

Progress and Problems

Government Scientists Report on Scientific Integrity at Four Agencies



Scientists working for the federal government serve as researchers, advisers, technicians, and specialists in diverse areas ranging from weather forecasting to biodiversity conservation to public health. Their research, and the scientific data and analysis they produce, plays a pivotal role in the development and implementation of policies that affect our lives on a daily basis.

Policy decisions better informed by the expertise of government scientists can lead to better outcomes—stronger public health protections, better management of natural resources, and greater security for all. Therefore, as the country continues to face challenges from drinking water contamination to species protection to food and drug safety, it is vital to maintain a high standard of scientific integrity within government agencies.

To assess the state of scientific integrity within federal science agencies, the Union of Concerned Scientists (UCS) conducted a survey of government scientists at four agencies—the Centers for Disease Control and Prevention (CDC), the Food and Drug Administration (FDA), the Fish and Wildlife Service (FWS), and the National Oceanic and Atmospheric Administration (NOAA). UCS surveys of FDA, FWS, and NOAA scientists conducted in previous years can be used as comparisons.

The results indicate that progress has been made. However, much more work is needed to protect science and scientists from political interference and to enable scientists to share their expertise publicly. Some survey respondents report inappropriate outside influence and political interference in government decision making. A considerable number of scientists across federal agencies feel they cannot openly communicate their scientific work to the public and the media. And many scientific experts feel constrained by lack of resources and lack of respect for the scientific process.

Background

In the early 2000s, UCS received reports from federal scientists that their work was being misused, altered, or buried completely (UCS 2004). To gauge how representative these

accounts were, UCS conducted surveys of federal scientists over the course of several years (UCS SIP 2008a; UCS 2006; UCS 2005a; UCS 2005b). Results indicated that problems were widespread across agencies and scientific disciplines, and UCS developed a set of recommendations for federal agencies to improve scientific integrity (see the box) (UCS SIP 2008b). Subsequent outcry from scientists and citizens and significant organized pressure from groups, including UCS, led the Obama administration to issue a scientific integrity directive in December 2010 (Holdren 2010; UCS 2004). In response, 23 federal agencies and departments developed scientific integrity policies that varied in their comprehensiveness (Grifo 2013). Some policies—such as those of NOAA,

Outcry from scientists and citizens led the Obama administration to issue a scientific integrity directive in 2010.

the CDC, and the Department of the Interior (DOI)—provided the kinds of protections necessary to create a strong culture of scientific integrity at federal agencies. Others—such as those at the U.S. Department of Agriculture and the Department of Energy—contained little more than broad statements that provided few to inadequate protections for scientists.

Protecting the Independence of Science and Scientists

Informed by conversations with agency scientists and officials, congressional staff, science policy experts, public interest organizations, reporters, and other stakeholders, the following principles identify key provisions that should be in policies and in practice at federal agencies in order to protect the independence of government science and scientists (UCS SIP 2008b):

- **Transparent decision making.** The public should have access to information on how science is used in regulatory decision making, as well as access to the government scientists responsible for that science. Agencies should institute a transparency policy covering meetings with outside entities to give the public more information about who has influence over science-based policy decisions and who may be influencing the science behind those decisions. The presidential directive on scientific integrity directed agencies to “facilitate the free flow of scientific information” and “open communication between experts and the public” (Holdren 2010). It also asked agencies to establish principles for conveying scientific and technological information to the public.
- **Use of federal advisory committees.** Expert advice from scientific advisory committees should be free from political or special-interest interference in order for agency decisions to be fully informed by science. Selection processes and deliberations of federal advisory committees should be public. Conflicts of interest should be minimized. As directed by the presidential directive on scientific integrity, agencies should develop clear standards for governing conflict of interest and any conflict of interest waivers granted should be publicly disclosed.
- **Whistle-blower rights.** Federal employees who report political interference in science as a form of fraud, waste, or abuse in government should be protected from retaliation by both law and policy. The Whistleblower Protection Enhancement Act of 2012 recognized that these protections include employees who expose censorship of federal information that is either crucial to public health and safety or required by law or regulation. The presidential directive on scientific integrity directed agencies to include whistleblower protections in their scientific integrity policies (Holdren 2010).
- **Right of last review.** Scientists should have the right to review, prior to publication, the final draft of any communications that are to be released under their names or that substantially rely on their research (UCS 2008). While the presidential directive did not affirm this right specifically, some agency scientific integrity policies do explicitly grant their scientists this right.
- **Right to publish.** Scientists should have the right to conduct research and publish findings in a timely manner. Agencies should articulate policies on the clearance of official and nonofficial publications, presentations, and other information, including reasonable time limits.
- **Personal-views exception.** Scientists should have the right to express personal views not authorized by the agency provided that they (a) make it clear they are not speaking for the agency and (b) do not use unreasonable amounts of government time and resources in expressing those views (UCS 2008). This tenet also applies to social media, in which federal employees should be free to name their employing agency on personal social media accounts, provided they follow the above guidelines (Goldman et al. 2015).
- **Professional development.** Scientists should be allowed appropriate time and resources to keep up with advances in their profession by attending conferences and trainings, participating in scientific or professional societies, serving on editorial boards of scientific journals, and publishing in the scientific literature. The presidential directive on scientific integrity asked agencies to afford such rights to their scientists in their agency scientific integrity policies.

Some agency policies—such as those of the FDA and Department of Commerce (DOC)—fell in the middle of the pack, providing some protections for their scientists while neglecting other important aspects of scientific integrity.

Policies are not always put into effective practice. History shows that agencies that have good policies do not necessarily follow good practices. A 2008 UCS analysis, for example, evaluated the effectiveness of agency media policies by assessing policy language and surveying scientists about the degree to which such policies were put into practice (UCS 2008). The analysis found a range of results; some agencies, such as the CDC, had good policies in place, but survey results suggested that, in practice, agency scientists faced barriers to communicating to the public. At the same time, some agencies, such as the National Science Foundation, had good practices in place, but no official policy at all. Further, since the advent of the policies, issues from emergency contraception to endangered species have continued to be politicized.

Now, three years into implementation of the scientific integrity policies, UCS resurveyed agency scientists in order to shed light on how well the scientific integrity policies have been put into practice.

Agencies that have good policies do not necessarily follow good practices.

Methodology

Surveys were conducted of scientists working at four federal agencies: the CDC, FDA, FWS, and NOAA. The survey instrument evaluated scientists' perspectives on the state of scientific integrity at their agencies, their ability to communicate with colleagues and the public, and overall agency effectiveness. This report is a summary of the results; detailed methodology and results can be found in online appendices at www.ucsusa.org/scientistsurvey.

These four agencies were chosen because of their significant level of scientific work and past evidence of scientific integrity concerns (Bailin et al. 2015; Goldman et al. 2015; UCS SIP 2008b). Many other federal agencies should receive the same level of assessment, but time and capacity constraints limited the scope of this study. The Environmental Protection Agency (EPA) was originally included in this analysis, but EPA officials informed us that the agency would currently conduct its own scientific integrity survey.

A 40-question online survey was sent to 37,593 federal scientists. Scientists were identified via publicly available agency staff directories and job titles. To ensure surveys were reaching the intended participants, opening questions asked respondents to indicate the amount of science-related work involved in their jobs. Those indicating no scientific work were excluded from the results. Unique identifiers were included in each survey link for data quality but were destroyed before results were made public to preserve anonymity for respondents. In order to assess trends over time, questions from past UCS-conducted surveys of the FDA, FWS, and NOAA were used when possible. To determine the statistical significance of these overlapping questions, two-sample t-tests were performed and only results found to be significant at the 95-percent level ($p = 0.025$) are presented in this report.

Results

A total of 37,593 surveys were sent to scientists and other technical experts at the CDC, FDA, FWS, and NOAA, and 6,999 responses were received for a total response rate of almost 19 percent (see the table), similar to previous UCS surveys. The response rate was highest at the FWS and lowest at the FDA. Sixty-three percent of respondents have been at their agencies for more than five years, and more than 75 percent of respondents hold advanced degrees.

Survey Response Rates

Agency	Surveys Sent	Responses	Response Rate
CDC	9,896	1,764	17.8%
FDA	11,301	1,866	16.5%
FWS	4,241	981	23.1%
NOAA	12,155	2,388	19.6%
Survey Total	37,593	6,999	18.6%

Survey respondents were asked whether they thought their federal agency adhered to its scientific integrity policy. As noted above, the four agencies surveyed have scientific integrity policies that vary in their comprehensiveness; thus, this interagency discrepancy will be reflected in the survey results.

Awareness of agency scientific integrity policies was moderate among survey respondents. The FWS had the highest rate of awareness, with 79 percent (632 respondents) reporting awareness of the agency's scientific integrity policy. NOAA had the lowest, with 66 percent (1,092 respondents)

reporting awareness. Of respondents who reported awareness of the scientific integrity policy, 50 to 66 percent believed their agencies adhere to this policy, with 66 percent of CDC scientists (643 respondents) at the high end and 50 percent of FWS scientists (345 respondents) at the low end (Figure 1).

