Awarding Engagement

The impact of scientific societies' awards recognizing work at the intersections of science and society

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Summary

One of the many ways that scientific societies and associations aim to support and encourage public and civic engagement among their membership is by conferring awards to those who excel in these areas. This report describes research designed to better understand this class of awards (referred to throughout this report as "engagement awards," though the awards themselves are often described as recognizing a variety of activities, including science communication, advocacy, engagement, outreach, public service, and community- or publicly-engaged research). Specifically, **we explore the kinds of activities that these awards recognize; who tends to receive them; how the awards impact recipients, their disciplines, and their institutions; and opportunities for societies to increase the positive impact these awards make in the future**. Overall, we find that there are many ways in which societies' existing awards are effectively supporting and encouraging engagement, for example by boosting recipients' confidence, visibility, and credibility, benefiting them on both personal and professional levels. This report also describes considerations for further increasing the impact that engagement awards might have for their recipients, science societies and associations, and as levers for encouraging more widespread and effective civic and public engagement throughout the research enterprise.

Background

In recent years, there has been growing interest among researchers to communicate or engage with public audiences (National Academies of Sciences, Engineering, and Medicine, 2017). Researchers in physical, natural, and social sciences have articulated the importance of public and policy maker engagement not only because it can benefit society (e.g., Jefferson et al., 2018; Maynard, 2015), but also because it helps researchers themselves build important skills (Baron, 2010; Feliú-Mójer, 2015; Bankston & McDowell, 2018) and advance their research (Wai & Miller, 2015; McCall et al., 2016; Kappel & Holmen, 2019). In a study of land grant faculty by Rose and colleagues (2020), a majority (53.2%) indicated that pursuing public engagement activities is highly important to them, with faculty earlier in their career saying that these activities are highly important to a greater extent than later career faculty.

This widespread interest among individuals is promising for advocates of public and civic engagement, but at the same time, research suggests that the academic and institutional cultures that these individuals are part of do not yet support or reward these efforts in ways commensurate with researchers' interests or motivations (Rose et al. 2020). Instead of reflecting a supportive culture for public and civic engagement, the norms, policies, practices, and discourses throughout the research enterprise continue to prioritize and reward traditional research outlets (i.e., peer-reviewed publications in high-impact journals) over non-specialist-focused outputs or societal impact. Despite believing that

engagement is important, faculty tend to report that neither high-level administrators at their institutions nor their colleagues prioritize such activities (Rose et al. 2020). Beyond perceived attitudes, a cultural devaluation of public and civic engagement can be seen in policies, particularly in academic reward systems. These policies tend to reward traditional forms of scholarship — namely, peer-reviewed journal articles — and rarely mention whether or how faculty can receive credit for engagement activities (Djupe et al., 2017; Doberneck, 2016; Goldstein & Bearman, 2011; Risien & Nilson, 2018).

In short, **there is a misalignment between individual researchers' drives to engage and the norms and structures that they work within**. As a result, those who engage largely do so in spite — rather than with the support of — their institution's priorities (Risien & Nilson, 2018). They often need to fit engagement efforts into their portfolios on top of work that is more consistently rewarded, limiting the time and energy they can devote to engagement, and in turn, often limiting the impact of such efforts (Varner, 2014). However, there are signs that academia may be gradually shifting toward a culture that truly values public and civic engagement. For example, some institutions have integrated relevant training into graduate curricula (Morin et al. 2016), and others have allowed engagement efforts to be considered in their review, promotion, and tenure processes in recent years (Hutchinson, 2011; Saltmarsh et al., 2009).

To speed this shift toward systemic support for engagement, institutional cultures and policies must reflect the value of such activities. Awards, as components of reward systems, are one area where institutions can convey particular behaviors or norms (Gallus & Frey, 2016), such as public engagement**.** However, there has been scant research to date on the effectiveness of awards given to researchers for their engagement efforts (AbiGhannam & Dudo, 2021).

