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Summary Report on Findings – NIH-HHS Collaborations Evaluation

National Institutes of Health

Office of the Director

Office of Science Policy

MSC 0166

1 Center Drive

Bethesda, MD 20892

May 28, 2015

Battelle

The Business of Innovation

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Summary Report on Findings – NIH-HHS Collaborations Evaluation

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List of Acronyms and Abbreviations

ACF: Administration for Children and Families

ACL: Administration for Community Living

CAs: Collaborative activities

CDC: Centers for Disease Control and Prevention

CRS: Intra-HHS Collaborations Reporting System

FDA: Food and Drug Administration

HHS: U.S. Department of Health and Human Services

ICs and OD Offices: Institutes, Centers and Offices in the Office of Director at NIH

NIH: National Institutes of Health

OSP: NIH Office of Science Policy

SAMHSA: Substance Abuse and Mental Health Services Administration,

Executive Summary

Introduction

This report presents the results of an evaluation to better understand the processes and outcomes of collaborations between NIH and other agencies of the Department of Health and Human Services (HHS). The mission of the National Institutes of Health (NIH) is to generate knowledge that will be used in enhancing health, lengthening life, and reducing illness and disability. This mission is vital to the larger mission of the Department of Health and Human Services (HHS) to protect the health of all Americans and to provide essential human services. Interagency collaborations are thought to be an important way to promote the efficient and effective translation of knowledge to application. Such collaborations have the potential to enhance the impact of the Department's programmatic activities by capitalizing on the strengths of individual agencies and creating cross-agency synergism that can accelerate progress in medicine, public health, and human services.

Purpose and Objectives

This is the first of a two-phase study on the flow of information between NIH and other HHS agencies. The NIH will use the information collected through this study to generate recommendations for enhancing effective collaborations across HHS, minimizing inefficiencies in collaborative efforts, and identifying areas where new collaborations could be fostered.

The goal of Phase 1 was to capitalize on currently available data on NIH collaborations with other HHS agencies and further examine how collaborations are, or can be, used to support the translation of scientific research and discovery to applications in health and human services. Furthermore, we sought to identify ways that NIH could strengthen its annual data collection and monitoring of NIH-HHS collaborations. There were five objectives for the Phase 1 study:

- To identify the areas in which NIH is currently collaborating with other HHS agencies.
- To determine if these collaborations successfully promote the use of NIH research in the development of public health programs and activities within HHS.
- To describe characteristics of successful collaborations.
- To identify the barriers to successful collaborations and the use of NIH research in public health programs.
- To identify important gaps in collaboration between NIH and the other HHS agencies and provide options relating to how those gaps could be addressed.

Building on the first phase, Phase 2 will involve in-depth interviews with NIH personnel to assess how other HHS agencies inform the policies and priorities of NIH through inter-agency collaborations.

Methods

The evaluation focused on five HHS agencies involved in collaborative activities with NIH Institutes, Centers, and Offices, including:

- Administration for Children and Families (ACF),
- Administration for Community Living (ACL),
- Centers for Disease Control and Prevention (CDC),
- Food and Drug Administration (FDA), and
- Substance Abuse and Mental Health Services Administration (SAMHSA).

These five other HHS agencies were chosen to represent a mix of missions and functions – including research, regulation, and service provision – that provide a range of opportunities to which NIH can potentially contribute. Additionally, they represent a broad range of overall involvement in NIH-HHS collaborations: the CDC and FDA exhibit high levels of collaborative engagement with NIH, SAMHSA is medium; and ACF and ACL are low. Employees from agencies with a long history and great extent of intra-HHS collaboration are able to provide insight and feedback based on more extensive experience. In contrast, employees from agencies with less history of collaborations with NIH can provide insight and ideas about how to foster and expand inter-agency collaborations in new areas.

Using a mixed methods approach, the Phase 1 evaluation consisted of three main components:

- First, we analyzed **data reported by NIH staff** in the Intra-HHS Collaborations Reporting System (CRS) on their collaborative activities with other HHS agencies during FY2012 (see NIH's [Report on Collaborations with Other HHS Agencies](#)).
- Second, we conducted a **web survey of employees at NIH and the five targeted HHS agencies** regarding their NIH-HHS collaboration experiences, practices, and attitudes, as well as ideas for improving and promoting intra-HHS collaboration. The survey was designed to include collaborators at NIH from all Institutes, Centers, and relevant Offices within the Office of Director (ICs and OD Offices), as well as both collaborators and non-collaborators in the targeted agencies.
- Third, we conducted **in-depth interviews with a sample of 45 survey respondents from the five targeted agencies (non-NIH)** representing different levels of experience and involvement with NIH-HHS collaborations (non-collaborators or those with very little experience versus those with medium to high experience). We used the interviews to obtain a more nuanced understanding of how inter-agency collaboration works, the value that diverse individuals place on collaboration, and the barriers and facilitators to collaboration.

Results

Areas of NIH-HHS Collaborations

We used data from the CRS (NIH's interdepartmental collaborations database) and the survey to examine collaborative activities involving NIH ICs and OD offices and the five targeted agencies, the types and purposes of the collaborations, and the various products and outputs coming out of the collaborations.

- There were a total of 601 distinct collaborative activities (CAs) submitted to the CRS by 31 ICs and OD Offices for FY2012.
- The distribution of activities reported in the CRS in FY2012 matched expectations about overall levels of involvement of the five target agencies: CDC and FDA were high; SAMHSA was medium, and ACF and ACL were low. Across the 601 collaborative activities (CAs) reported in FY2012, one or more of the five targeted agencies were involved in 503 (84%) activities.
- The majority of the CAs (86%) consisted of four collaboration types: (1) Committee, Advisory Group, or Work Group; (2) Research Initiative; (3) Meeting/Workshop; and (4) Resource Development
- The most common types of collaboration purposes, products, or outputs reported in the CRS and by survey respondents were related to research, data collection, and information dissemination.
- Less common were the products and outputs that are potentially further along the research-to-practice continuum – e.g., health/human services program; practice recommendations/guidelines; and policy or regulatory guidance.

Study Participants

- The total number of responses to the survey was 485, 41% of which were from NIH employees, 26% from CDC, 19% from FDA, 7% from SAMHSA, 5% from ACL, and 4% from ACF.

- Overall, we had a 50% total response to the survey from across the HHS personnel invited to participate, with relative response varying from 45% to 61% across the agencies of interest.
- The vast majority of respondents (86%) reported having a “successful” NIH-HHS collaboration experience, while less than a third (30%) reported having participated in a NIH-HHS collaboration that they considered to be especially challenging, problematic, and “unsuccessful.”
- The vast majority of respondents (84%) reported feeling satisfied or very satisfied overall with NIH-HHS collaborations in which they have participated.
- The majority of respondents (74%) reported being very interested or extremely interested in participating in future NIH-HHS collaborations.
- Participants generally agreed more with the benefits of collaborations as opposed to the challenges.
- Participants indicated that their work environments were generally supportive of collaboration but were less likely to indicate that dedicated staff, funding, or incentives are provided to collaborate.

Forming Collaborations

One of the key characteristics of inter-agency collaborations is how they are formed or initiated. Because this early aspect of the collaboration process shapes who is involved, how they are organized, and the focus or purpose of the collaboration, it can influence how collaborations operate over their life-cycle, and ultimately their chances for success.

- Respondents cited several reasons and benefits for inter-agency collaboration, including the need for additional expertise, sharing information and resources, and a greater ability to address important health issues.
- Respondents reported that the most common method for initiating new inter-agency collaborations is when agency staff reach out to members of their professional networks. Overall, 69% of respondents rated the initiation method as “quite important” or “extremely important” for determining the success of that collaboration.
- Respondents most commonly became involved in NIH-HHS collaborations by either being assigned by their manager (36%), by being one of the initiators/organizers for the collaboration (32%), or by being personally invited to participate by someone in their professional network (22%). The most frequently selected motivations for participating NIH-HHS collaborations included the relevancy of the topic to professional interests (84%), the perceived importance of the issues being addressed by the collaboration (75%), and wanting to work with a specific agency or individual from another agency (37%).
- Respondents considered their professional networks and the published scientific or professional literatures to be the most useful sources for identifying potential collaborators.
- The top barriers to initiating new collaborations included:
 - Lack of funding and resources;
 - Burden of the time requirements;
 - Not knowing who to contact or how to initiate an inter-agency collaboration;
 - Difficulties obtaining leadership support;
 - Differences in agency philosophies, cultures, and missions; and
 - Bureaucratic or administrative hurdles encountered when working across agency lines.

Characteristics of Successful Collaborations

We used data from the survey and interviews to examine how HHS personnel define collaboration “success” and what factors facilitate that success.

- Survey respondents reported that the most important outcomes for determining if a collaboration is generally successful are:

- When the intended purpose and products are achieved;
 - Information sharing and creating new lines of communication between agencies, including new inter-agency collaborations;
 - When long-term public health impacts are realized; and
 - The implementation of a new or revised program, policy, or regulation.
- However, the latter two outcomes were less frequently selected by respondents as applicable to their most successful collaborations, perhaps because of the longer time horizons that are needed to see those types of changes.
 - The factors considered by respondents to be the most important for facilitating collaboration success include:
 - Having a clear purpose and goals;
 - Good working relationships between participants;
 - Effective leadership;
 - The right skills and expertise among participants, plus authority to make decisions; and
 - Support for the collaborative endeavor, both in terms of material support and the perceived blessings from agency leadership.
 - The factors considered by respondents to be the least important for facilitating collaboration success include:
 - Clear mechanisms for tracking and monitoring progress; and
 - Formal agreements that spell out relationships between partner organizations.

Barriers to Successful Collaboration

We used data from the survey and interviews to understand what HHS personnel see as the most important challenges and inhibiting factors for successful inter-agency collaborations.

- The barriers to successful collaborations most frequently identified by respondents as the most important include:
 - Time commitment required to participate;
 - Lack of commitment or support from agency leadership;
 - Lack of clarity about the purpose of the collaboration; and
 - Lack of funding or resources.
- The other barriers frequently identified as also important include:
 - Lack of authority among participants to make decisions;
 - Lack of clarity about participant roles and responsibilities;
 - Lack of commitment among participants; and
 - Ineffective leadership.
- All of the important barriers to successful collaboration are consistent with the top barriers to initiating collaborations and the highly-rated success factors.

Collaborating with NIH and the Use of NIH Research

We used data from the survey and interviews to understand HHS employees' perspectives and opinions on collaborating with NIH and NIH personnel, and to understand how NIH contributes to successful collaborations.

- The most frequently mentioned benefits to collaborating with NIH include:
 - Access to scientific knowledge and expertise;
 - Additional funding and other resources shared by NIH; and
 - A commitment to inter-agency collaboration among some NIH personnel.

- The most frequently mentioned challenges to collaborating with NIH include:
 - “Non-collaborative” attitudes among some NIH staff;
 - Bureaucratic and administrative hurdles that make it difficult to initiate or carry out collaborative work;
 - Poor communication and outreach about NIH-sponsored research; and
 - A lack of focus or emphasis given to translating basic research results into practical applications that could be useful to the programs in other HHS agencies.

- Collaborators participating in the interviews described things that NIH does well and does poorly in the context of inter-agency collaborations.
 - The most commonly cited thing (nearly 60%) that NIH does well is providing scientific and subject matter knowledge and expertise. Smaller percentages described some NIH staff as having a “collaborative spirit” (25%), or as being able to contribute resources to collaborations (10%).
 - Nearly 30% of respondents felt that NIH could do better in **translating basic science** in a “digestible manner,” while almost 25% of respondents indicated that NIH has **poor communications and outreach** about NIH-sponsored research that may be applicable to the other HHS agencies.

- The majority of respondents characterized NIH as a main or co-initiator of inter-agency collaborations (72%), and rated the role of NIH or NIH personnel in initiating their most successful collaborations as “quite important” or “extremely important” (69%).
- The majority of respondents characterized the role of NIH in carrying out the general work of their most successful collaboration as: providing scientific and subject matter expertise (71%), and playing a leadership role (66%). In addition, the vast majority of respondents (88%) rated the role of NIH or NIH personnel in carrying out the general work of their most successful collaboration as “quite important” or “extremely important.”
- The majority of respondents explained that scientific research is generally used to inform their work as needed, but they did not go into specifics of how the research is used or the extent to which this is done, even when prompted for more details from the interviewer.
- When interview respondents were asked specifically about whether NIH-funded research was used in their inter-agency collaborations, about 60% of respondents were confident that NIH-funded research was used as part of the scientific or evidence base. But they were not able to provide details of how the research was used or what specific studies were drawn upon.

Promoting and Improving Collaboration

Respondents provided suggestions on opportunities for new NIH-HHS collaborations, as well as how to enhance the collaboration process and encourage greater and more effective participation in collaborations among HHS personnel.

- Respondents provided many suggestions for new areas for NIH-HHS collaborations, reflecting the belief that there are many cross-cutting or shared topics of interest between NIH and other HHS agencies, and that the agencies with these shared interests should collaborate in order to be more effective at solving public health problems.

- Many suggestions were related to traditional public health topics that can be linked to specific agencies or sub-agency organizational units within HHS (e.g., “maternal and child health,” “aging and elder care”).
 - Many other suggestions reflect broader reasons for collaboration, including how NIH and other HHS agencies can collaborate for: data collection and sharing; developing and sharing new research methods; translating basic scientific research into evidence-based applications; and promoting the dissemination and implementation of those applications.
- Respondents also provided many suggestions for expanding and enhancing NIH-HHS collaborations, including:
 - Improving communication about opportunities for collaborating;
 - Support from agency leaders by providing dedicated time, resources, and infrastructure, and by generally promoting the value of collaboration;
 - Fostering collaborations with clear need and clearly stated purposes and goals; and
 - Addressing staff motivations, attitudes, and skills related to collaboration by recognizing and rewarding participation in collaborations; fostering a collaborative spirit that recognizes the value of partners; promoting engagement/commitment among collaborators; providing trainings and workshops.

Recommendations

The findings from this study shed light on ways to *enhance* the effectiveness of inter-agency collaboration and coordination among HHS operating divisions.

Recommendations for Promoting Effective Inter-Agency Collaborations

First, we offer recommendations related to identifying opportunities for enhanced NIH-HHS collaborations, encouraging staff participation in inter-agency collaborations, and facilitating connections among staff and agencies.

Identifying Areas of Needed Intra-HHS Collaboration

This study solicited a multitude of ideas from participants about new topics for inter-agency collaboration (see Appendix G for the full list).

- Based on agency mission, identified priorities and available resources, agency leaders should identify priority areas that inter-agency collaborations could be formed around.
- Agency leaders and managers should encourage and allow staff to continue to identify opportunities and initiate collaborations in their areas of interest.

Encouraging Staff Participation in Inter-agency Collaborations

Encouraging HHS staff participation in inter-agency collaborations can be done at the department and operating division levels. Staff motivations to participate come from professional interests and personal commitments to public health issues, and a desire to have their efforts valued and credited.

- Promote collaboration participation as a way to pursue and develop areas of professional interests.
- Provide dedicated time to help staff balance their various works commitments.
- Provide recognition and awards for involvement and commitment to successful collaborations that address high priority issues.

Facilitating Connections among Staff and Agencies

The initiation of successful collaborations that address important public health issues relies on the ability of HHS staff to make connections with one another across agency boundaries based on shared or common interests and complementary areas of expertise. NIH and HHS can help staff from across the department get started by identifying and supporting mechanisms that enhance HHS staff professional contacts and networks.

Because of its unique Congressional mandate, the CRS represents the most complete and extensive historical and current listing of intra-HHS collaborations, despite the fact that the CRS is limited to NIH-HHS collaborations (i.e., it does not include inter-agency collaborations that do *not* involve NIH). Therefore, it could serve as a key resource across HHS agencies for facilitating connections among agencies and agency staff that could lead to the initiation of new and strategically important inter-agency collaborations.

- Create an intra-HHS portal to allow open access for all HHS employees so they can view and search the CRS data.
- Conduct a strategic communications campaign targeting key audiences (e.g., agency leadership across HHS agencies and at multiple levels within agencies; current collaboration participants) to build greater awareness of the online CRS reports and data sets. This could foster use of the CRS to identify collaboration opportunities and gaps among the other HHS agencies, and could increase demand for CRS data.
- Add data fields to the CRS to capture relevant topic or subject matter key words for each CA. The CRS should allow users to search, filter, and sort CAs based on the topic key words.
- Add data fields to the CRS to capture participants from other non-NIH agencies, along with their organizational affiliations at the lower-level units. Integrate the CRS with existing HHS systems to allow easy linkage to personnel directories and other available collaboration technologies.

Respondents suggested that social media platforms could be used to raise awareness across HHS about collaboration opportunities, and for allowing employees to identify potential collaborators with shared interests or relevant expertise. Ideally, whatever system is used should complement and be linked to existing employee directories so that contact information and organizational affiliation are easy to add and keep up-to-date. In addition, employees should be able to create profiles within the system describing areas of interest and expertise, and that information should be easily searchable.

- HHS and operating division leaders should actively promote broad use of a chosen social media platform(s) – e.g., Yammer – and encourage employees to create accounts with descriptive profiles about their work activities, areas of interest, and expertise.

Recommendations for Improving the Collaboration Process

Once an inter-agency collaboration has been started, success in addressing the desired purpose and goals is dependent on the overall process of carrying out the work. We offer some specific recommendations in this section for ways that NIH and HHS can support and improve the collaboration process.

Collaboration Trainings and Workshops

Inter-agency collaborations benefit from effective leaders (formal or informal) who have good group management skills and expertise.

- Offer HHS staff trainings and professional development opportunities to enhance skills for effectively leading and managing inter-agency collaborations.

Use of Collaborative Infrastructure and Technology

Inter-agency collaborations can also benefit from a greater use of social media and collaboration technology for better communication, coordination, and information sharing. In addition, online collaboration spaces provide another tool for documenting and evaluating collaborative activities across HHS.

- NIH should actively promote the use of available online collaboration resources and technologies among employees for existing and future NIH-HHS collaborations. Existing resources that can serve this purpose include:
 - **SharePoint:** Microsoft SharePoint is a web-based collaboration and information management platform that allows groups to set up a centralized, password protected space for information and document sharing;
 - **Max Federal Community:** Available through OMB Max, it allows federal employees to create web-based group collaboration sites (similar to Microsoft SharePoint). Some additional investigation is needed to determine if tools are available that provide useful data on social networks and collaborative activities (such as offered by Yammer). (<https://max.omb.gov/maxportal/home.do>);
 - **Yammer:** An enterprise-level social networking site for HHS employees that includes features that support and facilitate group collaboration. Yammer has management-level tools that provide data on social networks and collaborative activities that can facilitate ongoing documentation, evaluation, and reporting on intra-HHS collaboration. (<https://about.yammer.com/product/features/>)

Evaluation

NIH is in a unique position to play a central role in proactively evaluating NIH-HHS collaborations, which will allow HHS to continuously enhance efforts to promote and improve inter-agency collaborations. NIH can fulfill this potential role in several ways: (1) Periodically collecting data (e.g., every 3-5 years) from HHS employees for ongoing assessments of trends in collaboration participation and networks, attitudes and opinions, processes and functioning, and outputs and outcomes; (2) Evaluating specific initiatives designed to promote and improve collaborations; (3) Enhancing the CRS to include a small but useful set of collaboration evaluation measures for annual tracking; and (4) Using data available from the social media and collaboration technologies being used by HHS employees.

- NIH should proactively evaluate NIH-HHS collaborations on an ongoing basis using a variety of available data sources and tools as a way to identify opportunities to continuously enhance efforts to promote participation and improve collaboration processes.

Resources

A consistent finding from this study is that HHS staff perceive a need for agency support to carry out successful inter-agency collaborations. While not every inter-agency collaboration can receive a full range of support due to the limits in available resources, these types of support could be provided when collaborations address agency priorities in order to maximize the probability of success.

- When an inter-agency collaboration is considered a high priority by agency leadership, a variety of forms of support should be provided, including explicit leadership endorsement and encouragement, dedicated funding, administrative and logistical support, and allowing participating staff to set aside a percentage of their time to dedicate to the collaboration work.

Enhancing the Use of NIH Research in Inter-Agency Collaborations

The results of this study suggest that NIH-HHS collaborations do provide an opportunity for the use of NIH research in the development of public health programs and activities within HHS. It is still unclear how this happens specifically, or the extent to which it happens. However, the results do provide some

potential avenues for promoting greater use of NIH research to inform and develop HHS programs and services.

- To address the problem of lack of awareness about NIH-sponsored research, NIH should develop targeted communications and outreach to other HHS operating divisions that summarize research developments that could inform relevant programs and activities.
- Establish a mechanism to facilitate discussion and coordination among HHS operating divisions to address ways to support research translation in the service of HHS programs and activities.

Note on Organization of the Report

This report is organized into ten chapters:

- Chapters 1 and 2 provide an introduction, background, a brief literature review, study purpose and objectives, and an overview of the evaluation design.
- Chapters 3 through 9 present the findings that address the purpose and objectives of the study with a focus on the content and processes of NIH-HHS collaborations.
 - Chapters 3 and 4 focus on characteristics of NIH-HHS Collaborations (agency involvement, types, purposes, and products/outputs) and the study participants (demographics, experiences with and attitudes toward inter-agency collaboration).
 - Chapters 5 through 8 address the: initiation of collaborations; characteristics of successful collaborations; barriers to successful collaboration; and use of NIH research in inter-agency collaborations.
 - Chapter 9 summarizes respondents' suggestions for ways that NIH and HHS can improve the collaboration process and encourage greater participation in collaborations among HHS personnel.
- Chapter 10 includes a discussion of the main findings presented in earlier chapters, and provides a set of recommendations to NIH and HHS based on the study findings and study participant suggestions.

The appendices provide information about the evaluation study not covered in the main body of the report, including methods, data collection instruments, other interim study reports, and additional findings.

1. Introduction

The mission of the National Institutes of Health (NIH) is to generate knowledge that will be used in enhancing health, lengthening life, and reducing illness and disability. This mission is vital to the larger mission of the Department of Health and Human Services (HHS) to protect the health of all Americans and to provide essential human services. The Department is designed such that all its components have a unique and important role in fulfilling that mission. NIH's contribution is to provide the evidence-base that will enhance and improve upon the policies, programs, and services undertaken by the other components. Information gathered by other HHS agencies on public health needs, in turn, informs the policies and priorities of NIH-funded research. Collectively, the Department works to transform fundamental knowledge into useful health applications, such as disease treatments, preventive interventions, protective health policies and regulations, and public health campaigns. However, there have been few, if any, formal attempts to evaluate how this evidence-base is disseminated and implemented throughout the Department. Likewise, there have been few, if any, attempts to evaluate how the needs of other components of the Department influence the research agenda undertaken by NIH.

Direct collaborations are thought to be an important way to promote the efficient and effective translation of knowledge to application and to inform the research agenda. The process of translating research into practice has often been described as a continuum, with the discovery of fundamental knowledge at the beginning, followed by the development and testing of promising evidence-based strategies, and the ultimate uptake of strategies that have been proven safe and effective into medical and public health practice. In reality, the movement of research to practice is rarely linear or uni-directional, and many inter-agency collaborations likely represent a mix of efforts along the research to practice continuum.

Recognizing the importance of collaboration in fulfilling the mission of HHS, Congress requested in the 2006 NIH Reform Act that NIH undertake an annual exercise in which it reports to the Secretary of HHS and make available to the public the number and content of its collaborative activities with the rest of HHS (see NIH's [Report on Collaborations with Other HHS Agencies](#)). The NIH Office of Science Policy (OSP) has lead responsibility for collecting and reporting on this data, and this study was designed in part to capitalize on this data in order to assess the current state of NIH-HHS collaborations as well as to develop new mechanisms for evaluating the effectiveness of NIH's collaborative efforts with the rest of the Department.

This report presents overall findings from the first phase of a two phase study on the flow of information between NIH and other HHS agencies and their collective impact on public health, using data gathered through the annual reporting process as a starting point. The goal of the first phase was to capitalize on currently available data on NIH collaborations with other HHS agencies and further examine how collaborations are, or can be, used to support the translation of scientific research and discovery to applications in health and human services. Phase 1 examined attributes of cross-HHS collaborations that successfully promote the use of NIH research and expertise in the development of HHS agency policies, programs, and services. Building on the first phase, Phase 2 will involve in-depth interviews with NIH personnel to assess how other HHS agencies inform the policies and priorities of NIH through inter-agency collaborations.

The audience for this study is leadership, program, and policy staff throughout HHS. This report describes current strengths and gaps in the collaborative efforts of NIH with sister HHS agencies as well as potential avenues for improving inter-agency collaborations. In addition, options are provided for strengthening data collection on NIH-HHS collaborations and dissemination of collaborative activities across HHS. Overall, the results of this evaluation should enable the Department to better evaluate current collaborations, identify gaps in HHS programs where HHS agencies can provide meaningful contributions, and strategically plan for future collaborations that help NIH and other HHS agencies achieve mission-related goals.

1.1 Literature on Collaboration

The literature on collaboration is large and covers multiple disciplines and theoretical perspectives. We reviewed a cross-section of seminal publications in this area of research, with a special focus on collaborations used to address health and human services issues, and the factors that facilitate success (see Appendix A for the full report).

1.1.1 Benefits and Challenges of Collaboration

Collaborations are frequently used to pursue health and social service goals. More and more entities are recognizing that collaborations can achieve goals that may not be attainable by working independently (Gajda, 2004). While collaborations may be useful under a variety of settings, the literature helps to identify certain situations where collaborations might be particularly beneficial. For example, collaborations can be highly relevant when stakeholders are challenged by multiple issues, problems are perceived as exceeding the problem-solving capabilities of independent stakeholders, and traditional routines of problem-solving are no longer yielding results (Lipp, Winters, & de Leeuw, 2013). Collaboration might also be helpful when problems are ill-defined, various stakeholders have vested interest in a problem, and stakeholders have different levels of expertise (London, 1995).

Despite the potential benefits of collaborations, the literature also points to a variety of challenges related to collaborative efforts. London (1995) describes collaborations as time consuming, less effective in groups that are too large, and prone to power inequalities that can sometimes derail the collaborative process. Conflict is also common in collaborations, especially when partners with different organizational cultures and varied views about planning, strategies, and tactics come together (Woulfe, Oliver, Zahner, & Siemering, 2010). Even if stakeholders agree with the overall goals and objectives of the partnership, partners may have different views on how to get there. Collaboration may also not be the best course of action in a situation that requires quick and decisive actions (London, 1995). The stage of a collaborative effort can also present challenges. A new collaboration may lack credibility and power and be less connected than an established one (Woulfe et al., 2010).

1.1.2 Success Factors

The literature points to a variety of factors that are often thought to be associated with successful collaborations. These success factors can be grouped into five categories, including governance (structure and leadership), synergism, interpersonal factors, communication, and organizational support.

Governance

The success of a coalition is often linked to the way it is run. This includes both the informal and formal structures by which the coalition organizes itself, makes decisions, as well as the leadership that sets the tone for member interactions. The GAO identified several practical elements related to the governance of inter-agency collaborations such as defining joint outcomes, agreeing upon roles and responsibilities, and establishing policies, procedures and operating mechanisms (GAO, 2005).

Structure: Collaboration involves creating structures that can help participants make choices about collective action through developing a set of working rules (Thomson, Perry, & Miller, 2007). Formalized rules, roles, and procedures can often help to engage members and increase the effectiveness and sustainability of a collaboration (Fawcett, Schultz, Watson-Thompson, Fox, & Bremby, 2010). Conversely, partnerships without clear goals and that rely on broad agendas can become more easily distracted (Woulfe et al., 2010). To help formalize roles and responsibilities a collaboration can develop action plans, or other types of written agreements to help facilitate dialogue and collaboration among partners. Establishing a vision or mission can also help communicate a common purpose (Fawcett et al., 2010). The GAO report on *Results-Oriented Government* suggest that well-defined roles can help to ensure that members understand their specific roles and responsibilities, organize joint and individual efforts, and facilitate decision making (GAO, 2005).

Leadership: Effective leadership can help inspire commitment and action, help sustain the mission, and motivate participation among collaborating members (Fawcett et al., 2010). Unlike leaders of more traditional efforts, however, collaborative leadership often functions differently from leaders of an organization. Traditional leadership qualities of power, persuasiveness, and the ability to make unilateral actions may be inappropriate in a collaboration (London, 1995). Core competencies related to effective collaborative leadership may include effective communication skills, meeting facilitation, negotiation, and networking. Woulfe and colleagues suggest that collaborations need leaders who possess the necessary process-oriented skills to keep the collaboration going (Woulfe et al., 2010). Several scholars also suggest that leadership roles and responsibilities should be distributed across different levels to allow for more ownership and responsibility (Fawcett et al., 2010).

Synergism

A major premise underlying the use of collaborations to address health problems is that working together creates a synergy that enables the group to achieve more than they would as individual entities. Synergism can be created by sharing responsibilities, having common values, and combining the perspectives, knowledge, and skills of diverse partners in a way that enables the partnership to think in new ways, plan more comprehensively, and strengthen relationships. In a survey of 48 different collaborations, Nowell found that shared philosophy had one of the strongest effects on achieving intended outcomes, while perceptions of fundamental philosophical differences could significantly hinder success (Nowell, 2009). The 2005 GAO report also identifies several synergistic activities that could enhance and sustain interagency collaboration that include articulating a common purpose and establishing a joint strategy (GAO, 2005).

Interpersonal Factors

Successful collaborations depend upon positive personal relations between partners (Nowell, 2009). It is important that collaborations foster an open and trusting environment among members. Henneman and colleagues stress that trust between members of a group is an essential element for collaboration that requires individuals to know each other and develop trust and respect over time (Henneman, Lee, & Cohen, 1995). In addition to trust, the literature points to a number of personal factors that promote collaboration including good communication skills, respect for fellow collaborators, and a willingness to share.

