Faculty Public Engagement Attitudes and Practices at Land-Grant Universities in the United States

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Executive Summary: Faculty public engagement attitudes and practices at land-grant universities

This report answers questions related to the current state of public communication efforts and attitudes of faculty at land-grant universities across the United States. Using the results from a census survey, we examine faculty views of public engagement activities and the role of science in society, along with their current participation in a variety of engagement and outreach activities. We also explore the institutional climate surrounding public communication and factors that may encourage or discourage involvement in outreach and engagement.

Results presented in this report stem from a large-scale census of all faculty at 46 land-grant universities (within 45 university systems) across the U.S. The survey was conducted from May to July 2018. Our final sample consisted of N=10,706 respondents who were distributed across multiple fields, broadly categorized into the arts and humanities (N=2,471) and sciences (N=8,235). More details can be found in the “About the survey” section.

Within the context of this report, the following topics are discussed: Faculty views of science and the public; social media use and attitudes; participation in engagement activities and training; faculty definitions of public engagement; perceived engagement climate and culture at universities; perceived self-efficacy for engagement; and motivations, drawbacks, and barriers for engagement.

Responses to the survey questions are presented in two groups: faculty in the Sciences (N=8,235) include those who indicated they were in the social sciences, life sciences, or physics and mathematics and faculty in the Arts and Humanities (N=2,471) include those who indicated they were in the arts and humanities or other non-science, profession-based fields.

To explore similarities and differences in public engagement-related attitudes attributable to cultural differences associated with the geographical locations of the land-grant universities spread across the United States, we also provide responses to survey questions distributed across the regions of the U.S. (see Figure 15.2 for the distribution of responses across geographic location). These figures can be found in Appendix A.

Select results

- Both Science and Arts and Humanities faculty held mixed views of the public. Faculty agreed that members of the public can bring valuable perspectives to discussions about scientific research (75% agreement among Science faculty; 68% agreement among Arts and Humanities faculty), they also viewed the public as generally uninformed about basic science (68% agreement for both Science and Arts and Humanities faculty).

- Faculty had strong opinions about scientists’ involvement in policy decisions about science, with over 80% of faculty in the Sciences and Arts and Humanities agreeing that scientists should be actively involved in political debates about science. Faculty in the Sciences were confident in the abilities of the scientific community to guide the responsible development of new technologies (75% agreement), as were faculty in the Arts and Humanities (68% agreement). At this same time, 55% of faculty in the Sciences and 44% of faculty in the Arts and Humanities thought scientists should pay attention to wishes of the public.
• Social media was not heavily used by faculty respondents in either field for science or work-related purposes, although some platforms were more heavily used than other. Of those on social media, around half (50%) of Science and Arts and Humanities faculty reported that they never used social media for a variety of specific purposes, such as participating in discussions about their field.

• Faculty in both disciplines were somewhat skeptical of social media as forum for public communication. Both those in the Sciences and Arts and Humanities generally did not agree that they should stay away from discussing controversial topics on social media (61% disagreement among faculty in the Arts and Humanities and 64% disagreement among faculty in the Sciences) but many respondents were unsure about whether it negatively impacted their reputations (around 40% ambivalent for each of the disciplines). Around half (50% agreement) of Science and Arts and Humanities faculty thought it was too time-consuming.

• Overall, 98% of faculty in the Sciences and Arts and Humanities participated in at least one outreach or engagement activity with more traditional activities, such as giving public lectures or interviews with journalists, remaining more popular.

• Not all faculty who participated in communication activities had received training; only 58% of faculty in the Sciences indicated they had some type of science communication training.

• For the institutional climate and culture surrounding public communication, responses revealed that institutional support was lacking. About 26% of faculty in Sciences and Arts and Humanities agreed that public engagement is treated as a core component of the work expected of faculty at their university.

• Respondents indicated there was some support from their colleagues for public communication.
  o Around 65% of faculty in both disciplines disagreed with the idea that people at their university who are active communicators are not very good researchers.
  o A high number of faculty in the Sciences (81%) rejected the idea that public engagement is incompatible with the scientific culture.

• Generational changes may affect the culture of support for public engagement.
  o Around half (51%) of respondents in both the Arts and Humanities and Sciences indicated they were not encouraged by their advisors to get involved in engagement when they were graduate students.
  o Yet, faculty in both disciplines now supported the engagement activities of their graduate students (around 87% agreement).

• There was mixed confidence in respondents’ abilities to interact with their audiences.
  o Most respondents from both fields were confident they could have discussions with diverse audiences (over 80% agreement).
  o While around 60% of faculty from the Arts and Humanities and Sciences did not think that answering questions from an audience was difficult, the remainder did find it difficult or were unsure.

• Many faculty in the Sciences were unsure about finding opportunities for science communication training (28% ambivalent).

• Around 75% of respondents from both disciplines thought insights from social science research should inform science communication efforts, but only around half reported paying attention to science communication research and around 25% of faculty did not use it.