Research Questions

This research provides a snapshot of the awards that scientific societies and research-related associations confer for work at intersections of research and the broader society — including awards for science communication, engaged research, public engagement, advocacy, public service, and similar activities — all of which we consider "public engagement" for the purposes of this work, with recognition that there are often meaningful differences between the types of activities that we include under the same umbrella (Rowe & Frewer, 2005). Specifically, we address the following questions:

1. What are common traits of these awards?
    a. Who tends to receive the awards (i.e., recipient demographics and their goals)?
    b. What kind of work tends to be recognized (i.e., forms of engagement)?
    c. What forms do the awards take (i.e., rewards, privileges, recognition)?
2. What impacts do the awards have?
    a. How are recipients affected personally and professionally by their award?
    b. To what extent does the existence of an award affect the way others in a particular discipline or at a recipient's institution regard engagement?
3. How might these awards become even more impactful and influential tools for culture and policy change throughout the research enterprise?

Methods

We addressed these research questions through two complementary methods: a content analysis of the publicly available information on societies' websites about their awards and interviews with a sample of award recipients.

For both of these methods, we began by assembling a list of relevant awards that scientific societies and associations confer to researchers. A research assistant assembled this list by searching for comprehensive lists of research societies and associations, including any organizations whose stated missions are to advance a discipline, group of disciplines, and/or researchers' careers. The research assistant visited all organizations' websites and added relevant awards to a central list. Awards were considered relevant if they recognized work explicitly connecting research and the broader society (e.g., science communication outside of research journals, public engagement, advocacy, human rights, knowledge co-production) and researchers were eligible for the award (i.e., if an award was only ever given to a policymaker or journalist, it was not included in the list). This resulted in a list of 78 unique awards, from a total of 42 organizations. For each award, the assistant noted the link to publicly available information about the award and a list of recipients over the past 10 years, when available.

Content analysis

We used a computer program[1] that visited each award's website and scraped language about the award from the webpage. Then, one of the three lead authors read each award's description and coded for the presence or absence of a number of features. For example, we coded for descriptions of the kinds of work the award is meant to recognize, noting when things like cumulative achievements or individual projects are mentioned in the award description. We coded for a number of other themes in these awards, such as how public engagement is defined, what is generally awarded, eligibility of applicants, and the forms of recognition offered. This process revealed common trends across awards, as well as differences.

Interviews

To recruit interview participants, we went through the list of awards and randomly selected one recipient from the past 10 years from each award. We sent initial invitations and reminders to those who did not respond to the initial invitation after two weeks. If a participant did not respond to the second request, we repeated the random selection process for that award, selecting a different recipient to invite. This process resulted in 28 interviews, at which point we had consistently noticed indicators that we had reached saturation — the point at which few new themes were emerging in subsequent interviews, therefore warranting an end to data collection. Approximately half (49.1%) of those invited agreed to participate in an interview.

The three lead authors conducted the interviews, and whenever possible, two interviewers were present (when this was the case, one interviewer led, while the other primarily listened and asked follow-up questions to ensure consistent coverage of the interview content). The interviews were semi-structured. This meant that we used a consistent protocol to ensure that every participant was asked the same high-priority questions, but interviewers were free to adapt questions to make them appropriate for the

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[1] The program was created by Anastasios Pateras who volunteered his time for this project.

particular interviewee and to ask follow-up questions that were not necessarily on the script. Interviews lasted no longer than 1 hour, and they were recorded and transcribed with otter.ai, an automated online transcription platform.

For analysis, all three lead authors read the transcripts for all 28 interviews, noting recurring themes, unique perspectives, and other points that address the research questions. Through multiple group discussions, the researchers arrived at the findings presented in this report.

Upon analyzing the interviews with awardees and investigating the emerging themes, it became clear to us that we need to further explore our questions from the perspective of the staff in charge of organizing public engagement awards at societies. We therefore reached out to each of the 42 societies to talk to staff about themes brought up in awardees' interviews. This triangulation will allow us to further validate our findings. So far, we have completed 8 interviews with society staff. Because this work is ongoing, findings from the staff interviews will be detailed in future work.

Results

In this section, we present the findings from the content analysis and interviews together, as they serve to contextualize and reinforce each other. Where possible, we include representative quotes for illustrative purposes. For each finding, we discuss the implications for societies and their members and open questions to explore in future work.

What are common traits of these awards?

1. **A majority of relevant awards focus on efforts by researchers to increase public understanding of their field, or of science more generally.** The most frequent descriptions of efforts that the awards recognize were in terms of public education (48%), outreach (24%), and science communication (24%). Some awards were described as recognizing more than one of these three kinds of activities.