Respondents across agencies were divided on whether the effectiveness of their office or division had increased, decreased, or stayed the same compared with five years ago (Figure 2, p. 6). The FDA had the highest proportion of respondents who felt that the effectiveness of their division or office had increased compared with five years ago, with 34 percent (577 respondents) reporting an increase. The FWS had the highest number of scientists who reported that the effectiveness of their division or office had decreased (32 percent, 298 respondents). For all agencies, a significant proportion of respondents were undecided about whether the effectiveness of their division had changed.

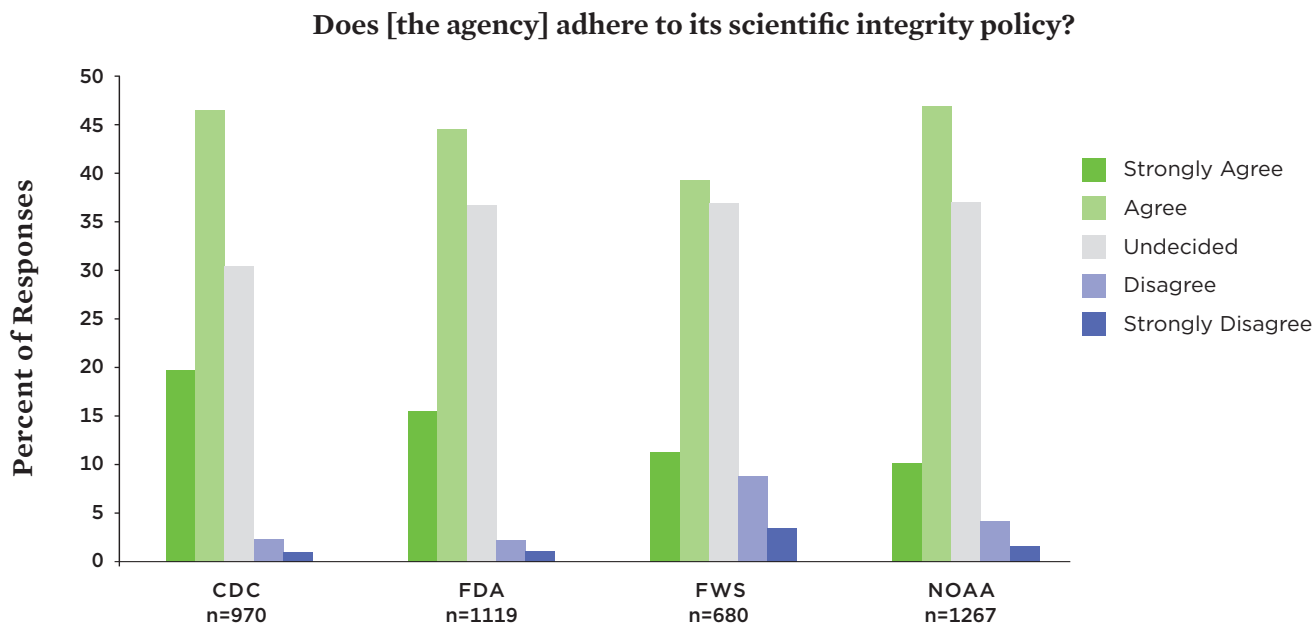
Scientists across agencies were divided on the level of awareness of and practices surrounding whistle-blower rights and on concerns about retaliation. Although the majority of scientists felt they had been adequately briefed on their whistle-blower rights under the Whistleblower Protection Enhancement Act of 2012 (53 to 75 percent across agencies), only about half of the respondents reported that they can

openly express any concerns about the mission-driven work of their agencies without fear of retaliation (53 to 58 percent). The agency having the greatest proportion of scientists who reported being adequately briefed on whistle-blower protections was the FWS, with 75 percent (606 respondents). This result aligns with agency actions on this topic: as of September 2015, the FWS is the only one of the four agencies to have completed the U.S. Office of Special Counsel’s certification program requiring agencies to ensure their employees are informed of their whistle-blower rights (OSC 2015).

Even at the FWS, however, respondents expressed fear in open-ended responses about using their whistle-blower rights. One respondent wrote, “Until staff employees see that

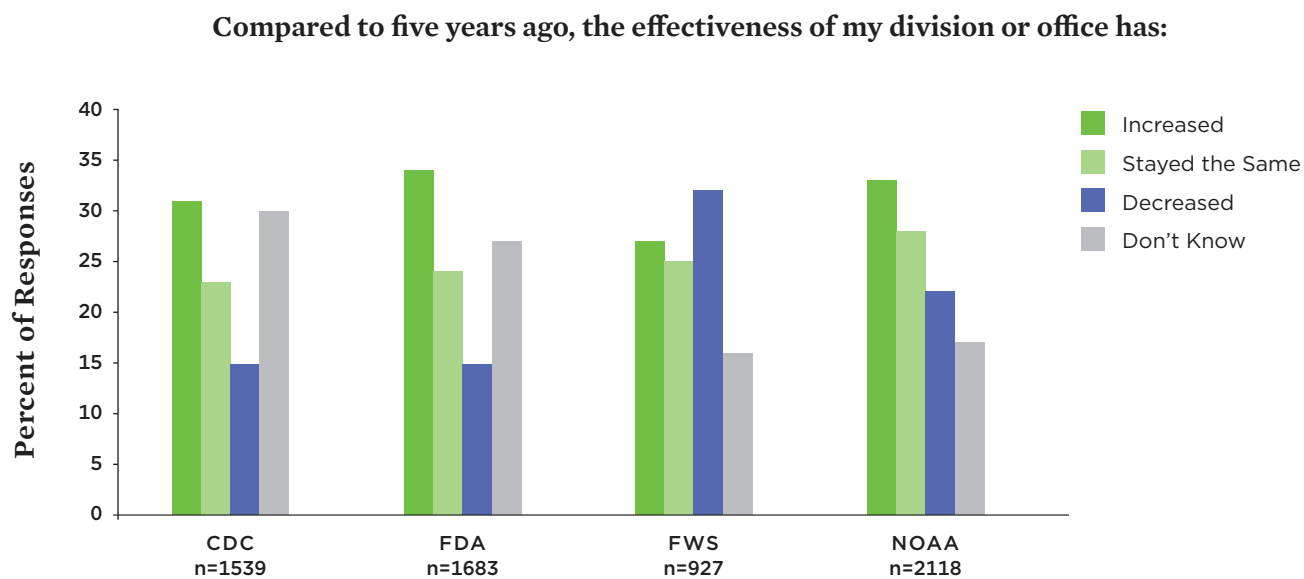
“Managers should actively solicit input from field biologists and not cultivate a ‘culture of fear’”
 —Anonymous FWS scientist

FIGURE 1. Adherence to Agency Scientific Integrity Policy



Of survey respondents who were aware of their agency’s scientific integrity policy, the majority agreed that the agency adhered to this policy, but a significant number of respondents were undecided or disagreed that their agencies followed the policy.

FIGURE 2. Change in Agency Effectiveness



Most survey respondents thought the division within their agencies had increased in effectiveness or stayed the same compared with five years ago.

they will not be retaliated against and that those individuals that have violated our policies and laws are punished, no one will come forward and stand up for scientific integrity for fear of retribution. I have personally heard . . . employees say they witnessed or [are] knowledgeable about a scientific integrity violation but will not come forward for fear of retribution.”

Only half of all scientists reporting that they can express concerns without fear of retaliation may be an indication of agency culture that is out of step with policies. One FWS respondent noted, “Managers should actively solicit input from field biologists and not cultivate a ‘culture of fear’ where voicing one’s opinion can involve negative consequences.”

