty have an impact on policy.

  o Many programs were lost with change in leadership to [an] unsupportive director.

**Tier 4: Lower levels of impact during and after grant**

Tier 4 included the seven institutions deemed to demonstrate little to no impact during or after the grant funding period. Unfortunately, we have the least amount of data to share on these institutions as only one had a respondent who completed the survey and only a few have updated websites or publicly available reports for us to review.

**Summary:**
Our findings suggest that the vast majority of ADVANCE-IT programs are able to demonstrate impact – whether during the grant period, post-grant, or in many cases both. This should be encouraging to NSF and to the broader community and underscores the need to share evidence-based practices and policy changes that lead to BP impact. With that said, there do appear to be some programs that attain and sustain greater levels of impact by virtue of their ability to secure more consistent and broad-based support, to focus their activities on programming or policy changes that can make
the greatest impact on the institution rather than focusing on individual faculty. Interestingly, neither where the ADVANCE office (or ADVANCE-related programming) exists nor whether there is permanent funding and dedicated personnel for these efforts are consistent predictors of impact.

**Recommendations:**
Some portion of the variance speaks to need for more structure and accountability for sustainability. To this end, we offer several recommendations relating to institutional accountability:

- Policies and practices should be put in place that hold leadership (e.g., department heads, deans) accountable for investments in and progress toward diversity and inclusion goals.

- Institutions should form Advisory Committees consisting of diverse faculty and administrators from across disciplines and across levels of authority who can create broad-based support and an embedded voice for continuing and advocating for ADVANCE-related work.

- NSF should consider modifying the cooperative agreement to require an annual contribution from STEM colleges until goals of grant are met and sustained.

- NSF might lead an effort to create a national rating system, similar to the Athena SWAN program, to require institutions to prepare a self-reflective evaluation and provide comparative rankings.

In addition to issues of accountability, our comparison of institutions by Tier also suggests that how or what efforts are undertaken affects sustainability more than level of permanent funding or centrality of any permanent ADVANCE office. These issues, and their associated recommendations, are discussed in Themes II and III.

**THEME II: THE SIZE AND PERMANENCE OF THE POST-GRANT BUDGET**

**Description:** In its solicitation for ADVANCE-IT grants, the NSF is forthright in position that institutional commitment is an integral component of funding decisions. Specifically,

*Institutional commitment from key administrative leadership to the proposed project activities and institutional transformation is vital for successful projects and must be demonstrated in the proposal. Letters of collaboration from key administrators and partners are required with IT proposals and should be submitted as supplementary documents.*
Sustainability should be considered at every stage of project implementation and should become a specific project activity with dedicated staff time at least from the third-year site visit through to the end of the project.

Implied, but not explicitly stated in the solicitation or within the cooperative agreement itself, is the expectation that IHEs awarded ADVANCE-IT grants will support efforts after the funding period has ended. In too many cases reported here, plans for sustainability were put in place but institutional support for implementing those plans was not in place or waned over time. As noted in the previous section, we believe that NSF could take a more proactive role in holding institutions accountable for long-term support. However, in this section we also argue that support should be strategically placed.

Support can, of course, take many forms but almost always requires an investment in financial, material, and human resources. Institutions vary dramatically in the investments they make after the funding period has ended. Surprisingly, there is no obvious pattern in predicting who receives permanent funding versus who does not. Instead, some patterns emerge suggesting what activities produce the greatest returns.

**Evidence:**
Just 19 of the 54 programs responded to a survey question asking whether they received permanent funding. Of those, 15 indicated that they did, although the size of these budgets ranged dramatically, from $30,000 to more than $500,000 (average = $225,000). Four of the 19 respondents reported that they did not have a permanent budget.

As would be expected the breadth of activities or programming provided by each IHE varied as a function of whether they benefitted from internal funding. These differences are captured in Figure 2. As shown in the figure, those with permanent funding are more likely to invest in mentorship programs, training (e.g., search committee, promotion and tenure, administration), and dual career initiatives. It is notable that none of the institutions without a budget engaged in the latter. Instead, those without permanent funding are more likely to focus on policy development, networking events, research and data analysis, and inviting external speakers.
Despite the gap in programming and activity, the reported impact of those institutions with permanent funding does not always exceed the impact reported by institutions without such funding. In particular, Figure 3 shows that those institutions without a permanent budget were more—not less—likely to report positive impact in faculty retention and women’s representation in leadership positions. Conversely, those with a budget reported greater impact in the areas of recruitment, advancement, and climate.