   Implications: Because a majority of awards seem to recognize researchers' efforts to disseminate knowledge, there are relatively few awards that explicitly focus on or prioritize work involving bidirectional sharing, despite the importance of this kind of engagement for strengthening the relationships between the research enterprise and the broader society (National Academies of Sciences, Engineering, and Medicine, 2017). To the extent that societies' awards encourage more members to take up the kinds of activities they recognize, this body of awards as a whole may be missing a key opportunity to encourage a shift from primarily one-way to more multidirectional communication between researchers, engagement practitioners, and public audiences.

   Open questions: How do societies arrive at the focus areas for their engagement awards? Do the online descriptions of these awards align with the criteria that societies use to select winners? Or are there additional traits that societies prioritize in making selections that may not be on their websites?

2. **Most awards are selected by nomination.** This was evident in both the text on societies' websites (51% of websites referenced a nominating letter, and 25% referenced supporting letters, with some websites referencing both) as well as in recipients' descriptions of how they

came to receive their award. Often, recipients did not know they had been nominated until they were notified that they had won, and sometimes they never learned who had nominated them or even what exact aspects of their engagement work they were nominated for, even if they had received the award years before. In some cases, self-nomination is allowed, and a small number of awards have an open application process (though many of these applications still require external letters of support).

One pattern that emerged through interviews was that women, people of color, and early career researchers (and especially people who identified as all three of these) were more likely to have nominated themselves or have asked someone else explicitly to nominate them.

Implications: The pool of nominees for many awards may be limited to those who do more visible and prototypical forms of engagement, who have larger networks within the discipline, and who already have strong reputations. In short, nominees are likely to already have a significant amount of power and prestige. In most fields, researchers with these forms of power are more likely to be later in their careers, white, male, and employed by prestigious R1 universities. This phenomenon has long been identified in the literature on scientific rewards — Merton (1967) described the "Matthew Effect," the practice of giving major awards to known names and institutions even when work of equivalent, or even higher, importance is simultaneously performed by less recognizable researchers and institutions. Nomination requirements may give rise to a Matthew Effect among societies' public and civic engagement awards, rather than elevating excellence or aptitude by researchers who don't already have significant visibility, large networks, or strong reputations. As a result, these awards may reinforce existing power dynamics in science, rather than serving as tools to bring about greater equity and culture change.

Open questions: Why do societies often require nominations? How do candidate pools differ — in terms of demographics or types of engagement work — when candidates must be nominated and when they can self-nominate or apply? How does the quality of information that a selection committee receives about a candidate's work differ when the candidate has submitted their own application or nomination, as opposed to when others have submitted it? How often are self-nominations allowed? How often are they encouraged? How are they viewed by selection committees?

3. **Publicly available criteria for awardees tend to be vague.** Many societies describe in high-level terms the kinds of work and recipients that they intend to recognize, for example by articulating broad kinds of activities the award is designed for (e.g., science communication, outreach) or the general goal that the recipient and their activities should be working toward (e.g., human rights, increased public understanding of science). Although award descriptions often state that awardees should make an impact in society at large, they rarely articulate specific impacts that they hope to see or how recipients should demonstrate impact. In addition, societies rarely publicize criteria related to approaches, partners, audiences, or outcomes. Further, very few societies publicized information about the selection process or committee making the selection.

Implications: On the one hand, general criteria can allow more people and more diverse forms of engagement to be considered for the award. On the other hand, vagueness may also make it difficult for individuals to see themselves (or others, in the case of awards requiring nominations) in the award description. General descriptions and unspecified criteria may also

result in many applications or nominations that do not actually fit the intent of the award as well as a paucity of applications or nominations that do fit the intent. In addition, research from a range of domains demonstrates that when individuals are being assessed without clear and transparent criteria, unconscious bias is more likely to influence assessments, favoring individuals from the dominant group and decreasing diversity (e.g., Ulhmann & Cohen, 2005).

Open questions: To what extent are the criteria that societies use to select recipients reflected in their publicly-available descriptions? Under what conditions might clarity or transparency about the criteria, selection committee, or selection process influence the number of applications, diversity of candidates, and/or the selected recipients?

4. **Most awards recognize only cumulative accomplishments.** Rather than being conferred to individuals for a specific engagement effort (e.g., a single video or event series), many awards are given to individuals who have engaged in a wide range of activities over a significant time span.