• Having a sense of duty (85% agreement from faculty in the Sciences and Arts and Humanities) and personal enjoyment (83% agreement from faculty in the Sciences and
86% agreement from faculty in the Arts and Humanities) were strong motivators for participating in engagement.

- Opinions were more mixed in identifying common drawbacks to engagement. Faculty indicated that they may not get involved because it does not help careers (25% agreement from faculty in the Arts and Humanities and 27% agreement from faculty in the Sciences) or because it makes people a target (39% agreement among faculty in the Sciences and 34% agreement among faculty in the Arts and Humanities).

- Agreement on possible barriers to engagement was also mixed. Faculty in both fields were ambivalent about the ideas that most researchers are bad at engagement (around 40% ambivalence) and that they may have had bad experiences (45% of faculty in the Sciences neither disagree nor agree and 50% of faculty in the Arts and Humanities neither disagree nor agree). Notably, faculty from both disciplines agreed with the barrier that there were no institutional incentives to do so (around 50%).
Part 1: Faculty in the Sciences
Section 1: Views of science and the public

Science faculty respondents generally hold mixed views of members of the public (Figure 1.1). Most faculty in the Sciences agree that lay audiences can bring valuable perspectives to science discussions, but they also think members of the public lack an understanding of basic scientific principles. Further, many respondents still prescribe to a deficit model of thinking about public attitudes toward controversial science, with 43% agreeing with the idea that people would be more supportive of science if they understood it and just under 17% disagreeing.

Regarding views of how science is used in society (Figure 1.2) and who should be responsible for making decisions about scientific issues (Figure 1.3), faculty respondents in the Sciences are mostly ambivalent about the idea that scientists know best what is good for the public (around 50% neither disagree nor agree). However, they do agree that scientists should be actively involved in political debates about science (over 83% agree) and that the scientific community is capable of guiding the responsible development of new technologies (75% agree). There is also general agreement among Science faculty that scientists should pay attention to the wishes of the public (55% agree). Notably, those in the Sciences appear to endorse the idea of multiple stakeholder involvement in making decisions about science: they are highly confident in the abilities of scientists to responsibly guide technology development and generally agree that scientists should pay attention to the wishes of the public.
Figure 1.1. Science faculty views of the public regarding science.
Figure 1.2. Faculty in the Sciences views of science in society
Figure 1.3. Science faculty views of scientific decision-making
Section 2: Social media use and attitudes

Overall, 84% of science faculty respondents indicate they used social media. They do not, however, report high social media use for science-related purposes. Of the common social media platforms we ask about, most respondents either do not use the platform or do not do so frequently. The respondents’ use of social media do vary by platform (Figure 2.1). Wikipedia, YouTube, and restricted online communities such as ResearchGate or Mendeley are among the more universally used platforms by Science faculty. Platforms such as Twitter appear to be more polarized: while most respondents never use it (59%), a considerable proportion (27%) use it at least a few times a month for science purposes.

When asked about their general use of social media for specific science-related purposes, many Science faculty respondents again report that they do not engage in these activities (Figure 2.2). Around half of Science faculty report that they never engage with peers on post-publication content about their research (52%), write about topics related to their research (52%), share announcements about their new studies (50%), or participate in discussions about their research (46%). Of the remaining respondents, for each of these activities around a third of faculty do indicate they took part around once a month.

Looking at all Science faculty members’ attitudes towards social media (Figure 2.3), over six-in-ten respondents (64%) disagree that scientists should not discuss potentially controversial topics on social media. Yet, considerably fewer respondents reject the idea that using social media negatively impacts a scientist’s reputation (46% disagree). Many respondents also find social media to be time-consuming (49% agree) and they are ambivalent about whether using social media impacts their academic impact (44% neither disagree nor agree). Most Science faculty respondents do, however, believe that there are lay audiences interested in what scientists have to share about science on social media (84% agree).
Figure 2.1. Frequency of social media platforms use by faculty in the Sciences
**Figure 2.2.** Frequency of social media use for specific science-related purposes from faculty in the Sciences
Figure 2.3. Social media attitudes from faculty in the Sciences

- There are lay audiences interested in what scientists have to share about Science on social media: Agree 90%, Neither disagree nor agree 10%, Disagree 0%
- Using social media is too time-consuming: Agree 60%, Neither disagree nor agree 30%, Disagree 10%
- Using social media increases a scientist's academic impact, such as citation rates: Agree 70%, Neither disagree nor agree 20%, Disagree 10%
- Using social media negatively impacts a scientist's reputation: Agree 30%, Neither disagree nor agree 50%, Disagree 20%
- Scientists should not discuss potentially controversial topics on social media: Agree 10%, Neither disagree nor agree 80%, Disagree 10%
Section 3: Engagement activities and training participation

Respondents in the Sciences report participating in a variety of public engagement and outreach activities (Figures 3.1 and 3.2), although participation is more common for some activities than others. Over half of the Science faculty have worked at open house events or science festivals, participated in public meetings, met with policymakers, given public lectures, given interviews to journalists, or worked with K-12 youth at least once in their careers. Faculty more frequently (i.e., more than once in the past year) participate in activities such as giving public lectures, giving interviews, and working with K-12 youth. Activities such as meeting with policymakers and participating in science festivals occur less often. Most Science faculty respondents never give talks at science pubs and cafés or blogged, although some in the Sciences participate in these activities multiple times.