The preceding findings suggest that it is not the size of the investment that impacts institutional outcomes, but whether efforts are focused on the appropriate need and executed in an effective way. Said differently, resources should be allocated strategically to address the most urgent needs facing the institution. Consider that programs that
received funding were more likely to report success in recruitment. However, they also invested in mentoring and training programs that seem to have limited impact. Further, those that did not receive funding were more likely to report success with retention and moving women into positions of leadership. These institutions focused more on policy change and research, two activities that may lead to more sustainable change or knowledge.

**Recommendation:**
- Our findings should encourage institutions to rethink how they develop and execute their sustainability plans. If, in fact, policy changes and changes in practice have greater impact than programming, then sustainability plans should reflect as much. People dedicated to advancing policy, putting accountability practices in place, and monitoring the data / indicator data (e.g., hiring decisions, RPT outcomes) to go back and hold departments and deans accountable for following policy and practice seem to be better investments than networking lunches and mentoring programs. The focus of sustainability efforts should be on transforming the structures of institutions, not individuals within the institution.

**THEME III: THE IMPACT OF INSTABILITY IN LEADERSHIP**

**Description:** A common frustration shared among members of the ADVANCE-IT community is the issue of leadership churn, the revolving door of administrative leadership within their institutions that inevitably leads to changes in institutional priorities and budgeting decisions. These changes can significantly impact the ability of ADVANCE programs to sustain their efforts.

**Evidence:**
Data from across the academy clearly suggest a troubling pattern in retention of academic leaders. For instance, the 2017 American College President report produced by the American Council on Education (ACE) indicates that the average tenure of college presidents in 2016 was 6.5 years, down from 7 in 2011 and 8.5 in 2006 (Seltzer, 2017). This has downward impact. For instance, a separate study by ACE in 2009 found that average tenure of chief academic officers (e.g., Provosts) was 4.7 years on the job—less than half that of presidents. As suggested in this report, “the chief academic officer almost always plays a vital role in shaping and executing the strategic plan, leading the design and refinement of academic programs, and recruiting and retaining faculty members. It takes several years to carry out major planning initiatives associated with institutional strategy, curriculum design, and the faculty. Without stable and effective CAO leadership, making progress toward institutional goals is extremely challenging, if not impossible” (Mann, 2010).

We do not have specific data regarding the prevalence of leadership churn among ADVANCE IT institutions. However, we can infer from the four-year national average that most institutions will experience at least one change during their funding period.
This is problematic as continued Provostal support is important. In fact, our data suggest that this is the most nagging concern for ADVANCE-IT institutions. A common theme from the Sustainability Summit was issues of turnover of upper administration during grant and inconsistent top-down support. As a Summit participant said, “Impact is lost with change in leadership and unsupportive directors.” The trickle-down effects are also apparent. From a survey respondent, “Some college-level leadership changes meant progress at a college level was very slow to take root, leaving those women faculty already feeling chilly climate issues frustrated.”

**Recommendations:**

**Strategies to endure administrative turnover**
- Modify the cooperative agreement to state changes in the PI or grant leadership require the submission of a new management plan.
- Target the Board of Trustees as an audience to help hold senior leadership accountable.
- Utilize Advisory Boards of diverse faculty, as described earlier, as Institutionalization Advisory Boards to determine activities and budget.

**Additional recommendations for NSF ADVANCE**
- Hold Year-Five Site Visit to discuss implications to university-wide NSF funding if sustainability fails.
- Require post-grant reports for five years
- Disclose faculty data on future NSF solicitations

**THEME IV: UNDERREPRESENTED AND UNDERSERVED: FACULTY OF COLOR**

**Description:** Research confirms that women faculty of color remain vastly underrepresented in the academy and that those in the academy continue to experience microaggressions, incivility, and devaluing of their work at rates that surpass those of majority men and women faculty. Concurrently, women of color tend to leave their faculty positions – and the academy itself – at rates that surpass their majority colleagues. Indeed, a national survey of nearly 700 four-year colleges and universities in the U.S. found that women of color are disproportionately represented in faculty positions with the least power and authority in academia (Hurtado, 2013). Further, Black and Latina women show the lowest representation at the level of Full Professor, followed by Asian women, white women, men of color, Asian men, and white men.