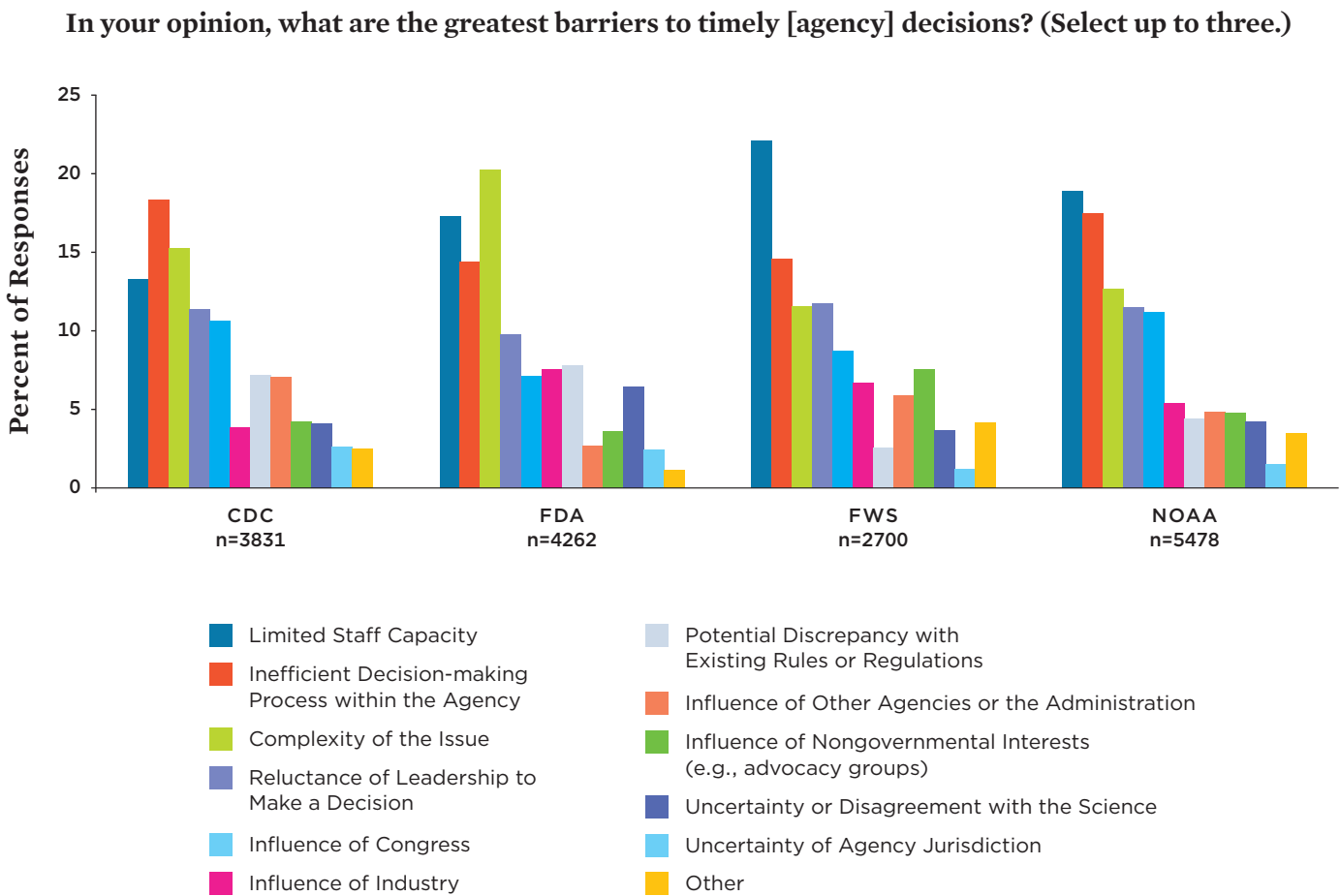
Federal scientists reported several barriers to timely decision making at their agencies (Figure 3). FWS and NOAA scientists reported that the greatest barrier to decision making was limited staff capacity, with 22 percent (596 respondents) and 19 percent (1,034 respondents), respectively, reporting this as one of the top three barriers at their agencies. CDC scientists reported that one of the greatest barriers to making timely decisions was inefficient decision making (19 percent, 712 respondents). FDA scientists reported that the greatest barrier to making timely decisions was the complexity of issues (20 percent, 861 respondents). Other barriers to timely decision making that respondents across agencies reported with higher frequencies were reluctance of leadership to

make a decision, the influence of Congress, and the influence of industry.

On social media use, the majority of respondents at all agencies reported not having a clear understanding of how they can use social media tools with respect to their scientific expertise in their official and personal capacities; only between 36 and 46 percent of the respondents reported having clarity in this area. NOAA respondents reported the highest level of clarity, with 46 percent (774 respondents); the FWS reported the lowest, with 36 percent (290 respondents).

These results may reflect a lack of clarity within agency social media policies, a lack of communication to employees about the existence of such policies, or a lack of interest in social media tools by scientists or agency leadership. Results are notably similar across agencies, despite a range of comprehensiveness in social media policies (Goldman et al. 2015). The FWS, for example, operates under the strong DOI social media policy, which provides clear guidance to employees and affords them broad freedoms to communicate on social media in their official and personal capacities. The CDC and NOAA (via the DOC social media policy), on the other hand, operate under more restrictive policies that prohibit employees from naming their employer on personal social media accounts, even if they invoke a disclaimer. As of August 2015, the FDA has no social media policy in place.

FIGURE 3. Barriers to Timely Decision Making within Agency

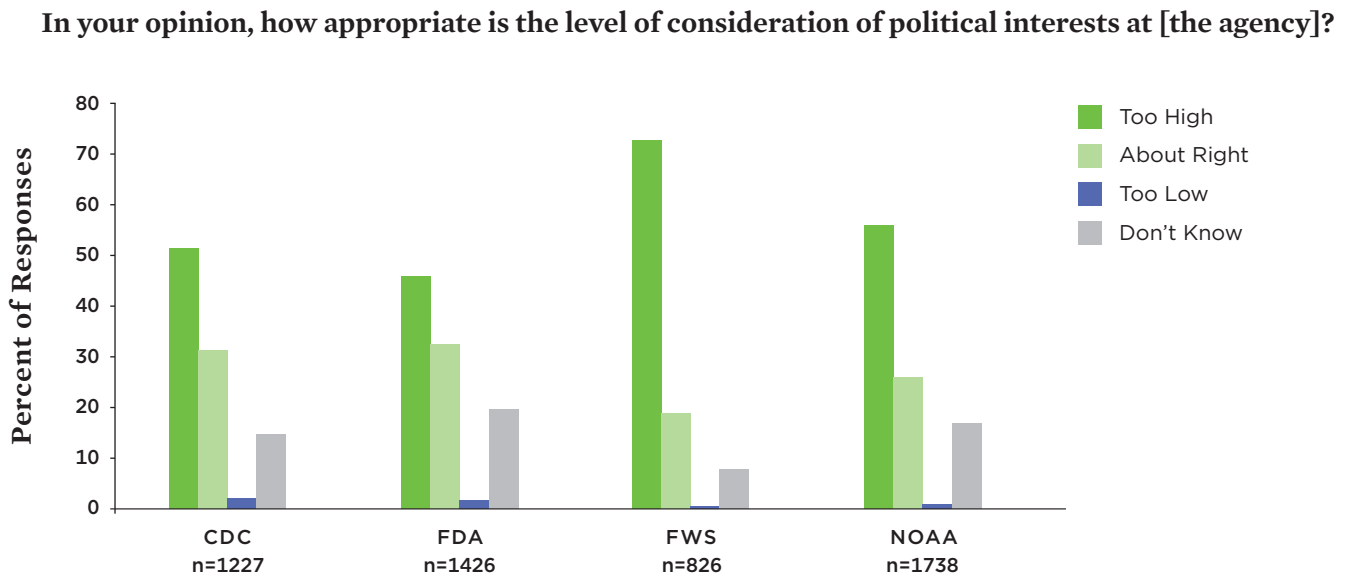


Barriers to timely agency decision making most reported by survey respondents were limited staff capacity, inefficient decision making processes within the agency, and complexity of the issue at hand.

A significant number of scientists reported that the level of consideration of political interests at their agencies was too high. Some noted that this was the result of the legacy of previous administrations.

A significant number of scientists (46 to 73 percent across agencies) reported that the level of consideration of political interests at their agencies was too high (see Figure 4, p. 8). The greatest proportion of respondents reporting this concern was at the FWS (73 percent, 601 respondents), while the FDA had the largest proportion of respondents reporting that the level of consideration of business interests was about right (33 percent, 465 respondents). In answers to open-ended questions, respondents commented on how they perceived the legacy of previous administrations to affect the current level of political interference. One FWS employee reflected, “Because the Bush administration was so intent about staffing the FWS with like-minded people for eight years, and because the Obama administration has done nothing to counter

FIGURE 4. Consideration of Political Interests at Agencies



Many scientists felt that too much consideration was given to political interests at their agencies. This was particularly true at the FWS where 73 percent of respondents reported the level of consideration of political interests was “too high.” FWS respondents also noted that interference can come from the legacy of previous administrations affecting current work.

it, many FWS employees feel like we’re still in the Bush administration.”

About half of respondents (between 47 and 63 percent across agencies) reported that they have the right to review, prior to publication, the final drafts of agency communications that will be published under their name or that substantially rely on their research (Figure 5). Sixty-three percent (760 respondents) at the CDC reported that they have this right, while 47 percent (440 respondents) of FDA respondents reported having this right. A significant proportion of respondents (30 to 44 percent across agencies) was unaware of whether they had this right, despite the fact that all four agencies have a policy that discusses this issue. NOAA is the only agency of the four that explicitly grants scientists the right of last review in its scientific integrity policy; the CDC, FDA, and FWS all provide only limited language in their policies on review of scientific materials (Goldman et al. 2015).

Agency-Specific Discussion

CENTERS FOR DISEASE CONTROL AND PREVENTION

As the nation’s leading public health institute, the CDC conducts research, sets health standards, and promotes

education addressing infectious and noninfectious diseases, food pathogens, environmental health, occupational health, and other areas. Survey results indicate that the CDC maintains a strong focus on public health as a priority in decision making, but the agency could improve in several areas, including public communications, allowing scientists to publish in peer-reviewed journals in a timely manner, and shielding scientific work from inappropriate political influence.

The CDC has a strong scientific integrity policy that has comprehensive communications policies, establishes clear procedures for how allegations of scientific misconduct will be investigated, and provides thorough guidance on timely dissemination of data to the public.

Despite a robust communications policy, CDC scientists may face challenges with regard to speaking to the media and the public.

Despite a robust communications policy, survey results suggest that CDC scientists may face challenges with regard to speaking to the media and the public. Half of respondents (715) reported that they disagree that they are allowed to speak to the public and the news media about their scientific findings regardless of the level of controversy surrounding the topic (Figure 6, p. 10). Only 15 percent (211 respondents) agreed with this statement. One respondent said, “There are now so many bureaucrats and midlevel managers who control the message at CDC. . . . They only want a positive message to come out . . . which may not be scientifically accurate nor helpful.”