Communication

To facilitate member participation, and increase commitment and satisfaction among members, frequent, productive communication has been shown to be very important aspect of a collaboration (Duckers, Wagner, & Groenewegen, 2008). Communication can include regularly occurring meetings and vehicles for sharing information such as through formal meeting notes, newsletters, or websites. Frequent interactions, such as regularly occurring meetings and other forms of communication, are important because they allow participants to build rapport, develop trust, and gain appreciation and respect for one another (Henneman et al., 1995; Kania & Kramer, 2011; Nowell, 2009).

Organizational Support

For collaborations to be successful, participants must be empowered to take on necessary roles with sufficient resources, responsibility, and organizational support (Duckers et al., 2008). Collaboration requires an environment with a team orientation that emphasizes cooperation as a mode of dealing with issues rather than competition (Henneman et al., 1995). Additionally, organizational representatives should have some degree of autonomy to work for the collective interest of the collaboration. Collaborative decision making is difficult if organizational representatives are not given some latitude in working out agreements among partners. Tension can sometimes occur between organizational self-interest and collective interest when representatives of the collaboration are feeling pulled between being accountable to the demands of their parent organization and those of their collaborative partners

(Thomson et al., 2007). Having the support of one's organization can help lessen this tension and empower the collaboration.

Collaborations are also likely to succeed when there is a supporting infrastructure distinct from partner organizations, with dedicated resources and staff who can plan, manage and support the initiative (Kania & Kramer, 2011). Though this notion may not always be practical in a resource limited environment, it stresses the need for an administrative element that can manage the collective efforts of the collaboration. For this to work, multiple levels of partner organizations may need to be engaged, including decision makers, who can commit resources, and operational staff, who can contribute to plan implementation.

1.1.3 Measuring and Evaluating Collaboration

As outlined above, the literature points to some common elements associated with successful collaborative efforts that can be used to guide evaluation of collaborations between NIH and other HHS agencies. These include such things as defining joint outcomes; agreeing upon roles and responsibilities; establishing policies, procedures and operating mechanisms; clear decision-making rules; effective leadership; frequent, ongoing communication; and synergism created from shared responsibilities. There are also potentially useful measures and instruments already developed that could be applied/adapted to evaluations of NIH-HHS collaborations. For example, Duckers et al. (2008), Frey et al. (2006), and Masse et al. (2008) all provide various survey items designed to measure specific aspects of collaboration characteristics or processes. Other researchers have developed comprehensive measures of collaboration factors, such as Gajda's Strategic Alliance Formative Assessment Rubric (SAFAR) (2004) and Mattessich and colleagues' Wilder Collaboration Factors Inventory (2014).

1.2 Working Definition of Collaboration

There is not a single, universal definition of "collaboration." London (1995) cites several different definitions and contends that the most robust is found in Barbara Gray's *Collaborating: Finding Common Ground for Multiparty Problems*, where collaboration is defined as "a process through which parties who see different aspects of a problem can constructively explore their differences and search for solutions that go beyond their own limited vision of what is possible". El Ansari and colleagues define collaboration as the "collective actions by individuals or their organizations for a more shared communal benefit than each could accomplish as an individual player" (El Ansari, Phillips, & Hammick, 2001). Many have argued that the lack of consensus among scholars in the conceptualization of collaboration has made it difficult to evaluate collaborations and compare findings across studies (Gajda, 2004; Henneman et al., 1995; Thomson et al., 2007). It is further argued that practitioners face an equally confusing landscape when collaborating due to differing interpretations, accountability standards, and expectations (Thomson et al., 2007).

Based on our review of the literature and the various definitions identified, we defined *collaboration* in general terms as collective actions by two or more individuals or organizations that align in organized ways to address issues of shared concern. For the purposes of this study, and to clearly communicate with study participants, we defined *NIH-HHS Collaborations* more specifically as:

- **Organized interactions between personnel from NIH and one or more HHS agencies.** Group membership may be stable or can change over time, but an NIH participant should be involved most of the time.
- **The collaboration involves two or more interactions among the group during each year of the collaboration.** Interactions among the group of participants can include in-person meetings, conference calls, or web meetings.
- **The collaborative activity has a particular purpose or purposes.** The purposes of NIH-HHS Collaborations can be diverse, and may include (but are not limited to):
 - General inter-agency coordination and information sharing, including administrative services;

- Ad-hoc groups to address special issues; and
- Co-development or implementation of: programs, services, and strategic plans; policies, regulations, and white papers; research and training initiatives; meetings and workshops; public education campaigns; health surveys; research or practice resources (e.g., web materials, databases, registries, information clearinghouses).

2. Study Purpose, Objectives, and Methodology

The primary focus of the Phase 1 evaluation was on the role that collaborations between NIH and other agencies within the Department of Health and Human Services (HHS) play in promoting the uptake and utilization of NIH-supported research results into the policies, programs, and services used to fulfill the mission of HHS. Additionally, we sought to better understand: the characteristics of successful NIH-HHS collaborations in terms of content and processes; the characteristics and perspectives of collaboration participants (both NIH and other HHS staff); and how NIH-HHS collaborations might be improved and expanded. Furthermore, we sought to identify ways that NIH could strengthen annual data collection and monitoring of NIH-HHS collaborations.

Given the overall purpose of the Phase 1 study, there were five objectives that we sought to address:

- To identify the areas in which NIH is currently collaborating with other HHS agencies.
- To determine if these collaborations successfully promote the use of NIH research in the development of public health programs and activities within HHS.
- To describe characteristics of successful collaborations.
- To identify the barriers to successful collaborations and the use of NIH research in public health programs.
- To identify important gaps in collaboration between NIH and the other HHS agencies and provide options relating to how those gaps could be addressed.

For the Phase 1 evaluation, a team of NIH staff from the Office Science Policy (OSP) in the Office of Director worked with Battelle (under Contract # HHSP23320095628WC_HHSP23337005T) to design and conduct the study. Battelle conducted the day-to-day operations of the study and provided evaluation technical expertise, while the OSP team provided overall guidance and vision to ensure that the results would address the purpose and objectives.

The evaluation was designed to employ a mixed methods approach to better understand the full scope and nature of the many collaborative efforts, examine in more detail *how* results from NIH-sponsored research flow into and inform the work of other HHS agencies, and identify the key factors that facilitate or hinder those efforts. In addition, we also wanted to be able to solicit information from key stakeholders on where new collaborations could be fostered, generate recommendations for how best to implement effective collaborations, and improve NIH's ability to monitor, evaluate, and improve collaboration overall within the agency and across all of HHS.

The Phase 1 evaluation consisted of three main components: (1) Analysis of data from the NIH's Intra-HHS Collaborations Reporting System (CRS); (2) a web survey of HHS staff affiliated with NIH and five targeted agencies; and (3) in-depth interviews with staff from the five targeted agencies. Table 1 presents the three components along with their primary units of analysis and number of participants. The following sections provide details on the evaluation components and the targeted populations.

2.1 Scope and Study Participants

The evaluation focused on NIH and five "sister" HHS agencies involved in collaborative activities with NIH Institutes, Centers, and Offices, including:

- Administration for Children and Families (ACF),
- Administration for Community Living (ACL),
- Centers for Disease Control and Prevention (CDC),
- Food and Drug Administration (FDA), and
- Substance Abuse and Mental Health Services Administration (SAMHSA),

Table 1. Evaluation Components & Units of Analysis

Unit of Analysis	Evaluation Components		
	Analysis of CRS Data (FY2012)	Survey	Interviews
NIH-HHS Collaborative activities	601 (100%)		
Collaborators affiliated with NIH		198 (50%)	
Collaborators affiliated with Targeted HHS Agencies (ACF, ACL, CDC, FDA, SAMHSA)		287 (49%)	45 (100%)

The numbers reported in the table are the total number of “participants” in each component. There were 601 collaborative activities reported in the CRS for FY 2012 and all were included in the analysis. For the survey and interview components, we provide the number of respondents along with the percentage of those invited.

These five other HHS agencies were chosen to represent a mix of missions and functions – including research, regulation, and service provision – that provide a range of opportunities to which NIH can potentially contribute. In addition, based on the number of documented NIH-HHS collaborations that these agencies have been involved with, the CDC and FDA represent high levels of involvement, SAMHSA is medium; and ACF and ACL are low. Employees from agencies with a long history and great extent of intra-HHS collaboration are able to provide insight and feedback based on more extensive experience. In contrast, employees from agencies with less history of collaborations with NIH can provide insight and ideas about how to foster and expand inter-agency collaborations in new areas.

The evaluation was also focused on two types of HHS personnel from the five targeted agencies: those who have participated in NIH-HHS collaborations (as defined above) and those who have not. For the purposes of this evaluation study, these two groups are referred to as “collaborators” and “non-collaborators.” And were defined as follows:

- **Collaborators:** This group is defined as HHS personnel who have participated in at least one NIH-HHS collaboration. This group is expected to be a very small proportion of the overall HHS personnel population, as well as of staff members of NIH and the five targeted agencies. Because of the small size, this group would normally be difficult to identify within such a large department like HHS. However, collaborators can potentially be identified through the NIH’s CRS, which includes the names of NIH points-of-contact for each submitted collaboration activity, who in turn can be a source of information about the identities of their fellow collaborators in the other agencies.
- **Non-collaborators:** This group is defined as HHS personnel who have never participated in an NIH-HHS collaboration, but who are involved in programs and activities that are related to important areas of relevant NIH research. This group can include individuals who have participated in inter-agency collaborations that did not involve NIH or NIH personnel. This group is expected to make up a vast majority of HHS personnel, given that participation in NIH-HHS collaborations (as defined above) is not common as most positions in the department do not require or provide the opportunity to do so.

Based on their direct experiences, the collaborators can provide valuable insight into the processes, outcomes, facilitators, and barriers related to successful NIH-HHS collaborations. In contrast, the non-collaborators can provide insights into the reasons that they have not collaborated with NIH in the past, and ways that relevant collaborations could be promoted and increased among this group.

2.2 Review and Analysis of NIH's Data on NIH-HHS Collaborations

First, we analyzed data reported by NIH staff on the 601 collaborative activities with other HHS agencies reported in FY2012 (see Appendix B for the full report). The NIH Reform Act of 2006 requires NIH to submit to the HHS Secretary an annual report on NIH and other HHS agency collaborations in order to encourage interagency collaboration and coordination. The NIH Office of Science Policy (OSP) collects data for the report from all 27 NIH Institutes and Centers as well as numerous offices situated within the Office of the NIH Director. Since 2011, NIH has utilized the Intra-HHS Collaborations Reporting System (CRS), a web-based content management system that stores all submitted data, facilitates annual data collection, and makes final report data available to the public (see NIH's [Report on Collaborations with Other HHS Agencies](#)). Information captured in the CRS includes a general description of current and past collaborations, participating NIH Institutes and Centers (ICs) and HHS agencies, NIH points of contact, budget information, and other external information. As such, the CRS is a valuable tool for understanding the range of collaborative activities between NIH and other HHS agencies over time. In this report, graphs that present CRS results use a blue color scheme.

2.3 NIH-HHS Collaboration Survey

Second, we conducted a web survey of employees at NIH and the five targeted HHS agencies regarding their NIH-HHS collaboration experiences, practices, and attitudes, as well as ideas for improving and promoting intra-HHS collaboration. The survey was designed to include collaborators at NIH from all Institutes, Centers, and relevant Offices within the Office of Director (ICs and OD Offices), as well as both collaborators and non-collaborators in the targeted agencies. Details about the survey design and methods are provided in Appendix C.

Prior to implementing the survey, we identified potential participants among the targeted groups from multiple sources. To identify collaborators among NIH personnel, we used the points-of-contact listed in the NIH Collaboration Reporting System (CRS), combined with lists provided by the ICs and OD Offices of all known personnel who have been involved in collaborations with the five targeted agencies. To identify collaborators among the five targeted agencies, we collected referrals from the identified NIH collaborators. To identify non-collaborators among the five targeted agencies, we distributed a web-based "opt-in and referral survey" that allowed respective agency staff to personally volunteer for the survey, and also to refer us to their agency colleagues that might also be interested in participating.

The survey questionnaire was developed by Battelle in close collaboration with the OSP study team, drawing from the literature and existing data collection instruments, and with input from the Advisory Group (consisting of NIH and other HHS staff familiar with inter-agency collaboration). Questions were designed to address the five evaluation objectives. It included 62 questions over 22 web pages, and was divided into 9 sections (Appendix D):

- A. Agency Affiliation (Q1-7).
- B. NIH-HHS Collaboration Status (Q8-9); identifying collaborators and non-collaborators.
- C. General NIH-HHS Collaboration Experience (Q10-20).
- D. Defining Successful Collaborations (Q21-23).
- E. Most Successful NIH-HHS Collaboration Experience (Q24-36).
- F. Recommendations for Enhancing NIH-HHS Collaborations (Q37-38).
- G. Inter-Agency Collaboration Experience (Q39-53); *non-collaborators only*.
- H. General Attitudes and Opinions about Inter-agency Collaboration (Q54-55); all respondents.
- I. Respondent Characteristics (Q56-62); all respondents.

Our definition of NIH-HHS Collaborations was shared with study participants in the web survey in order to clearly specify what was meant by inter-agency collaborations involving NIH and other HHS OPDIVs. The definition was presented at the beginning of section B in the questionnaire, and then respondents were asked if they had ever participated in this type of collaboration (Survey Question 8). This allowed us to

identify those who have been involved in NIH-HHS Collaborations and those who have not, which in turn was used to guide respondents to the appropriate questions in the survey.

The analysis of the data from the survey was primarily descriptive, employing univariate statistical methods with tables and graphs for display and summarization. In this report, graphs that present survey results use a green color scheme. To facilitate visual comparisons between sub-groups among respondents (e.g., by agency affiliation), we calculated statistics for each group and displayed them side-by-side when appropriate. For exploratory analyses of interest, we used either bivariate techniques to assess statistical association between two categorical variables (chi-square test of independence) or multivariate techniques when multiple examining the relationships between a dependent variable and multiple independent variables.

2.4 Interviews with Targeted Agency Personnel

Third, we conducted in-depth interviews with a sample of survey respondents from the five targeted agencies in order to obtain a more nuanced understanding of how inter-agency collaboration works, the value that diverse individuals place on collaboration, and the barriers and facilitators to collaboration. The intent of these interviews was to understand non-NIH perspectives on these issues, while the perspectives of NIH personnel will be addressed in the Phase 2 study (see Introduction). We interviewed two groups of survey respondents, based on their self-reported level of experience with NIH-HHS collaborations:

- **No/Low collaborators:** Non-collaborators and those with low levels of self-reported experience, and
- **Medium/High collaborators:** those moderate to high levels of self-reported collaboration experience.

We interviewed a total of 45 survey respondents, with 6 Medium/High collaborators and 3 No/Low collaborators from each of the targeted agencies, resulting in a total of 15 non-collaborators and 30 collaborators. Details on the interview methods, including how survey respondents were selected and recruited for the interviews, are provided in Appendix F.

We used two different semi-structured interview instruments to guide the interviews: one tailored to Medium/High NIH-HHS collaborators and the other tailored for non-collaborators (Appendix G). While the questions on the instruments differed by collaboration status, both addressed similar topics and had some overlap in the questions. The main topics for the Medium/High collaborator interviews included:

- The initiation of collaborations
- The benefits of collaboration
- Use of NIH-sponsored scientific research and evidence in collaborations
- Factors that facilitate successful collaborations
- Factors that inhibit successful collaborations
- Perspectives on collaborating with NIH
- Suggestions for increasing and improving NIH-HHS collaborations
- Opportunities for future NIH-HHS collaborations

The No/Low collaborator instruments included similar questions, but also include additional questions about reasons for not collaborating, or not collaborating very much with NIH, plus potential benefits and challenges of collaborating with NIH.

3. Areas of NIH-HHS Collaborations

One of the objectives for this study was to identify the areas in which NIH is currently collaborating with other HHS agencies. To address this objective, we used FY 2012 data from the Intra-HHS Collaborations Reporting System (CRS) – the web-based content management system that facilitates annual reporting on NIH-HHS collaborative activities – and the survey to examine collaborative activities (CAs) involving NIH ICs and OD offices and the five targeted agencies, the types and purposes of the collaborations, and the various products and outputs coming out of the collaborations.

Key Findings

- The distribution of activities reported in the CRS in FY2012 matched expectations about overall levels of involvement of the five target agencies: CDC and FDA were high; SAMHSA was medium, and ACF and ACL were low. Across the 601 collaborative activities (CAs) reported in FY2012, one or more of the five targeted agencies were involved in 503 (84%) activities.
- The majority of the CAs (86%) consisted of four collaboration types: (1) Committee, Advisory Group, or Work Group; (2) Research Initiative; (3) Meeting/Workshop; and (4) Resource Development
- The most common types of collaboration purposes, products, or outputs reported in the CRS and by survey respondents were related to research, data collection, and information dissemination.
- Less common were the products and outputs that are potentially further along the research-to-practice continuum – e.g., health/human services program; practice recommendations/guidelines; and policy or regulatory guidance.

3.1 Collaborative activities by Agency Involvement

Based on the FY2012 CRS data, there were a total of 601 distinct collaborative activities (CAs) for FY2012. These CAs were submitted to the CRS by 31 NIH ICs and OD Offices. Across the 601 total CAs reported in FY2012, one or more of the five targeted agencies were involved in 503 (84%) activities (Figure 1; see Table 17 in Appendix H for more details). In terms of the total number of CAs in which each were involved, the targeted agencies varied considerably. For example, the CDC and FDA had high levels of involvement (62% and 39% of all CAs, respectively), while SAMHSA had moderate involvement (14%), and ACF and ACL had low involvement (8% and 3%, respectively).

3.2 Types and Purposes of NIH-HHS Collaborations

The CRS and the survey data help describe the purpose and intent of the various NIH-HHS collaborations that have occurred to date. The CRS includes a data field that allows the submitting ICs and OD Offices to categorize CAs by type, e.g., committee, advisory group, or work group; research initiative; meeting/workshop; etc. While these categories are fairly generic, they do provide some clue as to the general purpose of the CAs. For the survey, we used a similar but more specific set of categories with more emphasis on the development of public health programs, policies, regulations, and services.

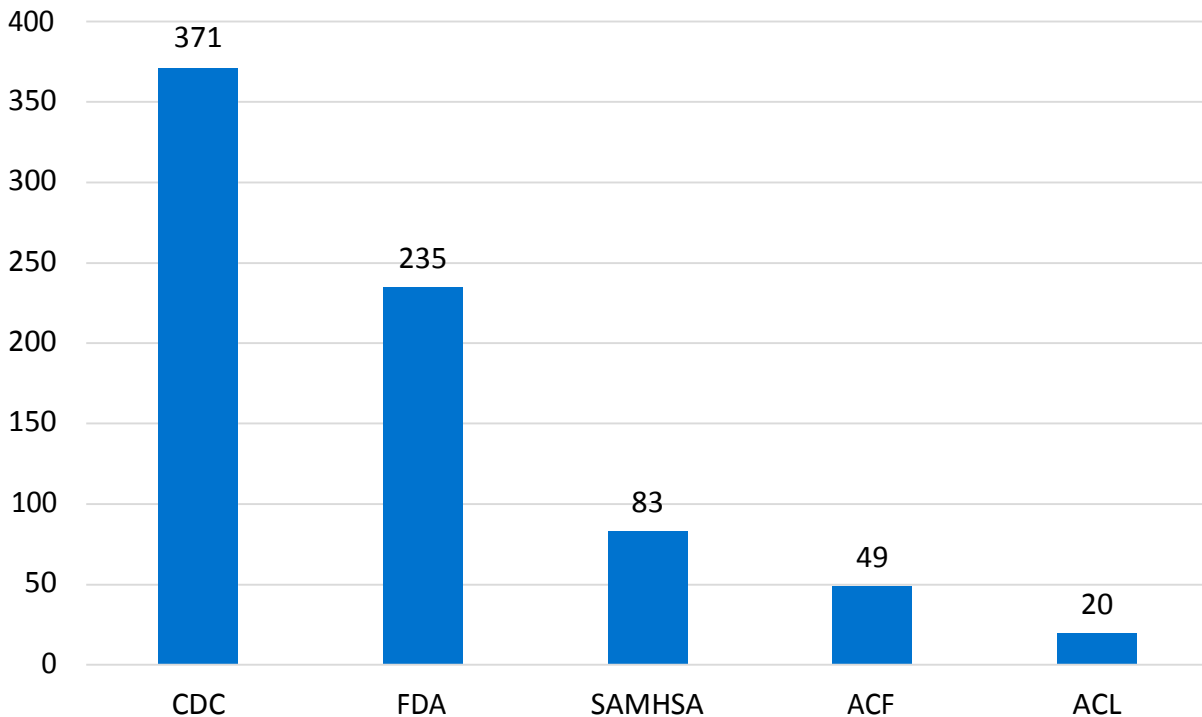


Figure 1. Number of Collaborations Involving the Five Targeted Agencies (n=503), CRS FY2012.¹

3.2.1 Types of Collaborations Reported in CRS

Among the 601 CAs reported to the CRS for FY2012, the majority (86%) consisted of four collaboration types: (1) Committee, Advisory Group, or Work Group; (2) Research Initiative; (3) Meeting/Workshop; and (4) Resource Development (Figure 2; see Table 17 in Appendix H for more details). The other collaboration types accounted for less than 15% of all reported CAs.

Based on the CRS data, the targeted agencies were involved in all seven types of collaborative activities, though some types of activities were more common than others:

- “Committee, Advisory Group, or Work Group” is the most common type of CA across all five of the targeted agencies, representing 44% to 80% of the total number of activities per agency.
- “Research Initiative” was a relatively common type of collaboration for the targeted agencies, especially for CDC and FDA.
- “Meeting/workshop” and “Resource Development” were also relatively common, especially for CDC, FDA, and SAMHSA.

¹ In Figure 1, because collaborative activities reported in the CRS can have multiple agencies involved, the sum of the agency-specific counts (n=758) is greater than the number of CAs that involved one or more of the targeted agencies (n=503). For example, among the 503 CAs reported for FY2012 that involved one or more of the targeted agencies, 37% (n=186) involved two or more of the targeted agencies.

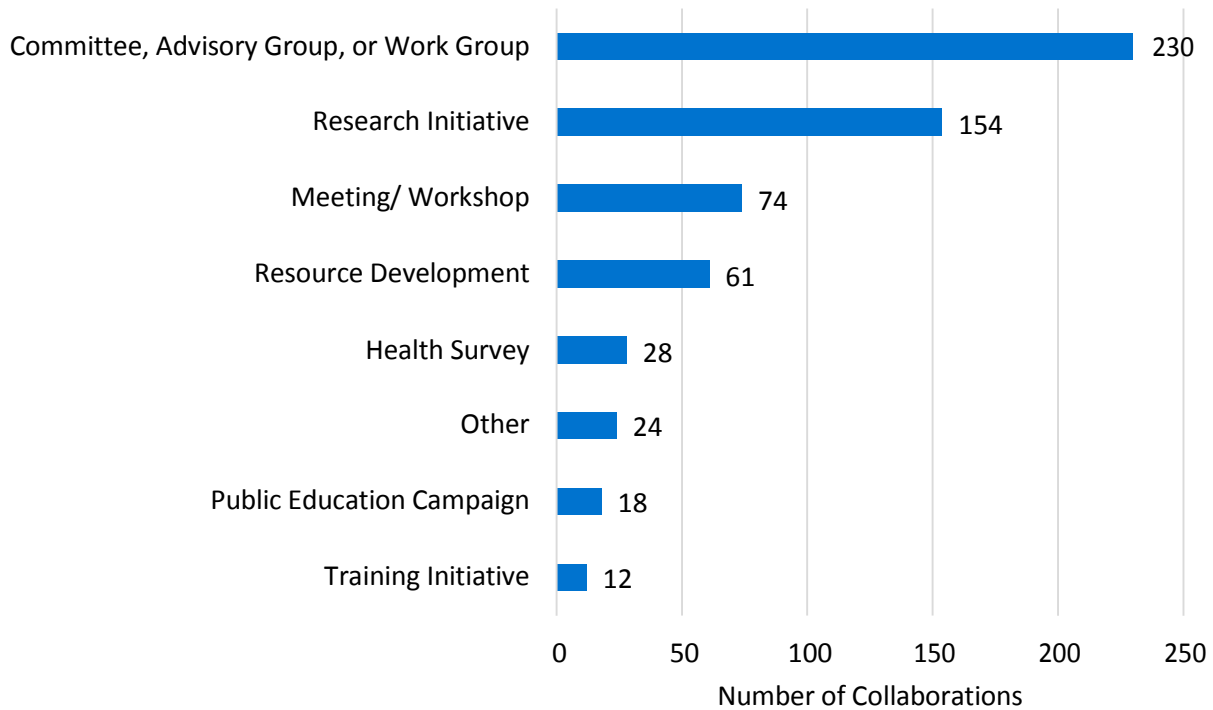


Figure 2. Types of NIH-HHS Collaborations Activities Submitted to CRS, FY2012 (n=601)

3.2.2 Purpose of Collaborations

Survey respondents reported the purposes of the NIH-HHS collaborations in which they have participated, including for all past and current collaborations (Q12) and their “most successful” collaboration (Q25). Using the same list for both questions, respondents were asked to select all categories that applied.

When asked about all past and current collaborations they have participated in, respondents most frequently selected items related to information sharing and research or data collection: General inter-agency coordination; Develop/conduct meeting or workshop; Develop/conduct data gathering activity; and Develop report/publication/paper (Figure 3). Collaboration purposes related to the development of public health services or programs were not frequently selected, e.g., Develop policy/regulatory guidance, Develop practice guidelines or recommendations, and Develop health/human services program.

For the survey respondents who reported having had a *successful* NIH-HHS Collaboration at some point time (n=388), they selected a very similar pattern of purposes for their “most successful” collaboration (Figure 3). The same four purposes emerged as the most frequently selected, though “Develop/conduct data gathering activity” took over the top spot from “General inter-agency coordination”.

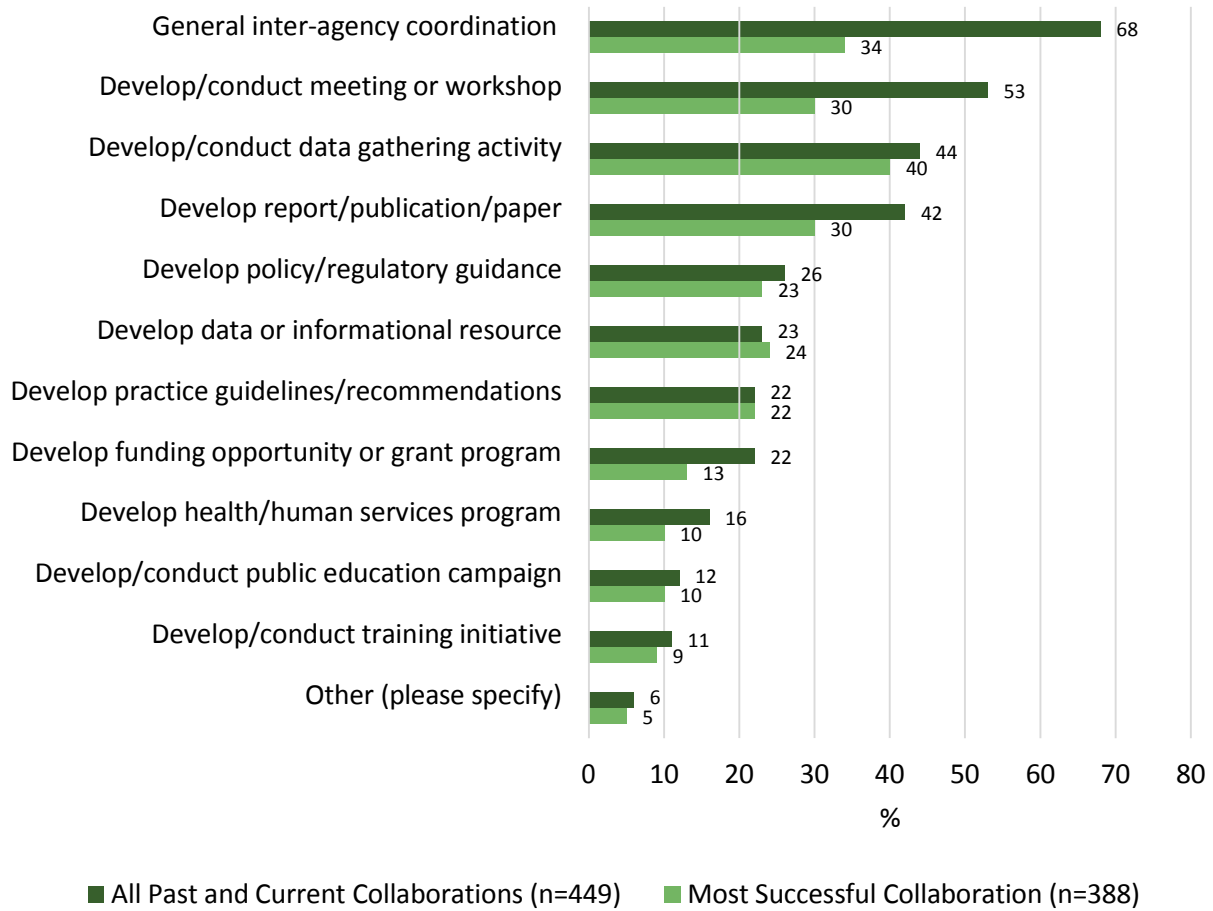


Figure 3. Purposes of NIH-HHS Collaborations (Survey)²

3.3 Products and Outputs of Collaborations

Related to the purpose and goals of the collaborations, the CRS and the survey also provide data that help describe the various types of products, outputs, or resources created as a result of the NIH-HHS collaborations. The CRS includes a data field that allows the submitting ICs and OD Offices to indicate the types of products or outputs created for each reported CA. While these categories are fairly generic, they do provide some clue as to the general purpose of the CAs. For the survey, we adapted the CRS list of products with more emphasis on the development of public health programs, policies, regulations, and services. These products, outputs, and resources reflect different stages of development along the research-to-practice continuum, all contributing to the translational process.