These sobering statistics underscore the need for more focused attention on the experiences and career outcomes of women of color faculty in STEM. This represents a unique opportunity for ADVANCE institutions to lead this effort through the development of targeted interventions and dissemination of best practices. To date, however, it appears that ADVANCE institutions have not taken advantage of this opportunity as very
few institutions provided information (directly or indirectly on their websites) regarding programming efforts, policy changes, or systematic practices that improve the work experience and career outcomes for women of color faculty.

Evidence:
A review of our data shows that 21 institutions (for which we have data) expanded their scope post-grant to place more attention on efforts that support the recruitment, advancement, and retention of underrepresented minority (URM) faculty, and that improve the climate for all faculty at their institutions. As shown in Figure 4, results from our on-line survey demonstrate that the greatest impacts for URM female faculty have been in the area of recruitment.

![FIGURE 4: IMPACT ON STEM URM WOMEN](image)

While it is important to get women in the door, less impact has been realized when it comes to improving their experiences on the job. As shown in Figure 4, less than half of the institutions responding to the survey reported that they have improved the climate for URM female faculty. Far fewer report improvements in retention, representation in positions of leadership, and in promotion and tenure rates. To the extent that these issues remain unaddressed and underexplored, we expect to see a continuing of the “revolving door” of URM women in faculty positions.

Recommendations:
- Institutions should more closely examine data relating to the recruitment and retention of URM faculty to identify baseline conditions (e.g., number of URM faculty, promotion and tenure rates relative to non-URM faculty, and perceptions of climate) and improvements on these metrics overtime. Accountability measures, such as those discussed earlier, should be put in place to hold departments or colleges accountable for efforts and tangible outcomes.
• Institutions should identify and implement programs, policies, and practices that have worked to advance women in STEM and apply these lessons learned specifically to URM women in STEM, taking into account the impact of intersectionality on such efforts.
REFERENCES


APPENDIX A
Summary of Data Collected

Sustainability Summit (October 2016)

In October 2016, nine ADVANCE institutions from active and former cohorts met to discuss best practices for sustaining structure, programming, and funding post-award. Several ADVANCE institutions from former cohorts presented highlights of their programs and gave advice on developing sustainability plans. The group discussed common challenges in sustaining ADVANCE initiatives post-grant and developed a set of recommendations to improve the process and to advocate for greater attention to making sustainability more systematic.

What became immediately clear from this meeting was that there has been no structured investigation regarding what elements are most crucial for successful continuation of ADVANCE programs post-grant, nor any systematic evaluation of the degree of success the continued programs achieve. This supplemental proposal aims to partially remedy this gap. In particular, this proposal requests funding to collect (via survey) and subsequently analyze data from the 56 ADVANCE institutions in the 2001-2012 cohorts to determine which factors are most strongly correlated with sustainability and impact in ADVANCE programs. Potential relevant factors for success might include:

- The amount of additional extra-mural funding
- The permanence and amount of internal budget allocations
- The level of centralized control
- The distribution of programs across a variety of institutional offices
- The number of professional and dedicated staff
- The level of faculty and administration partnerships
- Continuity in upper administration or other personnel
- Financial or other resource and incentive commitments from colleges or departments.

ADVANCE Sustainability Working Group Action Plan

Summary
Co-PI’s and Directors from nine ADVANCE institutions gathered to discuss best practices and challenges related to sustaining programs after grants expire. Participants discovered commonalities despite differences in institution size, type, and project goals. The most prevalent issue that arose during discussions was the continual turnover of upper administration during the life of each project and the subsequent challenges caused by inconsistent top-down support. Participants proposed forming a working group to continue discussions and to develop formal recommendations to the NSF.
**Action Items**

1. Increase the visibility of ADVANCE sustainability issues.
   a. Approach *The Chronicle of Higher Education* about an article.
   b. Write a group Op Ed outlining sustainability issues.
   c. Present on sustainability issues at the 2017 ADVANCE/GSE Meeting.
   d. Ask post-award institutions to discuss sustainability issues with NSF on behalf of active cohorts.