Implications: Earlier career researchers will be less likely to receive awards focused on cumulative achievements, since they have had less time in which to accumulate a wide range of engagement experiences. This is a potentially particularly important implication because, as we describe later, we found consistent evidence that awards tend to be more impactful for early career researchers. Further, similar to the finding that criteria tend to be general, recognizing cumulative, rather than specific, work may serve to widen the space of engagement efforts that can be recognized. It could also result in vagueness that makes it more difficult for individuals to see their work or their peers' work in the award description. It may also decrease the number of recipients who have done a smaller number of very high-impact activities or those who have done very recent high-impact engagement (a circumstance that is particularly prevalent at this moment, as many researchers who had never engaged widely stepped up to do so during the COVID-19 pandemic).

Open questions: Who and what forms of engagement tend to be recognized by awards focused on cumulative achievements, as opposed to those given for distinct efforts?

Who tends to receive the awards?

Recipient demographics

Participants were asked to respond to a short demographics survey after their interview. Twenty-six of the 28 interviewees completed the survey. We expect that the demographics of our interview sample approximate the demographics of the broader population of societies' engagement award recipients because we took a pseudorandom sampling approach. However, we recognize that all recipients may not have been equally likely to accept our invitation to participate — for example, retired individuals may have been more likely to feel they could give up an hour to participate than people at other career stages, or early career researchers, who reported disproportionately positive impacts, may have been more eager to share their experiences with their awards than others. As a result, our sample may not be a precise reflection of the demographics of recipients, but should still provide a general sense of this population. Interview participant demographics are represented in Figure 1.
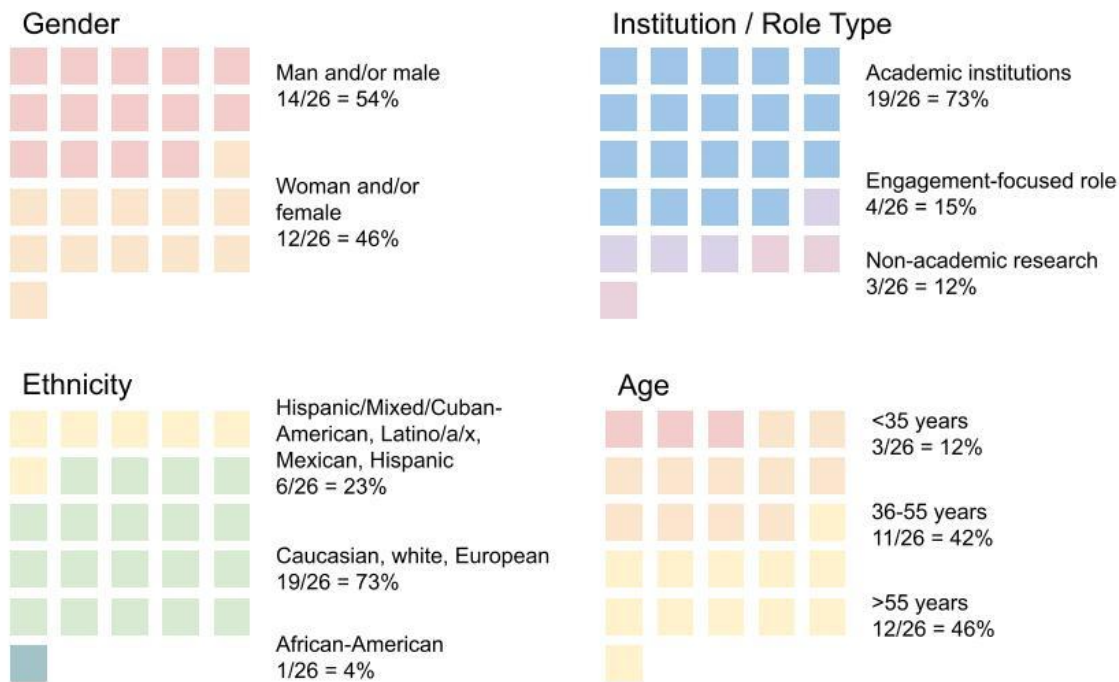
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Figure 1. Self-reported demographics. Participants were asked for their gender (top left), and ethnicity (bottom left) in the survey, reported here in the terms that participants provided. They were also asked for their title and institution, which we used to classify participants into one of three categories (top right). We used a combination of title information and participants' descriptions of themselves in the interviews to classify participants into career stages (bottom right).