Scientists at other agencies also reported challenges with speaking about their work publicly. Across agencies, only 9 to 32 percent of respondents reported being able to speak about their scientific work regardless of the level of controversy. Agency Public Information Officers (PIOs) have articulated several barriers that do not necessarily indicate inappropriate interference but that can still inhibit communication between scientists and the news media. PIOs from the EPA, FWS, NASA, and the National Institutes of Health cited staff capacity, internal bureaucracy, and litigation as issues of

“[CDC managers] only want a positive message to come out . . . which may not be scientifically accurate nor helpful.”

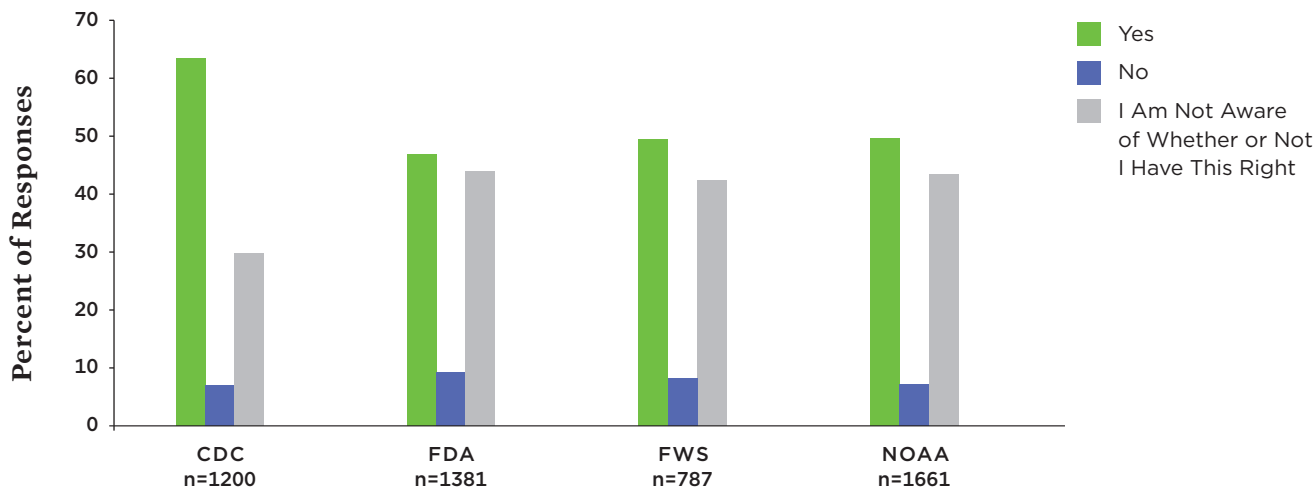
—Anonymous CDC scientist

which journalists and the public should be cognizant (Bailin et al. 2015).

The CDC scientific integrity policy does not explicitly grant scientists the right of last review on agency communications going out under their name or that significantly rely on their work; however, survey results suggest that most CDC scientists are afforded this right in practice. Sixty-three percent (760 respondents) reported that they have the right to review, prior to publication, the final draft of agency

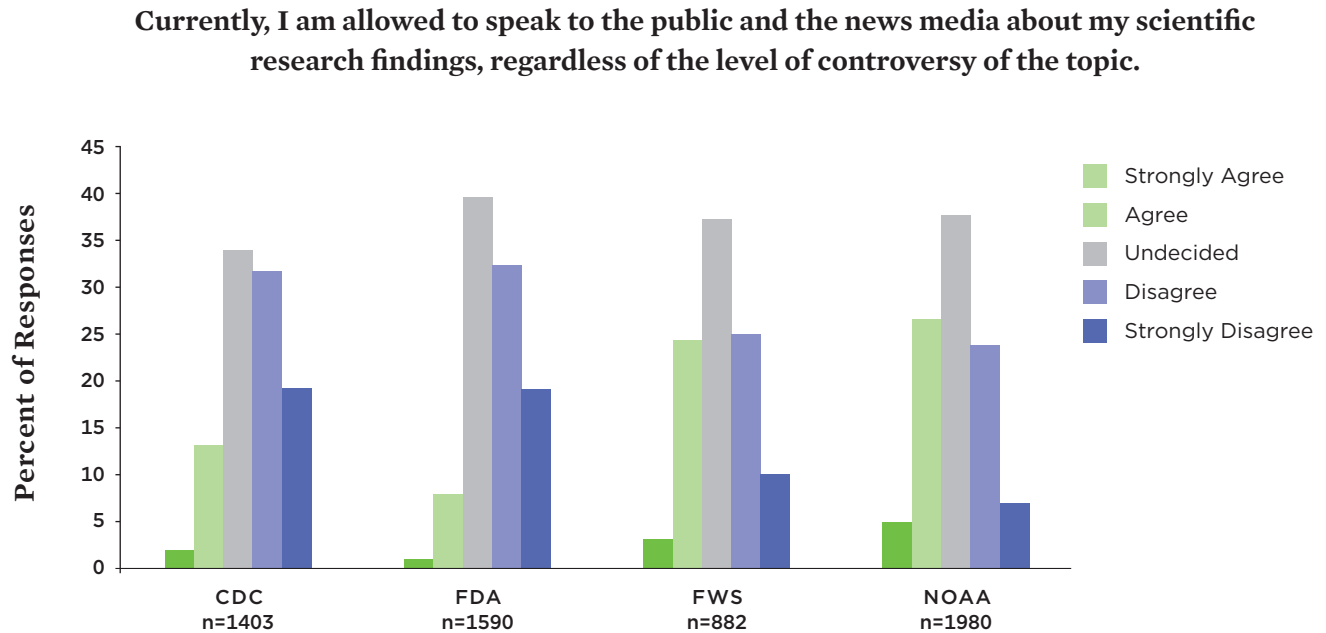
FIGURE 5. Scientists’ Right to Review

Do you have the right to review, prior to publication, the final drafts of agency communications that are being published under your name and/or that substantially rely on your research?



Respondents were largely split between reporting having the right of last review and not knowing whether they had this right or not, highlighting both the progress made by these federal agencies as well as the improvements in communication still needed.

FIGURE 6. Freedom to Speak to the Public and the News Media about Scientific Findings



Only a minority of respondents (9 to 32 percent) reported being free to speak publicly about their work regardless of the level of controversy, with the FWS and NOAA reporting greater abilities to speak to the news media and the public. Results suggest that CDC scientists face challenges speaking to the public, even though they have a thorough communications policy.

communications that are being published under their name or that substantially rely on their research (Figure 5).

Scientists at the CDC and elsewhere also reported facing challenges with regard to publishing their own work in scientific journals regardless of the level of controversy associated with the topic (Figure 7). The highest proportion of respondents disagreeing or strongly disagreeing that they are allowed such publication rights was at the CDC (29 percent, 412 respondents). A substantial proportion of scientists across agencies (37 to 48 percent) reported that they were undecided about whether they are able to publish in peer-reviewed scientific journals regardless of the associated level of controversy. This may indicate lack of knowledge or interest in publishing or a lack of clarity from agency leadership on this topic.

Other sources suggest that the ability to publish is a concern of CDC scientists. In a 2015 article in the *American Journal of Public Health*, two University of Pennsylvania professors reported that the agency weighs nonscientific factors too heavily in its review process for clearance of publications from its scientists (Blank and Jemmott 2015). This, they argue, significantly hinders CDC scientists' ability

to publish their scientific work. One survey respondent said the agency could best improve scientific integrity by allowing CDC scientists to publish. "In no case," the scientist wrote, "should scientific publications be substantively altered by anonymous persons in authority."

Another CDC scientist wrote that the agency could best improve scientific integrity by continuing to "to allow

Two University of Pennsylvania professors reported that the CDC weighs nonscientific factors too heavily in its review process for clearance of publications from its scientists.

scientists to publish independently under their own name regardless of political party in power” and by “not squashing scientific findings that relate to policy change or putting them under political review.”

By comparison, the FDA has in place a policy that allows its scientists to proceed with publication if their supervisor or other FDA official has failed to review the manuscript within 30 days, provided the article includes an appropriate disclaimer (GPO 2007).