When asked about their willingness to participate in public engagement and outreach in the future, the vast majority of Science faculty respondents are willing to take part in a variety of activities (Figures 3.3 and 3.4). The most popular choices (around 90% of respondents are at least somewhat willing to participate) are more traditional activities that many are already actively involved in: giving public lectures, giving interviews, meeting with policymakers, participating in public meetings, working at open houses, and working with K-12 youth. Respondents are relatively less open to and enthusiastic about writing blogs, giving talks in science pubs or cafés, and participating in science festivals. Notably, writing a blog is one of the least frequently performed activities and has the most resistance in terms of future willingness to participate.

In complement to their past engagement involvement, a total of 58% of respondents in the Sciences indicated that they have received some science communication training, with 33% participating in more than one type of training (Figure 3.5). The most commonly attended type of training was short, single day workshops or seminars (49%), followed by webinars (23%) and multi-day workshops or seminars (22%).
Figure 3.1. Science faculty participation in infrequent public engagement efforts over their careers.
Figure 3.2. Science faculty participation in frequent public engagement efforts over the previous year
Figure 3.3. Science faculty willingness to participate in infrequent public engagement efforts in the future
Figure 3.4. Science faculty willingness to participate in frequent public engagement efforts in the future
Figure 3.5. Participation in science communication trainings by faculty in the Sciences.
Section 4: Defining public engagement

In the science communication field, activities categorized as public engagement differ from those under the broader umbrella of public outreach. Specifically, public engagement activities involve two-way forms of communication which emphasize discussion and mutual learning. Using this definition, we assess Science faculty respondents’ understanding of public engagement (Figure 4.1). Most respondents from the Sciences understand that public engagement emphasizes two-way communication (86% agree) and discussion (74% agree), but over half of the respondents also align engagement activities with elements of traditional outreach, such as one-way forms of communication (54% agree). Moreover, there is less consensus among respondents as to what role, if any, direct policy recommendations or other tangible outcomes play for engagement. Around four-in-ten respondents are ambivalent (40% neither disagree nor agree) as to whether a tangible outcome is necessary for an activity to be considered engagement.

When asked about specific types or characteristics of activities that fall into the category of public engagement (Figure 4.2), Science faculty respondents identify community service (82% agree) and informal science education (92% agree) as public engagement, as well as any communication efforts more broadly (86% agree). Interestingly, respondents are less sure of the inclusion of social media: around 40% of respondents either disagree (17%) or are unsure (23% neither disagree nor agree) as to whether communicating on social media is a public engagement activity.
Figure 4.1. Definition of public engagement from faculty in the Sciences
Science faculty considerations of public engagement activities: "When I think of public engagement activities, I include the following..."

- Informal science education efforts
- Any communication efforts (blogging, news article, press release)
- Participating in community service activities
- Communicating on social media

% of respondents

Figure 4.2. Types of events considered public engagement from faculty in the Sciences
Section 5: Engagement climate and culture at universities

Next, we turn to Science faculty respondents’ perceptions of the university climate regarding public engagement and outreach efforts. In terms of official university expectations for public engagement and outreach (Figure 5.1), many Science faculty respondents indicate that public engagement and outreach activities are considered as at least a small part of their annual or performance review process (83%), tenure dossier (82%), and hiring contract (55%). Yet, this leaves a considerable portion of respondents in the Sciences for which public-facing communication efforts are not part of their official university expectations. In line with this, Science respondents are mixed in their views of the importance assigned to public engagement by their universities, with just under half disagreeing (48%) with the statement that public engagement is treated as a core component of the work expected of faculty at their university, as important as research and/or teaching (Figure 5.2).

Science faculty respondents are mostly supportive of their active communicator peers, with 66% rejecting with the idea that people at their university who are active communicators are not very good researchers (Figure 5.2). Further, most respondents in the Sciences do not think (81% disagree) that public engagement is incompatible with the scientific culture (Figure 5.3).

As additional indicators of university’s engagement climate, Science faculty give mixed responses as to whether they stopped participating in engagement based on how overwhelmed they felt by other responsibilities or with whether they’ve seen their colleagues get burned out from participating in engagement (Figure 5.3). Just over a third of respondents in the Sciences (37% agree) indicate that they sacrifice engagement when they are overwhelmed with other responsibilities, while another third (32% disagree) reject this strategy. Almost a quarter of respondents (22%) also indicate they have seen colleague burnout attributable to outreach and engagement, with more disagreement with this statement occurring among those who are more willing to participate in the future (Figure 5.4).

Lastly, responses from the Science faculty indicate there may be a change occurring over time regarding the culture of public engagement support (Figure 5.5). When asked about support for engagement from their advisors during their time as graduate students, most respondents indicate they were not encouraged to get involved in engagement (51% disagree). Despite the lack of encouragement from their advisors, most Science faculty respondents indicate they support their own graduate students’ participation in engagement activities (88% agree).
Figure 5.1. University expectations for public engagement and outreach for Science faculty
Public engagement is treated as a core component of the work expected of faculty members at my university, as important as research and/or teaching.

