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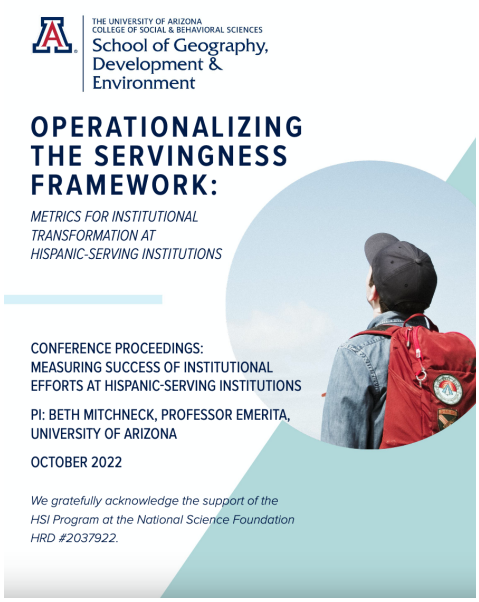

THE UNIVERSITY OF ARIZONA
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OPERATIONALIZING THE SERVINGNESS FRAMEWORK:

METRICS FOR INSTITUTIONAL TRANSFORMATION AT HISPANIC-SERVING INSTITUTIONS

CONFERENCE PROCEEDINGS: MEASURING SUCCESS OF INSTITUTIONAL EFFORTS AT HISPANIC-SERVING INSTITUTIONS

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RESEARCH, SCHOLARLY, AND CREATIVE ACTIVITIES CONCEPT PAPER

1.0 INTRODUCTION

Interrogating how Research, Scholarly, and Creative Activities (RSCA) Success and RSCA Development[2] intersects with servingness at HSIs is a new frontier for institutions and individuals. We use the term "Research, Scholarly, and Creative Activities" (RSCA) to embrace multiple forms of knowledge production across scholarly disciplines and practices as well as across institutional type. The extent to which RSCA intersects with the mission and practices at an HSI varies, based on a combination of factors such as institutional type, profile, history, and service area represented by the cohort of HSIs. Relatively few HSIs are RSCA-intensive institutions (Carnegie classified "research institutions"), however, RSCA likely plays a role at all HSIs. It may take the form of undergraduate RSCA (UR), such as UR experiences, extra- and co-curricular activities, and resources centers, or is embedded in the curriculum through course-based undergraduate RSCA experiences (CURES). Faculty, of course, are engaged in RSCA at many HSIs. At RSCA-intensive HSIs, conducting RSCA on an ongoing basis is a central focus of faculty job descriptions. At 2-year colleges, regional institutions, and predominantly undergraduate institutions (PUIs), many faculty also engage in RSCA projects, develop their course content based on current RSCA and cutting-edge science, and/or as noted above integrate RSCA into courses and mentoring.

2 RSCA Development (RD) encompasses a set of strategic, catalytic, and capacity-building activities that advance RSCA, especially in higher education. RD professionals help faculty become more successful communicators, grant writers, and advocates for their work. They help faculty bring new ideas to life. RD professionals also serve their institutions. They create services and resources that transcend disciplinary and administrative barriers and create programs to spur discovery. More information about RD: https://www.nordp.org/about.

We seek to disrupt the explicit hierarchy of institutions (e.g., as indicated in rankings like those of *U.S. News and World Report*), as it relates to RSCA expenditures and infrastructure, while at the same time acknowledging how systemic racism and white supremacy has a) shaped the construction of what constitutes RSCA, and b) created structural hierarchy resistant to disruption. The vision for our model is that the contributions of a 2-year college that engages students in project-based learning that develops leadership, communication, identity, and an appetite for scholarship is equally as valid as the contribution of an R1, 4-year institution that may be able to engage in technical training on advanced instrumentation – as long as the engagement of Latinx students and minoritized communities is intentional and authentic. As such, while this concept paper is about STEM activities, we broadened its applicability at the institutional level to the largest framing of scientific research.