Implications: While there is some diversity in the identities of recipients, there is relatively more homogeneity in the race/ethnicity of award recipients and institution and role type than in other areas. This may limit the extent to which engagement awards serve as a vehicle for uplifting types of awards and individuals who may have less power and privilege in the research enterprise, and instead make them more likely to reify the status quo. Similarly, although age is not a perfect proxy for career stage, it is clear from our sample that recipients skew later in their careers. This is particularly notable when considered alongside our finding, discussed in the next sections, that earlier career recipients often report the greatest impacts from receiving engagement awards and later career recipients report the least.

Open questions: To what extent do the demographics of awards recipients reflect the demographics of the nomination or application pools for the same awards? To what extent do recipients' demographics reflect the disciplines and institutions to which they belong?

Recipients' engagement goals

Each recipient has somewhat unique goals for their engagement, and many recipients had multiple goals. In some cases, goals were primarily about benefiting oneself or one's research (e.g., by helping them build partnerships or by helping them make sense of the value of their research). Others aspired to benefit the research enterprise, (e.g., providing opportunities to advocate for science, increase public trust in science, justify public investment in science, or increase diversity in science). A third group of

goals was to directly benefit members of the public and the specific communities with whom they engage (e.g., providing members of the public — especially members of marginalized communities — access to scientific information and an understanding of the scientific process). Individuals who tended to talk about themselves as researchers first, with engagement as an add-on to their professional identity, were more likely to describe their motivations in terms of the ways that engaging would benefit them, their research, and the research enterprise, while those who saw engagement as central to their work and professional identity were more likely to describe motivations related to benefiting others.

> *I'm interested in broadening people's perceptions of what science is and who can be involved in science. And it's funny because I will often feel like my ultimate goal is not necessarily to inspire… more scientists. I'm actually really interested in building a scientifically literate citizenry. I think it's more important that people are not scared of science, that they understand the basics of science, that they know how to ask scientific questions. And to think scientifically.*
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> *I enjoy doing it. I enjoy seeing what you might call that light bulb moment when something clearly makes sense to someone, I enjoy the challenge of trying to take something technical, and reduce it down so that it makes sense.*

Implications: Societies may find it beneficial to ask applicants about their engagement goals and, wherever possible, award those whose goals best align with the society's ultimate goals.

Open questions: To what extent do recipients' goals for their engagement work align with societies' goals? To what extent are recipients achieving their goals?

What impacts do these awards have for recipients?

It is challenging for anyone to know the ways in which receiving an award *caused* subsequent experiences, insights, emotions, or outcomes. However, many recipients were able to speak to ways that they felt the award had made a difference for them, whether personally, professionally, or in other, more nuanced ways. In this section, we report participants' accounts of the effects of the various engagement awards.

Personal Impacts

By far, the most common impacts described were personal ones. Although recipients described this result differently, nearly everyone described feeling **appreciative** or **honored** to have received the award. Participants often recognized that their nominators and the society expended time and effort to recognize their work, and they were often grateful that their engagement efforts were noticed by individuals and an organization that they respect.

Many participants — especially those who received the award relatively early in their career or who tended to think about themselves or their work as on the margins of their discipline — spoke to the **confidence** boost that resulted from receiving the award. They saw the award as recognition from a reputable organization that the work they were doing was valuable and interpreted the award as explicit encouragement to continue doing similar work.

> *I didn't take this as the endpoint. I thought this was more like a green light, like, please continue on in that direction.*
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> *These awards are like fuel… I don't think it's changed the way that I do things, or my commitment to it, but it fills up the tank again.*

Many recipients also described ways in which receiving the award increased their sense of connection — to other recipients, their collaborators, or to their field and professional society. For example, participants frequently talked about the sense of accomplishment they felt simply by being associated with past winners of their award, many of whom they think very highly of.

> *So I think that that was probably the most rewarding to me, just, you know, having my name be affiliated . . . with all of those previous award winners, who are just so incredible. Really put me in a different frame of mind.*

Some recipients also described the award creating a sense of connectedness with their research and engagement collaborators. Even if the award was formally given to just one person, they viewed it as validation and recognition for a much larger group of researchers to whom they're connected.

> *Because everything I do is teamwork…it's a recognition not only to me, but to what we do here in [country]. And it's a group award for everybody who works with these areas, which are usually not highly recognized. So I think that it's good for everybody involved -- from the university, from my country, and from my colleagues who work in this area.*

More broadly, some participants saw the validation their award brought as a sign that they share common values and priorities with others in the discipline and with the society that recognized them.