The people at my university that are active science communicators are not very good scientists.

**Figure 5.2.** University climate for public engagement according to Science faculty
Figure 5.3. University barriers related to public engagement from Science faculty
Figure 5.4. University barriers related to engagement by participation from Science faculty
**Figure 5.5.** Graduate student support for public engagement for faculty in the Sciences

Graduate student support for engagement from faculty in the Sciences

- **Agree**
- **Neither disagree nor agree**
- **Disagree**

<table>
<thead>
<tr>
<th>Statement</th>
<th>% of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>I support the engagement activities of my graduate students</td>
<td>90%</td>
</tr>
<tr>
<td>When I was a graduate student, my advisor encouraged me and/or my peers to get involved in public engagement</td>
<td>10%</td>
</tr>
</tbody>
</table>

The figure shows the percentage of respondents who agree, neither disagree nor agree, and disagree with two statements related to graduate student support for public engagement from faculty in the Sciences.
Section 6: Perceptions of self-efficacy related to engagement

In addition to the cultural climate surrounding engagement at universities, faculty members’ perceptions of their own self-efficacy or abilities to participate in public engagement can influence their involvement. Overall, 87% of Science faculty respondents feel they have autonomy over the decision to participate in engagement activities, with only around 4% indicating otherwise. The primary university position held by respondents in the Sciences does appear to influence how much autonomy they feel they have over this decision, with tenured faculty members (89%, N=4,375) reporting the greatest autonomy compared to their non-tenure track position (83%, N=1,719) and tenure-track, non-tenured (85%, N=1,383) colleagues (Figure 6.1).

Regarding their abilities to effectively participate in engagement and outreach (Figure 6.2), the majority of respondents in the Sciences feel capable of having discussions with diverse audiences (82% agree) and most respondents reject the assertion that answering questions from the audience is difficult (59% disagree). A notable number of Science faculty respondents are ambivalent about being able to find opportunities for science communication training (28% neither disagree nor agree). Looking at the effects of science communication training on scientists’ self-efficacy (Figure 6.3), those who have received training (one training type, N=2,068; 2+ training types, N=2,700) are, unsurprisingly, more knowledgeable about how to find opportunities to improve their communication skills compared to those with no training (N=3,397). Those with training are also more confident in their abilities to hold discussions with diverse audiences and, to a lesser extent, handle audience questions.

The growing body of social science research on science communication provides insights for effective science communication outreach and engagement efforts. Science faculty respondents indicate mixed use of this research when asked about whether they pay attention to social science research on the topic (Figure 6.4). Around half of respondents (51% agree) report paying attention to science communication research while a full quarter of respondents indicate they do not (25% disagree). Yet, the majority of respondents (78%) agree that insights from social science research should be used to inform science communication efforts.
Figure 6.1. Science faculty members’ autonomy to participate in engagement split by position
Figure 6.2. Self-efficacy related to public engagement from Science faculty
Figure 6.3. Self-efficacy related to public engagement by communication training experience from faculty in the Sciences
Figure 6.4. Use of social science research for science communication by faculty in the Sciences
Section 7: Engagement motivations, drawbacks, and barriers

Numerous motivations, drawbacks, and barriers to public engagement and outreach have been suggested by science communication researchers and practitioners. For personal motivations (Figure 7.1), faculty respondents in the Sciences indicate that a sense of duty (85% agree) and personal enjoyment (83% agree) are strong motivators for participating in engagement. Respondents also believe that demonstrating their university’s research relevance is a motivating factor (66% agree). Opinions are more mixed about motivations related to obtaining funding and fulfilling university appointment requirements.

Science faculty respondents mostly reject the drawbacks commonly associated with public engagement (Figure 7.2). Respondents reject the assertions that engagement is not their job (80% disagree), it distracts from research (60% disagree), and it diverts money from other activities (57% disagree). Opinions are more mixed about the potential drawbacks that engagement does not help their careers (27% agree; 44% disagree) and makes them a target (39% agree; 32% disagree).

Finally, faculty respondents in the Sciences are more ambivalent about some of the common potential barriers to public engagement (Figures 7.3). Respondents are ambivalent about the reasons preventing their colleagues from participating in public engagement being that most researchers are bad at engagement (39% neither disagree nor agree) and that they may have had bad experiences in the past (45% neither disagree nor agree). There is more consensus around the barrier that there is a lack of institutional incentives to engage (54% agree).
Figure 7.1. Motivations for engagement, according to respondents in the Sciences
Figure 7.2. Scientist drawbacks to engagement, according to respondents in the Sciences
Figure 7.3. Scientist barriers to engagement, according to respondents in the Sciences.
Part 2: Faculty in the Arts and Humanities
Section 8: Views of science and the public

Similar to their colleagues in the Sciences, faculty respondents in the Arts and Humanities hold mixed views of members of the public (Figure 8.1). In line with those in the Sciences, most Arts and Humanities respondents do not think that members of the public understand basic scientific principles (68% disagree). They do, however, believe that lay audiences can bring valuable perspectives to science discussions (68% agree), although they are not as confident in lay audiences as respondents in the Sciences. While still a considerable proportion, fewer faculty respondents in the Arts and Humanities prescribe to a deficit model of thinking about public attitudes toward controversial science, with over 40% agreeing that people would be more supportive of science if they understood it and only 17% disagreeing.