2.0 STATEMENT OF GOAL – WHAT SERVINGNESS LOOKS LIKE

This concept paper is a plan of action: facilitating greater HSI servingness through RSCA will lead to the development of more HSIs that will contribute to:

- better, more equitable student outcomes;
- greater diversity in faculty composition;
- more equitable tenure and promotion policies and practices;
- socio transformative RSCA that corresponds to the mission of HSIs and prerogatives of faculty at HSIs;
- engaging students in culturally relevant problem-solving by linking [scientific] inquiry with issues of concern to students' personal lives and the well-being of their communities;
- and an ongoing process of institutional transformation that focuses on servingness and all of its dimensions.

3.0 THEORETICAL FRAMEWORK THAT INFORMS RSCA METRICS AT HSIS

To briefly situate the RSCA enterprise within an institutional transformation approach, we draw on the broadening participation and HSI literature that seeks to "decolonize" HSIs by centering stakeholders with diverse and intersectional identities, experiences, and motivations (Garcia, 2018). A consistent theme in this research places institutions of higher education (IHEs) in a broader history of White privilege and power, that creates epistemological higher education norms about who goes to college, who is qualified to be a professor, how classrooms operate, and what constitutes scholarly knowledge and research, among other examples.

While there has been little research on the production of knowledge or the process of RSCA at HSIs, Garcia et al. (2019) and Núñez et al. (2021) have usefully approached this through the concept of "external boundary management," which places the social construction of RSCA in distinct relationship to external institutions, such as funding agencies and governmental agencies that shape the trajectory of scientific inquiry. In a related vein, a variety of studies have addressed bias in grant peer review (e.g., Lee et al., 2013). Some of this research specifically considers reviewer bias related to the race and gender of applicants (e.g., Ginther et al., 2011). According to a study by Núñez et al. (2021), researchers at HSIs may also be subject to being evaluated along different types of bias. On the one hand, some faculty at HSIs have identified wide gaps between their research approaches and practices and the

"narrow criteria" used to evaluate proposals at NSF. On the other hand, others perceive biases related to institutional prestige, in which proposals from less selective institutions, that have fewer resources and higher faculty teaching loads, are automatically considered less meritorious.

The literature on science studies and indigenous knowledge creation is also relevant to measuring RSCA servingness at HSIs, particularly community-engaged research (CER), and critical, post-colonial, and most recently "decolonizing" theories and methods (Scheurich & Young, 1997; Said, 1978; Delgado Bernal, 1998; Clement, 2019). This research exposes the western, colonial-imperial origins and politics of scientific inquiry, calling into question the universality of scientific epistemologies and methods (Harding, 2015). Indigenous scholars in particular have advanced various ways of decolonizing the practices of knowledge production through new "re-search" theories and methods that, for example, address the needs and questions of indigenous subjects; foreground indigenous and local knowledges and knowledge diversity; forge collaborations between researchers and communities; give voice to, instead of speaking for, subjects; and make visible the ways that researcher privilege and positionality is fundamental to the production of knowledge (Haraway, 1988; Denzin et al., 2008; Norström et al., 2020; Barker & Pickerill, 2020). We also draw on studies that scrutinize and seek to align the tensions between community-engaged research and public scholarship, the public mission of universities, and tenure and promotion policies and practices (Borkoski & Prosser, 2020).

Finally, RSCA at HSIs are significant in their role to create or contribute to intersectional and integrated science identities among students (Hurtado et al., 2017). The formation of STEM identities is critical to enrollment and persistence in STEM majors and subsequent entry into the STEM workforce, yet STEM identities are generally less accessible to URM and low-income students. Several factors contribute to the development of strong STEM identities, including academic experiences such as experiential learning, RSCA, learning communities, and a positive campus climate where URM students have a sense of belonging and are not dissuaded from STEM by implicit biases, stereotype threat, and imposter syndrome (Hurtado & Carter, 1997; Hurtado & Ponjuan, 2005). Recent research focuses on the imperative to link STEM identities to the "sociotransformative" potential of STEM careers (Rodriguez & Morrison, 2019). URM, low-income, and first-generation students are more likely to pursue STEM majors and careers when they find "cultural congruity" (Cole & Espinoza, 2008) and "socio-political efficacy" (Uriostegui et al., 2021) as part of their STEM experience and identity (Naphan-Kingery et al., 2019; Montoya et al., 2020).