> *And for that award to come back was like, really, really validating and made me feel much more connected… because I had been told so often by different professors, 'what you're doing doesn't matter and it's not valuable.' All of a sudden I had this fancy award and was like, 'well see, there you go. Yeah, it is important and other people besides you think so.' I always knew it was valuable. But it's also helpful to have other people say what you do is valuable.*

Professional Impacts

Whereas many participants described the personal benefits they experienced in similar ways, professional impacts were much more varied. Some participants, especially those who received their award later in their career and those who tended to see their engagement efforts as tangential to their primary work, did not think the award affected them professionally.

> *It's extremely pleasant to be told by other people, 'we appreciate what you're doing.' But I can't think that it's changed anything very much.*

Others, especially those for whom engagement is more central to their professional identity, felt that receiving the award increased their **credibility**, especially among others in their field who value or engage in the kind of effort they were recognized for and among potential partners outside the research enterprise. This credibility can open doors to professional opportunities.

To see that, oh, she's, she's recognized by this [discipline] society, she must be serious. I think that thinking is always part of when people are evaluating if they want to work with me, or if they want me to speak or if they want to take up my books. Initially, the name of the [society] gave me sort of like the Good Housekeeping Seal, if you will. And it probably continues to do so today... But initially, when [my methods of engagement] were rare, knowing that this person is, you know, recognized by the [society], that would have separated me from the rest.

In general, the credibility conveyed by an award was described as a professional bonus — recipients typically reported that they thought an award was unlikely to catalyze significant career success on its own, but that it could provide a boost to someone already on a successful trajectory.

The awards are now counted in our career, like, you know, when you apply for a promotion, etc. So awards are important. So yeah, I'd say, certainly it doesn't hurt. Yeah, I don't know how much it helps.

Earlier career recipients (i.e., those who received the award before applying for tenure, when relevant) reported the most consistent and strongest changes as a result of the award they received. They noted that the award helped them (and their research) become more visible among scholars in their field, it helped solidify engagement as a part of their professional identity, and in some cases served as a credential that improved their case for academic advancement.

The invitation to select the next year's [award recipient], that was also part of the award, if I wanted to be a part of it, which of course I said, yes. So, that was probably the third component — getting to sit in on that committee, which meant that I got to talk to those people that are very, you know, I think four out of five of whom were very senior scholars... I've only started getting to see the backstage of academia. It started with that award. Getting to be in the rooms with the senior scholars, and to talk to them and then getting on a first name basis with them.

I do think it has an effect on my career. I think going up for tenure… I'm sure it helped that… I'm sure it kind of allows me to say, 'see, you can do all of it,' like in the type of discussion with others who would say, "don't go do this."

Earlier career recipients were also more likely to report that a monetary prize was especially meaningful, especially in the cases where they reinvested the funds back into their engagement work. Later-career recipients, in contrast, generally described a monetary prize as a nice gesture that made little practical difference for them. Notably, few later-career participants mentioned the value of being able to reinvest the prize into future engagement efforts.

Early-career researcher: When I got the award, I was thinking like, man, I should really step up my game… remember, there was $500 connected to that award. So that $500 translated into a new camera lens [for my work], which was a big investment.

> *Later-career researcher: I think that the monetary awards that are significant, are really important for younger people. I don't think monetary awards are very significant — they wouldn't be very significant for me, unless they give me a million dollars.*

A number of later-career recipients also noted that they predicted that engagement awards would have a greater professional impact for graduate students, postdocs, and junior faculty, since their career advancement relies on peers recognizing and validating their work.

> *When you're still being promoted, from assistant to associate and associate to full professor, these awards can have a huge impact on your career... but if you're a full professor, then it's at the edges, I mean, if anything, they would just increase your salary here or there, but that's about it.*

Another factor that some participants felt limited the potential professional impacts of engagement awards was that these awards often had notable differences from research awards given by the same societies. For example, the society may include a monetary prize for their research awards but not for their engagement awards, or they may publicize research award recipients more extensively than engagement award recipients. Participants in this study pointed out that when differences like these imply that the engagement awards are a lower priority for the organization than research awards, recipients of engagement awards may experience fewer of the visibility benefits of the award. In addition, recipients and peers alike are likely to interpret the difference as a sign that the society does not consider engagement to be as important as research.