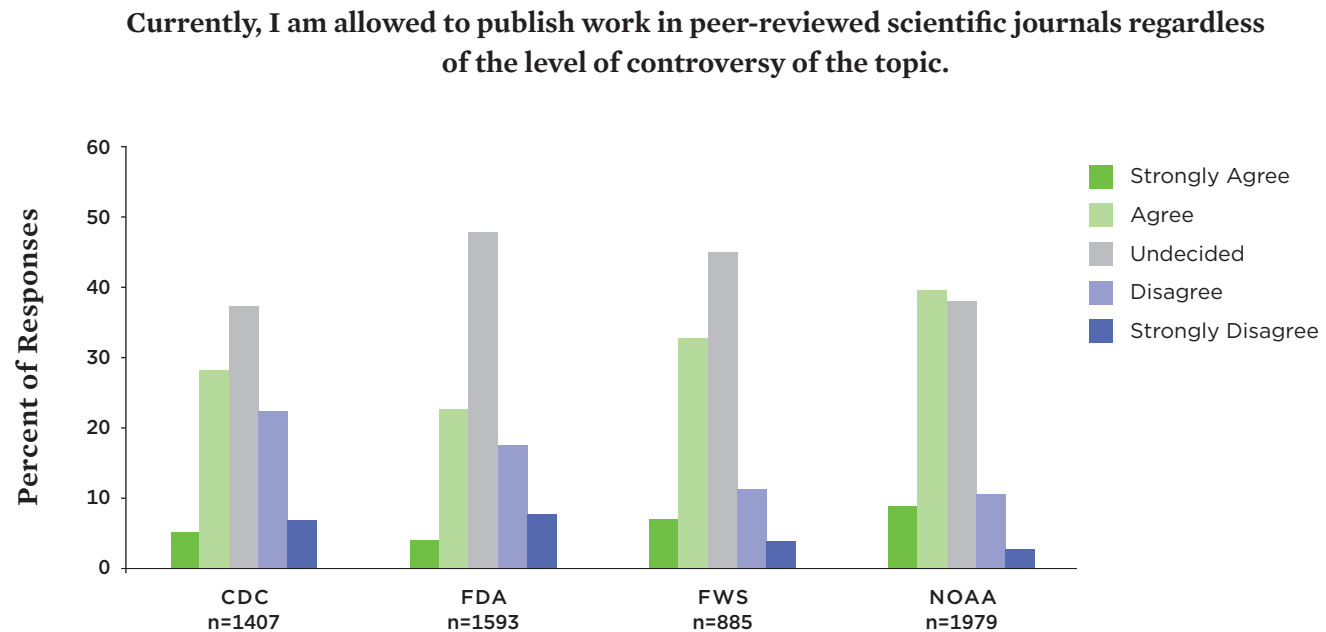
Survey results suggest that the CDC may be giving political interests too much weight in decision making. Fifty-two percent of CDC respondents (632) reported that the level of political influence at the CDC is too high (Figure 4). One respondent noted that scientific integrity at the CDC could best be improved by implementing “more of a firewall between political considerations and scientific decision making.” Another respondent asserted, “I believe that, although it is important to take political outcomes into consideration, CDC’s job is to present the best available science. This starts with leadership and filters down through the ranks. The less concerned the CDC director is, the less concerned other[s] are.” Another respondent wrote about the consequences of

giving too much weight to political considerations: “Fear of potential criticism or backlash dilutes our capacity to lead in public health.”

Of note, several respondents observed research restrictions they perceived to result from political influence. One respondent wrote, “Too many people in the top echelons of CDC . . . pay attention to the supposed political ramifications of sensitive public health work, such as sexual behavior or gun violence,” and another echoed, “In my view the widespread availability of guns is a major public health issue of the U.S. The congressional influence has limited CDC’s capacity to address this issue.” One respondent asserted that the best

“Fear of potential criticism or backlash dilutes our capacity to lead in public health.”
 —Anonymous CDC scientist

FIGURE 7. Freedom to Publish Work on Controversial Topics in Peer-Reviewed Journals



Scientists at all four federal agencies reported limitations on being able to publish their work in scientific journals; the CDC had the greatest proportion of respondents who disagreed. Forty-eight percent of FDA scientists reported they were undecided on whether they could publish in these circumstances, despite clear FDA policy on the subject.

way to improve scientific integrity at the agency would be to allow “more research regarding topics that have been considered too politically sensitive to tackle, such as sexual behavior or gun violence.”

CDC respondents also expressed frustration with the Office of Management and Budget’s (OMB’s) administration of the Paperwork Reduction Act (PRA), sometimes citing the potential for political interference to occur. One respondent stated that the best way to improve scientific integrity at the agency would be to “[g]et rid of the Paperwork Reduction Act . . . OMB’s reviews through the PRA add about a year to the timeline for a simple cross-sectional exposure-health study, with little to no added benefit to the science or to the public.” Another respondent wrote, “Complying with this act is a huge burden on public health and interferes with timely actions. . . . The Act is unnecessary and burdensome.”

Finally, several survey respondents discussed how an over-reliance on contractors created inefficiencies that affected the quality of agency research. One respondent wrote that the best way to improve scientific integrity at the agency would be to “[a]llow the hiring of more [full-time equivalent staff positions] so that there is less of a need to rely on contractors. I know of many situations where a manager wanted to hire someone and had the money, but didn’t have [a federal] slot available so they had to hire a contractor.” Another respondent explained how this situation can create problems because “[t]here is no immediate supervisor over both contractors and regular staff to resolve issues that might arise” and because “it is extremely difficult for a project lead to collaborate meaningfully, and provide good oversight of quality, when contract staff are offsite.”

FOOD AND DRUG ADMINISTRATION

The FDA employs more than 2,000 biologists, public health scientists, medical professionals, veterinarians, and other technical experts involved in research and decision making regarding food safety and drug approval processes.

Compared with UCS surveys of FDA scientists in 2006 and 2011, the agency has shown some improvement in several areas, including agency effectiveness and morale (UCS 2012; UCS 2006). However, 2015 survey results reveal areas in need of additional attention, including reducing inappropriate political influence on science-based policy decisions.

The FDA scientific integrity policy takes strong steps toward limiting conflicts of interest in scientific advisory panels and reiterates principles of scientific integrity. But the policy has several weaknesses, including restrictions on scientist interaction with the media and no policy granting scientists the right of last review.

Survey results appear to reflect these shortcomings, with fewer than half of respondents reporting that they have the

right to review, prior to publication, the final drafts of agency communications that are being published under their name or that substantially rely on their research (47 percent, 648 respondents) (Figure 5). One respondent discussed the role of the public information office in altering scientific content: “Content reviewers for external communications should have a better understanding of the science that is being written about so they can make thoughtful and meaningful comments and edits. When the public relations team does not understand the science it is difficult to take them seriously and for their contribution to have value.”

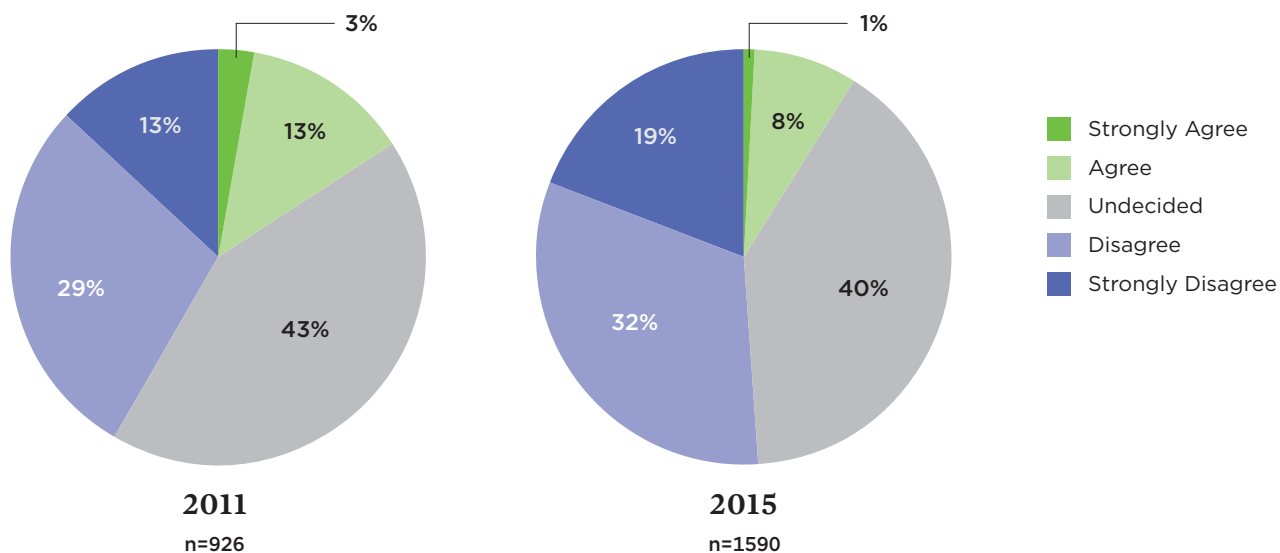
One respondent noted that the best way to improve scientific integrity at the FDA would be by “stopping the revolving door of industry people who are brought into high-level positions.”

On FDA scientists’ ability to talk with the media, only nine percent (141 respondents) agreed or strongly agreed that they are allowed to speak to the public and news media about their scientific findings regardless of the level of controversy associated with the topic. This represents a slight decrease in the proportion of respondents agreeing with this statement compared with the 2011 survey of FDA scientists, when 16 percent (142 respondents) agreed or strongly agreed with this statement (Figure 8). One respondent described how the perceived restrictiveness extended beyond talking to reporters, writing, “As far as social media goes, I feel like I am not allowed to express a differing opinion at all.”

Survey results also suggest that FDA scientists are concerned about the degree of industry influence in agency decision making. Thirty-three percent of respondents (469 respondents) reported that the level of consideration of business interests at the FDA was too high (Figure 9, p. 14). One respondent noted that the best way to improve scientific integrity at the agency would be by “stopping the revolving door of industry people who are brought into high-level positions, wreak havoc during their tenure, then return to the industry from which they came.” Another respondent urged the agency to “stop having industry make a call to FDA and ‘put pressure’ on [a drug] approval.”