4.0 STRUCTURAL CHANGE/EVOLUTION AND RELEVANT METRICS

In this context, several institutional structures (Garcia et al., 2019) are interrelated with RSCA in its many forms at HSIs and should transform in ways that align the RSCA enterprise with the mission of servingness. Below, several institutional structures are discussed, including a list of potential metrics through which transformation can be measured for each structure. The list of potential metrics is sizable. We recommend that you select the metrics that are the highest priority given your institutional context.

- HSI Grants and External Boundary Management

4.1.1 HSI GRANTS

HSI grants, particularly those from the Department of Education, are instrumental for many institutions in developing new programs, practices, and an institutional mission to serve Latinx students. Several

other federal and private agencies have funding specifically for HSIs and/or partnerships between HSIs and non-HSIs, such as the Department of Defense, the National Science Foundation, the National Endowment for the Humanities, the Mellon Foundation, and the Sloan Foundation, among others. Several of these emphasize the development of relationships between MSIs and non-MSI institutions. Measuring the role and efficacy of HSI grants at HSIs also involves an understanding of ***external boundary management***; in this case meaning how HSIs influence federal funding allocations for HSIs; how agencies frame funding requests for proposals (RFPs) for HSIs; who is chosen to review HSI grant applications; and the types of programs, topics, and research that are considered meritorious and fundable by the agencies. Three examples of institutional transformation and relevant metrics in these interrelated structures are as follows:

A. What is the institutional infrastructure for contracts and grants for HSI grants?

- **i.** Are there "adequate" staff and resources for grant submission and management (Office of Sponsored Projects, pre- and post-award)?
- **ii.** What is a systematic process to develop HSI grants?
  - **1.** Including current institutional data availability and analysis to inform evidence-based objectives;
- **iii.** Is there broad institutional engagement in developing HSI grants?
  - **1.** Inclusion of a variety of faculty, staff, and student stakeholders involved in the program/proposal development process;
  - **2.** Professional development for faculty and staff to help them develop expertise in proposal writing.

B. Engagement with funding agencies to reframe epistemologies of RSCA and creative activities at HSIs and in review panel processes:

- **i.** Faculty and staff serving as reviewers on grant review panels;
- **ii.** Faculty and staff attending agency webinars, workshops, other events, and meetings related to funding opportunities;
- **iii.** Government/federal relations office involved in agency outreach and engagement;
- **iv.** Government/federal relations office involved in local political representative outreach and engagement related specifically to HSI funding and agencies;
- **v.** Institutional participation in advocacy organizations such as HACU, Excelencia, AAHHE, AHSIE, and state level HSI Consortia.

C. Institutional Advancement for RSCA

- **i.** Engaging private, industry, and other donors for RSCA funding;
- **ii.** Endowment mechanism in ED HSI grants and matching opportunities.

4.1.2 COMPOSITIONAL DIVERSITY AND INCENTIVE STRUCTURES FOR FACULTY RESEARCH TEAMS

While compositional diversity is discussed in Institutional Success, we focus here on the role of diverse research teams in shaping servingness. Research on organizations and teams makes clear that diversity on RSCA teams can improve and amplify productivity, innovation, and efficacy when the climate engenders trust and the realization of all perspectives in the RSCA endeavor (Margolis & Fisher, 2003;

De Melo-Martín & Intemann, 2012; Uriarte et al., 2007; Hong & Page, 2004; Woolley, et al., 2010; Bear & Woolley, 2011). ***Achieving compositional diversity among faculty is fundamental to developing diverse RSCA collaborations at an HSI***. To harness the potential for diversity on RSCA teams, several other conditions must be in place, including a climate conducive to thriving and retention, as well as incentive structures that promote, catalyze, and reward RSCA activities in their many forms, RSCA teaming, collaboration, and co-publication. These ***incentive structures*** include tenure and promotion, and policies, practices, and professional development related to RSCA activities. Three examples of institutional transformation and relevant metrics in these interrelated structures are as follows:

- Faculty Professional Development and Practices Related to RSCA
  - Professional development for faculty and student researchers to effectively lead, manage, and participate in diverse RSCA teams through creating an inclusive environment;
  - Seed grants to catalyze new diverse collaborative RSCA projects;
  - Seed grants to develop leadership skills for diverse faculty;
- Administrator Professional Development and Practices Related to RSCA
  - Professional development for research administrators, deans, and department chairs on the ways that diverse RSCA teams can increase productivity, innovation, RSCA funding, and publication impact;
  - Inclusive committees and processes to choose/elect/nominate internal RSCA prizes, awards, and leadership roles;
  - Inclusive committees and processes to choose/elect/nominate faculty for external prizes, awards, fellowships, and other forms of recognition;
  - Representation of a range of disciplines in those nominated, intersectional diversity of faculty who are nominated and receive prizes, permission to submit limited submission proposals, and lead RSCA teams;
  - Equitable institutional partnerships with a wide variety of other IHEs and related RSCA organizations to build and conduct collaborative RSCA.
- Incentive Structures
  - Tenure and promotion and annual performance review policies and practices that reward team RSCA, collaborative research, and co-publications;
  - Tenure and promotion and annual performance review policies and practices that reward HSI-centric knowledge generation through faculty RSCA and scholarship (if desired by a faculty member);
  - Accommodation for course release, summer salary, seed funding, and other recognition and rewards for RSCA and creative activities that further the HSI mission;
  - Institutional support for decolonized RSCA topics, questions, methods, and dissemination (e.g., within policy or guidelines documents).

5.0 CULTURALLY RELEVANT CURRICULUM AND PEDAGOGY

RSCA Activities are related to curricula and pedagogy in a variety of ways. Undergraduate RSCA (UR) experiences are influential in improving various measures of student success and leading URM stu-

dents to attain advanced degrees (see Concept Paper on Faculty Success). RSCA experiences for students can be catalyzed through independent RSCA initiatives (perhaps funded through a campus UR program), participating in faculty RSCA projects, or conducting course based RSCA activities. In all these instances, culturally relevant RSCA topics can improve the formation of RSCA and academic identity for URM students (De Melo-Martín, & Intemann, 2012).

Three examples of institutional transformation and relevant metrics in this structure are as follows:

AVAILABILITY OF UNDERGRADUATE RSCA OPPORTUNITIES

- Existence of UR experiences, offices, infrastructure, and funding;
- Number of courses offering CURES;
- Rates of student and faculty participation;
- Numbers and disciplinary variety of UR opportunities;
- Industry partnerships and connection to industry-related experiences and career pipeline.

UR EXPERIENCES THAT INTEGRATE CULTURALLY RELEVANT AND CONGRUENT TOPICS

- Integration of community-based, citizen-science, public scholarship, and/or real-world examples in RSCA opportunities;
- Courses/training for students on a wide range of RSCA methods, with emphasis on how the production of scientific and academic knowledge is embedded in the history of racism;
- Course content informed by current and culturally relevant RSCA.

REGULAR PROCESSES OF REDESIGNING AND UPDATING CURRICULA AND MAJOR REQUIREMENTS

- Professional development for faculty related to teaching and learning in the context of an HSI.

6.0 ENGAGEMENT WITH LATINX COMMUNITY

HSIs engage with the local, regional, and national Latinx community in multiple ways, and leveraging this engagement is salient for the RSCA enterprise at HSIs (see Concept Paper on Community Engagement). HSIs can prioritize their institutional mission by promoting and incentivizing RSCA that relates in various ways to HSIs, the Latinx community, equity, justice, and diversity topics. Even in “basic science” STEM topics that may at face value have little to do with the Latinx community, can be oriented by faculty in their RSCA inquiry to focus on Latinx issues, for example bio-medical questions that implicate Latinx health patterns, or climate and environmental topics that implicate places/spaces where Latinx communities live. Other funding agencies - private foundations in particular - have missions that are explicitly focused on RSCA that address critical societal challenges, and/or action-oriented results. Across this RSCA landscape, RSCA can be improved through engagement with Latinx communities. Three examples of institutional transformation and relevant metrics in this structure are as follows:

- Equity-related RSCA topics;
- Broader impacts of RSCA;
- Community-based and engaged RSCA and public/action scholarship.