2. Form a sub-group to identify successful sustainability plans and develop a template for future cohorts.
   a. Continue to collect data from early cohorts.
   b. Reexamine Greta Leibnitz’s survey on sustainability.

3. Finalize recommendations for enduring administrative turnover. Ideas include:
   a. Modifying the cooperative agreement to state changes in the PI or grant leadership require the submission of a new management plan.
   b. Targeting the Board of Trustees as an audience to help hold senior leadership accountable.
   c. Utilizing Internal Advisory Boards as Institutionalization Advisory Boards to determine activities and budget.

4. Finalize recommendations to ensure greater institutional accountability. Current ideas include:
   a. Asking the External Advisory Committee to put pressure on the institution through a series of recommendations to upper administration.
   b. Modifying the cooperative agreement to require a $15k annual contribution from each STEM dean to support programming and a teaching release for a faculty member in each college until the goals of the ADVANCE grant are met and sustained.
   c. Recommending an NSF year-five site visit to discuss implications to university-wide NSF funding should sustainability fail.
   d. Requiring post-grant NSF annual reports for a period of five years.
   e. Disclosing faculty data from ADVANCE institutions on all future NSF solicitations.
   f. Creating a national rating system similar to Athena SWAN. Ask institutions to prepare a self-reflective evaluation and provide comparative rankings. The AAAS is investigating such a system.
   g. Establishing an account/fund through the university’s/college’s foundation to be able to engage in fund-raising.

5. Discuss Working Group Recommendations with NSF (completed by V. Hardcastle)
   a. Develop recommendations from sections 2 – 4 above.
   b. Meet with NSF Program Officers to discuss recommendations.
Working Group Members
Kelly Feltault, Program Manager, U.Va. CHARGE, University of Virginia
Karen Froelich, Project Director, ADVANCE Forward, North Dakota State University
Stacie Furst-Holloway, Co-PI and Co-Director, UC LEAF, University of Cincinnati
Marie Garland, Executive Director, SU Advance, Syracuse University
Urmila Ghia, External Advisory Board Chair, UC LEAF, University of Cincinnati
David Goldstein, PI and Director, LEADER Consortium, Wright State University
Stephanie Goodwin, Director of Faculty Development and Leadership, LEADER
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Kate Hester Siler, Program Coordinator, UNH ADVANCE, University of New Hampshire
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On-Line Survey Administration of Post-Grant ADVANCE Institutions

Summer/Fall 2017: We collected survey data from 36 out of the 51 ADVANCE institutions in the 2001-2012 cohorts to determine which factors were most strongly correlated with sustainability and impact in ADVANCE programs. We also collected the following information:

- The transformational goals for each institution as specified in their ADVANCE grant and the final report each submitted to NSF at the end of the funding period. Collectively, these documents allowed us to assess impact during the grant.
- The scope of post-grant ADVANCE-related programming
- Post-grant outcome priorities
- Post-grant programming (including policy analysis and best practices
- Organizational charts and integration with other campus offices
- Personnel and their relative stability and institutional commitment/support
- Intramural and Extramural funding
- Internal budgets
- How social science, evaluation, and institutional data are used to inform programming post-grant
- Previously collected climate data, indicator tables, evaluation data, social science data/reports (later cohorts) and annual and final reports

To identify factors associated with more sustainability, we correlated the preceding factors with post-grant impact and sustainability, which were assessed in terms of the
recruitment, retention, and promotion of women and URM women faculty in STEM since the end of the IT funding period. We also analyzed indicator data and qualitative data to identify themes.