² The percentages in Figure 3 add up to more than 100% because participants could select all that apply.

3.3.1 Collaboration Products or Outputs Reported in CRS

The CAs submitted to the CRS in FY2012 produced a variety of products and outputs. The most common types of products or outputs reported for all CAs (n=601) were related to research and information dissemination: Research tool development; Informational website or print materials; Research resource; and Journal article (Figure 4; see Table 18 in Appendix H for more details). Less common were the products and outputs that are potentially further along the research-to-practice continuum – e.g., health/human services program; practice recommendations/guidelines; and policy or regulatory guidance. Nearly one third of all the CAs (29%) were categorized as “not applicable” regarding products/outputs.

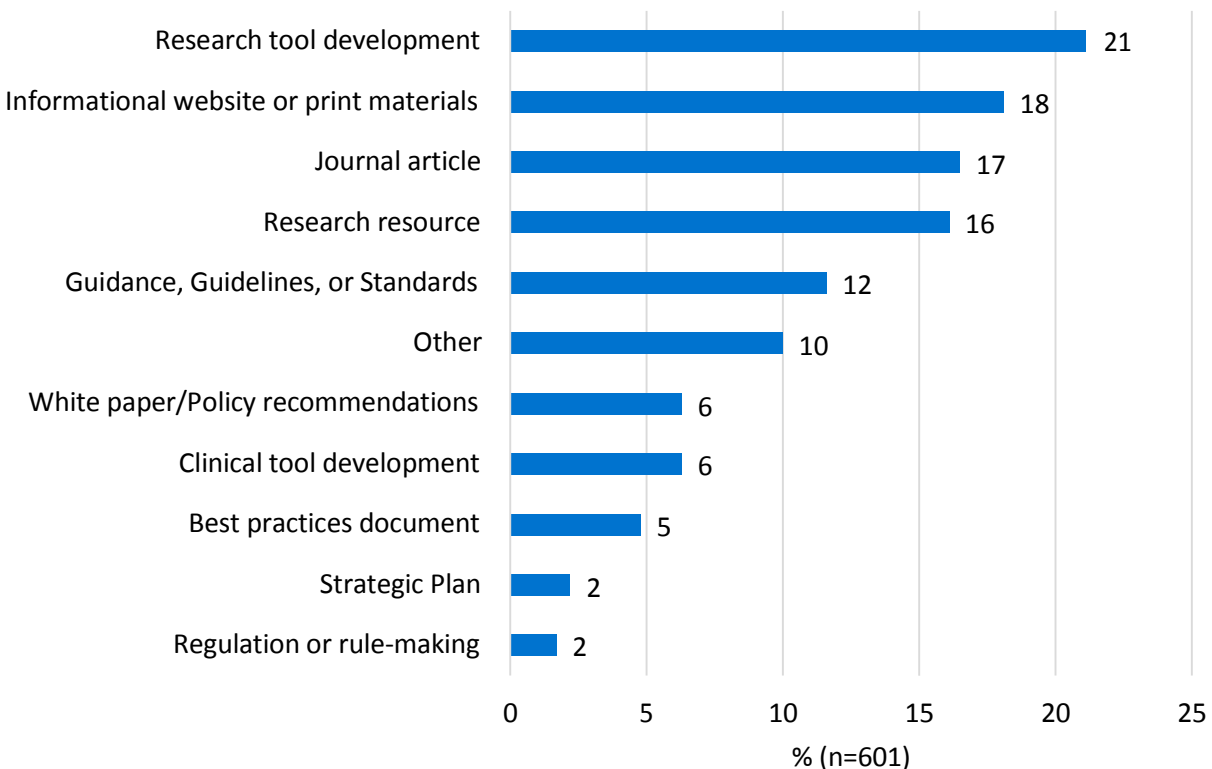


Figure 4. Collaboration Products and Outputs Reported in the CRS, FY 2012.

3.3.1 Collaboration Products Reported in the Survey

Survey respondents also reported the types of products, outputs, or resources that have been created through the NIH-HHS collaborations in which they have participated, including for all past and current collaborations (Q13) and their “most successful” collaboration (Q30). Using the same list for both questions, respondents were asked to select all categories that applied.

When asked about all past and current collaborations, respondents most frequently selected items related to information dissemination, planning, and research: Meeting, workshop, or training; Report or publication; Information/data resource; Strategic/action plan; and Health survey/research study (Figure 5). Thirteen percent of respondents selected “No specific product/output”.

Collaboration products related to the development of public health services or programs were not frequently selected, e.g., Health/human services program; Practice recommendations/guidelines; and Policy or regulatory guidance (Figure 5).

For the survey respondents who reported having had a *successful* NIH-HHS Collaboration at some point time (n=388), they selected a similar pattern of products for their “most successful” collaboration (Figure 5). Four of the same products emerged as the most frequently selected, though “Strategic/action plan” dropped out of the top group and “Meeting, workshop, or training” was less prevalent.

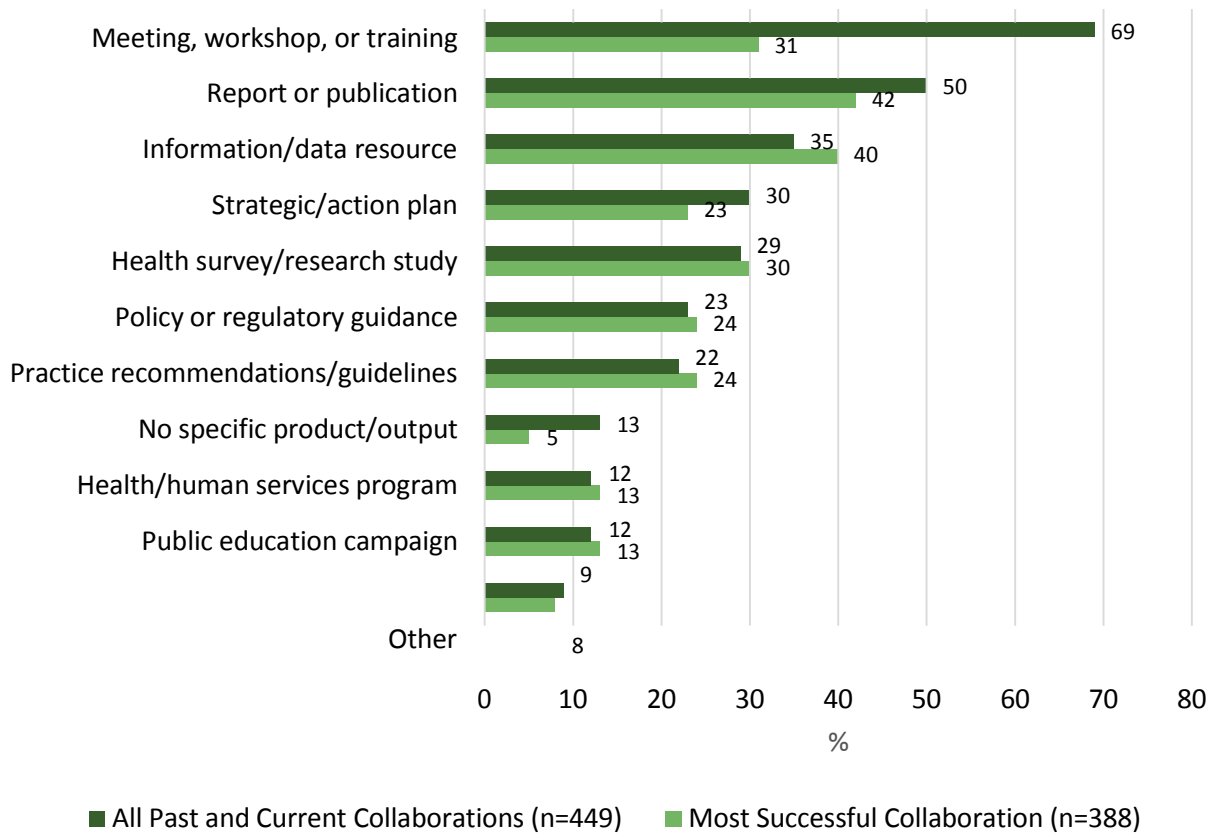


Figure 5. Products, Outputs, and Resources Created through NIH-HHS Collaborations (Survey)³

³ The percentages in Figure 5 add up to more than 100% because participants could select all that apply.

4. Study Participants

This section describes the study participants based on data collected through the survey related to demographics, their careers in HHS, and their involvement with NIH-HHS collaborations. This section also includes details on the response to the survey and interviews, overall and by agency affiliation.

Key Findings

- Overall, we had a 50% total response to the survey from across the HHS personnel invited to participate, with relative response varying from 45% to 61% across the agencies of interest. We conducted 100% of the planned interviews.
- The total number of responses to the survey was 485, 41% of which were from NIH employees, 26% from CDC, 19% from FDA, 7% from SAMHSA, 5% from ACL, and 4% from ACF.
- The vast majority of respondents (86%) reported having a “successful” NIH-HHS collaboration experience, while less than a third (30%) reported having participated in a NIH-HHS collaboration that they considered to be especially challenging, problematic, and “unsuccessful”.
- The vast majority of respondents (84%) reported feeling satisfied or very satisfied overall with NIH-HHS collaborations in which they have participated.
- The majority of respondents (74%) reported being very interested or extremely interested in participating in future NIH-HHS collaborations.
- Participants generally agreed more with the benefits of collaborations as opposed to the challenges.
- Participants indicated that their work environments were generally supportive of collaboration but were less likely to indicate that dedicated staff, funding, or incentives are provided to collaborate.

4.1 Survey and Interview Response

Overall, we had a 50% total response to the survey from across the HHS personnel invited to participate, with relative response varying from 45% to 61% across the agencies of interest (Table 2). Absolute responses by agency largely reflect the numbers of personnel initially identified and invited to participate, with NIH having the largest number, followed in order by CDC, FDA, SAMHSA, ACL, and ACF.

We met our goal of completing a total of 45 interviews across the five targeted agencies, with 30 interviews in the Medium/High level of collaboration group, and 15 in the No/Low group. For the most part, we achieved our within-agency goal of 3 No/Low and 6 Medium/High interviews. We were unable to obtain all 3 No/Low interviews for ACF, but were able to complete one additional No/Low collaborator from CDC to make up the loss.

Table 2. Survey Response.

Participants	NIH	CDC	FDA	SAMHSA	ACF	ACL	Total
Number Invited *	397	258	204	56	29	36	977
Number of Responses	198	124	91	33	17	22	485
% Response by Agency	50%	48%	45%	59%	59%	61%	50%
% of Total Survey Response (n=485)	41%	26%	19%	7%	4%	5%	100%

* Note: The total number invited does not include opt-outs/refusals (25), invalid email addresses (8), and ineligible respondents (12). Opt-outs consisted of individuals who had notified Survey Monkey © that they did not want to receive survey requests through that service. Ineligible respondents consisted of individuals who were not affiliated with NIH or one of the five targeted agencies. For the eight invalid email addresses, we could not find valid alternative email addresses for those individuals through the HHS staff directory.

4.2 Collaboration Involvement

The survey also collected data about respondents' personal involvement with NIH-HHS collaborations over their careers, including collaboration status (collaborator or non-collaborator), a relative measure of the level of their involvement, and their personal roles in those collaborations.

4.2.1 Collaboration Status and Level of Collaboration Involvement

After determining agency affiliation (Q's 1-7), the survey presented the working definition of NIH-HHS collaborations and then asked respondents to indicate their collaboration status based on that definition to determine whether they were collaborators or non-collaborators (Q8 and Q9). After establishing collaboration status, the collaborators were then asked to indicate their relative level of involvement in NIH-HHS collaborations (Q10; Full-time, Often, Occasionally, Rarely). Based on their responses to Q10, collaborators were grouped into three levels: High (Full-time, Often), Medium (Occasionally), and Low (Rarely). Non-collaborators were assigned to the "None" level. These levels were used to categorize all survey respondents regardless of collaborator status, and to stratify respondents for selection into the interview component of the evaluation.

The vast majority of survey respondents (85%) were collaborators with High to Medium levels of collaboration involvement (Figure 6). Half of the survey respondents reported a High level of NIH-HHS collaboration involvement, though among the collaborators (n=449), only 3% (n=14) reported being involved in NIH-HHS collaborations on a full-time basis. For the remaining respondents, 35% reported a Medium level of involvement, 8% reported a Low level, and only 7% identified as non-collaborators.

Because of the low survey response by non-collaborators, we do not include results for that group throughout the main body of the report, except in Chapter 9 where we present results related to the recommendations for improving and promoting new collaborations.

4.2.2 Personal Role in Collaborations

Once collaboration status and level of involvement were established, collaborators were asked to select all of the various roles they have played in NIH-HHS collaborations over the course of their career (Q11).

The majority of respondents (76%) had served in a non-leadership role as a collaboration participant (Figure 7). Another large portion of respondents (60%) indicated that they served as their agencies' representative or point-of-contact for a collaborative endeavor. A smaller but still substantial portion of respondents had played some type of leadership role for the NIH-HHS collaboration, including overall leadership (39%) and leadership for a sub-group (37%). A small percentage of respondents had played administrative or logistical support role (13%).

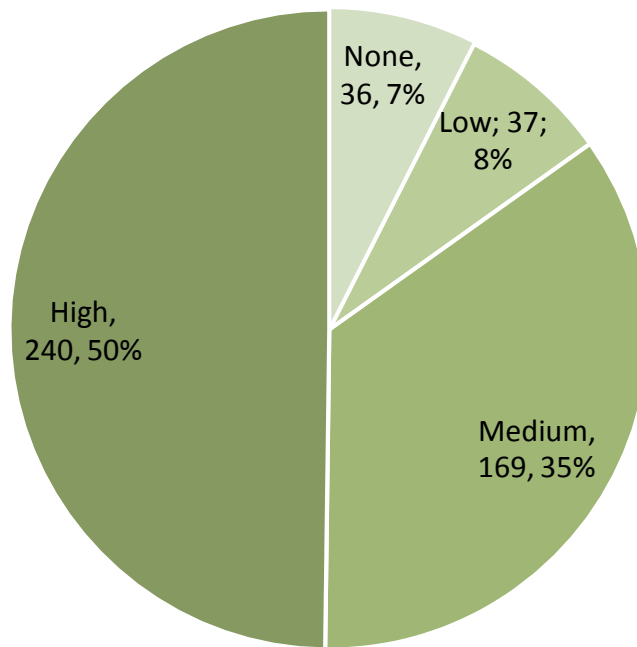


Figure 6. Survey Respondents' Level of Collaboration Involvement⁴

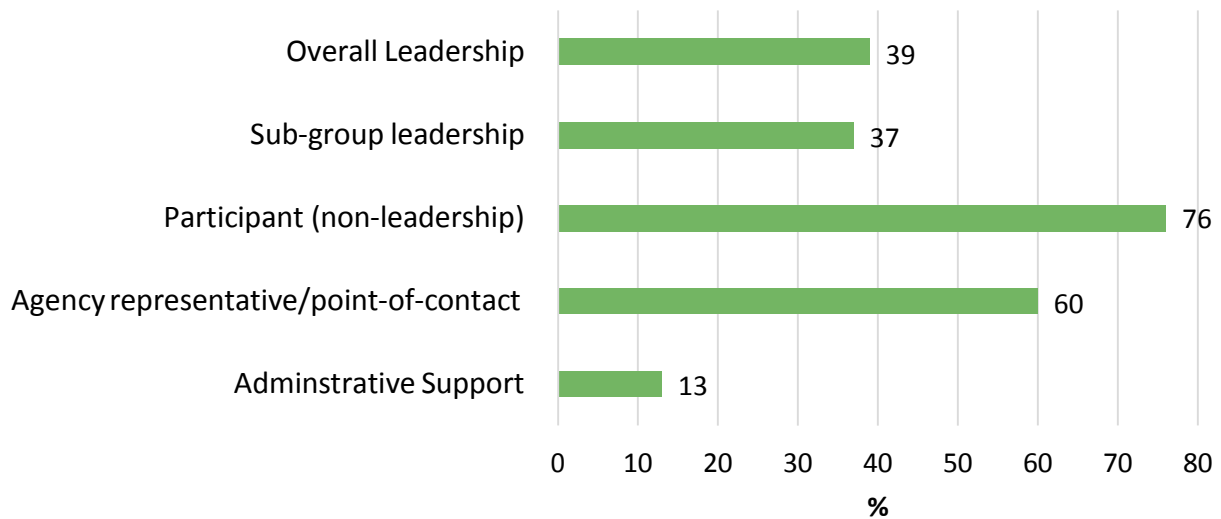


Figure 7. Survey Respondents' Roles in NIH-HHS Collaborations.⁵

⁴ In Figure 6, level of collaboration involvement is based on answers to survey question #10: How often do you participate in NIH-HHS Collaborations in your current position? High="Full-time" or "Often," Medium="Occasionally," and Low="Rarely."

⁵ The percentages in Figure 7 add up to more than 100% because participants could select all that apply.

4.3 Collaboration Attitudes and Perceptions

The survey also measured a variety of respondent attitudes and perceptions regarding inter-agency collaborations generally, and NIH-HHS collaborations specifically.

4.3.1 Experience with Collaboration Success

Overall, less than a third of respondents reported having participated in a NIH-HHS collaboration that they considered to be especially challenging, problematic, and “unsuccessful” (Q22). Experience with an unsuccessful collaboration varied by agency affiliation (Figure 8 and Table 3), and the result of the chi-square test of independence indicates that respondents’ agency affiliation was statistically significantly associated with their having had an unsuccessful collaboration ($p=0.0199$).

Overall, the vast majority of survey respondents reported having had what they perceive to be a “successful” NIH-HHS collaboration experience (Q23). These results are fairly consistent across the six agencies, though ACL and ACF reported lower percentages (Figure 8 and Table 3), and the result of the chi-square test of independence indicates that respondents’ agency affiliation was not significantly associated with their having had a successful collaboration ($p=0.0629$).

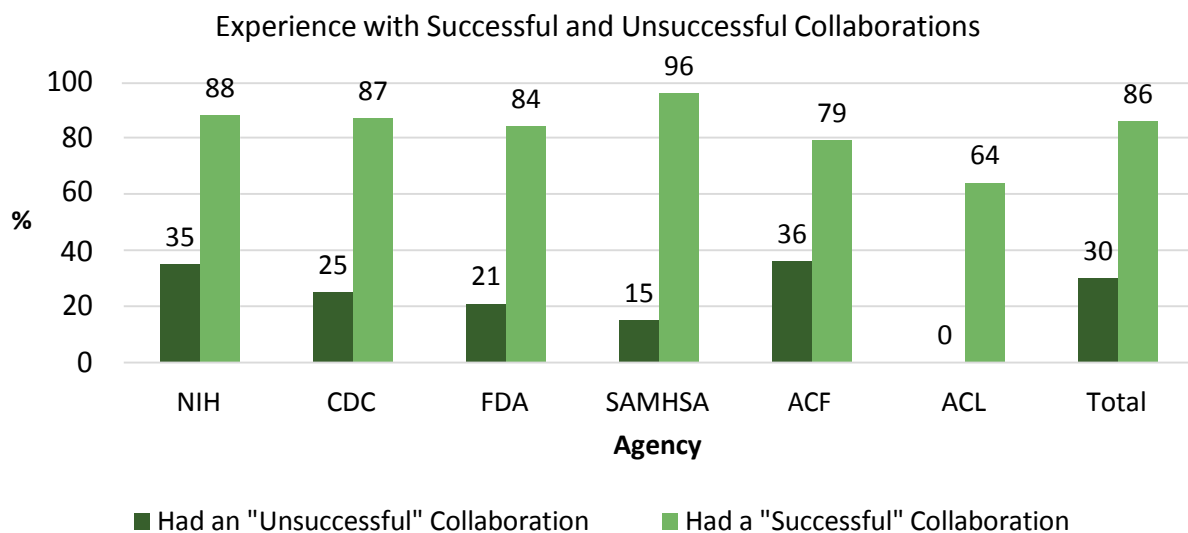


Figure 8. Successful and Unsuccessful NIH-HHS Collaboration Experiences

Table 3. Successful and Unsuccessful NIH-HHS Collaboration Experiences.

Survey respondents who have...	NIH (n=198) # (%)	CDC (n=110) # (%)	FDA (n=86) # (%)	SAMHSA (n=27) # (%)	ACF (n=14) # (%)	ACL (n=14) # (%)	Total (n=449) # (%)
Had an “Unsuccessful” Collaboration	70 (35)	27 (25)	27 (31)	4 (15)	5 (36)	0 (0)	133 (30)
Had a “Successful” Collaboration	174 (88)	96 (87)	72 (83)	26 (96)	11 (79)	9 (64)	388 (86)

Source: NIH-HHS Collaborations Survey

4.3.2 Satisfaction with NIH-HHS Collaborations

The vast majority of survey respondents reported feeling satisfied or very satisfied overall with NIH-HHS collaborations in which they have participated (Q18). These results are fairly consistent across the six agencies, though ACF respondents reported lower percentages (Figure 9 and Table 4). The result of the chi-square test of independence indicates that respondents' agency affiliation is not statistically significantly associated with their overall satisfaction with NIH-HHS collaborations ($p=0.150$).

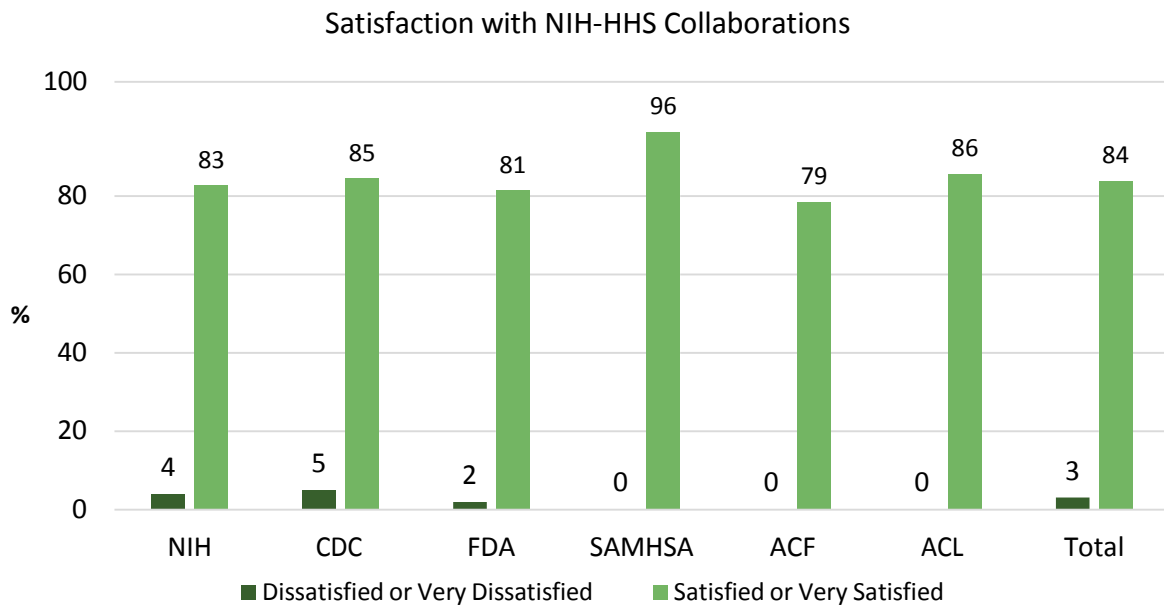


Figure 9. Overall Satisfaction with NIH-HHS Collaborations

Table 4. Overall Satisfaction with NIH-HHS Collaborations.

Level of Satisfaction	NIH (n=198) # (%)	CDC (n=110) # (%)	FDA (n=86) # (%)	SAMHSA (n=27) # (%)	ACF (n=14) # (%)	ACL (n=14) # (%)	Total (n=449) # (%)
Very satisfied	63 (32)	48 (44)	38 (44)	10 (37)	5 (36)	7 (50)	171 (38)
Satisfied	101 (51)	45 (41)	32 (37)	16 (59)	6 (43)	5 (36)	205 (46)
Neutral	26 (13)	10 (9)	14 (16)	0 (0)	3 (21)	2 (14)	55 (12)
Dissatisfied	7 (4)	5 (5)	0 (0)	0 (0)	0 (0)	0 (0)	12 (3)
Very dissatisfied	0 (0)	1 (1)	2 (2)	0 (0)	0 (0)	0 (0)	3 (1)
Missing	1 (0.5)	1 (1)	0 (0)	1 (4)	0 (0)	0 (0)	3 (1)

Source: NIH-HHS Collaborations Survey

4.3.3 Interest in future NIH-HHS Collaborations

Overall, the majority of survey respondents (74%) reported being Very Interested or Extremely Interested in participating in future NIH-HHS collaborations (Q19). Interest levels vary across the six agencies, though more than half of respondents for each of the six agencies reported high levels of interest (Figure 10 and Table 5). The result of the chi-square test of independence indicates that respondents' agency affiliation is statistically significantly associated with their interest in future NIH-HHS collaborations ($p=0.0021$).

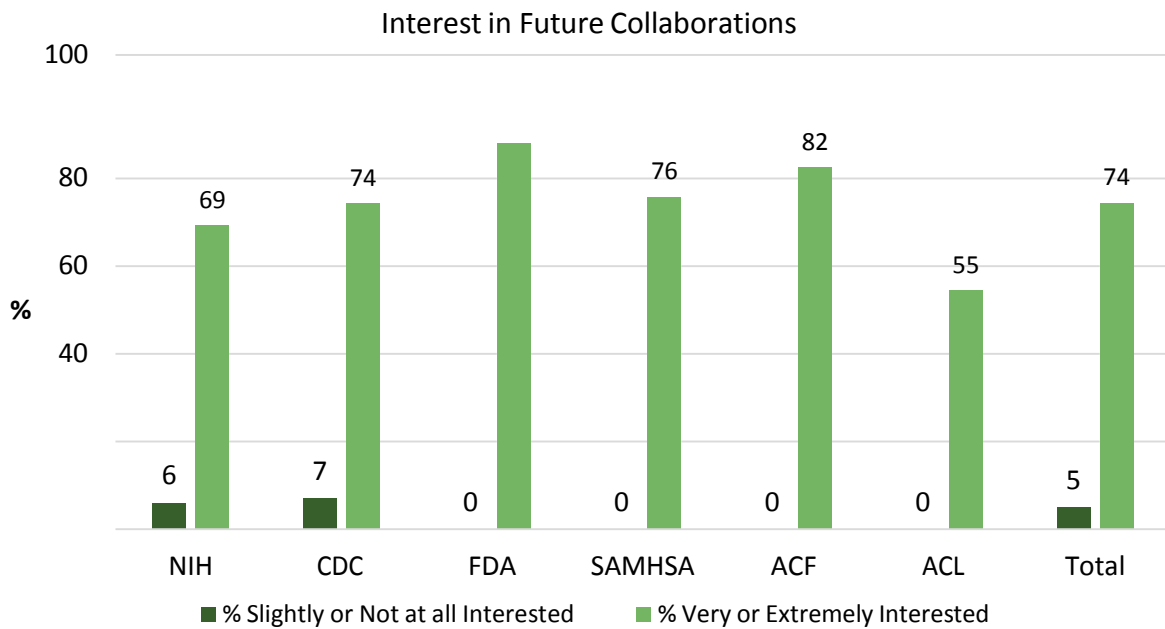


Figure 10. Interest in Participating in Future NIH-HHS Collaborations

Table 5. Interest in Participating in Future NIH-HHS Collaborations.

Level of Interest	NIH (n=198) # (%)	CDC (n=110) # (%)	FDA (n=86) # (%)	SAMHSA (n=27) # (%)	ACF (n=14) # (%)	ACL (n=14) # (%)	Total (n=449) # (%)
Extremely interested	65 (33)	53 (48)	45 (52)	14 (52)	6 (43)	7 (50)	190 (42)
Very interested	72 (36)	39 (36)	35 (41)	11 (41)	8 (57)	5 (36)	170 (38)
Moderately Interested	46 (23)	10 (9)	6 (7)	2 (7)	0 (0)	2 (14)	66 (15)
Slightly interested	8 (4)	8 (7)	0 (0)	0 (0)	0 (0)	0 (0)	16 (4)
Not at all interested	4 (2)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	4 (1)
Missing	3 (2)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	3 (1)

Source: NIH-HHS Collaborations Survey

4.3.4 Perceived Benefits and Challenges of Inter-Agency Collaboration

The survey measured respondents' (collaborators and non-collaborators) perceived benefits and challenges related to inter-agency collaboration in general (Q54). Respondents were asked to indicate their level of agreement on a five-point scale (1=strongly disagree, 2=disagree, 3=neutral, 4=agree, 5=strongly agree) with a series of 7 statements representing benefits (5 statements) or challenges (2 statements).

On the whole, survey respondents tended to agree with the statements about the benefits of inter-agency collaboration (Table 6a and 6b). The mean agreement ratings across the benefits statements ranges from 4.1 to 4.2. In addition, survey respondents also tended toward neutral or disagreement with the statements about the challenges of inter-agency collaboration.

Table 6a. Perceived Benefits of Inter-Agency Collaborations.

Benefits	n*	Agreement Rating** mean (sd)
1. Inter-agency collaborations can achieve better outcomes than single agencies working alone.	480	4.2 (0.79)
2. Inter-agency collaboration helps translate basic science research into beneficial health and human services and resources for the public.	478	4.2 (0.75)
3. HHS personnel benefit from participating in inter-agency collaborations.	478	4.2 (0.69)
4. Inter-agency collaborations enable HHS agencies to better fulfill their mission, strategic priorities, and goals and objectives.	476	4.1 (0.71)
5. In general, I find collaborations to be a good use of my time.	479	4.1 (0.71)

Table 6b. Perceived Challenges of Inter-Agency Collaborations.