> *My older brother gets a newsletter — I can't remember what it was that highlights [society] awardees, and he was so excited that I would have been in it. But [the society] didn't put the public engagement awards in it. They only had the science awards... So I would say, [it would increase the impact] to get the same level of, you know, publication, . . . on the same web platforms and printed material as other awards do.*

Implications: Since the most common and strongest impacts of engagement awards tend to be personal in nature, awards that are designed and communicated about in ways that reinforce the value that a society sees in an individual's work are likely to hold significant weight for the recipients. However, there are also a number of opportunities for awards to influence an individual's career, and societies may have an opportunity to strengthen these by considering factors such as who is eligible or prioritized for their award and how they are recognized.

Open questions: What aspects of an award might increase or decrease the various personal impacts? The professional impacts?

Impacts beyond the Individual

Participants were less confident about whether or how the award they received affected the ways their colleagues — members of the society or individuals at their home institution — thought about engagement. Many recipients received congratulations from their peers when they received their award, suggesting that peers in their discipline saw it as a notable achievement, but it was unclear whether the awards led others in the field to place a greater value on engagement.

Similarly, institutions' responses to these awards varied greatly. Some participants felt that their home institution or department took note of their award and publicly celebrated it, in many cases recognizing not only the recipient's accomplishment, but also the way that the award reflected positively on the institution.

> *Whenever I give any kind of a presentation at [institution] or for [institution] and they're introducing me, it's one of the biggest things that they mention that I got that award. They really acknowledge it, appreciate it and understand how important it is. They put it out to their donor base as a news item, put it out to the Board of Directors, as you know, a real highlight, an accomplishment of one of the [institution] scientists. They basically made as big a splash as you could probably make, you know, it went out on social media... So, you know, everybody heard about it — multiple times... It probably helps [my institution] generally, in that potential donors, who they also sent it out to as an example of the accomplishments of the [institution] scientists, recognize that the scientists at [the institution] are sort of top notch. And here's one way. So I think it's probably been super helpful in just bringing even more recognition and prestige to my employer, which is a really nice thing.*

Many others, however, did not think their institution or department was aware of the award, or if they were, they did not think the award was particularly meaningful to them.

> *Interviewer: Do you feel you were recognized by your institution or colleagues because of receiving those awards?*
> *Participant: Um, maybe, to some extent, I think it might have added some sense of respect. But I don't think I don't think it was deeply influential on them.*

In a few cases, participants noted that they had heard of — but not experienced directly — institutions or academic leaders who explicitly disapproved of researchers (especially those who have not yet achieved tenure) investing the time in engagement or related activities, often lumped in with teaching and service. In these cases, receiving an award was perceived negatively, since it highlights the time and energy that the recipient devotes to activities other than research.

> *I remember in my first year as a faculty member, I went to a junior faculty workshop at my disciplinary association's annual conference, and one of the people there had won an award for teaching and one for service from her institution. And her department chair said she needs to pull back on teaching and service, because that's not what's going to get her tenure. And these awards, maybe aren't going to help her. 'You should wait till after your tenure to get them' — made a big impression on me, because that was like, Wow, that's really unfortunate. And this was a person of color. And I asked her how much of that work is like, why you got a PhD and why you became a professor and she started crying and she's like, 'all of it, all of it is why I do this work.'*

Implications: While existing engagement awards may be contributing to some   positive shifts in overall perception of engagement among researchers and institutions, these shifts are most likely modest. Organizations that aspire for their awards to effectively "push the needle" on this aspect of research culture should deeply consider their theories of change for their awards and opportunities to combine awards with other efforts to see their desired changes.

Open questions: Are there ways in which the design of awards (including the selection criteria, type of prize(s), and publicity) may increase or decrease the extent to which an award shapes the views and behaviors of researchers and institutions beyond the recipients? Are there opportunities for awards to contribute to culture shifts in combination with other programs or initiatives at scientific societies?

How might these awards become even more impactful and influential tools for culture and policy change throughout the research enterprise?

In this section, we describe potential opportunities for further increasing the impact that societies' engagement awards can have. Some of these considerations were suggested by participants in awardees and staff interviews, while others were inferred by the researchers.