Faculty respondents in the Arts and Humanities hold similar views to those in the Sciences regarding science in society (Figure 8.2) but differ in who they think should be responsible for scientific issue decision-making (Figure 8.3). The respondents are mostly ambivalent about the idea that scientists know best what is good for the public (49% neither disagree nor agree), however, they do agree that scientists should be actively involved in political debates about science (85% agree). Interestingly, Arts and Humanities faculty respondents are less confident in the abilities of both the public and the scientific community to make decisions about science compared to Science respondents. Most Arts and Humanities respondents still do agree that the scientific community is capable of guiding the responsible development of new technologies (68% agree), but under half (44% agree) felt scientists have a responsibility to pay attention to the wishes of the public.
Figure 8.1. Arts and Humanities faculty views of the public regarding science
Figure 8.2. Arts and Humanities faculty views of science in society

- Scientists know best what is good for the public
- We depend too much on science and not enough on faith

% of respondents
Figure 8.3. Arts and Humanities faculty views of scientific decision-making
Section 9: Social media use and attitudes

Of the faculty respondents in the Arts and Humanities, 87% report using social media. Along with their Science colleagues, those in the Arts and Humanities do not report high frequency social media use for work-related purposes, although they do use most social media platforms slightly more frequently. The Arts and Humanities respondents’ use varies by social media platform (Figure 9.1), with the most universally used platforms including Wikipedia, YouTube, and Facebook. Perhaps unsurprisingly, the largest difference in platform use between respondents in the Arts and Humanities and those in the Sciences is for restricted online communities (e.g., ResearchGate), with those in the Sciences using the platforms considerably more frequently.

Faculty in the Arts and Humanities report a similar lack of engagement when asked about their general use of social media for specific work-related purposes (Figure 9.2). Around half of Arts and Humanities respondents report that they never engage with peers on post-publication content about their research (52%), write about topics related to their research (48%), share announcements about their new studies (47%), or participate in discussions about their research (40%). There is still a sizeable number of faculty who report that they engage on social media, but they participate only once a month or less frequently in the listed activities (around a third for each activity). Once again, faculty in the Arts and Humanities report slightly higher levels of engagement.

The social media attitudes of Arts and Humanities faculty members (Figure 9.3) indicate similar concerns and support as those in the Sciences. Just over six-in-ten Arts and Humanities respondents (61%) disagree that scholars should not discuss potentially controversial topics on social media. Yet, they also express a disconnect where considerably fewer respondents reject the idea that using social media negatively impacts a scholar’s reputation (42% disagree). Many respondents find social media to be time-consuming (47% agree) and they are ambivalent about whether using social media positively affects their academic impact (47% neither disagree nor agree). Most Arts and Humanities faculty respondents do, however, believe that there are lay audiences interested in what scholars share about the arts and humanities on social media (80% agree).
**Figure 9.1.** Frequency of social media platforms use by faculty in the Arts and Humanities
Figure 9.2. Frequency of social media use for specific work-related purposes from faculty in the Arts and Humanities
There are lay audiences interested in what scholars have to share about the Arts and Humanities on social media.

Using social media is too time-consuming.

Using social media increases a scholar's academic impact, such as citation rates.

Using social media negatively impacts a scholar's reputation.

Scholars should not discuss potentially controversial topics on social media.

**Figure 9.3.** Social media attitudes from faculty in the Arts and Humanities
Section 10: Engagement activities and participation

Faculty in the Arts and Humanities report participating in a variety of public engagement and outreach activities (Figures 10.1 and 10.2), although their level of involvement varies by activity.

Over half of the Arts and Humanities faculty have worked at open house events, participated in public meetings, met with policymakers, given public lectures, given interviews to journalists, or worked with K-12 youth at least once in their careers. Along with their Science colleagues, Arts and Humanities faculty most frequently (i.e., more than once in the past year) participate in activities such as giving public lectures, giving interviews, and working with K-12 youth. Activities such as meeting with policymakers occurred less often. Given their specific focus, those in the Arts and Humanities unsurprisingly participate less often in science festivals and science pubs or cafés than their Science colleagues, although some Arts and Humanities faculty do regularly participate in these activities.