Challenges	n*	Agreement Rating** mean (sd)
6. It can be harder to make decisions with so many stakeholders involved.	477	3.3 (1.00)
7. Inter-agency collaborations make things more complicated and can slow down the work.	476	2.8 (0.98)

Source: NIH-HHS Collaborations Survey

* All eligible respondents, including collaborators and non-collaborators (n= 485).

** 5-point level of agreement scale, where 1=strongly disagree, 2=disagree, 3=neutral, 4=agree, and 5=strongly agree.

4.3.5 Perceived Agency Support for Inter-agency Collaboration

The survey also measured respondents' (collaborators and non-collaborators) perceived support from their agency for inter-agency collaboration in general (Q55). Respondents were asked to indicate their level of agreement (on the same five-point agreement scale as Q54) with a series of 7 statements representing different types of agency support.

Survey respondents tended to agree with the set of statements about general agency support of inter-agency collaboration (Table 7). The agreement ratings range from 1 to 5 for nearly all of the statements, except for "My agency has a history of participating in inter-agency collaborations," which ranged from 2 to 5. Respondents tended to feel more neutral about the support from colleagues and coworkers. Respondents also tended to feel more neutral or disagree with statements that reflected agency material support (staff, funds, incentives/awards) for inter-agency collaboration.

Table 7. Perceived Agency Support for Inter-agency Collaboration.

Statement	n*	Agreement Rating* mean (sd)
1. My agency has a history of participating in inter-agency collaborations.	479	4.2 (0.74)
2. Agency leadership is supportive of inter-agency collaboration.	477	4.1 (0.79)
3. My supervisor values inter-agency collaborations.	477	4.0 (0.92)
4. Colleagues and co-workers in my agency are supportive of participation in inter-agency collaborations.	476	3.8 (0.81)
5. My agency provides staff to support the work of inter-agency collaborations.	473	3.4 (1.11)
6. My agency provides funding to support inter-agency collaborations.	474	3.1 (1.05)
7. My agency provides incentives and/or rewards to personnel for participating in inter-agency collaborations.	476	2.5 (0.92)

Source: NIH-HHS Collaborations Survey

* All eligible respondents, including collaborators and non-collaborators (n= 485).

** 5-point level of agreement scale, where 1=strongly disagree, 2=disagree, 3=neutral, 4=agree, and 5=strongly agree.

4.4 Demographics

Most of the respondents were women (56%), were 40 years of age or older (78%), and had a graduate or professional degree (93%). Overall, respondents tended to be older: 31% were age 50-59 years, and another 25% were 60 years or older.

4.5 Position and History in HHS

While the survey did not ask for specific job title, it did ask about government service (GS) level, and how long they had been working for their current agency (Q56, Q57, respectively).

4.5.1 Federal Government Service Level

Overall, survey respondents included HHS personnel at GS levels ranging from G9 to G15 (n=389, 80%), as well as individuals working in HHS as contractors or other temporary forms of employment (n=66, 14%). GS level data are not available for 6% of all survey respondents (n=30), either due to item non-response (n=11) or respondents indicating they declined to answer (n=19).

The majority of respondents were either GS14 (n=145, 30%) or GS15 (n=161, 33%). A small proportion were GS13 (n=67, 14%), and a tiny proportion were either GS9 or GS11 (n=5, 1%).

4.5.2 Time worked at current agency

Overall, survey respondents represent a broad time range of working at their current agency, spanning from 5 year or less to over 30 years (Table 8). However, the majority of respondents (77%) had been working for their current agency for 20 years or less, with 45% working for 10 years or less. Time at current agency data are not available for only 3% of survey respondents (n=15), either due to item non-response (n=4) or respondents indicating they declined to answer (n=11).

There is considerable variability in time worked at current agency when compared across agencies. Indeed, based on the test of independence, time worked was significantly associated with agency affiliation ($p < 0.001$).

Table 8. Time Worked at Current Agency (in years)

Time Worked	NIH # (%)	CDC # (%)	FDA # (%)	SAMHSA # (%)	ACF # (%)	ACL # (%)	Total # (%)
5 years or less	27 (14)	19 (15)	25 (27)	13 (39)	11 (65)	12 (54)	107 (22)
6-10 years	62 (31)	21 (17)	14 (15)	8 (24)	2 (12)	7 (32)	114 (23)
11-20 years	60 (30)	37 (30)	26 (29)	7 (21)	4 (23)	1 (4)	135 (28)
21-30 years	28 (14)	34 (27)	19 (21)	5 (15)	0 (0)	2 (9)	88 (18)
31 years or more	11 (6)	11 (9)	4 (4)	0 (0)	0 (0)	0 (0)	26 (5)
Decline to answer	3 (1)	1 (1)	0 (0)	0 (0)	0 (0)	0 (0)	4 (1)
Missing	7 (3)	1 (1)	3 (3)	0 (0)	0 (0)	0 (0)	11 (2)
Total	198 (100)	124 (100)	91 (100)	33 (100)	17 (100)	22 (100)	485 (100)

Source: NIH-HHS Collaborations Survey

5. Forming Collaborations

One of the key characteristics of inter-agency collaborations is how they are formed or initiated. Because this early aspect of the collaboration process shapes who is involved, how they are organized, and the focus or purpose of the collaboration, it can have an influence how collaborations are able to operate over their life-cycle, and ultimately their chances for success. Both the survey and the interviews provided data about this important characteristic of inter-agency collaborations.

Key Findings

- Respondents cited several reasons and benefits for inter-agency collaboration, including the need for additional expertise, sharing information and resources, and a greater ability to address important health issues.
- Respondents reported that the most common method for initiating new inter-agency collaborations is when agency staff reach out to members of their professional networks. Overall, 69% of respondents rated the initiation method as quite important or extremely important for determining the success of that collaboration.
- Respondents most commonly became involved in NIH-HHS collaborations by either being assigned by their manager (36%), by being one of the initiators/organizers for the collaboration (32%), or by being personally invited to participate by someone in their professional network (22%).
- The most frequently selected motivations for participating NIH-HHS collaborations included the relevancy of the topic to professional interests (84%), the perceived importance of the issues being addressed by the collaboration (75%), and wanting to work with a specific agency or individual from another agency (37%).
- Respondents considered their professional networks and the published scientific or professional literatures to be the most useful sources for identifying potential collaborators.
- The top barriers to initiating new collaborations included:
 - Lack of funding and resources;
 - Burden of the time requirements;
 - Not knowing who to contact or how to initiate an inter-agency collaboration;
 - Difficulties obtaining leadership support;
 - Differences in agency philosophies, cultures, and missions; and
 - Bureaucratic or administrative hurdles encountered when working across agency lines.

5.1 Reasons for Inter-agency Collaborations

When the interviewees were asked about why they collaborate in general, they discussed a variety of factors including the need for additional expertise, leveraging partner resources, and the benefits of approaching problems from a multidisciplinary perspective. Below are descriptions of the most frequently cited reasons for inter-agency collaboration. Table 9 provides a full list of the reasons.

- The majority of interviewees (67%) indicated that they collaborate in order to **utilize the expertise of others**. In the words of one respondent, *“I honestly believe that the more experts and more agencies that we have involved and have common interests that we just build stronger programs and stronger research.”*
- Almost 60% of interviewees indicated that they not only collaborate to gain expertise but also because of **shared interests**. One respondent working in domestic violence emphasized that *“Most of our collaborations are because we believe domestic violence is a problem that can’t be addressed in just*

one program. Victims of domestic violence are participating in every health and human service agency and program out there, and in every community. It's a very pervasive problem."

- Related to the notion of shared interests, over 30% of interviewees expressed that they collaborate in order to **share information** such as when a "need has arisen in my program that I either need additional information to help them (staff) better do their job, or I need to provide information."
- Another common reason for collaborating as discussed by about 20% of interviewees was that collaborating can often help agencies **gain access to additional resources** for which they might not otherwise have access to. "We feel that we could quote, unquote "get more bang for the buck" if we collaborate. It could also be for things in which we have a question or interest, but we don't have the resources to do it, and another agency actually has a solution to our problem or can help us get the answers."
- Additional reasons for collaborating that interviewees discussed were related to being directed to collaborate by a manager or a job requirement, to network with other agencies, or to avoid duplication in their work.

Table 9. Reasons for Inter-agency Collaboration.

Why do agencies collaborate?	Number of Respondents (n 45)
Utilize expertise from other agencies	30 (67%)
Due to commonality (common goals/interests)	26 (58%)
To share information	14 (31%)
To leverage resources	9 (20%)
Directed by leadership/management	9 (20%)
Job requirement	6 (13%)
To network with other agencies	4 (8%)
Other	3 (6%)
Do not collaborate	2 (4%)

Source: NIH-HHS Collaborations Interviews

5.2 Collaboration Initiation, Involvement, and Motivation

Interviewees also discussed how inter-agency collaborations are initiated. Close to 67% of interviewees reported that collaborations are generally initiated through interested staff members reaching out to colleagues, other agencies, or management about potential collaboration opportunities. In the words of one participant, “*we have reached out to other agencies, and then we also have some in which they’ve reached out to ask us to collaborate with them on issues.*” In addition to having interested staff reach out about collaborating, about a third of interviewees indicated that they have also been asked to join a collaboration by their manager. About 20% of interviewees said that collaborations often form “*organically*” when meeting colleagues at conferences or other similar events.

Survey respondents who reported having had a *successful* NIH-HHS Collaboration at some point in time (n=388) were asked to indicate how their “most successful” NIH-HHS collaboration was initiated by selecting one option from a list of possible methods (Q26). Consistent with the interviewee responses, the most commonly selected method was initiation by agency staff through their professional networks, followed distantly by “*Directives from department/agency leadership*” (Figure 11). In terms of determining the success of that collaboration, the survey also asked respondents to rate the importance⁶ of the method of initiation for determining the success of that collaboration (Q27). Overall, 69% of respondents rated the initiation method as quite important or extremely important, while 7% rated it as slightly important or not at all important.

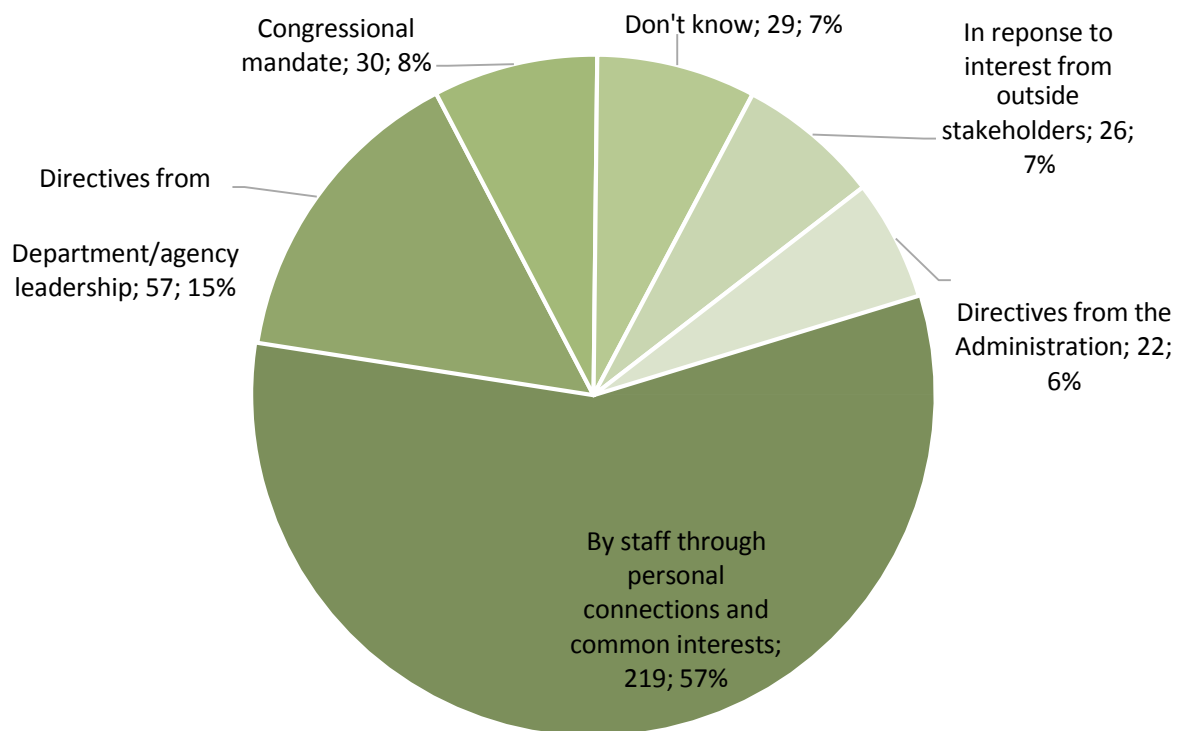


Figure 11. How was the most successful collaboration initiated?

⁶ 5-point rating scale for importance in determining collaboration success: 1=Not at all important, 2=Slightly important, 3=Moderately important; 4=Quite important, and 5=Extremely important.

5.3 Incentives and Motivations for Participation

In addition to describing how their most successful NIH-HHS collaboration was initiated, survey respondents also described how they personally become involved in that collaboration (Q28, select only one) and their incentive or motivation for participating (Q29, select all that apply).

The two most frequently selected ways that survey respondents became involved in their most successful collaboration were either being assigned by their manager, or by being one of the initiators/organizers for the collaboration (Figure 12). Another fairly common method involved being personally invited to participate by someone in their professional network. Far less common methods included responding to requests for volunteers from either agency leadership or by peers.

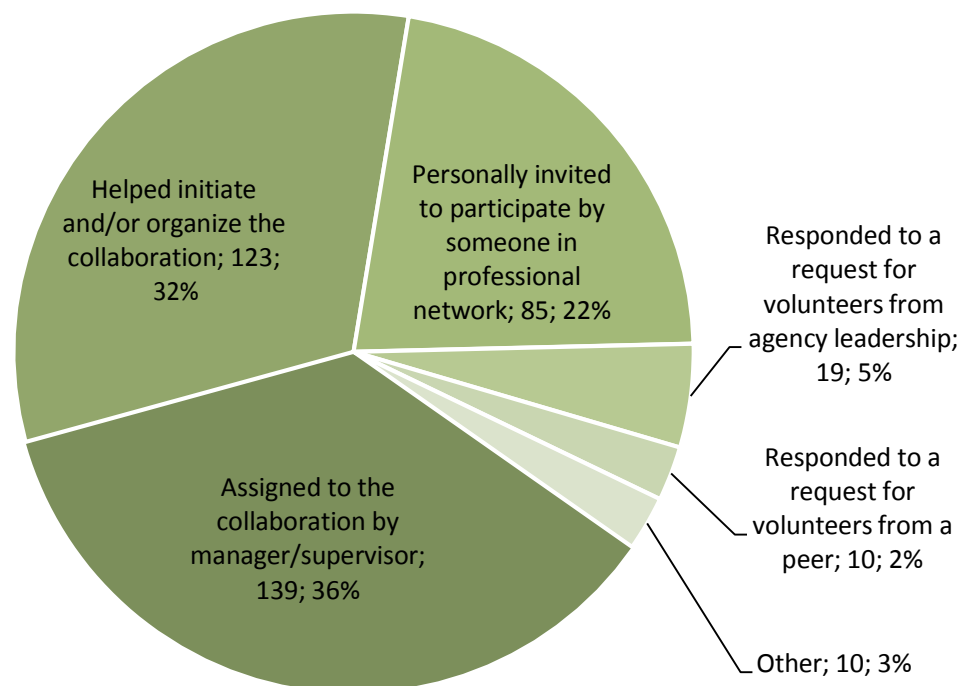


Figure 12. How Survey Respondents Joined their Most Successful NIH-HHS Collaboration.

The two most frequently selected incentives or motivations for participating in their most successful collaboration were relevancy of the topic to professional interests, and the perceived importance of the issues being addressed by the collaboration (Figure 13). Another fairly commonly selected motivation was wanting to work with a specific agency or individual from another agency (37%). However, wanting to collaborate specifically with NIH or an NIH staff person was less frequently selected (24%). Other motivations more explicitly related to job performance or career advancement were also selected by a smaller percentage of respondents.

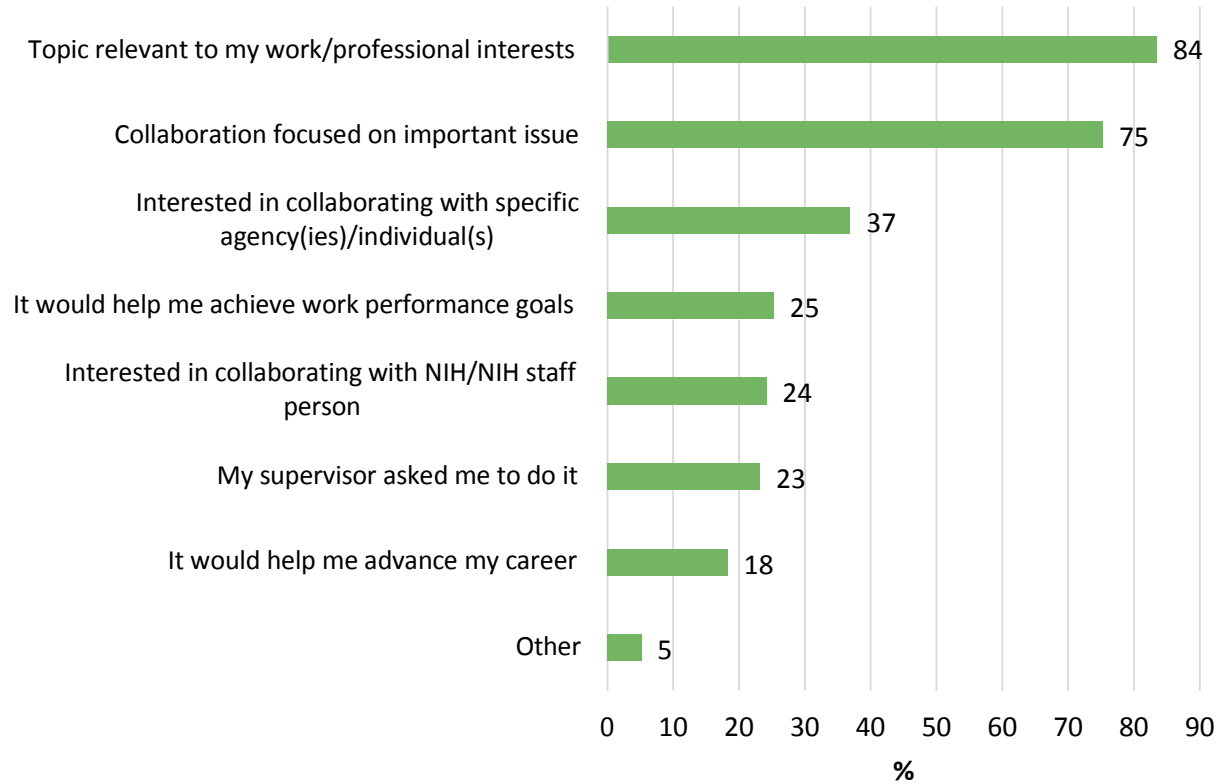


Figure 13. Incentives or Motivations for Participating in Most Successful NIH-HHS Collaboration.⁷

5.4 Identifying Collaborators

The survey asked collaborators to rate the usefulness of different sources of information for identifying potential collaborators using a five-point scale ranging from 1=Not at all useful, 2=Slightly useful, 3=Moderately useful, 4=Very useful, and 5=Extremely useful (Q14).

The source with the highest usefulness rating is “*Professional contacts and network*,” followed by “*Other*” and “*Published scientific or professional literature*” (Table 10). The sources with the lowest ratings included Internet searches and the HHS Global Directory. Respondents also specified and rated the “*Other*” sources or venues for identifying potential collaborators, including:

- Professional and scientific conferences
- Other collaborative activities and topical interest groups
- In-person meetings in general
- Social networking technologies: LinkedIn, Yammer, email listservs
- References from colleagues and managers
- NIH’s grants database

⁷ The percentages in Figure 13 add up to more than 100% because participants could select all that apply.

Lastly, one survey respondent commented that it “would be nice to have a database of NIH-HHS collaborations and their contacts.”

Table 10. Usefulness Ratings of Sources of Information for Identifying Potential Collaborators

Source of Information	n*	Mean Usefulness Rating** mean (sd)	Don't Use # (%)
Professional contacts and network	430	4.6 (0.72)	13 (3)
Other	27	3.9 (1.17)	97 (22)
Published scientific or professional literature	396	3.6 (1.07)	40 (9)
Internet Searches	361	2.8 (1.17)	75 (17)
HHS Global Directory	348	2.5 (1.17)	83 (19)

Source: NIH-HHS Collaborations Survey

* Collaborator respondents only (n= 449).

* 5-point usefulness scale ranging from 1=Not at all useful, 2=Slightly useful, 3=Moderately useful, 4=Very useful, and 5=Extremely useful (Q14)

5.5 Barriers to Initiating New Collaborations

The survey asked both collaborator (Q17, n=292) and non-collaborator respondents (Q48, n=16) to identify and describe the barriers to initiating new inter-agency collaborations. A total of 308 respondents (64%) provided answers to these questions. Responses with similar topics were grouped into categories and labeled accordingly (Figure 14). The top barriers to initiating new collaborations included lack of “*Funding and resources*,” the burden of “*Time requirements*,” not “*Knowing who to contact/how to initiate*,” difficulties “*Obtaining leadership support*,” “*Partner/agency differences*” (e.g., differences in agency philosophies, cultures, and missions), and “*Bureaucratic/administrative hurdles*” of working across agency lines.



Figure 14. Barriers to Initiating New Inter-Agency Collaborations

6. Characteristics of Successful Collaborations

One of the objectives for this study was to describe characteristics of successful collaborations. To address this objective, we used data from the survey and interviews to examine how HHS personnel define collaboration “success” and what factors facilitate that success.

Key Findings

- Survey respondents reported that the most important outcomes for determining if a collaboration is generally successful are:
 - When the intended purpose and products are achieved;
 - Information sharing and creating new lines of communication between agencies, including new inter-agency collaborations; and
 - When long-term public health impacts are realized;
 - The implementation of a new or revised program, policy, or regulation.
- However, the latter two outcomes were less frequently selected by respondents as applicable to their most successful collaborations, perhaps because of the longer time horizons that are needed to see those types of changes.
- The factors considered by respondents to be the most important for facilitating collaboration success include:
 - Having a clear purpose and goals;
 - Good working relationships between participants;
 - Effective leadership;
 - The right skills and expertise among participants, plus authority to make decisions; and
 - Support for the collaborative endeavor, both in terms of material support and the perceived blessings from agency leadership.
- The factors considered by respondents to be the least important for facilitating collaboration success include:
 - Clear mechanisms for tracking and monitoring progress;
 - Formal agreements that spell out relationships between partner organizations.

6.1 Defining “Success” for Inter-Agency Collaborations

As part of addressing the objective to identify and describe the characteristics of successful collaborations, we sought to understand how HHS personnel define “success” for inter-agency collaborations in general, and for their “most successful” NIH-HHS collaboration. In other words, what outcomes or results need to be achieved for a collaboration to be considered successful? First, the survey asked collaborators to rate a given list of collaboration outcomes in terms of each one’s importance for determining if an inter-agency collaboration is successful (Q21). Second, for collaborators who reported having had a successful NIH-HHS collaboration (n=388), the survey asked them to indicate how their “most successful” NIH-HHS collaboration had been successful by selecting the applicable outcomes from the same list (Q24). For both questions, respondents were allowed to also specify other outcomes that they felt were not included in the provided list (see Table 19 in Appendix H for those responses).

On average, all of the collaboration outcomes listed in the survey were rated between moderately important and quite important for determining success (Table 11). The importance ratings range from 1 to 5 for nearly all of the outcomes, except for “The collaboration’s intended products, outputs, or resources were created,” which ranged from 2 to 5. The outcomes with the highest ratings are those related to achievement of the intended purpose and goals of the collaboration, as well as long-term public health impacts. The outcomes that fell in the middle of the distribution are related to the general sharing of information and creating new lines of communication between agencies. Outcomes at the lower end of the distribution include the creation or expansion of individual networks and specific collaborative activities.

Table 11. Outcomes Important for Determining Collaboration Success.

Collaboration Outcome	Importance Rating for Determining Success*mean (sd)	% Rated Quite or Extremely Important*	% Selected for Most Successful Collaboration**
The collaboration’s main purpose or goal was achieved.	4.5 (0.71)	89	79
The collaboration’s intended products, outputs, or resources were created.	4.4 (0.73)	87	70
Long-term impacts on health practice were achieved.	4.1 (1.02)	73	28
Information or expertise from my agency was used to inform the work/meet the needs of other HHS agencies.	4.1 (0.86)	78	67
Participating agencies shared information that was not previously shared.	4.0 (0.89)	73	66
Participating agencies established new lines of communication for future collaborations.	3.8 (0.89)	64	68
A new or revised program, policy, or regulation is implemented.	3.7 (1.05)	57	28
New inter-agency collaborations were initiated.	3.5 (0.95)	52	47
Participants expanded their professional network.	3.2 (1.05)	39	61
New “spin-off activities” were initiated (not inter-agency collaborations).	3.1 (0.99)	31.7	33.5

Source: NIH-HHS Collaborations Survey

* Collaborator respondents only (n= 449); 5-point rating scale for importance in determining if an inter-agency collaboration is successful (Q21): 1=Not at all important, 2=Slightly important, 3=Moderately important; 4=Quite important, and 5=Extremely important.

** Collaborators who reported having had a successful collaboration (n=388) were asked to select the outcomes that applied to their “most successful” collaboration (Q24).

For the most part, the outcomes most frequently selected as applicable to the respondents' most successful collaborations are also the ones rated as highly important for determining success in inter-agency collaborations in general. However, two of the outcomes were less frequently selected as applicable to the most successful collaborations in contrast to their importance rating:

- *“Long-term impacts on health practice were achieved”*: 73% of respondents rated this outcome as quite or extremely important to defining success generally and only 28% reported experiencing this outcome in their most successful collaboration
- *“A new or revised program, policy, or regulation is implemented.”*: 57% of respondents rated this outcome as quite or extremely important to defining success generally and only 28% reported experiencing this outcome in their most successful collaboration

This suggests that while some of these outcomes may be considered ideal indicators of success, they may not always be achieved, and success can still be achieved in their absence. These findings may also be explained by the fact that public health outcomes are difficult to measure and changes in public health outcomes generally have long time horizons. Furthermore, collaborations with the primary aim of developing health/human services programs, practice recommendations/guidelines, and policy or regulatory guidance – e.g., the ones that are further along the research-to-practice continuum – are less common among NIH-HHS collaborations (see Section 3.3, Products and Outputs of Collaborations).

Two of the outcomes are particularly relevant to the study objective of determining if NIH-HHS collaborations successfully promote the use of NIH research in the development of public health programs and activities within HHS, and deserve closer examination. First, the outcome *“Information or expertise from my agency was used to inform the work/meet the needs of other HHS agencies”* is among the highest rated in terms of importance (mean=4.1), and nearly 80% of respondents rated it as either quite important or extremely important. The average importance ratings vary little between agencies – NIH avg=4.0 (sd=0.90), CDC avg=4.0 (sd=0.87), FDA avg=4.1 (sd=0.84), ACL avg=4.3 (sd=0.61), SAMHSA avg=4.4 (sd=0.64), and ACF avg=4.5 (sd=0.66) – and all are within the “quite important” range. In addition, nearly 70% of all respondents selected it as applicable to their most successful collaboration, with some variation among agencies: ACF=63.6%, NIH=65.5%, ACL=66.7%, CDC=66.7%, FDA=70.8%, SAMHSA=73.1%. These results suggest that respondents place considerable value on their contributions to other agencies in the context of inter-agency collaborations.

Second, the outcome *“A new or revised program, policy, or regulation is implemented”* is among the lowest rated in terms of importance of determining success (mean=3.7), and a little over half of respondents (57%) rated it as either quite important or extremely important. The average importance ratings vary little between agencies – NIH avg=3.6 (sd=1.0), CDC avg=3.6 (sd=1.1), FDA avg=3.7 (sd=0.97), SAMHSA avg=3.7 (sd=1.0), ACL avg=3.9 (sd=1.2), and ACF avg=3.9 (sd=1.2) – but all are within the “moderately important” range. In addition, nearly 28% of all respondents selected it as applicable to their most successful collaboration, but there is substantial variation among agencies: ACF=9.1%, FDA=26.4%, NIH=27.6%, CDC=28.1%, SAMHSA=38.5%, and ACL=44.4%.

6.2 Facilitating Factors for Successful Collaboration

The survey and interviews also examined what HHS personnel see as the specific factors that facilitate collaboration success, both for inter-agency collaboration in general as well as for respondents' most successful NIH-HHS collaborations.

Based on their overall experiences with NIH-HHS collaborations, the collaborator respondents (n=449) rated a set of given factors in terms of their importance for facilitating the success of an interagency collaboration (Q15). On average, all of the facilitating factors were rated between moderately important and quite important for determining success (Table 12). The factors with the highest ratings are those related to clear purpose and goals; good working relationships between participants; good leadership; the

right skills and expertise among participants, plus authority to make decisions; and support for the collaborative endeavor, both in terms of material support and the perceived blessings from agency leadership. Five of the factors were rated as “not at all important,” but those that received this lowest rating did so from a very small percentage of the respondents.

Table 12. Facilitating Factors for Successful Collaboration.