1. **Seek opportunities to recognize early-career researchers.** This could take multiple forms, such as more strongly considering early career researchers for societies' existing awards or developing an early career version of an existing award that is typically given to later career researchers. Either of these practices would result in more early career researchers receiving recognition for their engagement efforts, with a greater overall potential for these awards to support recipients' professional success and continued incorporation of engagement in their careers.

2. **Seek opportunities to recognize more researchers.** The majority of the awards included in this study are given to one recipient per year (with some awards given less frequently). While this practice may increase the perceived prestige associated with the award, a number of participants pointed out that there are many individuals doing exceptional engagement. They suggested recognizing more than one person per year, so that the positive impacts observed in this study could be experienced by more researchers overall and so that awards may serve to signal even more strongly that societies value their members' engagement efforts.

   There may be concerns or potential trade-offs associated with increasing the number of awards, however. As one recipient described the potential tension:

   I think people will worry if you do something like that, then it dilutes the prestige of the award. And then that raises the question, what's the point then? Is it about trying to have a prestigious award? Or is it about trying to create change?

   Worth considering then, are:

   a. If there are constraints that limit the number of individuals who can be selected (e.g., the award comes with a monetary prize and there is not sufficient budget to extend this to more recipients), societies may consider naming finalists or runners-up who will still experience many of the benefits of recognition and publicity but would not necessarily require the same prize as the primary winner.

   b. Another option is to simply provide positive feedback to more (or all) researchers who were nominated or applied for the award. Although this practice wouldn't increase the

visibility of the nominees or applicants, it would likely still benefit them personally, providing the confidence boost, encouragement, and validation that many individuals described in interviews as particularly valuable.

3. **Don't underestimate the value of small prizes or privileges that come with recognition.** A number of participants described the value they ascribed to small monetary prizes and other forms of recognition that likely cost the society very little. For example, many recipients had readily available and showed us the plaque or physical award they had received, noting that they like to display it. Others appreciated opportunities such as serving on the subsequent year's award selection committee or receiving the award at a ceremony in front of their peers during the annual meeting. Awards do not need to be expensive or involve elaborate forms of recognition for them to be meaningful to recipients.

   a. Publicity in particular was one aspect of awards that many interviewees discussed as valuable. Because it requires minimal resources and awardees value visible recognition, societies might explore additional ways to publicly celebrate their winners, including in emails to their membership (especially if the email singles out the recipient or a small number of recipients, rather than including them in a long list of updates and awards notifications), inclusion on a webpage, and communications to the awardee's primary institution (e.g., one participant noted that if the society wrote to their department head or dean about their receipt of the award, especially if the society were to articulate the significance of the award, such a communication would likely encourage more institutional acknowledgement of the value of the award and the awardee's work). Publicity could include description of what aspects of the recipients work were especially award-worthy, both to communicate to the recipients and to signal approaches and value to the wider research community and institutions.

4. **Look for opportunities to recognize engagement awardees in ways that are comparable to research awardees.** Although even small privileges and acknowledgements can go a long way, recipients and the broader membership take note when some awards seem to be treated as more prestigious than others. Therefore, engagement awards will have a greater impact on recipients and the value that the membership places on engagement if recipients receive similar benefits and recognition for exceptional engagement work as exceptional research. This is particularly true for components of the award that are widely visible, such as where and how the award and winner(s) are publicized, but is also true for less visible aspects like the monetary prize associated with the award.

5. **Consider inviting self-nominations or switching from a nomination system to an application system.** When individuals must be nominated by someone else, the potential pool of winners is more likely to reflect those who already have significant power and privilege. As such, researchers who do less conventional forms of engagement, those who are earlier in their careers, and those who are underrepresented in their fields (especially women and people of color) are less likely to be nominated. A more open application process may increase the extent to which awards recognize innovative engagement, catalyze new and impactful efforts, and increase equity in science and engagement.

6. **Clarify the criteria for selecting winners.** Articulating and publicizing criteria may result in more individuals seeing their work or their colleague's work in the award description, resulting in more

and higher quality applications or nominations. Clear, transparent criteria can also put all applicants or nominators on a more level playing field, so that those without special insights or connections aren't at a disadvantage and creating less room for unconscious biases to shape who is nominated and selected. In addition, having a clear description of the kind of work the society recognizes through the awards and what the organization considers exceptional engagement has the potential to amplify many of the other impacts of the award — for example, it conveys to the recipient, others in the field, and the recipient's institution more clearly what aspect(s) of their work the society especially values and encourages.

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