When asked about their participation in public engagement and outreach in the future, Arts and Humanities faculty respondents are willing to take part in a variety of activities (Figures 10.3 and 10.4). The most popular choices (around 90% of respondents were at least somewhat willing to participate) are more traditional activities that many are already actively involved in: giving public lectures, giving interviews, meeting with policymakers, participating in public meetings, working at open houses, and working with K-12 youth. Respondents are relatively less open to and enthusiastic about writing blogs, giving talks in science pubs or cafés, and participating in science festivals.
Figure 10.1. Arts and Humanities faculty participation in infrequent public engagement efforts over their careers
Figure 10.2. Arts and Humanities faculty public engagement participation for frequent events over the previous year.
Figure 10.3. Arts and Humanities faculty willingness to participate in infrequent public engagement efforts in the future
Figure 10.4. Arts and Humanities faculty willingness to participate in frequent public engagement efforts in the future
Section 11: Defining public engagement

Using a definition of public engagement focused on activities involving two-way forms of communication which emphasize discussion and mutual learning, we assess Arts and Humanities faculty respondents’ understanding of public engagement (Figures 11.1 and 11.2). While there is general alignment among all faculty respondents based on the characteristics of activities considered to be public engagement, respondents in the Arts and Humanities are more selective than Sciences respondents about the specific events. For general characteristics (Figure 11.1), most respondents from the Arts and Humanities understand that public engagement emphasizes two-way communication (84% agree) and discussion (76% agree), but over half of the respondents also align engagement activities with elements of traditional outreach, such as one-way forms of communication (53% agree). Moreover, there is less consensus around what role, if any, direct policy recommendations or other tangible outcomes play for engagement. Around four-in-ten respondents are ambivalent (41% neither disagree nor agree) about the necessity of a tangible outcome for public engagement.

For specific types of activities that fall into the category of public engagement (Figure 11.2), Arts and Humanities faculty respondents identify community service (87% agree) and informal science education (88% agree) as public engagement, as well as any communication efforts more broadly (83% agree). Along with those in the Sciences, Arts and Humanities respondents are also less sure about whether social media could be included: almost 50% of respondents either disagree (19%) or are unsure (27% neither disagree nor agree) as to whether communicating on social media was a public engagement activity.
**Figure 11.1.** Definition of public engagement from faculty in the Arts and Humanities
Figure 11.2. Types of events considered public engagement by Arts and Humanities faculty
Section 12: Engagement climate and culture at universities

Next, we address Arts and Humanities faculty respondents’ perceptions of the university climate regarding public engagement and outreach efforts.

As with Science faculty, Arts and Humanities respondents have mixed views of how public engagement is viewed at their universities and by their colleagues (Figure 12.1): 28% agree that public engagement is treated as a core component of the work expected of faculty at their university compared to the 44% who disagree. Arts and Humanities faculty respondents also reject (65% disagree) the idea that people at their university who are active communicators are not very good researchers.

As additional indicators of university’s engagement climate, Arts and Humanities faculty were asked whether they stopped participating in engagement based on how overwhelmed they felt by other responsibilities or whether they’ve seen their colleagues get burned out from participating in engagement (Figure 12.2). Just under a third of Arts and Humanities respondents (30% agree) indicate that they give up engagement when overwhelmed with other responsibilities, while over a third (37% disagree) reject this strategy. Almost a quarter of respondents (24%) also indicate they have seen colleagues burnout from outreach and engagement.

Lastly, responses from the Arts and Humanities faculty supplement the potential change in the culture of public engagement indicated by those in the Sciences (Figure 12.3). When asked about support for engagement from their advisors when they were graduate students, most respondents indicate they were not encouraged to get involved in engagement (52% disagree). In contrast to the lack of encouragement from their advisors, most Arts and Humanities faculty respondents indicate they support their own graduate students’ participation in engagement activities (87% agree).
Figure 12.1. University climate for public engagement according to Arts and Humanities faculty.
Figure 12.2. University barriers related to public engagement according to Arts and Humanities faculty
Figure 12.3. Arts and Humanities faculty graduate student support for public engagement
Section 13: Perceptions of self-efficacy related to engagement

Faculty members’ perceptions of their own self-efficacy or abilities to participate in public engagement can also influence their involvement. Overall, 87% of Arts and Humanities faculty respondents feel they have autonomy over the decision to participate in engagement activities, with only 3% indicating they do not. Regarding their abilities to effectively participate in engagement and outreach (Figure 13.1), respondents in the Arts and Humanities feel capable of having discussions with diverse audiences (85% agree) and do not think that answering questions from the audience is difficult (62% disagree).

Compared to Science faculty, those in the Arts and Humanities are more hesitant of using social science research to inform science communication efforts (Figure 13.2). Fewer than half of Arts and Humanities respondents (47% agree) report paying attention to science communication research while a full quarter of respondents indicate they do not (25% disagree). Considerably more respondents (72%) agree that insights from social science research should be used to inform science communication efforts.
Figure 13.1. Self-efficacy related to public engagement from Arts and Humanities faculty
Figure 13.2. Use of social science research for science communication by Arts and Humanities faculty.

Use of social science research by faculty in the Arts and Humanities

- Agree
- Neither disagree nor agree
- Disagree

Insight from social sciences research should be taken into account when communicating about science with audiences.

I pay attention to social sciences research on science communication.