7.0 STAKEHOLDERS AND STAKEHOLDER RESPONSIBILITIES

In order to shift away from the norm within research, stakeholders should shift the lens to ask "how"(i.e., how are the offices, programs, or policies that institutions have in place leveraging the diverse assets of your institution, faculty, and students to enable them to connect with RSCA at a scale appropriate to the mission of the institution) rather than asking "what"(i.e., what programs do you have, what is the size/scope/scale of your resources, what are your faculty doing, what are your laboratories doing). Our questions should also center on epistemological higher education norms about who goes to college, who is qualified to be a professor, how classrooms operate, and what constitutes scholarly knowledge and research, among other examples. To work towards servingness in RSCA, institutions should center stakeholders with diverse and intersectional identities, experiences, and motivations (Garcia, 2018) and re-orient institutions in the broader history of White privilege and power.

8.0 RECOMMENDATIONS

As stated above in the structure change/evolution and relevant metrics section, our recommendations for institutional change focused in RSCA include a focus on:

- ### HSI GRANTS AND EXTERNAL BOUNDARY MANAGEMENT

  Engage in external boundary management; in this case meaning how HSIs influence federal funding allocations for HSIs; how agencies frame funding requests for proposals (RFPs) for HSIs; who is chosen to review HSI grant applications; and the types of programs, topics, and research that are considered meritorious and fundable by the agencies.

- ### COMPOSITIONAL DIVERSITY AND INCENTIVE STRUCTURES FOR FACULTY ENGAGING IN RSCA

  Pursue ***compositional diversity among faculty***. Develop a climate conducive to thriving and retention. Implement ***incentive structures*** that promote, catalyze, and reward RSCA activities in their many forms, RSCA teaming, collaboration, and co-publication.

- ### CULTURALLY RELEVANT CURRICULUM AND PEDAGOGY AND RSCA

  Highlight and reward culturally congruent RSCA topics.

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APPENDIX A. *A TOOL FOR DEVELOPING RSCA-RELATED MEASURES AT HSIS*

To facilitate institutional introspection, we propose the use of a simple, flexible tool that may reveal hidden connections between RSCA Development and Success and the features of servingness that we propose. This tool serves as a check list of the types of activities with which an HSI may engage on its path toward institutional transformation and servingness. The tool may assist tracking whether the IHE is using techniques for institutional change of RSCA.

The primary utility of this tool is to enable careful thinking regarding the intersection of RSCA and servingness at an HSI. We propose that an institution could choose the factors relevant to their own RSCA Profile, could elect either static (existing features) or dynamic (trajectories) components relevant to their own institutional mission. Looking at the interaction of specific features, an institution could articulate a target that is not-applicable, relevant and in-progress, or aspirational, and interrogate the critical contribution of this concept paper: HOW is the activity related to RSCA Development and Success considering the specific axis of servingness. There is no implied or explicit assumption that each feature of servingness would be addressed.

FEATURES OF SERVINGNESS	Working Group on RSCA Development and Success	Student capacity to engage RSCA projects	Student leadership capacity	Trajectory of RSCA Development Resources	Partnerships, Networks, and Collaborations	Representation on RSCA Teams	Measurable growth in RSCA skills	Capacity or incidence or RSCA presentation	Application of RSCA Findings in the Classroom	Size of RSCA enterprise
Academic Outcomes										
Non Academic Outcomes										
Student Experiences										
Non Student Experiences										
Leadership and Decision Making										
Culturally Relevant Pedagogy and Curriculum										
Culturally Relevant Programs										
HSI Context Considered in design										