**Critical findings from the survey**

- Post-grant, offices can be housed in a number of locations, including the Provost office, Diversity office, and within an academic unit (e.g., college). However, some do not have an office.
- Roughly half of those who responded said they had a permanent budget. There was a big range, from $30K to more than $500K (average = $225K).
- Programs with budget are, obviously able to do more programming. Notable though that those without programming are much more likely to focus on policy change and research. Biggest gap for those WITH budgets is investment in dual career efforts, mentoring programs, search committee training, and grant writing workshops. None of those w/o a budget do dual career things.
- 4/5ths continue to do SSR.
- 85% saw policy reform during their grant.
- Those who weren’t given a budget reported more success than those who were when it comes to retention and moving women into leadership roles. Those who got budgets reported more success with recruitment, climate, and P&T rates. Bigger difference with climate and recruitment.
- All report FAR less success impacting women of color.

**Depth Interviews with Survey Respondents and Non-Respondents**

Based on responses from the survey, we developed a number of questions targeting sustainability efforts more in depth. We selected 10 ADVANCE programs to participate in phone interviews in Fall 2017 to discuss their practices in detail. Of the 10 programs contacted, five responded for a conference call. The conference calls were semi-structured interviews with five predetermined questions, and the flexibility to adjust questions depending on the specific program. The questions focused on support from administration, deans, and department heads, accountability structure for departments and colleges who participate in ADVANCE programing, and whether or not an explicit sustainability plan was developed. Conference calls generally lasted around 30 minutes and we spoke with either the provost, PI, or program director. A summary of these interviews is shown below.

**Interview 1: Tier 1 Institution**

1. **Lower dependence on leadership**

   If upper administration or institutional leadership changes, what impact would it have on your funding efforts?
• Grant ended in 2012, current provost committed funding to support initialization Faculty Fellow/Director, based on recommendation from previous provost.
• Deans see value and have been vocal in supporting it, each college has an equity advisor, with teacher buyout.
• Former dean that were involved with ADVANCE are now upper administration

2. **Commitment for extension not just participation**

Are department heads willing to commit to the practices or even invest in efforts to sustain beyond sending to faculty to workshops or taking surveys?
• Provost goes on record with equity expectations has helped alleviate any push-back

3. **Accountability structure**

How are faculty, departmental heads and deans held accountable for achieving ADVANCE-related goals relating to retention, recruitment, promotion, etc.? Are there formal or informal structures or procedures in place?

• Equity advisors are supposed to be supported by Dean whom they report to and placed in every college via Provost but there hasn’t been a reason to revisit this or establish anything more formal
• Department enhancement program linked with long-standing program review, still in development

4. **Inclusion of departments outside arts and sciences**

Did you include departments from outside of arts and sciences? What were their responses? Were they excited to participate? During and after?
• Yes

5. **Tied program to profession requirements (grants helping with promotion and tenure)**

What are the most important programs or initiatives that you are running and why do you believe they are important?

• COACH faculty satisfaction survey (Harvard education) allows them to compare to peer institutions, used to identify areas for ADVANCE to address
• Workshop on advancement to full professor was really impactful
• Training of every search committee on faculty and senior on unintended bias for every college trained by equity advisor

6. **Stated goal of sustainability**

Was there an explicit plan for how you would make efforts sustainable? If so, how was it communicated to faculty and department heads?
• Sought to institutionalize “best practices” from other universities and conversations were had but expansions were through evolutions

**Interview 2: Tier 3 Institution**

1. **Lower dependence on leadership**
   
   If upper administration or institutional leadership changes, what impact would it have on your funding efforts?
   
   • Several programs and policy are still active despite changes in leadership

2. **Commitment for extension not just participation**
   
   Are department heads willing to commit to the practices or even invest in efforts to sustain beyond sending to faculty to workshops or taking surveys?
   
   • Provost goes on record with equity expectations has help alleviate any push-back

3. **Accountability structure**
   
   How are faculty, departmental heads and deans held accountable for achieving ADVANCE-related goals relating to retention, recruitment, promotion, etc.? Are there formal or informal structures or procedures in place?
   
   • WISEST had to provide an annual report and send to department head and vice provost on what they were doing (e.g., success of search committee training)
   
   • Faculty equity committee serves as a sort of external evaluation

4. **Inclusion of departments outside arts and sciences**
   
   Did you include departments from outside of arts and sciences? What were their responses? Were they excited to participate? During and after?
   
   • Yes

5. **Stated goal of sustainability**
   
   Was there an explicit plan for how you would make efforts sustainable? If so, how was it communicated to faculty and department heads?
   