% of respondents
Section 14: Engagement motivations, drawbacks, and barriers

Faculty in the Arts and Humanities were also asked about the potential motivations, drawbacks, and barriers to public engagement and outreach. For personal motivations (Figure 14.1), faculty respondents in the Arts and Humanities indicate that a sense of duty (85% agree) and personal enjoyment (86% agree) are strong motivators for participating in engagement. Many respondents are also driven by demonstrating their university’s research relevance (62% agree). Opinions are more mixed about motivations attributable to obtaining funding and fulfilling university appointment requirements. Compared to their Scientist colleagues, those in the Arts and Humanities focus more on personal enjoyment as a motivator and less on demonstrating their university’s research relevance or obtaining funding.

As with the Science faculty, Arts and Humanities respondents mostly reject the drawbacks commonly associated with public engagement (Figure 14.2). Art and Humanities faculty do not endorse the assertions that engagement is not their job (79% disagree), it distracts from research (60% disagree), and it diverts money from other activities (60% disagree). Respondents are less certain about the drawbacks that engagement does not help their careers (25% agree; 46% disagree) and makes them a target (34% agree; 34% disagree). Those in the Arts and Humanities are less worried about engagement making them a target and about it diverting resources than Science respondents.

Finally, faculty respondents in the Arts and Humanities are less cynical (lower agreement) about the common potential barriers to public engagement compared to those in the Sciences (Figures 14.3). Arts and Humanities respondents are mostly ambivalent about researchers being bad at engagement (41% neither disagree nor agree) and having bad experiences in the past (50% neither disagree nor agree) as reasons that prevent their colleagues from participating in public engagement. Almost half (48% agreement) of respondents think that the lack of institutional incentives to engage was a barrier.
Figure 14.1. Motivations for engagement according to Arts and Humanities faculty
Figure 14.2. Scholar drawbacks to engagement, according to Arts and Humanities faculty
Figure 14.3. Scholar barriers to engagement, according to Arts and Humanities faculty
Part 3: About the Survey
Section 15: Sample information

As a sample from a census of land-grant universities, survey respondents represented the range of land-grant universities. Most faculty respondents are located at universities with a Carnegie Classification of Institutions of Higher Education Research 1 designation (Figure 8.1), but they also represent universities with a range of research designations. As with the land-grant universities themselves, respondents are spread across all regions of the U.S. (based on the U.S. Department of Agriculture’s Agricultural Research Service regions; Figure 8.2). The largest portion of respondents are employed at midwestern (29%) land-grant universities, followed by respondents at universities in the northeastern (23%) and southeastern (22%) agricultural service regions.

The respondents represent a range of fields (Figure 8.3). After consolidating respondents into the broad categories of Sciences or Arts and Humanities (or other non-science fields), the majority of respondents are in the Sciences (77%) rather than the Arts and Humanities (23%). Within the Sciences, faculty respondents are categorized into social sciences (32%), life sciences (28%), and physical sciences (19%). (For more information about the fields of study, see “Section 18: Fields of Study.”)

In terms of their primary university positions (Figure 8.4), most faculty respondents are in tenure-track positions (70%). Of those holding a tenure-track position, 77% are tenured. An additional 22% of respondents indicate their primary university position is non-tenure track, such as lecturers or adjunct faculty. Respondents hold a range of additional administrative positions (Figure 8.5): around 15% of respondents are department-level administrators, 5% are college-level administrators, and 2% are university-level administrators. Around 10% of respondents also hold extension appointments (Figure 8.6).
Figure 15.1. Distribution by research designations

Sample distribution by university research designation

% of respondents (N=10,706)

Research designation

R1  R2  R3  M1  M2

0% 10% 20% 30% 40% 50% 60% 70% 80% 90%

Figure 15.2. Distribution by U.S. regions

Sample distribution by university geographical location

% of respondents (N=10,706)

USDA Agricultural Research regional designations

Midwest  Northeast  Southeast  Plains  Pacific West

0% 5% 10% 15% 20% 25% 30% 35%
Figure 15.3. Respondents’ fields of study
Figure 15.4. Respondents’ primary university position

Figure 15.5. Respondents’ additional university positions
Figure 15.6. Respondents' extension appointments
Section 16: Respondent demographics

Over half of the survey respondents are male (58%). The average (median) age of respondents is 53 years old with respondents distributed across all age groups (Figure 16.1). As seen in Figure 16.2, most respondents report their race as White (82%), followed by Asian (7%), Hispanic or Latino (6%), and Black (4%).
Figure 16.1. Respondents’ ages

Figure 16.2. Respondents’ races
Section 17: About the survey

The research team conducted a census survey of faculty members at specific land-grant universities across the U.S. The original university sample pool included 73 land-grant universities (within 69 university systems) established through the Morrill Acts of 1862 and 1890. A team of research assistants manually collected information for all faculty members by department or college from university websites. After compiling the contact lists, any non-eligible positions (non-faculty) were removed. Duplicate records were removed by checking for matching email addresses.

The online Qualtrics-hosted survey was around 20 minutes in length. The survey was conducted from May to July 2018 and had four waves of contact. No incentive was provided. In total, around 103,000 faculty members were contacted in the initial wave.