Facilitating Factor	n*	Importance Rating** mean (sd)	% Rated Quite or Extremely Important**	Most Successful Collaboration*** (n 388)	
				% Selected as the Most Important	% Selected in the Top Three
Clearly defined purpose and goals	445	4.7 (0.59)	95	37	62
Participants who work well together and share information freely	443	4.7 (0.55)	95	24	58
Leaders who have the appropriate skills and expertise to manage the group	442	4.5 (0.63)	92	8	34
Commitment of agency leadership	440	4.5 (0.76)	88	14	42
Participants have the appropriate level of authority to make decisions and the relevant skills and expertise	442	4.4 (0.70)	87	4	33
Resources are provided by one or more of the participating agencies, such as funding or administrative and logistical support	436	4.2 (0.93)	74	8	30
Formal, structured, and regularly occurring meetings with a pre-set schedule, an agenda, and a central convener	443	3.8 (0.97)	66	3	20
Clear mechanisms for tracking and monitoring progress	438	3.7 (0.98)	59	0	7
Formal agreements that spell out relationships between partner organizations	430	3.3 (1.14)	40	2	10

Source: NIH-HHS Collaborations Survey

* Collaborator respondents only (n= 449).

** 5-point rating scale for importance in determining if an inter-agency collaboration is successful (Q15): 1=Not at all important, 2=Slightly important, 3=Moderately important; 4=Quite important, and 5=Extremely important.

***Respondents who reported on their “most successful” NIH-HHS collaboration (n=388) were asked to select the three most important factors that enabled the success of that particular collaboration, ordered according to the “Most important,” the “2nd most important,” and the “3rd most important” (Q31).

Using the same list of facilitating factors, respondents who reported on their “most successful” NIH-HHS collaboration (n=388) were also asked to select the three most important factors that enabled the success of that particular collaboration, ordered according to the “Most important,” the “2nd most important,” and the “3rd most important” (Q31). Table 12 shows results for all of the factors in terms of those selected as the “Most important” and those that were included among the top three. These results are largely consistent with the ratings of factors for inter-agency collaborations in general – the same factors with the highest importance ratings were also the ones selected as the most important or were included among the top three.

As part of the interviews, respondents were asked to think about their most successful inter-agency collaborations (including those that did or did not include NIH) and discuss the factors they believed contributed to the successes of those collaborations. Below are descriptions of the most commonly discussed success factor themes that emerged from the interviews. All of these themes echo the success factors assessed in the survey. Table 13 provides the full list of success factor themes identified in the interview data.

- One of the most common themes in the interviews was the importance of clear and shared purpose:
 - A little over half of respondents (50%) explained that an important success factor was having a **common purpose and mission**. Participants felt that having this commonality helped keep collaborators focused on the same goal. When recounting a successful collaboration, one respondent said, *“I think partners came together willing to share resources and decision making. They were focused on achieving an important goal, rather than focused on ownership or control.”*
 - In addition to having a common purpose, almost 40% of respondents indicated that a **clear purpose and clear goals** can help improve the chances that a collaboration will be successful. A clear and tangible purpose can help *“foster buy-in and commitment”* from the collaboration’s members.
- Other success factor themes from the interviews centered on who was participating in the collaboration and the nature of the relationships among those participants.
 - More than half of respondents indicated that a successful collaboration hinges on **interested and engaged participants**. If participants are not engaged and active in the collaboration, then many respondents felt that the collaboration would not succeed. As one participant said, *“If it’s one of these meetings where everybody gets together and does a Kumbaya and let’s all do this and everybody goes home, I don’t know whether they’ve gained anything out of the process.”*
 - Over 40% of respondents felt that the success of a collaboration hinges on having **good rapport** with colleagues that included a **trusting and open relationship**. In the words of one respondent, *“There are lots of confidential conversations and you have to be able to be very frank and open, and to say, okay, that is going to be difficult for my agency. I don’t know how to describe that besides simplistically saying that there has got to be a high level of trust and intimacy and confidentiality in the core steering committee or leadership group. And so that relationship or those relationships evolve over time.”*
 - In discussing successful elements of collaborations, over 35% of respondents felt that having **“the right people at the table”** was also very important. To illustrate this, one respondent said, *“I think that one key factor is finding subject matter experts who are also people willing to listen and learn. You don’t need a bunch of grandstanders or people with egos that will not accept what somebody else has to say for them to collaborate.”*
- Other themes from the interviews were related to the sense of support for a given collaborative endeavor:
 - Having the **support of leadership** was also mentioned by about 40% of respondents. Those respondents who mentioned this felt that having the support of management and leadership was crucial in a successful collaboration. Respondents felt that without leadership support, it would be

difficult to successfully carry out the collaboration or acquire the resources needed for the collaboration.

- About 36% of respondents discussed the importance of having dedicated **time and resources** to devote to a collaboration, including dedicated time for staff to work on a collaboration. In the words of one respondent, *“People have to carve out time to engage and participate in meetings. I think that supervisors, managers, and leaders have to recognize that there is a certain amount of time that needs to be dedicated to it. It can’t be sort of an add-on on top of people’s already busy schedules. If it’s not a priority, it’s going to be the last thing that people focus on.”*
- Other factors frequently mentioned by respondents were related to the collaboration process, such as **good communications** and a **good leader/manager**. Almost 25% of respondents mentioned good communications as being an important element of a successful collaboration and 20% mentioned the importance of a good leader to manage the collaboration.

Table 13. Collaboration Success Factor Themes from Interviews

Factors That Make a Collaboration Successful	#*	Percent (N=45)
Interested and engaged participants	24	53%
Common purpose/mission	24	53%
Support of leadership	19	42%
Good rapport	19	42%
Clear purpose and goals	17	38%
Dedicated time or resources	16	36%
The right people at the table	16	36%
Good communication	11	24%
Good leader/manager	10	22%
Mutual benefits	8	18%
Trust and Respect	7	16%
Agency-staff understand each other	6	13%
Other	6	13%
Clear participant roles	5	11%
A designated facilitator	5	11%
Purpose of the collaboration is to solve an important problem	4	9%
Authority to act	4	9%
Written agreements	4	8%
NIH involvement	2	4%
Accomplishments	2	4%
Sound Science	2	4%

Source: NIH-HHS Collaborations Interviews

* Count of interviewees who discussed the theme.

7. Barriers to Successful Collaboration

One of the objectives for this study was to identify the barriers to successful collaborations and the use of NIH research in public health programs. To address this objective, we used data from the survey and interviews to understand what HHS personnel see as the most important challenges and inhibiting factors for successful inter-agency collaborations.

Key Findings

- The barriers to successful collaborations most frequently identified by respondents as the single most important include:
 - Time commitment required to participate;
 - Lack of commitment or support from agency leadership;
 - Lack of clarity about the purpose of the collaboration;
 - Lack of funding or resources;
- Other barriers frequently identified as one of the top 3 most important barriers include:
 - Lack of authority among participants to make decisions;
 - Lack of clarity about participant roles and responsibilities;
 - Lack of commitment among participants;
 - Ineffective leadership
- All of the most important barriers to successful collaboration are consistent with the top barriers to initiating collaborations and the highly-rated success factors.

Based on their overall experiences with NIH-HHS collaborations, the collaborator respondents (n=449) selected the three most important factors that inhibit or cause impediments to the success of NIH-HHS collaborations, ordered according to the “Most important,” the “2nd most important,” and the “3rd most important” (Q16). Figure 15 shows results for all of the factors in terms of those selected as the “Most important” and those that were included among the top three. While all of the listed inhibiting factors made it into the top three, some were more likely to be selected as the “Most important” and others were more frequently included in the top three. The four factors most frequently selected as the “Most important” are “*Time commitment required to participate*,” “*Lack of commitment or support from agency leadership*,” “*Lack of clarity about the purpose of the collaboration*,” and “*Lack of funding or resources*.” Those same four factors were also frequently included among the top three, plus four more: “*Lack of authority among participants to make decisions*,” “*Lack of clarity about participant roles and responsibilities*,” “*Lack of commitment among participants*,” and “*Ineffective leadership*.”

The barriers that were more often selected as either the “Most important” or included among the top three are largely consistent with the highly-rated success factors discussed in Section 5, including those related to: clear purpose and goals; good working relationships between participants; the right skills and expertise among participants (leaders and non-leaders); the authority to make decisions; and leadership and material support for the collaborative endeavor. While not explicitly addressed as a success factor, “*Time commitment required to participate*” emerged as one of the main barriers to successful collaboration in general and for initiating new collaborations.

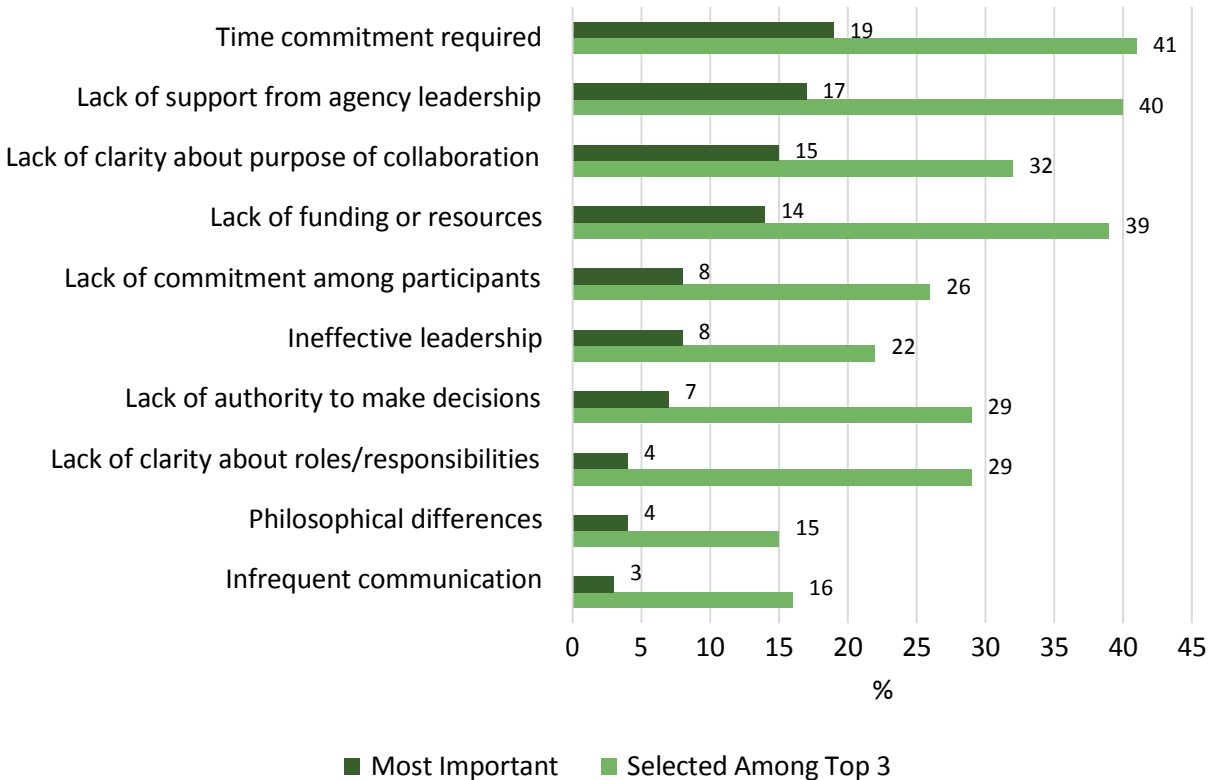


Figure 15. Top Three Barriers to Collaboration Success

As part of the interviews, respondents were asked to think about a collaboration that was particularly challenging, and then discuss the specific factors made it challenging or inhibited success. Below are descriptions of the most commonly discussed inhibiting factor themes that emerged from the interviews. These themes echo the barriers assessed in the survey. Table 14 provides the full list of barrier themes identified in the interview data.

- The most frequently mentioned challenge that respondents discussed was a **lack of dedicated resources**. Nearly 40% of respondents felt that a lack of resources devoted to the collaboration, including insufficient staff time, was a big factor contributing to an unsuccessful collaboration. As one respondent described, *“There have been times on some of my less successful collaborations where the staff themselves are very interested and see the value in whatever the collaboration was working on, but they either weren’t able to carve out time; weren’t able to get resources, or they were just simply told that yes, this is important, but there are competing priorities that have precedence.”*
- The other most frequently attributed factor in an unsuccessful collaborations was a **lack of common goals**. Whereas common goals have the ability to unite collaborators, a lack of common goals can often derail a collaboration if members are not *“in agreement on what we’re supposed to be working on together.”* Nearly 40% of respondents felt that a lack of commonality, such as common goals and interests, could derail a collaboration. Related to this notion, a **lack of clear goals** was also attributed to unsuccessful collaborations. For instance, when *“partners don’t understand their role and the purpose for their participation”* it makes it more challenging for a collaboration to be successful. Almost 30% of respondents felt that collaborations fail due to unclear goals.
- A challenge mentioned by nearly 33% of respondents was **disinterested or non-committed participants**. Many respondents felt that members who were not engaged or who were *“put on the*

project because they have time, and not because they bring appropriate expertise or interest” can get in the way of a project’s success.

- Nearly 30% of respondents also mentioned a **lack of leadership or management support** as a hurdle to a successful collaboration. Respondents who expressed this notion felt that if leaders are not supportive of a collaboration, it would not be given the necessary resources including dedicated staff time to work on the collaboration. In the words of one respondent, *“One of the most important parts is buy-in from the leadership. Because if it doesn’t become part of what they’re accountable for in their daily work, then it’s very difficult to keep folks engaged.”*
- Another barrier to success as mentioned by nearly 30% of the sample was the **personal characteristics of fellow collaborators**. Respondents felt that if members of a collaboration do not have a *“collaborative spirit”*, and ego’s get in the way, that could derail a collaboration. As one respondent explained, *“I think the times that I’ve seen collaboration fail, many times it’s either an individual’s ego getting in the way, or it’s clear that their agency leadership has not defined what true collaboration means in either word or in deed.”*

Table 14. Collaboration Barrier Themes from Interviews

Inhibiting Factors that Make Collaboration Challenging or Unsuccessful	#*	Percent (N=45)
Lack of dedicated resources	16	36%
Lack of common goals	16	36%
Disinterested/ non-committed participants	15	33%
Lack of leadership/agency support	13	29%
Personal characteristics of collaborators	13	29%
Lack of commonality/understanding each other/bringing different groups together	12	27%
Unclear goals	12	27%
Not well organized	9	20%
Ineffective leader	6	13%
Unrealistic expectations	5	11%
Inability or unwilling to act	4	9%
No trust or respect	4	9%
Poor communications	4	9%
Not having anything in writing	4	9%
Administrative and/or government hurdles	4	9%
Other	4	9%
Lack of relevant staff qualifications	3	7%
Not feeling valued	3	7%
Not in best interests to collaborate	3	6%

Source: NIH-HHS Collaborations Interviews

* Count of interviewees who discussed the theme.

8. Collaborating with NIH and the Use of NIH Research

We used data from the survey and interviews to understand HHS employees' perspectives and opinions on collaborating with NIH and NIH personnel, and to understand how NIH contributes to successful collaborations. These results help us address two of the study objectives: (1) determining if NIH-HHS collaborations successfully promote the use of NIH research in the development of public health programs and activities within HHS; and (2) identifying the barriers to successful collaborations and the use of NIH research in public health programs.

Key Findings

- The most frequently mentioned benefits to collaborating with NIH include:
 - Access to scientific knowledge and expertise;
 - Additional funding and other resources shared by NIH; and
 - A commitment to inter-agency collaboration among some NIH personnel.

- The most frequently mentioned challenges to collaborating with NIH include:
 - “Non-collaborative” attitudes among some NIH staff;
 - Bureaucratic and administrative hurdles that make it difficult to initiate or carry out collaborative work;
 - Poor communication and outreach about NIH-sponsored research; and
 - A lack of focus or emphasis given to translating basic research results into practical applications that could be useful to the programs in other HHS agencies.

- Collaborators participating in the interviews described things that NIH does well and does poorly in the context of inter-agency collaborations:
 - The most commonly cited thing (nearly 60%) that NIH does well is providing scientific and subject matter knowledge and expertise. Smaller percentages described some NIH staff as having a “collaborative spirit” (25%), or as being able to contribute resources to collaborations (10%).
 - Nearly 30% of respondents felt that NIH could do better in **translating basic science** in a “digestible manner,” while almost 25% of respondents indicated that NIH has **poor communications and outreach** about NIH-sponsored research that may be applicable to the other HHS agencies.

- The majority of respondents characterized NIH as a main or co-initiator of inter-agency collaborations (72%), and rated the role of NIH or NIH personnel in initiating their most successful collaborations as quite or extremely important (69%).
- The majority of respondents characterized the role of NIH in carrying out the general work of their most successful collaboration as: providing scientific and subject matter expertise (71%), and playing a leadership role (66%). In addition, the vast majority of respondents (88%) rated the role of NIH or NIH personnel in carrying out the general work of their most successful collaboration as quite or extremely important.

8.1 Perspectives on Collaborating with NIH

Interview participants, both collaborators and non-collaborators from the five targeted HHS agencies (n=45), were asked to share their views and perspectives on collaborating with NIH. This included the

benefits and challenges of collaborating with NIH, and the things that NIH does well and not so well in the context of inter-agency collaborations.

8.1.1 Benefits and Challenges to Collaborating with NIH

Interview participants discussed a variety of benefits and challenges to collaborating with NIH. Those that were discussed most frequently among the interviews are summarized below. The full list of benefits and challenges is provided in Table 15.a and 15.b.

Benefits to Collaborating with NIH

- The most frequently mentioned benefit to collaborating with NIH was **access to scientific knowledge, expertise, and NIH's reputation**. The majority of respondents, or 80% mentioned this as a benefit to collaborating with NIH. As one respondent said, *"I think that one of the main benefits is the kind of scientific cachet, especially when it's a scientific issue that should be well informed by science. Having that voice there I think is very important."*
- Close to 30% of respondents felt that NIH could also provide **additional resources** either through funding or providing an *"expanded pool of researchers"* for a project.
- Other cited benefits include the ability to find NIH staff with **shared interests** across a broad range of health topics, and a high degree of **intellectual curiosity and freedom** among NIH staff.

Challenges to collaborating with NIH

- One of the challenges or frustrations to collaborating with NIH expressed by over 40% of respondents was the perception of a **non-collaborative attitude** among NIH staff. One participant expressing frustration with a recent NIH project said, *"I get the sense that leadership at the particular branch within this particular NIH institute just did not truly understand and appreciate what collaboration means and that it is sort of where we're all equal partners and all have contributions, not that NIH is the answer and all others must follow. I think that sort of pervaded how the staff interacted with us. It really didn't seem like there was motivation for true and a sort of equal partnership and respect."*
- Another challenge mentioned by about 40% of respondents were the **differences in missions, perspectives, and approaches**. In the words of one respondent, *"A lot of times people from NIH don't really understand what CDC is trying to do and how it fits into the larger picture; for instance, the polio vaccine was discovered 60 years ago, yet there is still polio in the world today. Why is that? And so there is a lot of applied research, practical research which is what CDC does. I view NIH as in general trying to create new knowledge. CDC is generally trying to apply that knowledge. We need to understand that from each perspective. The work is not done when the knowledge is created, in other words."*
- **Bureaucracy and administrative hurdles** was mentioned by over 33% of respondents. As one participant explained referring to a current collaboration, *"I think the one that I'm currently working on took two years to come to fruition because of legal and administrative issues."*
- An additional 30% of respondents indicated that a challenge to collaborating with NIH was in actually **knowing how to go about collaborating with the agency**. In the words of one respondent, *"It's not always obvious the ways in which you can partner with NIH. I think that you really need to seek out people. If you don't know whom to contact over there, I think it's not the kind of place where you can just explore and happen upon the person that you should be speaking with."*

Table 15.a Benefits to Collaborating with NIH (Interviews)

Benefits	#*	Percent (N=45)
Access to scientific knowledge and expertise	36	80%
NIH can provide additional resources	13	29%
Share common interests	4	9%
Intellectual freedom among NIH staff	2	4%
Basic science expertise	2	4%
Size of agency as a benefit	1	2%

Table 15.b Challenges to Collaborating with NIH (Interviews)

Challenges	#*	Percent (N=45)
Non-collaborative attitude at NIH	20	44%
Different approaches	18	40%
Bureaucracy	15	33%
Not sure who to contact/Unaware of staff and projects suited to collaboration	14	31%
Proximity (location of NIH)	6	13%
Size and complexity of NIH	5	11%
Lack of experience working together	5	11%
Requires additional resources	5	11%
Lengthy clearance process	3	7%
Potential conflicts of interest	3	7%
Narrow staff skills at NIH	2	4%
Lack of "real world" implementation	1	2%

Source: NIH-HHS Collaborations Interviews

* Count of interviewees who discussed the theme.

8.1.2 Things that NIH Does Poorly, and Does Well

Collaborators participating in the interviews (n=30) were also asked to talk about the various things that NIH does well and that it does poorly in the context of inter-agency collaborations. The full list of themes from these discussions is provided in Table 16.a and 16.b.

Things that NIH Does Well

- The most frequently mentioned item was **knowledge and expertise**. Close to 60% of respondents mentioned that NIH staff are very knowledgeable and experienced and “*stellar at doing research.*”
- Nearly 25% of respondents felt that the NIH colleagues that they’ve worked with have a “**collaborative spirit**” that includes good communications and an active interest in the project.
- About 10% of respondents felt that NIH also has good **access to resources**.

Things that NIH Does Poorly

- Close to 30% of respondents felt that NIH could do better in **translating basic science** in a “*digestible manner.*” In the words of one collaborator, “*I think that NIH types are more research oriented. But when you’re trying to get this product out into the clinical community, you get this non-scientific pushback because it’s not a simple therapy. You can’t just write a dose and walk away.*”
- Almost 25% of respondents indicated that NIH has **poor communications and outreach** about NIH-sponsored research that may be applicable to the other HHS agencies. As one collaborator said, “*It’s like I know that there is all of this great research that’s going on at NIH, but I’ll have to say that it’s probably been more ad hoc in terms of learning about it. It’s dependent on the couple of folks we know who participate in some of our meetings, and when they’re there we get an update of some stuff that they’re finding — that they’re funding, learning about — but then it’s very surface level. Yes, there is the NIH database I think, and so in theory we could look it up ourselves. I think we could put in some key words and find the studies or whatever, but it’s just not something I’ve done. It would be nice to get more of like a regular update.*”

Table 16.a Things NIH Does Well

Things That NIH Does Well	#*	Percent (N=45)
Knowledge and expertise	18	60%
Collaborative spirit	7	23%
Access to resources	4	13%
Disseminates research	2	7%

Table 16.b Things NIH Does Poorly

Things That NIH Does Poorly	#*	Percent (N=45)
Translating basic research	8	27%
Communicating	7	23%
Consumer materials too complex	3	10%
Administrative and/or government hurdles	3	10%

Source: NIH-HHS Collaborations Interviews

* Count of interviewees who discussed the theme.

8.2 NIH Contributions to the Most Successful Collaboration

Collaborator survey respondents who reported on their “most successful” NIH-HHS collaboration (n=388) answered a series of questions related to the roles and contributions of NIH and NIH personnel on that collaboration. They indicated the type of role played for initiating and carrying out the work, and the importance of NIH for each role played (Q32 to Q36). In addition to the basic univariate analyses, we also conducted multivariate analyses of the three questions (Q’s 33, 35, 36) asking respondents to rate the importance of NIH for carrying out the different roles (see Appendix E for details).

8.2.1 Initiating the Collaboration

Forty-five percent of these respondents reported that NIH was a *co-initiator* along with one or more other agencies. Another 27% reported that NIH was the *main initiator*, 13% reported that NIH played a *minor role*, 8% reported that NIH was *not involved in initiation at all*, and 8% did not know.

Overall, 69% of respondents rated the role of NIH or NIH personnel in initiating the collaboration as quite or extremely important (Figure 16). These ratings were mostly consistent across the six agencies, with the exception of ACF whose affiliated respondents reported that just a little over a third of their collaborations were initiated by NIH. The results of the multivariate analysis for this question indicate that ACF employees were significantly less likely to rate favorably the importance of NIH for initiation of their most successful collaboration ($p < 0.007$; 95% CI: 0.462, 2.955), when controlling for the other independent variables included in the model. None of the other independent variables were significantly associated with the initiation importance rating.

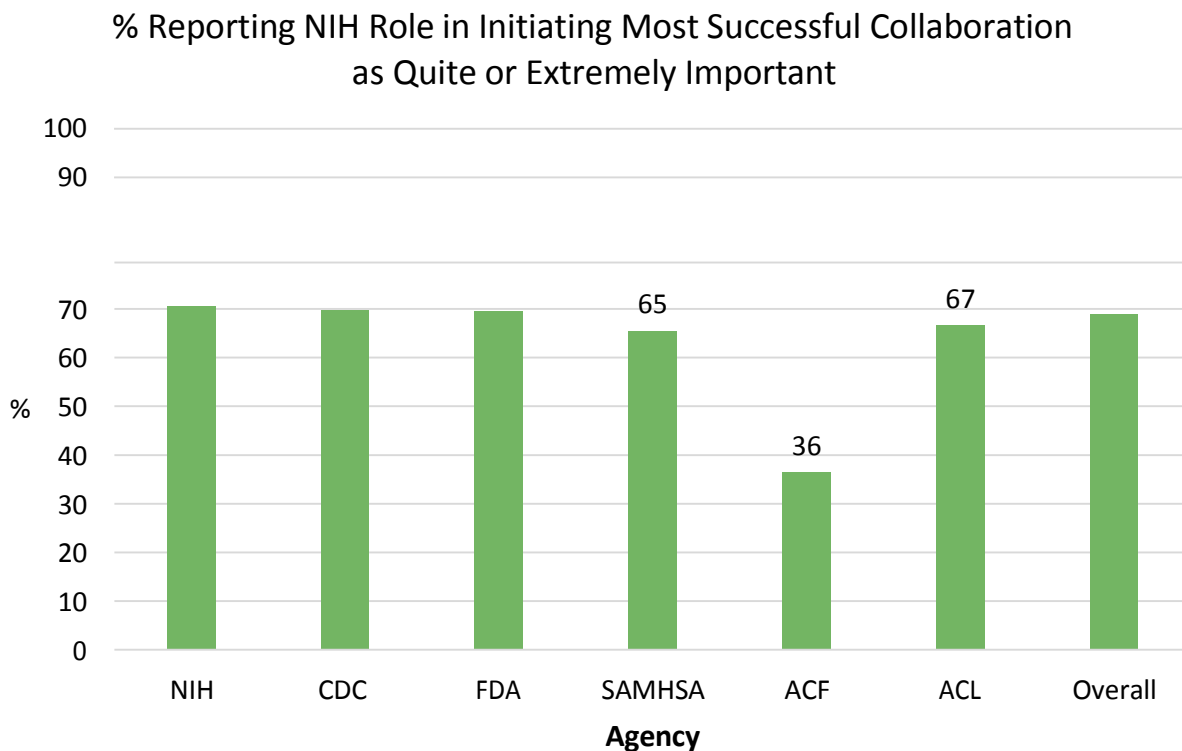


Figure 16. Importance of NIH for Initiating Respondents’ Most Successful Collaboration.

8.2.2 Carrying out the Work and Creating Outputs

When asked to select the various roles that NIH played in carrying out the general work of their most successful collaboration (Q34), respondents most frequently indicated that NIH personnel either served as scientific and subject matter experts (71%), and/or played a leadership role (66%) (Figure 17). While not selected by a majority of respondents, the other types of roles listed in the survey were selected by a substantial portion (41-46%).

Overall, 88% of respondents rated the role of NIH or NIH personnel in carrying out the general work of their most successful collaboration as quite or extremely important (Figure 18). These ratings were largely consistent across the six agencies (78% to 89%), with slightly lower percentages for ACF and ACL. The results of the multivariate analysis for this question indicate that two of the independent variables are significantly associated with the importance ratings, when controlling for the other independent variables included in the model:

- Respondents in *leadership roles* were *more likely* to rate NIH's importance favorably ($p=0.004$; 95% CI: -1.141, -0.218).
- *ACF employees* were *less likely* to rate NIH's importance favorably ($p=0.001$; 95% CI: 0.824, 3.173).

Overall, 85% of respondents rated the role of NIH or NIH personnel in creating the products and outputs of the collaboration as quite or extremely important (Figure 18). These ratings were largely consistent across the six agencies (78% to 89%). The results of the multivariate analysis for this question indicate that three of the independent variables are significantly associated with the importance ratings, when controlling for the other independent variables included in the model:

- Respondents in *leadership roles* were *more likely* to rate NIH's importance favorably ($p=0.014$; 95% CI: -0.991, -0.114).
- *FDA employees* were *less likely* to rate NIH's importance favorably ($p=0.003$; 95% CI: 0.311, 1.525).
- *ACF employees* were *less likely* to rate NIH's importance favorably ($p=0.031$; 95% CI: 0.123, 2.507).

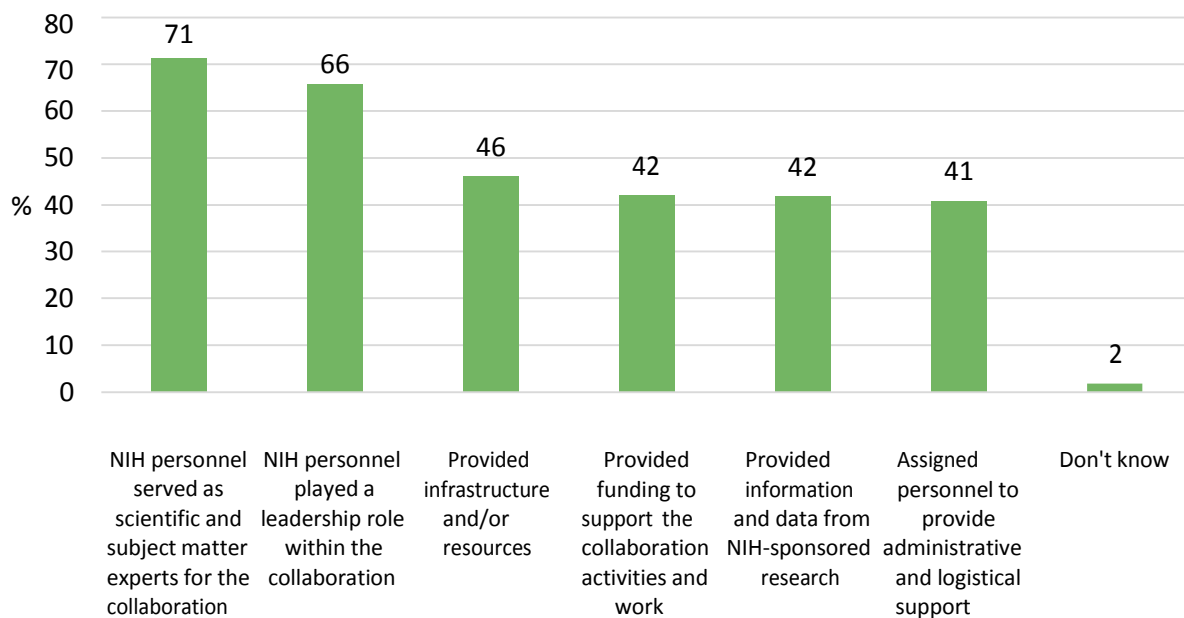


Figure 17. NIH Roles in Carrying Out the Work of Respondents' Most Successful Collaboration.