FIGURE 8. Freedom to Communicate Scientific Findings to the Public and the News Media at the FDA, Change from 2011 to 2015

Currently, I am allowed to speak to the public and the news media about my scientific research findings, regardless of the level of controversy of the topic.



A smaller proportion of FDA scientists in 2015 report being able to speak to the media, regardless of the controversy of the topic, compared with a 2011 UCS survey. A two-sample t-test between survey results found that these results were significantly different at a 95-percent level ($p = 0.0000$).

“When the public relations team does not understand the science it is difficult to take them seriously and for their contribution to have value.”

—Anonymous FDA scientist

FISH AND WILDLIFE SERVICE

The FWS has more than 5,000 scientists working at offices distributed across the nation. These scientists work as biologists, archaeologists, botanists, civil engineers, ecologists, and other technical experts.

In 2005, UCS conducted a survey of scientists in the FWS Ecological Services Division. The agency appears to have improved since 2005 on a number of metrics, such as agency

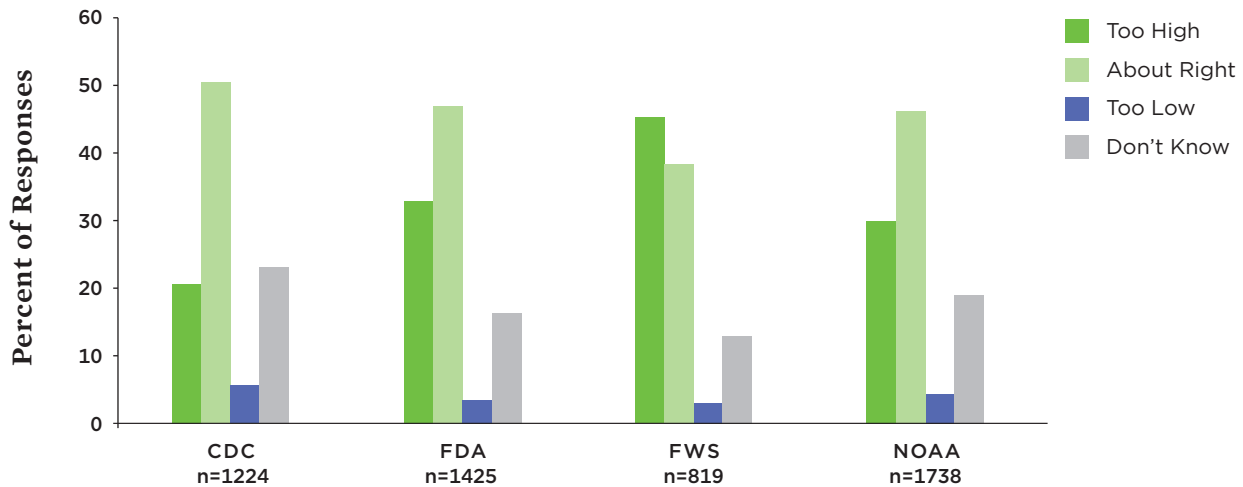
morale, the ability to publish, the consideration of expert advice in decision making, and whistle-blower protection awareness (Figure 10, p. 15). However, 2015 survey results indicate there are still a number of areas where the agency can improve, including reducing the level of political influence on decision making.

The FWS operates under the DOI’s strong Scientific Integrity Policy. This comprehensive policy contains procedures for reporting and resolving differing scientific opinions, asks employees to distinguish between official public communications and other communications made in their personal capacity, and provides information on conflict-of-interest issues. Despite this robust policy, survey results indicate several scientific integrity concerns among FWS scientists.

The FWS appears to have a strong focus on ensuring employees understand their whistle-blower rights. In the survey, 87 percent (699 respondents) reported that they are aware of their whistle-blower rights, with 75 percent (606 respondents) reporting that they have been adequately briefed on their rights under the Whistleblower Protection Enhancement Act of 2012. However, one respondent wrote that the agency could best improve scientific integrity by “prompt

FIGURE 9. Consideration of Business Interests

In your opinion, how appropriate is the level of consideration of business interests at [the agency]?



Industry influence in agency decision making is reported as a concern at all four agencies, particularly at the FWS and the FDA. Respondents from the FDA reported industry hires and pressures from the business sector as barriers to scientific integrity.

ample support of whistleblowers.” Another said, “We are aware of and trained in whistle blowing and such, but few would actually feel confident in coming forward on an issue.”

Survey results also indicate that FWS effectiveness and its ability to make science-informed decisions may be increasingly inhibited by staffing and resource constraints. Thirty-two percent (298) of respondents reported that the effectiveness of their division or office has decreased compared with five years ago (Figure 2). When asked about the extent to which the agency collects scientific monitoring information needed to

meet its mission effectively, 59 percent (536) of FWS respondents chose “occasionally,” “seldom,” or “never” (Figure 11, p. 16). This result was distinct from results at the CDC, FDA, and NOAA, where respondents reported 19, 26, and 28 percent, respectively, for these categories combined.

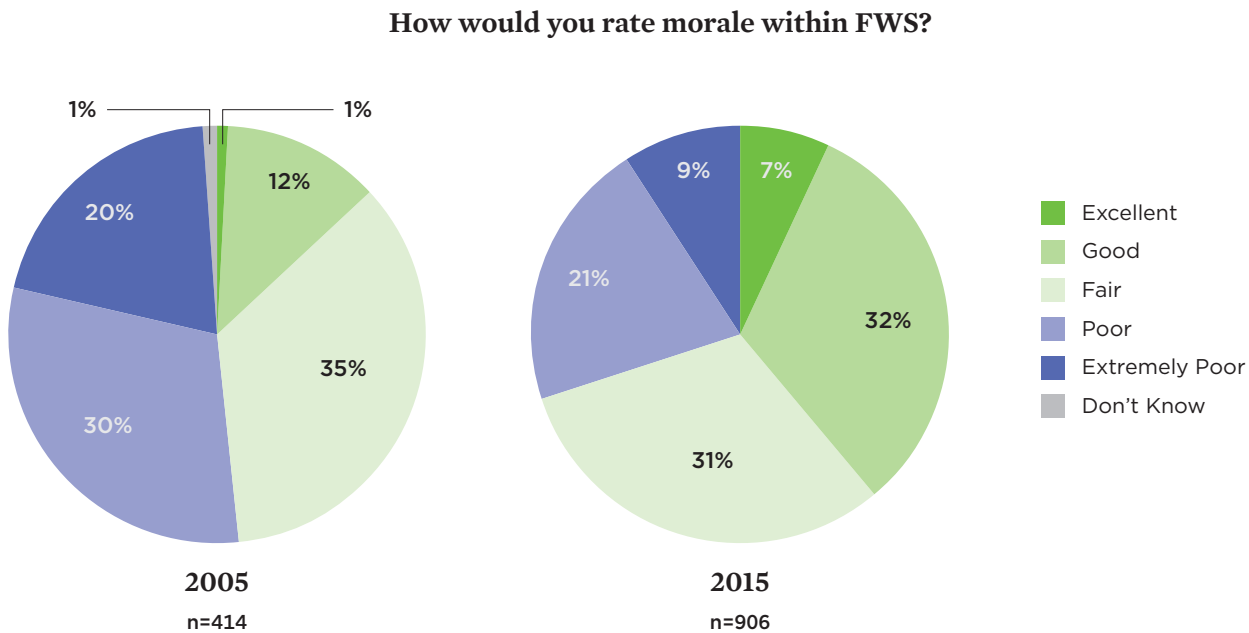
In open-ended responses, survey respondents indicated that constraints were about quality as much as quantity. One respondent wrote, “Workloads are increasing, staff is shrinking, and folks are retiring. We need more people, more time, and more Ph.D.’s and Master’s folks in the agency. . . . There is a need for more horsepower in-house—more research experience—more analytical skills.”

FWS resource allocations in recent years support these findings. From 2012 through 2015, the FWS budget has not increased substantially despite inflation, and the number of full-time-equivalent staff positions has decreased 13 percent.

Notably, 70 percent of FWS scientists (601 respondents) reported that the level of consideration of political interests at the FWS is too high (Figure 4). One respondent noted, “Ultimately, the USFWS would be improved the most if we could make decisions based solely on the science, instead of having to balance those decisions with politics.” Another respondent inferred the motive accounting for such political influence:

From 2012 through 2015, the FWS budget has not increased substantially despite inflation, and the number of full-time-equivalent staff positions has decreased 13 percent.

FIGURE 10. Morale at the FWS, Change from 2005 to 2015



It appears that morale has improved in the FWS Ecological Services Division compared with 2005. More than double the proportion of Ecological Services scientists now report morale as excellent or good. A two-sample t-test between survey results found that these results were significantly different at a 95-percent level ($p = 0.0000$).

“It is my perception that upper-level managers are influenced by fear of Congress dismantling the Endangered Species Act and/or otherwise interfering with the mission of the Service. This affects their ability to appropriately support the scientific integrity of the very conscientious scientific staff whose work is supposed to support the managers’ decision making.”