During the survey period, we removed candidates who were ineligible, including non-faculty members or those unavailable during the survey period. Additionally, we received consistent email bounce-backs from some candidates and removed them from the final sample. A subsequent duplicate record search manually checked first and last names within each university and removed confirmed matches. After the survey closed, 17 universities with a small number of responses (<20 completes) were removed from the sample.

To determine whether our sample is representative of the universities included in our study, we compared our sample to the population of each university (as reported to the Integrated Postsecondary Education Data System (IPEDS), run through the U.S. Department of Education’s National Center for Education Statistics). We removed ten universities with problematic gender distribution among respondents (>10% difference of gender distribution between the reported faculty population and the sample). The remaining university comparisons indicate that the samples were representative of their respective universities.

After removing the 27 ineligible universities, the final sample consisted of 46 land-grant universities (within 45 university systems), with N=10,706 survey completes (>80% finished). The final response rate (RR2) was 14.1%.
Section 18: Fields of study

In the survey, respondents are asked to indicate their field of research. The Arts and Humanities are included as a broad group (N=2,471) and consisted of those in the arts and humanities or other non-science, profession-based fields. For those in a Science-related field (as defined by the research areas identified by the National Science Foundation), respondents’ fields of study was split into: 1) life sciences (N=2,999) – agriculture and food; biological sciences; and medical sciences, 2) physics and maths (N=2,047) – computer and information sciences; engineering; geoscience; and math and physics, and 3) social sciences (N=3,389) – environmental resources and education; social, behavioral, and economic sciences; education and human resources (removing those who also selected arts and humanities). Social sciences fields were given a priority over the other fields (i.e., if respondents selected a social sciences field, they were placed in that category), while life and physical sciences are non-exclusive (N=200 overlap).
Appendix A: Responses across regions of the U.S.

In addition to the field-based sections presented above, we also looked at survey responses across different regions of the U.S., using the U.S. Department of Agriculture’s Agricultural Research Service regions. Responses were generally comparable across the regions. (For more information about the regional distributions, see “Section 15: Sample information.”)
Figure A.1. Views of the public regarding science by U.S. regions

- Lay audiences can bring valuable perspectives to discussions about scientific research
- If people understood the research behind controversial science, they would be supportive of it
- Generally, members of the public understand basic scientific principles
Figure A.2. Views of science in society by U.S. regions
Figure A.3. Views of scientific decision-making by U.S. regions
Figure A.4. Participation in infrequent public engagement efforts by U.S. regions
Figure A.5. Participation in frequent public engagement efforts by U.S. regions.
Note: Only scientists received this question. CIRTL=Center for the Integration of Research, Teaching, and Learning

Figure A.6. Participation in science communication trainings by U.S. regions
Public engagement is treated as a core component of the work expected of faculty members at my university, as important as research and/or teaching.

The people at my university that are active science/public communicators are not very good scientists/scholars.

Figure A.7. University climate for public engagement by U.S. regions
Note: Only scientists were asked “Public engagement is incompatible…”

**Figure A.8.** University barriers related to public engagement by U.S. regions
The decision to participate in public engagement is my own

Figure A.9. Autonomy to participate in engagement by U.S. regions
Figure A.10. Self-efficacy related to public engagement by U.S. regions
Insight from social sciences research should be taken into account when communicating about science with audiences.

I pay attention to social sciences research on science communication.

Figure A.11. Use of social science research for science communication by U.S. regions
Figure A.12. Motivations for engagement by U.S. regions

<table>
<thead>
<tr>
<th>Motivation</th>
<th>Northeast</th>
<th>Midwest</th>
<th>Southeast</th>
<th>Plains</th>
<th>Pacific west</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sense of duty or a personal commitment</td>
<td>Agree</td>
<td>Neither disagree nor agree</td>
<td>Disagree</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Personal satisfaction or enjoyment</td>
<td>Agree</td>
<td>Neither disagree nor agree</td>
<td>Disagree</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Demonstrate university research relevance</td>
<td>Agree</td>
<td>Neither disagree nor agree</td>
<td>Disagree</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Part of my university appointment or service requirements</td>
<td>Agree</td>
<td>Neither disagree nor agree</td>
<td>Disagree</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Obtain funding</td>
<td>Agree</td>
<td>Neither disagree nor agree</td>
<td>Disagree</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Figure A.13. Drawbacks to engagement by U.S. regions
Figure A.14. Barriers to engagement by U.S. regions

There are no institutional incentives to engage

Scientists/scholars have had previous bad experiences

Most scientists/scholars are bad at it

Agree  Neither disagree nor agree  Disagree

% of respondents
0%  20%  40%  60%  80%  100%
Northeast  Midwest  Southeast  Plains  Pacific west
Northeast  Midwest  Southeast  Plains  Pacific west
Northeast  Midwest  Southeast  Plains  Pacific west
Northeast  Midwest  Southeast  Plains  Pacific west
Northeast  Midwest  Southeast  Plains  Pacific west