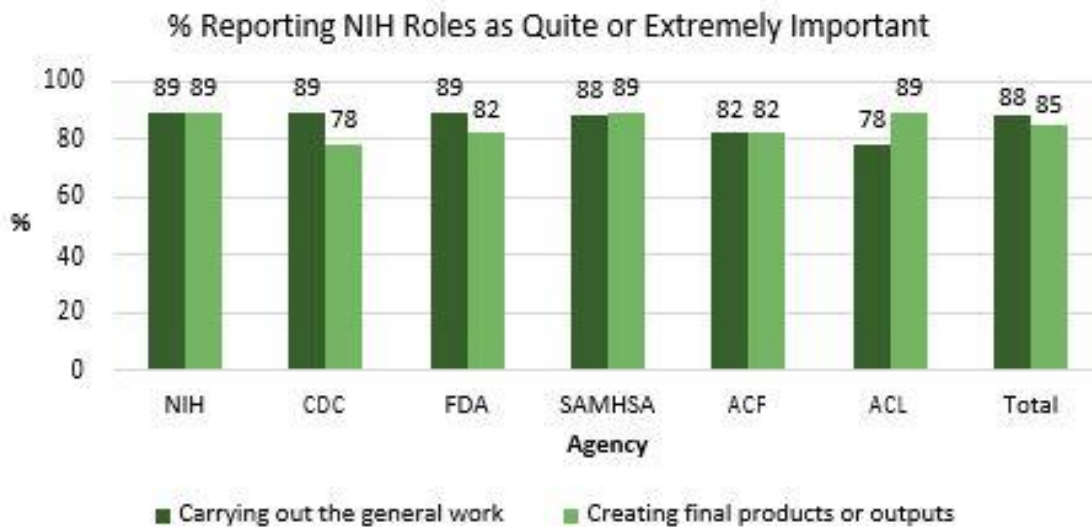


Figure 18. Importance of NIH for Respondents' Most Successful Collaborations.

8.3 Use of NIH Research

One of the objectives for this study was to determine if NIH-HHS collaborations successfully promote the use of NIH research in the development of public health programs and activities within HHS. Because of the flexible and open-ended format of the interviews, in which we could clarify questions as needed and follow-up and probe on the responses, we explored this issue with the interview participants. However, it proved challenging to get in-depth and satisfying answers for this key question.

First, when collaborators (n=30) were asked about how scientific research is generally used in their collaborations, the majority (80%) simply explained that it is used to inform their work as needed. But for the most part they did not go into specifics of how the research is used or the extent to which this is done, even when prompted for more details from the interviewer.

Second, when collaborators and non-collaborators (n=45) were asked specifically about whether NIH-funded research was used in their inter-agency collaborations, about 30% of respondents said that NIH-funded research was not used, and about 10% of our sample was unsure. About 60% of respondents were more certain that NIH-funded research was used in their collaborations as part of the scientific or evidence base, but as a whole were not able to provide details of how the research was used or what specific studies were drawn upon. As one respondent explained, *"Our initiatives are evidence based, and so I'm sure that we use a lot of NIH-funded research to inform our work."* Some of these respondents felt confident that NIH-funded research had been used since the collaborations were directly supported or funded by NIH. Other respondents believed that their collaborations were very likely to have included some NIH-funded research, directly or indirectly, given how much scientific research is funded by NIH in general.

In sum, these were not easy questions for respondents to answer, and many had a difficult time recalling specific uses of NIH-funded research in their collaborations.

9. Promoting and Improving Collaboration

One of the objectives for this study was to identify important gaps in collaboration between NIH and the other HHS agencies, and provide options or suggestions for filling those gaps. Furthermore, we wanted to identify ways that NIH-HHS collaborations might be improved and expanded. To address these objectives, we used data from the survey and interviews related to respondents' ideas on opportunities for new NIH-HHS collaborations, as well as how to enhance the collaboration process and encourage greater and more effective participation in collaborations among HHS personnel.

Key Findings

- Respondents provided many suggestions for new areas for NIH-HHS collaborations, reflecting the belief that there are many cross-cutting or shared topics of interest between NIH and other HHS agencies, and that the agencies with these shared interests should collaborate in order to be more effective at solving public health problems.
 - Many suggestions were related to traditional public health topics that can be linked to specific agencies or sub-agency organizational units within HHS (e.g., “*maternal and child health*,” “*aging and elder care*”).
 - Many other suggestions reflect broader reasons for collaboration, including how NIH and other HHS agencies can collaborate for: data collection and sharing; developing and sharing new research methods; translating basic scientific research into evidence-based applications; and promoting the dissemination and implementation of those applications.
- Respondents provided many suggestions for expanding and enhancing NIH-HHS collaborations, including:
 - Improving communication about opportunities for collaborating;
 - Support from agency leaders by providing dedicated time, resources, and infrastructure, and by generally promoting the value of collaboration;
 - Fostering collaborations with clear need and clearly stated purposes and goals;
 - Addressing staff motivations, attitudes, and skills related to collaboration by recognizing and rewarding participation in collaborations; fostering a collaborative spirit that recognizes the value of partners; promoting engagement/commitment among collaborators; providing trainings and workshops.

9.1 Opportunities for New Collaborations

The survey asked both collaborator (Q34) and non-collaborator respondents (Q53) to identify and describe opportunities for new NIH-HHS collaborations. A total of 141 respondents (125 collaborators, 16 non-collaborators) provided answers to these questions (29% of total survey response). Similar responses were grouped into unique categories and labeled accordingly. The various categories that represent the responses are summarized in Figure 19, and **a complete list of the responses organized by the categories are provided in Appendix I.**

Most of the categories represent traditional public health topics that can be linked to specific agencies or sub-agency organizational units within HHS, e.g., “*maternal and child health*,” “*aging and elder care*,” “*behavioral health and substance abuse*.” However, the top three categories reflect ideas about gaps or opportunities for collaboration at a broader level than specific health domains:

- **“Data and methods sharing”**: This category represents a variety of suggestions about how NIH and other HHS agencies can collaborate for data collection (e.g., surveys on specific health topics), creating shared databases or information resources, or developing new research methods.
- **“Translation, dissemination, and implementation”**: This category represents a variety of suggestions about how NIH and other HHS agencies can collaborate for translating basic scientific research into clinical or public health applications, and promote the dissemination and implementation of those applications among populations.
- **“Cross-cutting or shared topics across agencies”**: This category represents a group of suggestions reflecting the belief among the respondents that there are many cross-cutting or shared topics of interest between NIH and other HHS agencies, and that the agencies with these shared interests should collaborate in order to be more effective at solving public health problems.

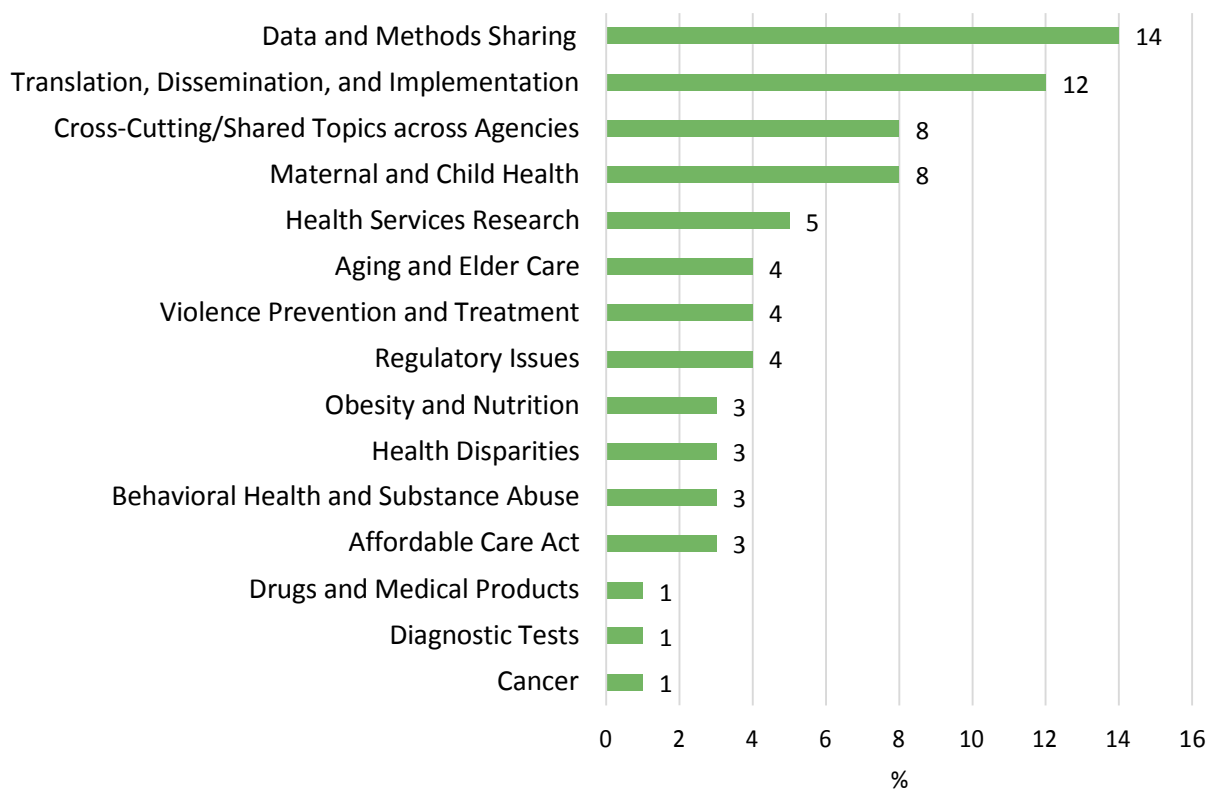


Figure 19. Specific Topics or Issues for New NIH-HHS Collaborations.

9.2 Expanding and Enhancing NIH-HHS Collaborations

We used the survey and interviews to solicit suggestions and ideas from the respondents about what could be done to expand and enhance NIH-HHS collaborations in the future. First, the survey asked both collaborator (Q20) and non-collaborator respondents (Q52) for suggestions on promoting NIH-HHS collaborations by encouraging or incentivizing participation among HHS personnel. A total of 309 respondents (290 collaborators, 19 non-collaborators) provided answers to these questions (64% of total survey response). Second, the survey also asked collaborators how NIH-HHS collaborations could be

improved (Q37), which solicited a total of 142 responses (32% of collaborators). These questions were explored also in the interviews with both collaborators (Q's 9 and 11) and non-collaborators (Q8).

Survey and interview responses were grouped into similar categories and labeled accordingly. Many of the categories identified from the different responses to these two sets of questions – promoting versus improving collaborations – were very similar. Therefore, we present these categories as one group of suggestions for the overall enhancement of NIH-HHS collaborations. These various categories are summarized for the surveys in Figure 20 and for the interviews in Figure 21.

One of the top categories of survey respondents' suggestions is *"Increased awareness of opportunities for collaborating."* This category is similar to one of the main themes that emerged from the interviews: *"More and better communication."* These two categories represent a belief among some respondents that there needs to be improvements in communication about opportunities for collaborating. In the words of one interview participant, *"I wonder too maybe putting out something using Yammer or some other types of communication tools with other HHS staff when they are looking to collaborate. I almost feel like the stuff I'm doing with them I've kind of stumbled into on accident."*

The next three top categories – *"Provide dedicated time, resources, and infrastructure," "Supportive leadership,"* and *"More encouragement for agencies to collaborate"* – represent different examples of how leadership support can promote inter-agency collaboration: (1) supportive leadership at the operating division level that encourages agency staff to participate; (2) support at the department level that encourages the promotion of inter-agency collaboration among leadership across the operating divisions; and (3) the translation of leadership support at these different levels into material support so that staff have the time and resources to participate. Similarly, the most frequent theme in the interviews (mentioned by close to 60% of respondents) was for HHS leadership to encourage collaborations more, whether in terms of financial support or through promoting the importance of collaboration among agencies. This type of high level support can also help *"Minimize administrative hurdles"* that can sometimes make it difficult to initiate inter-agency collaborations.

Another set of categories – *"Collaborations with purpose and clear need," "Foster collaborations with clearly stated purposes and goals,"* and *"Promote common goals"* – represent two distinct but related ideas expressed by respondents. First, collaborations that are initiated should be done so with a real and specific purpose in mind, and not just done for the sake of collaborating. Second, collaborations should prioritize making sure that the purposes and goals are specific, realistic, clearly stated and agreed upon by all participants.

Another set of categories address collaboration participants motivations, attitudes, and skills related to collaboration, including: *"Recognizing staff for collaborating by providing incentives," "Fostering a collaborative spirit that recognizes the value of partners," "Promote engagement/commitment among collaborators,"* and *"Provide trainings and skill-building activities."* HHS personnel would be more motivated to participate in time-consuming collaborations if they felt there would be direct and tangible benefits to their careers. Also, some respondents have not always felt that their contributions were valued by their fellow collaborators, or that the other collaborators really wanted to be involved, and this can be demoralizing and a disincentive for active and enthusiastic participation among all collaborators. Lastly, good collaboration requires unique sets of skills and talents, and collaboration can be improved when those skills and talents are improved.

9. PROMOTING AND IMPROVING COLLABORATION

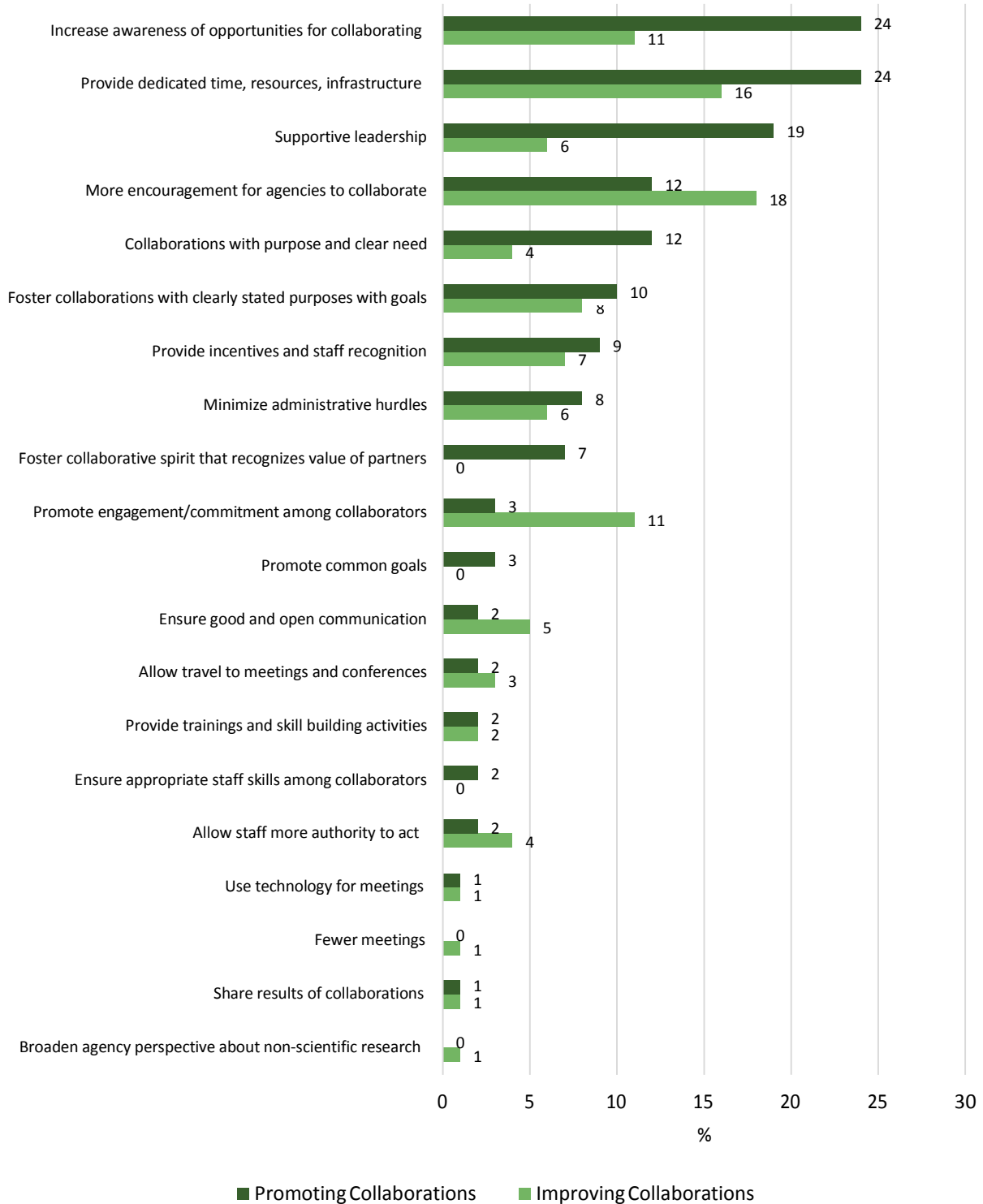


Figure 20. Suggestions for Encouraging Collaboration Participation (Survey).

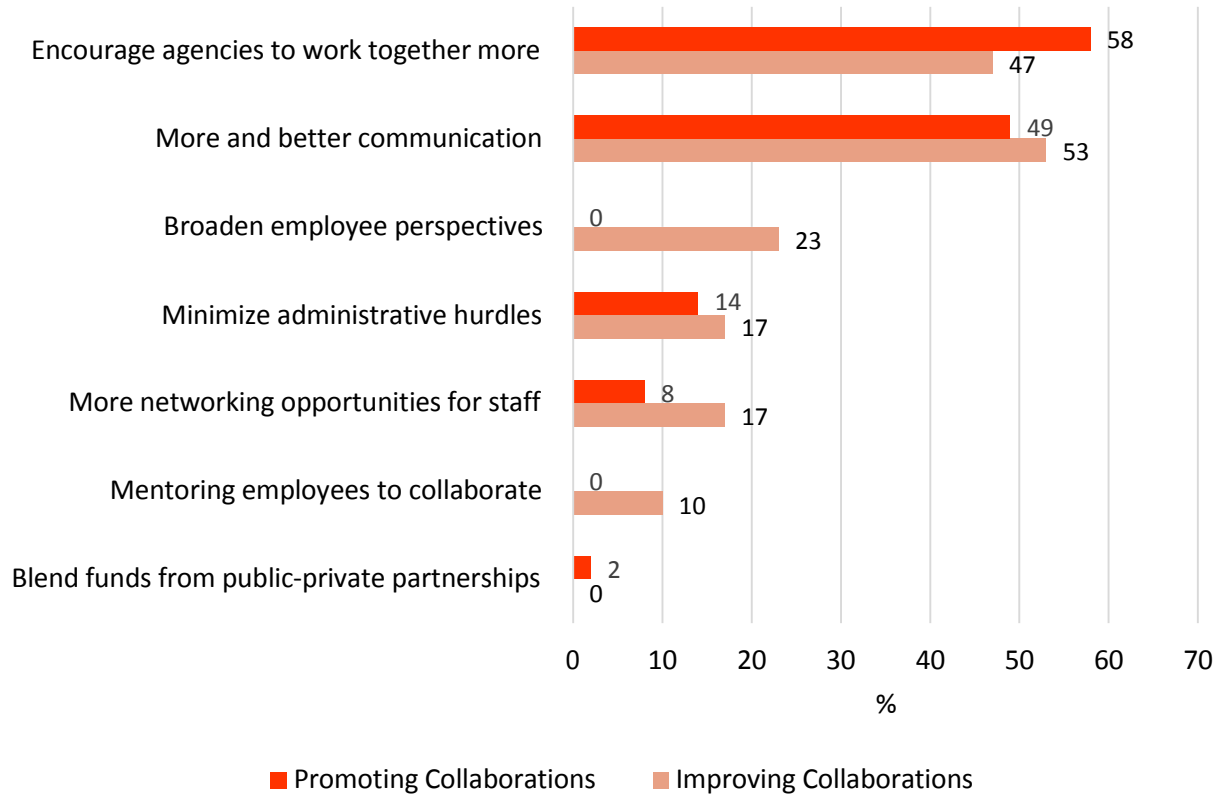


Figure 21. Suggestions for Encouraging Collaboration Participation (Interviews).

10. Discussion and Recommendations

The primary focus of this evaluation study was on the role that collaborations between NIH and other agencies within the Department of Health and Human Services (HHS) play in promoting the uptake and utilization of NIH-supported research results into the policies, programs, and services used to fulfill the mission of HHS. Additionally, we sought to better understand: the characteristics of successful NIH-HHS collaborations in terms of content and processes; the characteristics and perspectives of collaboration participants (both NIH and other HHS staff); and how NIH-HHS collaborations might be improved and expanded. Furthermore, we sought to identify ways that NIH could strengthen annual data collection and monitoring of NIH-HHS collaborations.

In this chapter we summarize and discuss key findings in relation to these study purposes, and offer recommendations for promoting and improving NIH-HHS collaborations based on those findings. The first set of recommendations are related to the ways that NIH and HHS can promote inter-agency collaborations, both in terms of generating new collaborations and encouraging active and engaged participation among HHS personnel. The second set of recommendations address the facilitation of successful collaborations, with an emphasis on supporting effective collaboration processes. Lastly, we offer recommendations on how NIH can better promote the use of NIH-sponsored research and resources in the context of inter-agency collaborations.

10.1 Discussion of Study Findings

The findings discussed in this section should be viewed in light of the limitations of this study. First, there is the possibility of sampling bias due to the way that we targeted and identified potential study participants. We were interested in collecting data from two populations among HHS employees: (1) those affiliated with NIH and the five targeted agencies who have been involved with NIH-HHS collaborations (i.e., the “collaborators”); and (2) those in the targeted agencies that have *never* been involved with NIH-HHS collaborations (i.e., the “non-collaborators”). A complete and accurate list of the targeted collaborators was not available to create a sampling frame, so we used a multi-step process using the best available sources to compile as complete a list as possible. While we believe that this process yielded a substantial number of the targeted collaborators, the process may have inadvertently and systematically excluded certain members of the targeted collaborator population. Furthermore, the process favored the more well-known “formal” collaborations recognized and documented within NIH, and may have missed less formal types of inter-agency collaborative activities among HHS personnel. While we did achieve a relatively high survey response rate (50%) that was fairly consistent across the six agencies, we do not know the degree to which the set of respondents represents the actual targeted population. In addition, since we limited our focus to the collaborators affiliated with NIH and the five targeted agencies, we did not include all collaborators across the HHS operating divisions. Thus, our findings only apply to the survey respondents, and caution must be exercised when trying to generalize the study findings to all HHS operating divisions and employees.

Second, we were not successful in recruiting the “non-collaborators” into the study. Only 7% (n=32) of survey respondents identified as “non-collaborators” based on the definition of NIH-HHS collaborations presented in the questionnaire. This is a very small portion of the overall non-collaborator population in HHS, considering that most HHS employees have never been involved in an NIH-HHS collaboration. Therefore, we were not able to adequately address our objective of identifying ways to increase involvement of potentially relevant non-collaborators in NIH-HHS collaborations.

Third, we were not able to fully address our objective to determine if NIH-HHS collaborations successfully promote the use of NIH research in the development of public health programs and activities within HHS. We chose to address this objective with the in-depth interviews rather than the survey due to the challenges of developing a valid measure for the survey questionnaire that would capture the data we wanted in a way that was clear to respondents. The flexible and open-ended format of the qualitative interviews allowed us to clarify the questions as needed, and probe on the responses to elicit more details

if necessary. However, even within the interview format these were not easy questions for respondents to answer, and many had a difficult time recalling specific uses of NIH-funded research in their collaborations. Thus, it was difficult to gauge the extent to which NIH-HHS collaborations promote the use of NIH research in the development of public health programs and activities in this study.

10.1.1 Attitudes and Perceptions about Inter-Agency Collaborations

The results of this study shed light on attitudes and perceptions about inter-agency collaborations among HHS employees, and give us insight into HHS employees' interest in and commitment to inter-agency collaborations, and their motivations for participating.

The survey respondents consisted of mostly senior-level HHS employees with substantial experience participating in NIH-HHS collaborations. They tended to be older (40 years or more) with advanced degrees and GS levels of 13 or higher. Participants were roughly evenly divided between women and men (slightly more women), and were fairly evenly distributed in terms of the number of years they had been working at their current agency (spanning less than 5 years to more than 20 years). Most participants reported medium to high levels of involvement in NIH-HHS collaborations, and while the majority reported playing non-leadership participant roles in those collaborations, more than a third had also served in some kind of leadership capacity.

On the whole, respondents are favorably disposed to inter-agency collaborations in general, and NIH-HHS collaborations specifically. For inter-agency collaborations in general, respondents tended to place less weight on the challenges and more weight on the benefits, largely agreeing with the ideas that collaborations: (1) achieve better outcomes than single agencies working alone; (2) help agencies better fulfill their missions; (3) help translate basic scientific research into public health applications; and (4) are beneficial for the HHS employees who participate as well as a good use of their time. Respondents saw inter-agency collaborations as an opportunity to achieve better outcomes for their agencies and for public health in general by sharing information, resources, and expertise around areas of common interest. Respondents were largely motivated to participate in and contribute to inter-agency collaborations because they thought the topic was an important public health issue that should be addressed, and it was related to their professional interests or area of expertise. These attitudes are consistent with the premise underlying collaborations that individuals or organizations working together creates a synergy that enables the group to achieve more than they would working separately.

For NIH-HHS collaborations specifically, the vast majority of respondents have had what they think of as a "successful" collaboration (e.g., achieving the intended purpose and goals of the collaboration), while less than a third reported having a particularly challenging or "unsuccessful" collaboration. In addition, the vast majority of respondents were satisfied overall with their NIH-HHS collaboration experiences, and the majority reported a high level of interest in participating in future NIH-HHS collaborations.

Non-NIH respondents largely have a positive view on the roles and contributions of NIH and NIH employees to inter-agency collaborations, and viewed working with NIH as beneficial. These respondents value the scientific and subject matter expertise that NIH employees willingly and enthusiastically bring to inter-agency collaborations, as well as the fact that NIH is often able to contribute resources (funding, data, organizational infrastructure, and personnel). Non-NIH respondents also tended to rate highly NIH's contributions to inter-agency collaborations in terms of initiating the collaboration, carrying out the day-to-day work, and creating the final products and outputs. However, Non-NIH respondents also described ways in which NIH could improve its contributions to inter-agency collaborations, including: improving "non-collaborative" attitudes among some NIH staff that do not value or appreciate the contributions and strengths of the other agencies (though to be fair, some respondents also described what they saw as an engaged and constructive "collaborative spirit" among their NIH collaborators); addressing bureaucratic and administrative hurdles that make it difficult to initiate or carry out collaborative work (though this can apply to other cross-agency collaborations); improving communication and outreach about NIH-sponsored research and the subject matter experts that could contribute to relevant collaborations; and an enhanced focus or emphasis given to translating basic research results into practical applications that could be useful to the programs in other HHS agencies.

10.1.2 Initiating and Forming New Collaborations

The results of this study indicate that NIH has been an active and important initiator of NIH-HHS collaborations, and is in a good position to continue playing a strong role in identifying and promoting opportunities for new inter-agency collaborations.

Survey respondents provided a variety of suggestions representing gaps and opportunities for new NIH-HHS collaborations. While many of the suggestions represent specific public health topics that can be considered and potentially pursued by the relevant NIH ICs and OD offices, many of the other suggestions reflect ideas about the fundamental reasons for collaboration, and the essential role that NIH can play within inter-agency collaborations. First, many of the suggestions did not cite a specific health topic or problem, but reflected belief in the idea of synergism that there are many cross-cutting or shared topics of interest between NIH and other HHS agencies, and that the agencies with these shared interests should collaborate in order to be more effective at solving public health problems. Second, another group of suggestions represents the belief that an underlying purpose for NIH-HHS collaborations is the translation of basic scientific research into clinical or public health applications that can be broadly disseminated and implemented. Lastly, other suggestions reflect the belief that, as a research agency, NIH has an important role in the development of research methods and the collection of data that are needed to support the development and delivery of public health and health services programs.

In terms of the initiation of new NIH-HHS collaborations, the results indicate that the social networks among HHS employees play a prominent role, though directives and mandates from government leadership is also important. For example, respondents reported that their successful collaborations were most often initiated by staff through their professional connections with other employees who share common interests. In addition, collaboration initiation is also driven by leadership at various levels of the federal government. Respondents reported that nearly a third of their successful collaborations were initiated as result of directives from agency or department leadership, the Administration, or by Congressional Mandate.