   • When grant ended went to the provost to discuss sustainability
   
   • Deans support this and related programs

6. **What factors do you believe contributed most to sustainability efforts?**
   
   • Wiseit supported by provost and volunteer basis by faculty who received a small stipend
   
   • The involvement of higher administration and passion of male and female faculty members in Wisest
   
   • The focus of more disciplines outside STEM
Interview 3: Tier 1 Institution

1. Lower dependence on leadership
If upper administration or institutional leadership changes, what impact would it have on your funding efforts?
- Same director from 2002-2016, have new president, several provost, deans of the major colleges there have. Not in the colleges, they report to the provost. They believe it is important, people feel comfortable talking with.

2. Commitment for extension not just participation
Are department heads willing to commit to the practices or even invest in efforts to sustain beyond sending to faculty to workshops or taking surveys?
- Programs developed by advance from 2002-2007 were impressive enough and the university didn’t want to lose them. Director made a real strong case to program

3. Accountability structure
How are faculty, departmental heads and deans held accountable for achieving ADVANCE-related goals relating to retention, recruitment, promotion, etc.? Are there formal or informal structures or procedures in place?
- They report to provost, things instituted in college there is a committee Engineering Arts and Medicine are on there. Materials are required faculty are required to participants

4. Inclusion of departments outside arts and sciences
Did you include departments from outside of arts and sciences? What were their responses? Were they excited to participate? During and after?
- Focus has moved beyond stem, provost picked up funding at same level and increased and instructed to focus on all schools, gender and races.

5. Stated goal of sustainability
Was there an explicit plan for how you would make efforts sustainable? If so, how was it communicated to faculty and department heads?
- No explicit statement but there are many advisory committees who go through STRIDE. PI’s of grant were deans of colleges from the beginning
- Presidents committee on faculty diversity is where they have time to talk to president and provost, she believes it to be very important of having an audience at high levels
Interview 4: Tier 1 Institution

1. Lower dependence on leadership
   If upper administration or institutional leadership changes, what impact would it have on your funding efforts?
   - Got a new president once grant ended, provost was really on board and convinced the new president.

2. Commitment for extension not just participation
   Are department heads willing to commit to the practices or even invest in efforts to sustain beyond sending to faculty to workshops or taking surveys?
   - Provost goes on record with equity expectations has helped alleviate any push-back

3. Accountability structure
   How are faculty, departmental heads and deans held accountable for achieving ADVANCE-related goals relating to retention, recruitment, promotion, etc.? Are there formal or informal structures or procedures in place?
   - Before grant ended developed a steering committee with deans of stem colleges and provost, it maintains visibility and relevance of ADVANCE initiatives
   - Followed the NSF blueprint on sustainability
   - Department heads must approve ADVANCE participation.
   - Goes to department chair meetings are shown ADVANCE website

4. Inclusion of departments outside arts and sciences
   Did you include departments from outside of arts and sciences? What were their responses? Were they excited to participate? During and after?
   - Yes, to both men and women of color in any discipline

5. Stated goal of sustainability
   Was there an explicit plan for how you would make efforts sustainable? If so, how was it communicated to faculty and department heads?
   - Discussed sustainability before grant ended

6. What factors do you believe contributed most to sustainability efforts?
   - Provost office
   - The advance liaisons: group of dedicated liaisons meet once a month but were paid by NSF before, STEM women who advise on practical issues, barriers and problem. Approach people who can benefit from ADVANCE. They also research to stay close to the data
   - External mentoring seen as most important, it turns out to be a meaningful relationship that result in papers, grants and presentations. The students of the participants also mentor, so there is a trickle down effect.
Interview 5: Tier 3 Institution

- Departments either wanted to participate in their hiring initiatives or not. No accountability there (engineering was most receptive to these initiatives particularly because the Dean was supportive)
- President doesn’t think building policies around hiring diverse faculty is a priority
- Successful thing was their research support. They have workshops, grants, and other resources for all faculty that have been very beneficial. Sara directly attributed that to the woman they hired to spearhead those programs
- Essentially very difficult to get any department heads, deans, administration to care. They care as long as NSF is funneling millions of dollars and once that stops, it’s back to business as usual.