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

NOAA employs more than 12,000 geologists, biologists, conservationists, meteorologists, engineers, and other technical experts for its research, operations, and policy development regarding atmospheric and ocean sciences.

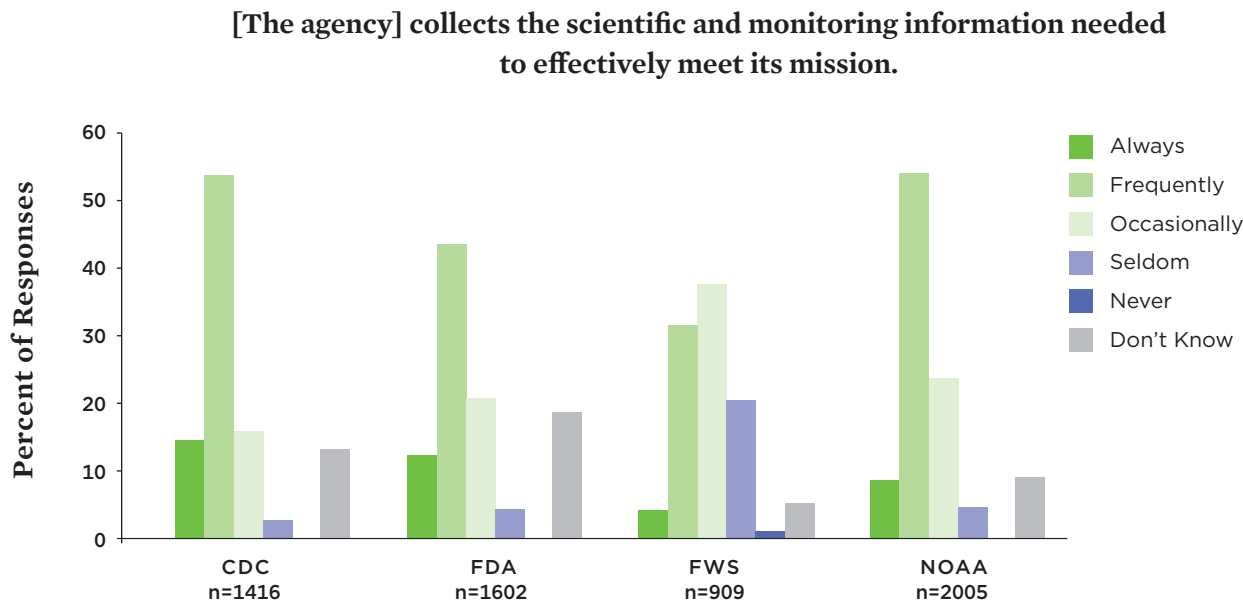
Compared with 2005, when UCS surveyed scientists working at NOAA’s National Marine Fisheries Service (NMFS), the agency appears to have vastly improved in terms of perceived agency effectiveness and adherence to scientific integrity principles. Aside from these improvements, some issues remain, including barriers to scientists publishing their work and communicating to the media and public. NOAA scientists also indicated that the overuse of contractors was having a negative impact on agency morale and productivity.

Ultimately, the [agency] would be improved the most if we could make decisions based solely on the science.”

—Anonymous FWS scientist

A majority of NOAA respondents agreed or strongly agreed that they can openly express their professional opinion about the mission-driven work of the agency without fear of retaliation (59 percent, 1,176 respondents) (Figure 12). This is comparable to results of the 2005 survey of NOAA NMFS, when 63 percent of scientists (78 respondents) reported having this freedom, compared with 59 percent (431 respondents) of 2015 NMFS respondents. One respondent compared the past with the present in a similar way: “Communication with the public has greatly improved since the Bush days. I feel free to respond to media requests without seeking

FIGURE 11. Collection of Needed Scientific Monitoring Information



FWS respondents reported insufficient levels of monitoring data collection at a greater proportion than the CDC, FDA, and NOAA. These results, coupled with open responses from FWS scientists, suggest that the FWS may be more resource constrained in terms of data collection than other agencies.

anyone’s approval, although I will usually contact our press relations person for advice on how to respond to requests.”

NOAA has a comprehensive scientific integrity policy containing a strong communications policy and authoritative language allowing a personal-views exception. The policy, however, does not explicitly grant scientists the right of last review on release of information that relies on their work. A survey respondent commented on the practical implications of scientists not having this right of last review: “Lower and midlevel supervisors continue to remove or alter science from decision-making processes and promulgate opposing policy by silencing or skirting experts that disagree.”

Despite moderately strong communications policies in place, NOAA scientists report several challenges related to the release of information from the agency, with some scientists reporting restrictions on communication and challenges in getting research published (Figures 6 and 7). As one respondent articulated, “The internal review process is onerous and used to delay and filter publications. We should be able to publish externally without internal reviews and approvals. Even our oral presentations, web pages, and posters have to be reviewed and approved. It is absolutely ridiculous.”

Forty-six percent (775 respondents) of survey respondents reported that they are required to obtain agency pre-approval for media interviews. These responses stand in contrast to the NOAA scientific integrity policy, which has no such restrictive language. Clearly highlighting the difference between policy and practice, one respondent wrote, “The

“Lower and midlevel supervisors continue to remove or alter science from decision-making processes and promulgate opposing policy by silencing or skirting experts that disagree.”

—Anonymous NOAA scientist

requirement for prior approval before speaking to media is the most mission-hampering rule inside NOAA. It is not actually all of NOAA, nor all of [the National Weather Service]. But it is all of [The National Center for Environmental Prediction] . . . and has been reaffirmed even after NOAA released its new policy which a naive person might think was encouraging NOAA scientists to answer media questions.”

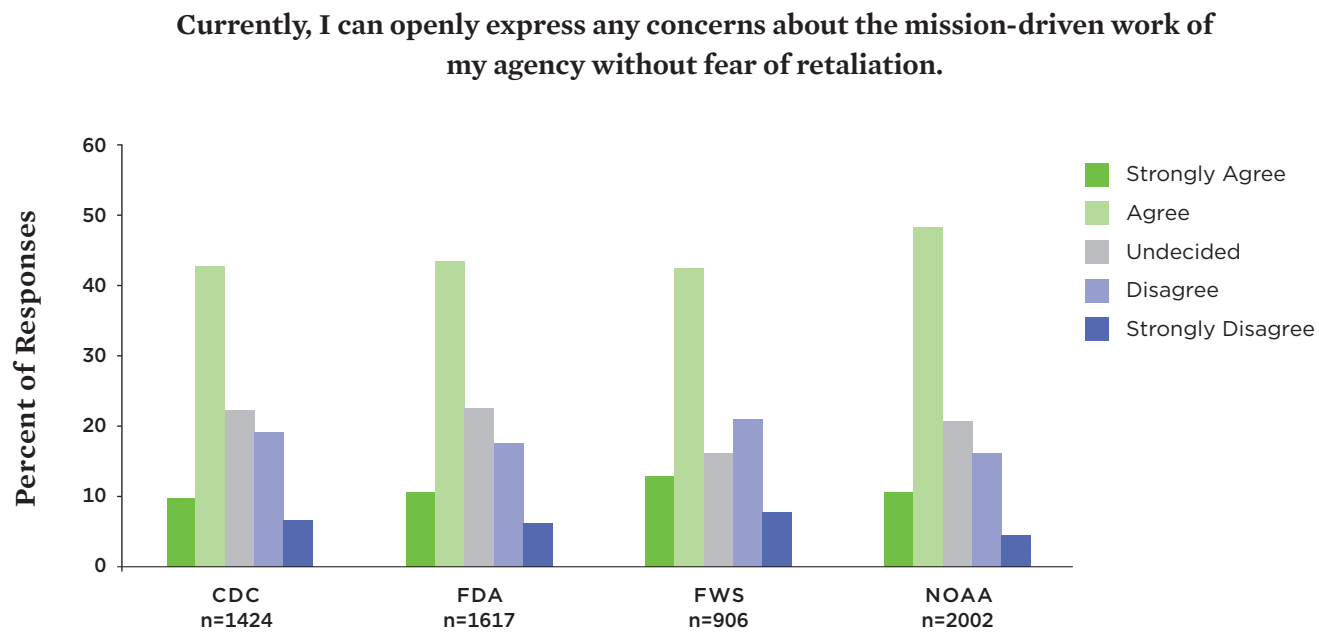
Similar to other agencies, NOAA scientists reported too much weight being given to political interests (56 percent, 973 respondents) (Figure 4). When asked what could improve scientific integrity at NOAA, several scientists focused on ways the agency should address this issue. One respondent wrote, “Remove all political agendas and influence by those without expertise in a designated field of study.” Another respondent wrote, “Stop giving in to political and industry pressure when making scientific decisions!” Another put it this way: “No single entity unduly influences the agency but the combination of NGOs, industry, Congress, OMB, and Commerce results in watering and wearing down and splintering of the agency’s efforts.”