In terms of the formation of collaboration teams, social networks again play a prominent role, but so do agency managers. More than a third of respondents became involved in their successful collaborations as a result of assignments or requests from agency leadership. But more than half of respondents reported that they became involved in collaborations because either they themselves were one of the initiators, or they were asked to join by someone in their professional network. Furthermore, social networks also play a role in identifying potential collaborators in other agencies: the sources that respondents considered the most useful for identifying potential collaborations were their professional contacts and network, professional and scientific conferences, topical interest groups, in-person meetings, and references from in-agency colleagues and managers.

Resources and technologies that are shared across agencies also play an important role in the formation of collaboration teams. For example, respondents cited social media technologies as very useful sources for identifying potential collaborators, including LinkedIn, Yammer, and email listservs. Respondents also cited NIH's grants database as a useful source, presumably because it can be searched to identify subject matter experts and scientists in specific fields that would be relevant to a collaboration. Lastly, one non-NIH survey respondent commented that it "would be nice to have a database of NIH-HHS collaborations and their contacts," probably unaware that this currently exists with NIH's Collaboration Reporting System (CRS).

Respondent's suggestions and ideas about ways to promote and increase NIH-HHS collaborations are applicable to the issue of initiation and formation. For example, one of the most frequent suggestions was about improving inter-agency communication and increasing awareness about opportunities for collaboration. Some of the suggestions cited social media technologies (e.g., Yammer) as a means to disseminate information about collaboration opportunities.

Other frequently offered suggestions that address how leadership support at different organizational levels can promote inter-agency collaboration. First, support at the department level would encourage the

promotion of inter-agency collaboration among leaders at the operating division level. This type of high level support could help minimize administrative hurdles that sometimes make it difficult to initiate inter-agency collaborations. Second, supportive leaders at the operating division level could encourage staff members' participation in collaboration through various mechanisms, including some form of incentive or award program, or by simply giving them the latitude to pursue opportunities that are in line with their professional interests (and agency priorities). While many respondents were motivated to join collaborations because of professional interests and a desire to improve public health, other HHS personnel may also be motivated to participate in time-consuming collaborations if they felt there would be direct support and explicit benefits to their careers.

10.1.3 Facilitators and Barriers for Successful Collaborations

As part of the overall purpose and objectives of this study, we sought to better understand the factors that influence the inter-agency collaboration process and determine whether or not collaborations are able to achieve some measure of success and beneficial impact. Based on the collaboration literature, plus input from the study team and advisory group, we identified and operationalized a variety of factors as facilitators or barriers to productive collaboration, including those related to:

- Governance – the structure and leadership of a collaboration initiative;
- Interpersonal factors - how well participants work together based on mutual trust and respect;
- Communication – the quality and quantity of participant interactions and information sharing; and
- Organizational support – the resources, infrastructure, and authority provided to a collaboration initiative.

Based on their personal experiences as participants and leaders in NIH-HHS collaborations, we asked respondents to rate the importance of these factors in terms of their influence on the success of those collaborations. The results largely confirm the importance of many of these factors in the context of NIH-HHS collaborations. Below we describe and discuss the factors that had consistently high rankings of importance from respondents (whether framed as facilitators or barriers), and emerged as the most prevalent themes and issues from the interviews and the “suggestions for improvement” questions on the survey.

Clear purpose and goals

One of the most highly-rated factors was the need for clearly-defined purpose and goals, and a common suggestion for improving inter-agency collaboration was making sure that the purpose and goals of collaborations are clear and grounded in real needs. Collaborations that are initiated should be done so with a real and specific purpose in mind, and not just done for the sake of collaborating. At the beginning of a collaborative endeavor, priority should be given to making sure that the purposes and goals are specific, realistic, clearly stated, and agreed upon by all participants. Without a clear and shared purpose, participants can become frustrated and lose interest, and this can affect the outcomes of the collaboration as well as reduce interest or motivation for participating in future collaborations. Having a clear purpose and goals can be a function of other factors, including guidance from the leaders of participating agencies about shared priorities and the public health problem being addressed; the effectiveness of the leadership for a particular collaboration endeavor; and the characteristics of the participants and the group dynamics among them.

Collaboration governance

As described in the literature, the success of a collaboration is often linked to the way it is run, or its governance. This includes both the informal and formal structures by which the coalition organizes itself and makes decisions, as well as how the leadership facilitates communication, sets the tone for member interactions, and help the group define and stay focused on their purpose and goals over time. Additionally, agency representatives should have some degree of autonomy and authority to make decisions and work arrangements with other participants in order to achieve the purpose and goals of the

collaboration. Several of the governance-related factors that the respondents considered important included:

- Effective leadership with the skills and expertise to manage the group.
- Authority to make decisions.
- Clarity about participants' roles and responsibilities.
- Good communication among leaders and participants, including effective and regularly occurring meetings, open information sharing among participants, and ways to track progress toward achieving collaboration goals.

Participant Characteristics and Group Dynamics

According to the literature, successful collaborations depend upon positive personal relations and connections between participants. To achieve this, it is important to foster an open and trusting environment among members. In addition, participant characteristics are important as well, such as good communication skills, respect for collaborators, and a willingness to share and collaborate. Several of the factors considered important by the respondents reflect an emphasis on participant characteristics and group dynamics, including:

- Participants have a sense of a shared purpose and mission that brings them together.
- Participants are committed to and engaged with the collaborative activities.
- Participants have a collaborative attitude characterized by respect for other participants and a willingness to listen and consider everyone's input.
- Positive working relationships between participants, characterized by mutual trust and good rapport.
- Participants have the appropriate skills and expertise for the topic of the collaboration.

To facilitate positive participant relationships, and increase commitment to and satisfaction with the collaboration, frequent and productive communication is important and can be facilitated and fostered through effective governance and leadership.

Agency support and resources

For collaborations to be successful, participants must be able to take on the necessary roles and carry out the work with sufficient resources and organizational support (Duckers et al., 2008; Kania & Kramer, 2011). Ideally, there should be a supporting infrastructure, dedicated resources and time, and staff who can support the initiative. This may not always be feasible when resources are limited, but it is best when there is some form of an administrative element that can help support the work of the collaboration. Several of the factors considered important by the respondents are related to this need for agency support and resources, including:

- Funding set aside to support a specific collaboration initiative.
- Dedicated time for participants to work on collaboration-related activities.
- Infrastructure to support inter-agency collaborations, including administrative and logistical assistance for carrying out day-to-day activities and the development of intended outputs (e.g., reports, databases, or guidance documents).

While respondents tended to perceive overall "moral" support for the idea of collaboration from supervisors and agency leadership, they tended to perceive there to be less material support in terms of funding, time allowed for the work, and administrative assistance. In other words, agency leadership are supportive in the general sense but not always able to provide resources to directly support specific collaborative efforts. However, the translation of moral support into material support would make it much easier for participants to have the time and resources to carry out the work required to be successful. It

would also facilitate the initiation and formation of effective collaboration teams, when potential participants know that resources will be available.

10.1.4 Collaborations and the Use of NIH Research

One of the objectives for this study was to determine if NIH-HHS collaborations successfully promote the use of NIH research in the development of public health programs and activities within HHS. We chose to address this issue with the in-depth interviews rather than the survey due to the challenges of developing a valid measure that would capture the data we wanted in a way that was clear to respondents. The flexible and open-ended format of the qualitative interviews allowed us to clarify the questions as needed, and probe on the responses to elicit more details if necessary. However, it still proved challenging to get detailed answers for these questions that would help us fully address this objective.

Based on the answers that we did get, it is clear that respondents view scientific research as having a valuable role to play in providing an evidence-base to inform the work of inter-agency collaborations. But only a small majority of respondents felt relatively confident that NIH-funded research had been used specifically in their collaborations, and even these respondents were not able to provide details of how the research was used or what specific studies were drawn upon. And even among this group, their confidence seemed to be based on assumptions that NIH research must have been used because the collaborations were supported or funded by NIH, or because so much scientific research is funded by NIH in general that surely some of it would have been NIH-sponsored.

So while our approach did not work, other findings from this study do provide some potential insights into understanding how NIH-sponsored research is used in inter-agency collaborations.

It is clear that NIH is valued as a collaborator because the agency's personnel are perceived as being credible subject matter experts with extensive knowledge about relevant scientific research. Respondents reported that NIH personnel often play the role of the scientific expert in NIH-HHS collaborations. NIH respondents seem to value that role as well, attributing a high degree of importance to the use of NIH information and expertise in collaborations to inform the work of other HHS agencies (see Section 6.1, Defining "Success" for Inter-Agency Collaborations). But these findings only provide support for the *supposition* that inter-agency collaborations provide an opportunity for NIH-sponsored research to inform public health programs and activities within HHS, and do not actually tell us how this is happening.

Other findings suggest that NIH-HHS collaborations are largely situated along earlier steps of the research-to-practice continuum. Many of the NIH-HHS collaborations reported in the CRS or described by survey respondents are focused on research and data collection, data or information resources, meetings and workshops, and reports or publications. Less common were the products and outputs that are further along the research-to-practice continuum – e.g., the development of health/human services program; practice recommendations/guidelines; and policy or regulatory guidance (see Sections 3.2 and 3.3). Nevertheless, we should exercise caution when trying to determine exactly where along the continuum certain collaborative activities lie based on the broad and generic labels used in the CRS (as well as this study's survey questionnaire) to characterize purpose and outputs. For example, "meetings and workshops" can be very much a part of the process to develop new policies and regulations.

While most respondents (both NIH and non-NIH) perceive the strengths and value of NIH for collaboration as providing scientific evidence and expertise, some respondents do not perceive NIH as being particularly good at research translation. Indeed, some non-NIH participants described their agencies as being the ones primarily responsible for research translation and application, rather than NIH playing that role. Yet, inter-agency collaborations do offer a unique opportunity to bring scientific experts from NIH together with their more practice-oriented counterparts in other HHS agencies to synthesize and translate scientific evidence into public health or health services applications that address important public health topics. These collaborations remain a fertile arena in which scientific research as a whole, and NIH-sponsored research specifically, can inform and inspire the ideas and innovations of HHS personnel from across the department.

10.2 Recommendations for Promoting Inter-Agency Collaborations

Ideas and opportunities for inter-agency collaborations can come from a variety of sources and reflect the missions, priorities, and interests of the participants. Once an idea or opportunity is identified, an important aspect of inter-agency collaborations is how they are initiated and how the group of participants are formed. This early part of the collaboration process shapes who is involved, how they are organized, and the focus or purpose of the collaboration. Thus, it can have an influence on how well collaborations function and how successful they can be in achieving their purpose and goals. The findings from this study shed some light on ways to increase inter-agency collaboration and coordination among HHS operating divisions. In this section we offer some recommendations related to Identifying and exploiting opportunities for new NIH-HHS collaborations, encouraging staff participation in inter-agency collaborations, and facilitating connections among staff and agencies.

10.2.1 Identifying and Exploiting Opportunities for New NIH-HHS Collaborations

NIH has been an important initiator for inter-agency collaborations. This role should be continued and encouraged, both as part of deliberate efforts to identify and pursue new areas of collaboration, but also something that individual NIH staff are encouraged to pursue.

This study solicited a multitude of ideas from participants about new topics for inter-agency collaboration, and these ideas should be carefully reviewed by NIH leadership from the relevant ICs and OD offices (see Appendix I). But more generally, and with the long-term future in mind, the formation of new inter-agency collaborations can be based on two driving forces: agency priorities and individual staff interests. There will often be overlap between these forces, but they can work in separate, complementary ways.

Recommendations:

Based on agency mission, identified priorities and available resources, agency leaders should identify priority areas that inter-agency collaborations could be formed around.

Agency leaders and managers should encourage and allow staff to continue to identify opportunities and initiate collaborations in their areas of interest.

10.2.2 Encouraging Staff Participation in Inter-agency Collaborations

Encouraging HHS staff participation in inter-agency collaborations can be done at the department and operating division levels. Staff motivations to participate come from professional interests and personal commitments to public health issues, and a desire to have their efforts valued and credited.

Recommendations:

Promote collaboration participation as a way to pursue and develop areas of professional interests.

Provide dedicated time to help staff balance their various works commitments.

Provide recognition and awards for involvement and commitment to successful collaborations that address high priority issues.

10.2.3 Facilitating Connections among Staff and Agencies

The initiation of successful collaborations that address important public health issues relies on the ability of HHS staff to make connections with one another across agency boundaries based on shared or common interests and complementary areas of expertise. Many inter-agency collaborations are initiated and formed through the social networks of HHS personnel. However, it may be difficult to identify potential collaborators in other agencies when there are gaps in those networks. Some staff in other HHS agencies may not be sure how to identify potential NIH collaborators or where to look. NIH and HHS can help staff from across the department get started by identifying and supporting mechanisms that enhance HHS staff professional contacts and networks.

Using and Enhancing the CRS to Facilitate Connections

Because of its unique Congressional mandate, the CRS represents the most complete and extensive historical and current listing of intra-HHS collaborations, despite the fact that the CRS is limited to NIH-HHS collaborations (i.e., it does not include inter-agency collaborations that do *not* involve NIH). Therefore, it could serve as a key resource across HHS agencies for facilitating connections among agencies and agency staff that could lead to the initiation of new and strategically important inter-agency collaborations. However, there would need to be some key enhancements to the CRS to fulfill this potential (see Appendix J for additional recommendations related to the CRS).

Awareness and Access to the CRS. In general, there is very low awareness and knowledge about CRS among HHS agencies and staff. Plus, access to current CRS data is limited to authorized NIH-only users, and the publicly-available CRS data is limited in content and may be out-of-date, making it difficult for HHS employees (non-NIH) to search for and identify existing collaborations and collaborators. This limits the ability to use CRS as a way to foster and facilitate intra-HHS collaboration.

Recommendations:

Create an intra-HHS portal to allow open access for all HHS employees so they can view and search the CRS data.

Conduct a strategic communications campaign targeting key audiences (e.g., agency leadership across HHS agencies and at multiple levels within agencies; current collaboration participants) to build greater awareness of the online CRS reports and data sets. This could foster use of the CRS to identify collaboration opportunities and gaps among the other HHS agencies, and could increase demand for CRS data.

Collaboration Topics. With the current design of the CRS, information about collaboration topics or subject matter areas is only found in the Collaboration Title and Description data fields, and while there is a basic free-text search function built into the CRS, improvements could be made to allow individuals to search for topical information in a more accurate and comprehensive way. This would enhance the ability of HHS staff to identify collaborations related to topics of interest, and thus their ability to either join existing activities, or initiate new ones.

Recommendation:

Add data fields to the CRS to capture relevant topic or subject matter key words for each CA. The CRS should allow users to search, filter, and sort CAs based on the topic key words.

Collaborator Information. The CRS does not currently provide fine-grain details about collaborating HHS agencies or the NIH and HHS employees who are involved in the CAs. While the CRS does include

a field for listing NIH points-of-contact (POC) for each CA, this information is not always reliable/up-to-date or submitted in a consistent format, nor does it provide information about the key collaborators or POCs in the other HHS agencies. Lower-level organizational units represented by the Non-NIH participants are not reported in CRS, but this information can provide clues about the specific participants involved, as well as their mission and subject matter interests. So, it is currently difficult for any HHS staff to use the CRS to make collaboration connections with their topically relevant counterparts in other agencies.

Recommendation:

Add data fields to the CRS to capture participants from other non-NIH agencies, along with their organizational affiliations at the lower-level units. Integrate the CRS with existing HHS systems to allow easy linkage to personnel directories and other available collaboration technologies.

Using Social Media to Facilitate Connections

Respondents suggested that social media platforms could be used to raise awareness across HHS about collaboration opportunities, and for allowing employees to identify potential collaborators with shared interests or relevant expertise. Given that social media has a strong presence in the everyday life of many Americans, it is reasonable to assume that a proportion of HHS employees would find it desirable and convenient to participate in some type of social media platform. Currently, a platform called Yammer is available to all HHS employees. Ideally, whatever system is used should complement and be linked to existing employee directories so that contact information and organizational affiliation are easy to add and keep up-to-date. In addition, employees should be able to create profiles within the system describing areas of interest and expertise, and that information should be easily searchable.

Recommendation:

HHS and operating division leaders should actively promote broad use of a chosen social media platform and encourage employees to create accounts with descriptive profiles about their work activities, areas of interest, and expertise.

10.3 Recommendations for Improving the Collaboration Process

Once an inter-agency collaboration has been started, success in addressing the desired purpose and goals is dependent on the overall process of carrying out the work. This part of collaboration includes clarification and agreement on purpose and goals, how the group of collaborators are organized and the definition of roles and responsibilities (including leadership), and how the participants will communicate and share information. Based on the findings related to the factors that can facilitate successful collaborations, and the suggestions from respondents on how to improve NIH-HHS collaborations, we offer some specific recommendations in this section for ways that NIH and HHS can support and improve the collaboration process.

10.3.1 Collaboration Trainings and Workshops

Inter-agency collaborations benefit from effective leaders (formal or informal) who have good group management skills and expertise. The core competencies related to effective collaborative leadership include effective communication skills, meeting facilitation, conflict resolution and negotiation, and networking. Leaders should be able to help form and maintain collaboration teams to ensure participants work well together by: helping establish a clear and well-defined purpose shared by participants, fostering trust and good communication, and be able to address attitudinal and interpersonal issues that arise.

Leaders should also be able to keep the work well-organized and track progress to keep the group focused on the stated goals.

Recommendation:

Offer HHS staff trainings and professional development opportunities to enhance skills for effectively leading and managing inter-agency collaborations.

10.3.2 Use of Collaborative Infrastructure and Technology

Inter-agency collaborations can benefit from a greater use of social media & collaboration technology for better communication, coordination, and information sharing. Online spaces for collaborations offer collaboration leaders and participants several tools that could facilitate their work, including shared calendars and task lists, secure places to store documents and files, and discussion boards to supplement in-person or teleconference meetings. In addition, online collaboration spaces provide another tool for documenting and evaluating collaborative activities across HHS. Currently, there are existing resources available that can serve this purpose, including:

- **Yammer:** An enterprise-level social networking site for HHS employees that includes features that support and facilitate group collaboration. Yammer has management-level tools that provide data on social networks and collaborative activities that can facilitate ongoing documentation, evaluation, and reporting on intra-HHS collaboration. (<https://about.yammer.com/product/features/>)
- **SharePoint:** Microsoft SharePoint is a web-based collaboration and information management platform that allows groups to set up a centralized, password protected space for information and document sharing.
- **Max Federal Community:** Available through OMB Max, it allows federal employees to create web-based group collaboration sites (similar to Microsoft SharePoint). Some additional investigation is needed to determine if tools are available that provide useful data on social networks and collaborative activities (such as those offered by Yammer). (<https://max.omb.gov/maxportal/home.do>)

Recommendation:

NIH should actively promote the use of available online collaboration resources and technologies among employees for existing and future NIH-HHS collaborations.

10.3.3 Evaluation

As a result of the NIH Reform Act of 2006 requiring NIH to report on NIH-HHS collaborations, the agency is in a unique position to play a central role in evaluating those collaborations. Proactive evaluation will allow NIH, and HHS as a whole, to identify opportunities to continuously enhance efforts to promote and improve inter-agency collaborations. NIH can fulfill this potential role in several ways: (1) Periodically collecting data (e.g., every 3-5 years) from HHS employees involved in NIH-HHS collaborations for ongoing assessments of trends in collaboration participation and networks, attitudes and opinions, processes and functioning, and outputs and outcomes; (2) Evaluating specific initiatives designed to promote and improve collaborations, including those that stem from the recommendations in this report; (3) Enhancing the CRS to include a small but useful set of collaboration evaluation measures for annual tracking among NIH staff; and (4) Using data on social networks and activities that are available from the social media and collaboration technologies being used by HHS employees. To collect evaluation data, NIH can use either existing measures and instruments (see Section 1.1.3 Measuring and Evaluating Collaboration), including the survey questionnaire used for this study, or develop new measures and instruments that are more specifically tailored for inter-agency collaborations within the federal

government context. Some of the social media and collaboration technologies that are available to HHS employees can automatically generate useful evaluation data about collaboration participation, networks, activities, and outputs (see Section 10.3.3. Use of Collaborative Infrastructure and Technology).

Recommendation:

NIH should proactively evaluate NIH-HHS collaborations on an ongoing basis using a variety of available data sources and tools as a way to identify opportunities to continuously enhance efforts to promote participation and improve collaboration processes.

10.3.4 Resources

A consistent finding from this study is that HHS staff perceive a need for agency support to carry out successful inter-agency collaborations. While not every inter-agency collaboration can receive a full range of support due to the limits in available resources, these types of support could be provided when collaborations address agency priorities in order to maximize the probability of success.

Recommendation:

When an inter-agency collaboration is considered a high priority by agency leadership, a variety of forms of support should be provided, including explicit leadership endorsement and encouragement, dedicated funding, administrative and logistical support, and allowing participating staff to set aside a percentage of their time to dedicate to the collaboration work.

10.4 Enhancing the Use of NIH Research in Inter-Agency Collaborations

The results of this study suggest that NIH-HHS collaborations do provide an opportunity for the use of NIH research in the development of public health programs and activities within HHS. It is still unclear how this happens specifically, or the extent to which it happens. However, the results do provide some potential avenues for promoting greater use of NIH research to inform and develop HHS programs and services. First, some non-NIH respondents reported that they not always aware of the NIH-sponsored research that is relevant to their work or areas of interest. Raising awareness about NIH research could generate interest and help make connections to NIH experts. Second, inter-agency collaborations can be a good opportunity for NIH scientists and practice-oriented employees in other agencies to support the research translation process on specific topics.

Recommendations:

To address the problem of lack of awareness about NIH-sponsored research, NIH should develop targeted communications and outreach to other HHS operating divisions that summarize research developments that could inform relevant programs and activities.

Establish a mechanism to facilitate discussion and coordination among HHS operating divisions to address ways to support research translation in the service of HHS programs and activities.

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Appendices

- A. Literature Review Report
- B. CRS Analysis Report
- C. Survey Methods
- D. Survey Questionnaire
- E. Multivariate Analysis Summary and Detailed Results
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Appendix A. Literature Review Report

1. Introduction

This report is for Task 1 of the process evaluation Tracing Discovery to Implementation and Dissemination within HHS: An Evaluation of Information Flow through Collaborations (Contract HHSP23320095628WC_HHSP23337005T). In order to determine whether NIH-HHS collaborative efforts are achieving the desired results over the long run, it is necessary to conduct a process evaluation to better understand the full scope and nature of the many collaborative efforts, examine in more detail *how* results from NIH-sponsored research flow into and inform the work of other HHS agencies, and identify the key factors that facilitate or hinder those efforts. The evaluation will also be used to solicit information from key stakeholders that will identify areas where new collaborations could be fostered, generate recommendations for how best to implement effective collaborations, and improve NIH's ability to monitor, evaluate, and improve collaboration overall within the agency and across all of HHS. The evaluation will employ a mixed methods approach to collect and analyze relevant data to address these aims.

The process evaluation will focus on five HHS agencies representing different levels of involvement in collaborative activities with Institutes, Centers and Offices in the Office of Director at NIH (ICs and OD Offices), including the Centers for Disease Control and Prevention (CDC), the Food and Drug Administration (FDA), the Substance Abuse and Mental Health Services Administration (SAMHSA), the Administration for Children and Families (ACF), and the Administration for Community Living (ACL). Employees from agencies with a long history and great extent of intra-HHS collaboration will be able to provide insight and feedback based on substantial experience. In contrast, employees from agencies with less experience will provide insight and ideas about how to expand collaborations between those agencies and NIH.

The purpose of Task 1 is to conduct a focused literature review on the effectiveness of collaborative efforts that include both positive and negative factors impacting collaborations. Specifically, the literature review will summarize the key factors identified in theoretical models and empirical research that are most relevant to successful collaborations. The sources included in the literature review consist of the references identified in the NIH bibliography and ten additional references that Battelle identified as described in the Methods section.

2. Methods

A comprehensive search was conducted to identify peer-reviewed publications that assess factors that influence the success of collaborative efforts. The search was conducted among English language literature published during 2011-present using multiple literature databases including PubMed, CINAHL (nursing, allied health), Sociological Abstracts, and PsycInfo. The search was based on the following criteria that were determined in consultation with the NIH project team:

General Search Criteria

- Partnership
- Collaboration
- Cooperation
- Network
- Interagency
- Implementation
- Translation research
- Knowledge transfer
- Knowledge translation
- Research dissemination
- Research to practice
- Evidence based
- Instrument
- Interview
- Questionnaire
- Interagency (inter-agency)

The search resulted in 134 unduplicated references (153 total references before removing duplication). The references were then screened based on the title and abstract of the article according to the following inclusion/exclusion criteria:

Inclusion criteria (the title/abstract of the article addresses one or more of the following):

- Collaboration/partnership;
- Success factors of collaboration;
- Findings from evaluation, review articles, conceptual models, or instrument development

Exclusion criteria:

- Unit of analysis is individual;
- The collaboration is not sufficiently described;
- No success factors reported.

Based on the screening, thirteen articles were identified as the most relevant for consideration. To supplement the formal literature search, Battelle identified thirteen additional articles that were used in previous projects that reviewed the collaboration literature prior to 2011. Combining both sets of articles, twenty-six references were selected as the most relevant for consideration by the NIH and Battelle teams. From these twenty-six references, Battelle and NIH agreed upon ten articles for final inclusion in the

literature review. These ten articles were combined with fifteen references from the NIH bibliography for a total of twenty-five articles. Two NIH references that were books were excluded from the formal review.

To support efficient document analysis and to serve as a document repository for extracted information, we created an Excel database. Our systematic process helped to standardize the data extraction and the subsequent information synthesis process. For each article, we extracted the following information into the database:

- ID
- Article title
- Author(s) name(s)
- Publication title
- Year
- Volume/Issue/Pages
- Type of article
- Purpose/objective/article summary
- Methods
- Study location/setting
- Type(s) of collaboration
- Type of organization/Collaborative entity(ies) (i.e. government, private, NGO, etc.)
- Theoretical/conceptual model(s)
- Key measures
- Instrument(s) used
- Success factors
- Barriers/challenges
- Key findings

3. Literature Summary

Though referred to by many different names (partnership, coalition, joint-working), there is a rich tradition of using collaborations to pursue health related goals. Though the literature on collaborative efforts is vast, there is no universal definition of “Collaboration.” London (1995) cites several different definitions and contends that the most robust is found in Barbara Gray’s *Collaborating: Finding Common Ground for Multiparty Problems*, where collaboration is defined as “a process through which parties who see different aspects of a problem can constructively explore their differences and search for solutions that go beyond their own limited vision of what is possible”. El Ansari and colleagues define collaboration as the “collective actions by individuals or their organizations for a more shared communal benefit than each could accomplish as an individual player” (El Ansari, Phillips, & Hammick, 2001). Many have argued that the lack of consensus among scholars in the conceptualization of collaboration has made it difficult to evaluate collaborations and compare findings across studies (Gajda, 2004; Henneman, JL, & Cohen, 1995; Thomson, Perry, & Miller, 2007). It is further argued that practitioners face an equally confusing landscape when collaborating due to differing interpretations, accountability standards, and expectations (Thomson et al., 2007). Based on our review of the literature and the various definitions presented, we define collaboration as collective actions by two or more individuals or organizations that align in organized ways to address issues of shared concern. The following sections of the report provide a summary of the collaborative literature.

3.1 Benefits and Utility of Collaboration

Despite a lack of consensus on a definition, collaborations are frequently used to pursue health and social service goals. More and more entities are recognizing that collaborations can achieve goals that may not be attainable by working independently (Gajda, 2004). Federal agencies, public and private funders, academics, and practitioners are all among the groups appealing for greater collaboration to address complex health issues in an often uncoordinated and fragmented health care system (Nowell, 2009).

While collaborations may be useful under a variety of settings, the literature helps to identify certain situations where collaborations might be particularly beneficial. For example, collaborations can be highly relevant when stakeholders are challenged by multiple issues, problems are perceived as exceeding the problem-solving capabilities of independent stakeholders, and traditional routines of problem-solving are no longer yielding results (Lipp, Winters, & de Leeuw, 2013). London adds that collaboration might be helpful when problems are ill-defined, various stakeholders have vested interest in a problem, and stakeholders have different levels of expertise (London, 1995).

3.2 Evaluating Collaboration

Despite the rise in collaborations, challenges exist in evaluating collaborative efforts and determining “what works.” For instance, partnerships are often unique and embedded within local communities, making them difficult to replicate and often unrepresentative of other partnerships (Butterfoss, 2009). Challenges with evaluating collaborations can include the diversity of perspectives of partners; lack of objective measures; deciding between short and long-term effects; individual or collective outcomes; and measuring a “moving target” (El Ansari et al., 2001). El Ansari and colleagues contend that measuring the effectiveness of collaborations can be problematic due to indicators with varying degrees of measurability. For instance, evaluations can be based on distal measure such as improved health, which can be difficult to measure in a short time-frame, or more proximal measures such as member satisfaction. Additionally, partner agreement can also be challenging in evaluating collaborations since factors that are viewed as obstacles by some partners could also be viewed as benefits by others (El Ansari et al., 2001). Therefore, success factors can sometimes be variable and collaboration-specific.

Despite the difficulties of evaluating collaborations, some scholars have attempted to systematically measure collaborative efforts and have provided potentially useful measures and instruments. Duckers et al., Frey et al., and Masse et al. provide various survey items that have been used to measure collaborations including satisfaction, impact of the collaboration, and trust. Gajda provides the Strategic Alliance Formative Assessment Rubric (SAFAR) that can be utilized to evaluate collaboration during various stages of development and Mattessich and colleagues present the Wilder Collaboration Factors Inventory to help examine factors that have been shown to be important for the success of collaborative projects.