ADVANCE NSF / AWIS Workshop on Sustainability

1. Who is being served post-grant? How do you contain mission creep?
   - Shouldn’t worry about mission creep—it’s a collaboration.
   - VP literally, some active STEM women faculty practically.
   - Goal is to continue to serve STEM women.
   - Success in catalyzing national cohorts; still struggle internally.
   - Right now, everyone. We’re new in its implementation and mission creep is intended but not sure yet of the scope to which it should be maintained.
   - Everyone through policy change, ten+ promo training.
   - Campus wide recruitment workshops- move from training to train the trainers.
   - Mentoring workshops- training mentors and mentees. Moving from STEM to campus wide- controlling rogue efforts to assure quality.
   - Served post-grant= junior tenure track faculty (men & women) in STEM, expanding to school of education.
   - Our grant has a few more years to go so we aren’t post grant, we’re just starting plan for sustaining.

2. What are your new goals and how do you determine them?
   - Expand program to other schools/ departments on campus, host joint events between schools.
   - New-goals budget & maintaining key initiators.
   - Still very few in number > increase the number change culture in a long range.
   - New goals based on most successful initiators in grant period.
   - New mentoring pilot; 2nd year; Sr. fac. To URM Jr. fac. (2 colleges)
   - Still in development we can be focused on gender equity but intersectionality is vital, all forms of equity currently being considered. Need to focus and clarify.
   - Institutionalize training all mentoring by integrating with UP faculty affairs and HR.

3. Where do you see post-grant funding (internal/external)?
• Had bridge funding from college of Arts & Sci. during transition period program now sustained by research office.
• Post grant funding is tied to incorporation of ADVANCE goals into UN: policy.
• Broad-based
• Internal from president> shrinking
• External from MEXT/JST> limited
• Considering NSF intersection grant.
• Small budget but doesn’t inhibit.
• We have internal funding to sustain us but additional funding is sought for new research efforts although where time from this will come from is?
• Internal sources and seeking development funds through big donors.

4. Where in the organization should/will the program be located after the NSF funding? How can you be most effective there?
• Located in the research office. Most effective= continue cohort (group) mentoring, expand programs beyond stem to foster interdisciplinary interactions.
• Office of Faculty and Global Affairs is already in existence; will they take over these issues?
• Our office is advance-focused, but has other programs. Are there enough resources to sustain an office and staff?
• In provost offices & office of institutional equity diversity & access.
• Currently contained in home colleges w/ outreach to targeted/selected colleges for cross disciplinary mentoring.
• We are to report to the provost office.
• In the admin office actually, desirably independent office on campus.
• Institute presence within presidents w/ provost office. Leadership takeover raises concerns and uncertainty.
• Should be held in Academic affairs but in collaboration with diversity office, CTL, Women’s Center and any other relevant groups. Everyone responds differently to different offices.

5. What staff support do/will you have and what work can you accomplish with it?
• Full time program coordinator
• Someone embedded in each of the aforementioned offices should have the work written into their job description/
• Currently no dedicated staff support- PI’s department administrative assistant does grant-related paperwork.
• Have a ½ time of administration assist, 20-hr grad assistant, and 20 hr/ week even and communication support. We can do a lot w/ these individuals but I still feel really overwhelmed w/ other part of my job (50% of my directorship is a gender studies program.)
• Seeking some institute staff- interface with VP Faculty Affairs & VP equity & inclusion will be critical.
6. How does social science research get incorporated, if it does?

- Sociologist served as internal evaluator, political scientist helped with evaluation/initiates as Co-PI program coordinator in public administration.
- Need to target people who are already engaged in related research, have them as fellows/visiting scholars, etc.—but need the funding.
- Needs to be incorporated. Academic relate to data (grant & goal) Cite prominent studies and know your own institutional data whether though climate studies or focused institutional research effort.
- SSRI-will be integrated across campus.
- We definitely need objective analyses.
- Have conducted large campus wide survey on climate, work life, etc. issues- plan to revisit that.
- This was mine** in the grant & it will continue but when is the question. I’m overwhelmed.
- Social Science – book chapters, paper collabs qualitative narratives.
- Incorporated with a separate ISSR staff & continues research
- Social science research is critical to get attention of scientists.