In open-ended responses, survey respondents also expressed concern that what they felt to be the agency’s

Similar to other agencies, NOAA scientists reported too much weight being given to political interests.

overreliance on contractors was having a negative impact on agency effectiveness. This was in contrast to open-ended responses from other agencies, where overreliance on contractors appeared to be less of a problem. One NOAA respondent explained, “The integrity of the scientific work could best be improved by ensuring that the expertise of the science stays within the government and is not outsourced. In my division, the expertise that is lost through the revolving door of contractors slows our ability to expand in both knowledge and the scope of the work. Our contract staff is excellent, and then it leaves due to underinvestment in them while the contracting groups soak up available resources. Science agencies need to be able to invest in a strong workforce.”

FIGURE 12. Freedom to Express Professional Opinions without Fear of Retaliation



More than half of survey respondents—52 to 59 percent across agencies—feel they can express concerns about the mission-driven work of their agencies without fear of retaliation. For NOAA, and perhaps other agencies as well, these responses could be a result of improvements to the agency’s scientific integrity policy.



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Independent science is critical to informing policies from the Endangered Species Act to the Clean Air Act, but federal scientists still report facing challenges and restrictions in their work. Strong policies are needed to help protect federal science and scientists.

Conclusion and Recommendations

The adoption of scientific integrity policies at federal agencies appears to have had some positive effect on protecting scientists from inappropriate influences. Survey results also indicate that there is still room for improvement in order to implement the policies and integrate them into agency culture fully.

Results suggest that all four agencies could benefit from better training of scientists, managers of scientists, and agency leadership on implementation of their scientific integrity policies. Political influence on their agencies is perceived as too high by many federal scientists. There is also indication that

All four agencies could benefit from better training of scientists, their managers, and agency leadership on implementation of their scientific integrity policies.

some communication barriers continue to prevent scientists from speaking to the public and news media and from publishing in scientific journals. And survey results show that staff capacity and resource constraints are widespread across all four agencies and such constraints hinder agency effectiveness.

Strong agency policies are essential to ensuring these policies' longevity and safeguarding federal science and scientists from potential interference by future administrations. We therefore advise the following recommendations:

- **The White House**, through the Office of Science and Technology Policy, should take an even stronger leadership role in promoting robust government-wide scientific integrity standards. Such action should include the following specific elements:
 - Regularly assessing and publicizing agencies' progress toward better scientific integrity policies and practices and encouraging agencies' efforts to bolster scientific integrity, particularly at agencies that still have poor policies.
 - Facilitating training for agency personnel responsible for developing and enforcing scientific integrity-related policies.
 - Collecting and sharing best practices among agencies.

- Creating opportunities for the public to provide feedback to the White House and agencies on strengthening scientific integrity in government.
- Promoting more transparency to ensure that science is not compromised during the interagency review process or by White House officials.

The White House should take a stronger leadership role in promoting robust government-wide scientific integrity standards.

- **Federal science agencies** should strengthen and fully implement their scientific integrity policies. In particular, federal agencies should develop and enforce strong policies on the following issues:
 - Right of last review
 - Personal-views exceptions for all communications, including social media
 - Whistle-blower protections
 - Resolving scientific disputes
 - Timely publication of research
 - Comprehensive trainings on scientific integrity for agency staff
 - Reporting and resolving allegations of political interference in science
 - Publicly reporting allegations of political interference in science that are found to have merit. When appropriate, the individual(s) who brought the problem to light should be commended and rewarded.
 - Periodic review and improvement of scientific-integrity-related policies and practices

Further, agencies should incentivize public engagement by providing adequate training for staff who want to share their expertise and rewarding those who do so effectively.

- In addition, specific agencies should take the following actions:
 - **The CDC** should work to align agency practices with its solid scientific integrity policy, particularly with regard to scientists' ability to research controversial

topics, publish in scientific journals, and communicate with the media and public.

- **The FDA** should work to reduce any inappropriate influence of political and business interests on agency decisions that should be based on science.
- **The FWS** should work to improve scientific integrity practices and minimize political interference in scientific decision making throughout the agency.
- **NOAA** should ensure that its strong scientific integrity policy is fully implemented in all divisions of the agency and that its scientists receive adequate training about its provisions.
- **Agency inspector generals** should investigate and issue reports on the degree to which agencies adhere to scientific integrity policies.
- **Federal scientists** should know their agency's scientific integrity and communications policies in order to bring attention, either anonymously or publicly, to breaches of scientific integrity they personally experience or observe. They should take advantage of opportunities to engage with the public and responsibly exercise their rights to share their research and personal opinions.
- **Congress** should request a report from the Government Accountability Office on the effectiveness of scientific integrity policies at federal agencies.
- **Candidates for federal office** should articulate how they would continue to build strong scientific integrity standards in government.
- **Journalists and the public** should call out agencies that obstruct transparency of agency decision making.

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REFERENCES

- Bailin, D., C.S. Carlson, M. Halpern, A. Huertas, and Y. Kothari. 2015. Mediated access: Transparency barriers for journalists' access to scientists and scientific information at government agencies. Cambridge, MA: Union of Concerned Scientists. Online at www.ucsusa.org/center-science-and-democracy/promoting-public-access-science/mediated-access-transparency, accessed August 21, 2015.
- Blank, M.B., and J.B. Jemmott. 2015. The CDC clearance process: An obstacle to progress in public health. *American Journal of Public Health* 105(4):614–615. doi: 10.2105/AJPH.2015.302600. Online at www.ncbi.nlm.nih.gov/pubmed/25713946, accessed August 24, 2015.
- Goldman, G., D. Bailin, A. Renaud, P. Rogerson, Y. Kothari, and M. Halpern. 2015. Grading government transparency: Scientists' freedom to speak (and tweet) at federal agencies. Cambridge, MA: Union of Concerned Scientists. Online at www.ucsusa.org/center-science-and-democracy/promoting-public-access-science/grading-government-transparency-2015, accessed August 21, 2015.
- Government Printing Office (GPO). 2007. § 379d–2. Policy on the review and clearance of scientific articles published by FDA employees. Washington, DC. Online at www.gpo.gov/fdsys/pkg/USCODE-2010-title21/pdf/USCODE-2010-title21-chap9-subchapVII-partA-sec379d-2.pdf, accessed September 11, 2015.
- Grifo, F. 2013. Federal agency scientific integrity policies: A comparative analysis. Cambridge, MA: Union of Concerned Scientists. Online at www.ucsusa.org/sites/default/files/legacy/assets/documents/scientific-integrity/SI-policies-comparative-analysis.pdf, accessed August 25, 2015.
- Holdren, J.P. 2010. Memorandum for the heads of executive departments and agencies, December 17. Washington, DC: Office of Science and Technology Policy. Online at www.whitehouse.gov/sites/default/files/microsites/ostp/scientific-integrity-memo-12172010.pdf, accessed January 24, 2015.
- U.S. Office of Special Counsel (OSC). 2015. Agencies that have completed the 2302(c) certification program. Online at <https://osc.gov/Resources/Agencies%20that%20have%20completed%202302c%20certification%20program.pdf>, accessed September 11, 2015.
- Union of Concerned Scientists (UCS). 2012. Voices of scientists at the FDA: Measuring progress on scientific integrity. Cambridge, MA. Online at www.ucsusa.org/our-work/center-science-and-democracy/promoting-scientific-integrity/fda-survey-shows-progress.html, accessed August 21, 2015.
- Union of Concerned Scientists (UCS). 2008. Freedom to speak? A report card on federal agency media policies. Cambridge, MA. Online at www.ucsusa.org/our-work/center-science-and-democracy/promoting-scientific-integrity/freedomtospeak.html, accessed January 24, 2015.
- Union of Concerned Scientists (UCS). 2006. Voices of scientists at FDA: Protecting public health depends on independent science. Cambridge, MA. Online at www.ucsusa.org/our-work/center-science-and-democracy/promoting-scientific-integrity/summary-of-the-fda-scientist.html, accessed August 21, 2015.
- Union of Concerned Scientists (UCS). 2005a. NOAA Fisheries survey summary. Cambridge, MA. Online at www.ucsusa.org/our-work/center-science-and-democracy/promoting-scientific-integrity/survey-noaa-fisheries.html, accessed August 21, 2015.
- Union of Concerned Scientists (UCS). 2005b. U.S. Fish & Wildlife Service survey summary. Cambridge, MA. Online at www.ucsusa.org/our-work/center-science-and-democracy/promoting-scientific-integrity/us-fish-wildlife-service.html, accessed August 21, 2015.
- Union of Concerned Scientists (UCS). 2004. 2004 scientist statement on restoring scientific integrity to federal policy making. Cambridge, MA. Online at www.ucsusa.org/our-work/center-science-and-democracy/promoting-scientific-integrity/scientists-sign-on-statement.html, accessed August 23, 2015.
- Union of Concerned Scientists Scientific Integrity Program (UCS SIP). 2008a. Federal science and the public good: Securing the integrity of science in policy making. Cambridge, MA: Union of Concerned Scientists. Online at www.ucsusa.org/scientific-integrity/solutions/big_picture_solutions/federal-science-and-the.html, accessed August 21, 2015.
- Union of Concerned Scientists Scientific Integrity Program (UCS SIP). 2008b. Interference at the EPA: Science and politics at the U.S. Environmental Protection Agency. Cambridge, MA. Online at www.ucsusa.org/our-work/center-science-and-democracy/promoting-scientific-integrity/survey-of-epa-scientists.html, accessed September 4, 2015.

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