3.3 Stages of Collaboration

Throughout the collaborative literature, references are made to the various stages that collaborations could be based upon. It has been posited that collaborations generally fall across a continuum of low to high integration, often determined by the intensity of the process, structure, and purpose of a collaborative effort (Gajda, 2004). Gajda uses the example of a roundtable and a coalition to illustrate the continuum. A roundtable is perceived as low on the integration continuum since its primary structure is mainly to communicate and share information. A coalition on the other hand, is often considered to have a higher level of integration since its primary purpose is often to collaborate and share planning responsibilities. Several articles, including ones by Gajda and Frey, review the most prominent stage models of collaboration as presented in the literature. One of the earliest models, proposed by Peterson in 1991 consists of a continuum including three stages that begins with cooperation (1), moves through to

coordination (2), and strives toward collaboration (3). In the “collaboration” stage of the model, the group gives up some degree of independence in an effort to realize shared goals. A model presented by Hogue and Gadja in 1993 incorporated an additional earlier stage called “communication” or networking that is less integrated than the cooperation stage. Though similarities exist between collaboration and earlier stages such as cooperation or communication, collaboration is often presented as a more articulated level of collective involvement. While complete integration might not be the goal of every collaboration, in most of the stage models, “collaboration” is often identified as the most highly developed and strived for level of integration. To illustrate an even stronger stage of integration, Bailey and Koney extended existing models to include a coadunation stage. Coadunation, which is defined as closely joined, involves the unification of structures and cultures and the relinquishment of autonomy of at least one partnering organization (Gajda, 2004). Examining the stage of a collaborative effort can be useful to determine the intensity of a collaboration and how it could potentially be improved. For example, should a collaborative effort demonstrate a lower level of integration than desired, specific actions could be recommended to improve the linkages of the group. Figure A.1 provides a summary of the various stage approaches to collaboration as described by Frey in 2006.

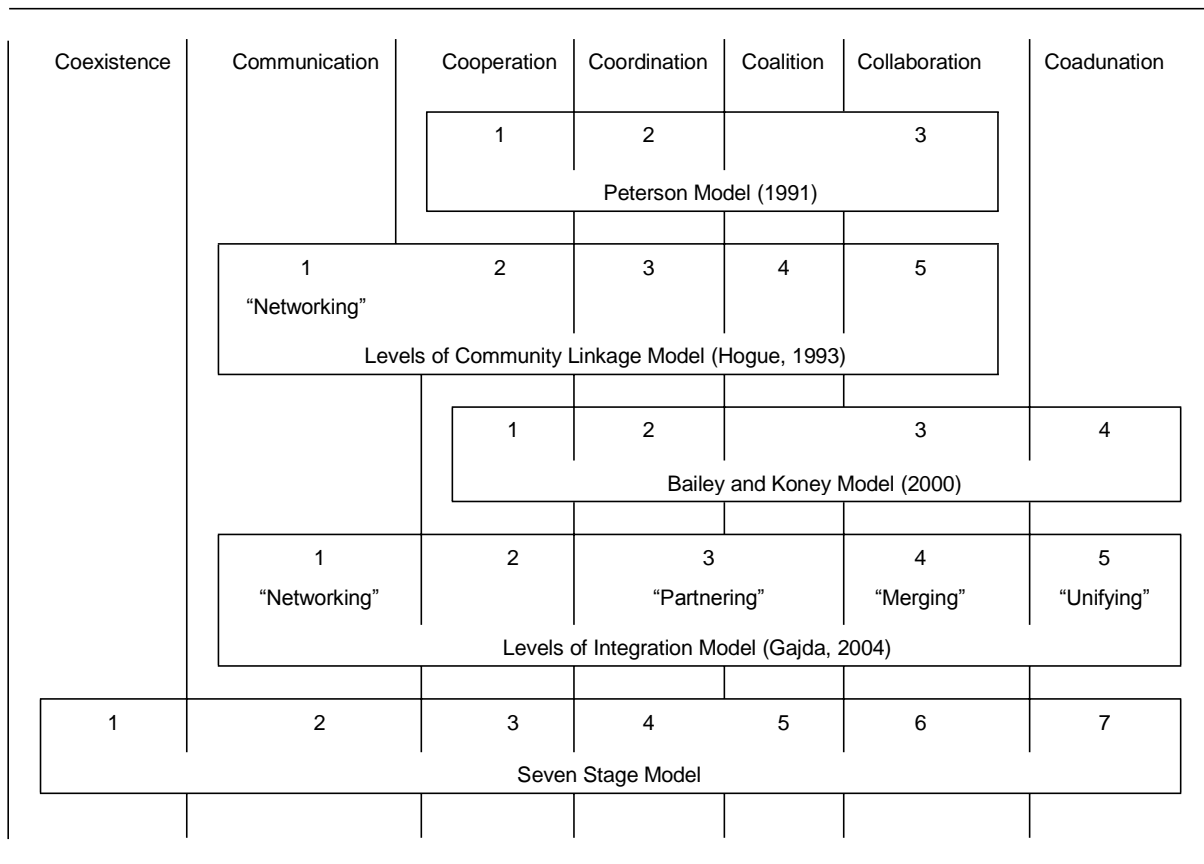


Figure A.1. Stage Models of Collaboration as Presented by Frey (2006)

3.4 Success Factors

Although evaluating the success of a collaborative effort can be challenging, the literature points to a variety of factors that are often thought to be associated with successful collaborations. While distinctions can sometimes be made in the literature between measuring a coalition's internal and external functioning (community change outcomes), sometimes referred to as process and outcome factors, for the purposes of this review, we include all associated factors. Additionally, the success factors presented in the literature generally assume that a more integrated level of collaboration is desired. To help organize our review and presentation of the literature, we have grouped success factors into the following categories:

- Governance
- Synergism
- Interpersonal factors
- Communication
- Organizational support

Governance (Structure and Leadership)

The success of a coalition is often linked to the way it is run. This includes both the informal and formal structures by which the coalition organizes itself, makes decisions, as well as the leadership that sets the tone for member interactions. It is important that members of a collaboration understand how to make joint decisions.

Structure: Collaboration involves creating structures that can help participants make choices about collective action through developing a set of working rules (Thomson et al., 2007). Formalized rules, roles, and procedures can often help to engage members and increase the effectiveness and sustainability of a collaboration (Fawcett, Schultz, Watson-Thompson, Fox, & Bremby, 2010). Conversely, partnerships without clear goals and that rely on broad agendas can become more easily distracted (Woulfe, Oliver, Zahner, & Siemering, 2010). To help formalize roles and responsibilities a collaboration can develop action plans, or other types of written agreements to help facilitate dialogue and collaboration among partners. Establishing a vision or mission can also help communicate a common purpose (Fawcett et al., 2010). The GAO report on *Results-Oriented Government* suggest that well-defined roles can help to ensure that members understand their specific roles and responsibilities, organize joint and individual efforts, and facilitate decision making (GAO, 2005). In a 2008 article, Varda and colleagues suggested that creating a subgroup within a collaborative might be an efficient way of interacting, particularly in a large collaboration.

Leadership: Effective leadership can help inspire commitment and action, help sustain the mission, and motivate participation among collaborating members (Fawcett et al., 2010). Unlike leaders of more traditional efforts, however, collaborative leadership often functions differently from leaders of an organization. Traditional leadership qualities of power, persuasiveness, and the ability to make unilateral actions may be inappropriate in a collaboration (London, 1995). Core competencies related to effective collaborative leadership may include effective communication skills, meeting facilitation, negotiation, and networking. Woulfe and colleagues suggest that collaborations need leaders who possess the necessary process-oriented skills to keep the collaboration going (Woulfe et al., 2010). Several scholars also suggest that leadership roles and responsibilities should be distributed across different levels to allow for more ownership and responsibility (Fawcett et al., 2010).

Synergism

Though collaboration implies that entities are working together, there are varying degrees of collective effort. A major premise underlying the use of collaborations to address health problems is that working together creates a synergy that enables the group to achieve more than they would as individual entities. Synergism can be created by sharing responsibilities, having common values, and combining the perspectives, knowledge, and skills of diverse partners in a way that enables the partnership to think in new ways, plan more comprehensively, and strengthen relationships in the broader community. In a survey of 48 different Midwestern collaborations, Nowell found that shared philosophy had one of the strongest effects on systems change outcomes. Conversely, perceptions of fundamental differences in philosophies concerning targeted issues could significantly hinder a collaborative's ability to promote systems change (Nowell, 2009). In discussing collective impact collaborations, Kania and Kramer identify several synergistic conditions necessary for a successful effort that include a common agenda, a shared measurement system, and mutually reinforcing activities (Kania & Kramer, 2011). The 2005 GAO report also identifies several synergistic activities that could enhance and sustain interagency collaboration that include articulating a common purpose and establishing a joint strategy.

Interpersonal Factors

Successful collaborations depend upon positive personal relations and effective emotional connections between partners. It is important that collaborations foster an open and trusting environment among members, which can often take time to develop. Henneman and colleagues stress that trust between members of a group is an essential element for collaboration that requires individuals to know each other and develop trust and respect over time (Henneman et al., 1995). In a qualitative study describing an academic-community partnership in North Carolina, a history of a positive working relationship between the community and academic partners contributed to the partnership's success (Teal, Moore, Long, Vines, & Leeman, 2012). In addition to trust, the literature points to a number of personal factors that promote collaboration including good communication skills, respect, and sharing. In a survey looking at 48 Midwestern collaborations, stakeholder relationships were suggested as an important aspect for supporting the effectiveness of a collaborative (Nowell, 2009). That same study also supported previous research suggesting that in addition to strong relationships, collaborations that have been around longer are generally perceived to be more effective.

Communication

To facilitate member participation, and increase commitment and satisfaction among members, frequent, productive communication has been shown to be very important aspect of a collaboration (Duckers, Wagner, & Groenewegen, 2008). Communication can include regularly occurring meetings and vehicles for sharing information such as through formal meeting notes, newsletters, or websites. Kania and Kramer stress the importance of regularly occurring meetings to develop trust and gain an appreciation of different partners. The authors stress that partners need time to see that their own interests will be treated fairly and not favor the priorities of one organization over another (Kania & Kramer, 2011). The ability to communicate effectively also requires that members listen to each other's perspective, yet negotiate constructively with one another (Henneman et al., 1995). Others portend that frequent interaction amongst members even outside of organized meetings can help build trust and rapport and impact the success of collaborative relationships (Nowell, 2009).

Organizational Support

For collaborations to be successful, participants must be empowered to take on necessary roles with sufficient resources, responsibility, and organizational support (Duckers et al., 2008). Collaboration requires an environment with a team orientation that emphasizes cooperation as a mode of dealing with issues rather than competition (Henneman et al., 1995). Additionally, organizational representatives should have some degree of autonomy to work for the collective interest of the collaboration.

Collaborative decision making is difficult if organizational representatives are not given some latitude in working out agreements among partners. Thomson and colleagues describe the tension that can sometimes occur between organizational self-interest and collective interest when representatives of the collaboration are feeling pulled between being accountable to the demands of their parent organization and those of their collaborative partners (Thomson et al., 2007). Having the support of one's organization can help lessen this tension and empower the collaboration.

Several authors claim that for a collaboration to succeed, it must have supporting infrastructure distinct from partner organizations with dedicated resources and staff who can plan, manage and support the initiative (Kania & Kramer, 2011). Though this notion may not always be practical in a resource limited environment, it stresses the need for an administrative element that can manage the collective efforts of the collaboration. For this to work, multiple levels of partner organizations may need to be engaged, including decision makers, who can commit resources, and operational staff, who can contribute to plan implementation.

3.5 Challenges of Collaborations

Despite the potential benefits of collaborations, the literature also points to a variety of challenges related to collaborative efforts. London (1995) describes collaborations as time consuming, less effective in groups that are too large, and prone to power inequalities that can sometimes derail the collaborative process. Conflict is also common in collaborations, especially when partners with different organizational cultures and varied views about planning, strategies, and tactics come together (Woulfe et al., 2010). Even if stakeholders agree with the overall goals and objectives of the partnership, partners may have different views on how to get there. Collaboration may also not be the best course of action in a situation that requires quick and decisive actions (London, 1995). The stage of a collaborative effort can also present challenges. A new collaboration may lack credibility and power and be less connected than an established one (Woulfe et al., 2010).

4. Evaluating NIH-HHS Collaborations

The literature points to some common elements associated with successful collaborative efforts that can be used to guide evaluation of collaborations between NIH and other HHS agencies. For example, the GAO reports identifies some important practical elements for successful collaborations such as defining joint outcomes, agreeing upon roles and responsibilities, and establishing policies, procedures and operating mechanisms. Additionally, the broader literature points to additional factors that can contribute to a collaborations success such as collective decision-making, non-traditional leadership styles, and the synergism created from shared responsibilities. The literature also points to the importance of frequent, ongoing communication among members. All of these elements should be considered when determining which aspects of NIH-HHS collaborations should be measured for evaluation purposes.

There are also potentially useful measures and instruments already developed that could be applied/adapted to evaluations of NIH-HHS collaborations. For example, Duckers et al., Frey et al., and Masse et al., provide various survey items; Gajda provides the Strategic Alliance Formative Assessment Rubric (SAFAR); and Mattessich and colleagues present the Wilder Collaboration Factors Inventory. The development of instruments for the current evaluation study should review all of these resources and incorporate and adapt as appropriate.

In addition, collaborations generally fall across a continuum of stages from low to high integration, ranging from communicating and networking, to collaborating and coadunation. Examining the various activities associated with an NIH-HHS collaboration in the context of stage theory can help to better understand

where current collaborations fall on the continuum, what issues might be common in those stage, and whether the collaboration might benefit from being more integrated.

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Annotated Bibliography

Butterfoss, F. D. (2009). "Evaluating partnerships to prevent and manage chronic disease." Prev Chronic Dis **6**(2): A64.

To be effective and sustain themselves over time, public-private partnerships must make evaluation a priority. Specifically, partnerships should evaluate 1) their infrastructure, function, and processes; 2) programs designed to achieve their mission, goals, and objectives; and 3) changes in health and social status, organizations, systems, and the broader community. This article describes how to 1) develop a comprehensive evaluation strategy based on partnership theory; 2) select short-term, intermediate, and long-term indicators to measure outcomes; 3) choose appropriate methods and tools; and 4) use evaluation results to provide accountability to stakeholders and improve partnership function and program implementation.

Conway, K., S. Greenaway, et al. (2007). "Community action--challenges and constraints--implementing evidence-based approaches within a context of reorienting services." Subst Use Misuse **42**(12-13): 1867-1882.

Community action on alcohol use-related projects face significant challenges in focusing efforts where they are most likely to be effective--on environmental strategies for optimum impact and sustainable institutional change. Reorienting and enhancing the efforts of existing services is a crucial issue for all countries with limited resources. This paper evaluates the use of a public health partnerships model to reorient resources and enhance cross sector collaboration to reduce alcohol consumption-related harm in a large New Zealand city from 2001-2004. The evaluation assessed changes in the management practices of participating health provider organisations, the reorientation of activities and the redeployment of provider resources, in light of evaluation evidence from collaborative initiatives undertaken by key stakeholder organisations. Despite the considerable challenges inherent in reorienting existing health sector resource and encouraging more evidence-based practice, this evaluation found encouraging signs of positive systemic changes, both within the health sector and with external stakeholders, in the redirection of priorities and resources. The focus on collaborative environmental strategies has also contributed to some limited, but promising structural changes to reduce harm in the licensed alcohol availability, accessibility and promotion environment.

Duckers, M., C. Wagner, et al. (2008). "Developing and testing an instrument to measure the presence of conditions for successful implementation of quality improvement collaboratives." BMC Health Services Research **8**(172).

El Ansari, W., C. J. Phillips, et al. (2001). "Collaboration and partnerships: developing the evidence base." Health Soc Care Community **9**(4): 215-227.

Despite the growing literature that collaboration is a 'good' thing, there are calls emphasising the need for evidence of its effectiveness. However, the nature of the

evidence to assess effectiveness is less clear. This paper examines the components that contribute to the challenges that confront evidence on collaboration. It considers the differing interpretations that have been placed on evaluation and explores how ways of determining the outcomes of collaboration and the levels of outcome measurement to assess collaborative effectiveness are influenced by the multifactorial nature of the concept. Evidence on the impact of collaboration is influenced by the diversity of perspectives and conceptual facets, and difficulty in measurement of the notions involved. Other factors discussed are the choice of macro or micro evaluation, of proximal or distal indicators, of short and long-term effects, or of individual-level or collective community-level outcomes. The suitability of randomised controlled trials for the measurement of collaborative outcomes as well as the requirement of mixed methods evaluations are highlighted. An evaluation of five community partnerships in South Africa is employed as an example to link the evaluation concepts that are discussed to a real enquiry. If collaboration is to be successful in making a difference in the lives of people, then increasing the precision and context of appraising its effectiveness will reduce the nature of inconclusive evidence and is likely to improve the practice of partnerships, coalitions and joint working in health and social care.

Fawcett, S., J. Schultz, et al. (2010). "Building multisectoral partnerships for population health and health equity." Prev Chronic Dis **7**(6): A118.

Poor performance in achieving population health goals is well-noted - approximately 10% of public health measures tracked are met. Less well-understood is how to create conditions that produce these goals. This article examines some of the factors that contribute to this poor performance, such as lack of shared responsibility for outcomes, lack of cooperation and collaboration, and limited understanding of what works. It also considers challenges to engaging stakeholders at multiple ecologic levels in building collaborative partnerships for population health. Grounded in the Institute of Medicine framework for collaborative public health action, it outlines 12 key processes for effecting change and improvement, such as analyzing information, establishing a vision and mission, using strategic and action plans, developing effective leadership, documenting progress and using feedback, and making outcomes matter. The article concludes with recommendations for strengthening collaborative partnerships for population health and health equity.

Frey BB, L. J., Lee SW, Tollefson N (2006). "Measuring collaboration among grant partners." American Journal of Evaluation **27**(3): 383-392.

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Gajda, R. (2004). "Utilizing Collaboration Theory to Evaluate Strategic Alliances." American Journal of Evaluation **25**: 65-77.

Increasingly, collaboration between business, non-profit, health and educational agencies is being championed as a powerful strategy to achieve a vision otherwise not

possible when independent entities work alone. But the definition of collaboration is elusive and it is often difficult for organizations to put collaboration into practice and assess it with certainty. Program evaluators can assist practitioners concerned with the development of a strategic alliance predicated on collaboration by understanding and utilizing principles of collaboration theory. The Strategic Alliance Formative Assessment Rubric (SAFAR) is an assessment tool that captures central principles of collaboration and has been used as part of a four-step evaluation process to help alliance leaders, managers, and members in Safe School/Healthy Student Initiatives to quantitatively and qualitatively gauge, celebrate, and communicate the relative strength of their collaborative endeavor over time. The collaboration principles and corresponding assessment processes described in this article can be used by evaluators of large- or small-scale initiatives that seek to capitalize on the synergistic power of the “collaborative effort.”

GAO (2005). Results-Oriented Government: Practices That Can Help Enhance and Sustain Collaboration among Federal Agencies. Washington, DC.

GAO (2012). Managing for Results: Key Considerations for Implementing Interagency Collaborative Mechanisms. Washington, DC.

Henneman, E., J. L. JL, et al. (1995). “Collaboration: a concept analysis.” Journal of Advanced Nursing **21**: 103-109.

Kania, J. and M. Kramer (2011). “Collective Impact.” Stanford social innovation review **Winter**.

Kenaszchuk C, R. S., Nicholas D, Zwarenstein M (2010). “Validity and reliability of a multiple group measurement scale for interprofessional collaboration.” BMC Health Services Research **10**(83).

La Porta, M., H. Hagood, et al. (2007). “Partnership as a means for reaching special populations: evaluating the NCI's CIS Partnership Program.” J Cancer Educ **22**(1 Suppl): S35-40.

BACKGROUND: The National Cancer Institute's (NCI's) Cancer Information Service (CIS) Partnership Program involves collaboration with over 900 organizations and coalitions serving minority and medically underserved populations. Cancer Information Service collaborations are categorized into three types: networking, educational program, and program development partnerships. METHODS: A survey of CIS partnership organizations (n = 288). RESULTS: Most respondents reported that partnerships with CIS are collaborative and make good use of their organization's skills and resources, and most perceive that the benefits of partnership outweigh any drawbacks. More than one-quarter say partnerships have not done a good job evaluating collaborative activities. Results vary among three types of partnerships. CONCLUSIONS: Evaluation of the CIS Partnership Program presents an opportunity to examine how a large-scale and multi-faceted partnership effort has been implemented, how it is evaluated, and initial indicators of program success. Organizations, health professionals, and community

leaders interested in effective partnerships can use these findings to strengthen collaborations and maximize outcomes.

Lipp, A., T. Winters, et al. (2013). "Evaluation of partnership working in cities in phase IV of the WHO Healthy Cities Network." *J Urban Health* **90 Suppl 1**: 37-51.

An intersectoral partnership for health improvement is a requirement of the WHO European Healthy Cities Network of municipalities. A review was undertaken in 59 cities based on responses to a structured questionnaire covering phase IV of the network (2003-2008). Cities usually combined formal and informal working partnerships in a pattern seen in previous phases. However, these encompassed more sectors than previously and achieved greater degrees of collaborative planning and implementation. Additional WHO technical support and networking in phase IV significantly enhanced collaboration with the urban planning sector. Critical success factors were high-level political commitment and a well-organized Healthy City office. Partnerships remain a successful component of Healthy City working. The core principles, purpose and intellectual rationale for intersectoral partnerships remain valid and fit for purpose. This applied to long-established phase III cities as well as newcomers to phase IV. The network, and in particular the WHO brand, is well regarded and encourages political and organizational engagement and is a source of support and technical expertise. A key challenge is to apply a more rigorous analytical framework and theory-informed approach to reviewing partnership and collaboration parameters.

London, S. (1995). "Collaboration and Community: A report prepared for the Pew Partnership for Civic Change."

Masse, L. C., R. P. Moser, et al. (2008). "Measuring collaboration and transdisciplinary integration in team science." *Am J Prev Med* **35**(2 Suppl): S151-160.

PURPOSE: As the science of team science evolves, the development of measures that assess important processes related to working in transdisciplinary teams is critical. Therefore, the purpose of this paper is to present the psychometric properties of scales measuring collaborative processes and transdisciplinary integration. **METHODS:** Two hundred-sixteen researchers and research staff participating in the Transdisciplinary Tobacco Use Research Centers (TTURC) Initiative completed the TTURC researcher survey. Confirmatory-factor analyses were used to verify the hypothesized factor structures. Descriptive data pertinent to these scales and their associations with other constructs were included to further examine the properties of the scales. **RESULTS:** Overall, the hypothesized-factor structures, with some minor modifications, were validated. A total of four scales were developed, three to assess collaborative processes (satisfaction with the collaboration, impact of collaboration, trust and respect) and one to assess transdisciplinary integration. All scales were found to have adequate internal consistency (i.e., Cronbach alpha's were all >0.70); were correlated with intermediate markers of collaborations (e.g., the collaboration and transdisciplinary-integration scales were positively associated with the perception of a center's making good progress in creating new methods, new science and models, and new interventions); and showed

some ability to detect group differences. CONCLUSIONS: This paper provides valid tools that can be utilized to examine the underlying processes of team science--an important step toward advancing the science of team science.

Nowell, B. (2009). "Profiling Capacity for Coordination and Systems Change: The Relative Contribution of Stakeholder Relationships in Interorganizational Collaboratives." Am J Community Psychol.

In response to increasing demands for greater coordination and collaboration among community institutions, interorganizational collaboratives (i.e., coalitions, partnerships, coordinating councils) have emerged as a popular mechanism for strengthening the capacity of a community system to respond to public and social issues. This study adopts a network approach to explore the relative importance of dense networks of cooperative relationships among members of interorganizational collaboratives for two outcomes of effectiveness: improving interorganizational coordination and fostering systems change. Based on survey and social network data collected from 48 different collaboratives, findings indicate that, relative to other key characteristics of collaboratives identified in previous literature, cooperative stakeholder relationships were the strongest predictor of systems change outcomes. However, for coordination outcomes, stakeholder relationships were overshadowed in importance by the leadership and decision making capacity of the collaborative. Collectively, findings suggest key differences in the requisite capacity profiles for coordination and systems change outcomes.

Sibbald, S., A. Kothari, et al. (2012). "Partnerships in public health: Lessons from knowledge translation and program planning." CJNR: Canadian Journal of Nursing Research **44**(1): 94-119.

The purpose of this study was to better understand how partnerships are initiated, maintained, and sustained in public health practice. A qualitative design was employed to conduct individual interviews and focus groups. The participants included practitioners from 6 purposively selected public health units in the Canadian province of Ontario that developed partnerships in program planning. It was found that partnerships play an essential role in program planning but that minimal information is available regarding the partnership process. Most partnerships are formed on an ad hoc basis, with little formalization. Public health professionals rely on their experiential knowledge when seeking out and working with partners. These findings can serve to inform future public health planning and strengthen the formation and maintenance of partnerships in public health and other sectors. Understanding how partnerships are initiated, maintained, and sustained is an important first step in supporting the use of research to advance collaborative public health efforts. (PsycINFO Database Record (c) 2013 APA, all rights reserved)(journal abstract)

Teal, R., A. A. Moore, et al. (2012). "A community-academic partnership to plan and implement an evidence-based lay health advisor program for promoting breast cancer screening." Journal of Health Care for the Poor and Underserved **23**(2, Suppl): 109-120.

Despite a growing body of evidence concerning effective approaches to increasing breast cancer screening, the gap between research and practice continues. The North Carolina Breast Cancer Screening Program (NC-BCSP) is an example of an evidence-based intervention that uses trained lay health advisors (LHA) to promote breast cancer screening. Partnerships that link academic researchers knowledgeable about specific evidence-based programs with community-based practitioners offer a model for increasing their use. This article describes a partnership between Cross Works, Inc., a community-based organization, and the UNC-CH Lineberger Comprehensive Cancer Center in planning and implementing an evidence-based program for promoting breast cancer screening among older African American women in rural eastern North Carolina communities. We used in-depth interviews to explore the relationship of the partnership to the activities that were undertaken to launch the evidence-based program. (PsycINFO Database Record (c) 2012 APA, all rights reserved)(journal abstract)

Thomson, A. M., J. L. Perry, et al. (2007). "Conceptualizing and Measuring Collaboration." Journal of Public Administration Research and Theory.

Varda, D. M., A. Chandra, et al. (2008). "Core dimensions of connectivity in public health collaboratives." J Public Health Manag Pract **14**(5): E1-7.

A major challenge facing state and local public health agencies is how to partner with other organizations, agencies, and groups to collaboratively address goals in population health while effectively maximizing resource sharing of the partners involved. Today's public health efforts require multiagency partnerships between both governmental and nongovernmental sectors to achieve this mission. However, the frequent reconfiguration of partnerships among government and nongovernmental agencies has left many public health managers struggling to find ways to both develop public health collaboratives and evaluate their success. In this article, we use network theory and social network analysis to outline the core dimensions of connectivity used to measure progress in public health collaboratives. Connectivity is defined as the measured interactions between partners in a collaborative such as the amount and quality of interactions and how these relationships might change over time. We also articulate how these measures fit into the overall process of measuring progress in public health collaboratives and end the article with suggestions for future research and development.

Woulfe, J., T. R. Oliver, et al. (2010). "Multisector partnerships in population health improvement." Prev Chronic Dis **7**(6): A119.

Many new initiatives for population health improvement feature partnerships of leaders and organizations across multiple sectors of society. The purpose of this article is to review 1) the rationale for such partnerships as an important, if not essential, tool for population health improvement; 2) key organizational and contextual factors that appear to be associated with effective multisector partnerships; and 3) the limited evidence regarding the effect of such partnerships on population health outcomes. We conclude that systems thinking - accounting for the collective effect of many actors and

actions - is essential to organizing and sustaining efforts to improve population health, and to evaluating them. More research is needed to understand how and why multisector partnerships are formed and sustained and the conditions under which multisector partnerships are necessary or more effective than other strategies for population health improvement. Research on and evaluation of multisector partnerships also need to incorporate more standard measures of partnership contexts, characteristics, and strategies and adopt longitudinal and prospective designs to accelerate social learning in this area. Finally, studies of multisector partnerships must be alert to the value of such initiatives to individuals and communities apart from any direct and measurable impact on population health.

Appendix B. CRS Analysis Report

1. Introduction

This report is for Task 2 of the process evaluation Tracing Discovery to Implementation and Dissemination within HHS: An Evaluation of Information Flow through Collaborations (Contract HHSP23320095628WC_HHSP23337005T). In order to determine whether NIH-HHS collaborative efforts are achieving the desired results over the long run, it is necessary to conduct a process evaluation to better understand the full scope and nature of the many collaborative efforts, examine in more detail *how* results from NIH-sponsored research flow into and inform the work of other HHS agencies, and identify the key factors that facilitate or hinder those efforts. The evaluation will also be used to solicit information from key stakeholders that will identify areas where new collaborations could be fostered, generate recommendations for how best to implement effective collaborations, and improve NIH's ability to monitor, evaluate, and improve collaboration overall within the agency and across all of HHS. The evaluation will employ a mixed methods approach to collect and analyze relevant data to address these aims.

The process evaluation will focus on five HHS agencies representing different levels of involvement in collaborative activities with NIH Institutes, Centers and Offices in the Office of Director (ICs and OD Offices), including the Centers for Disease Control and Prevention (CDC), the Food and Drug Administration (FDA), the Substance Abuse and Mental Health Services Administration (SAMHSA), the Administration for Children and Families (ACF), and the Administration for Community Living (ACL). Employees from agencies with a long history and great extent of intra-HHS collaboration will be able to provide insight and feedback based on substantial experience. In contrast, employees from agencies with less direct interaction with NIH will provide insight and ideas about how to expand cross-agency collaborations.

As one component of the larger evaluation project, the purpose of Task 2 is to analyze the most recent and complete dataset (FY2012) from NIH's Intra-HHS Collaborations Reporting System (CRS) in order to:

- Better understand the nature and outcomes of current collaborations between NIH and the Five Targeted Agencies;
- Identify Key Offices and Personnel at NIH and the Five Targeted Agencies involved in current collaborations; and
- Devise a sampling strategy for subsequent evaluation tasks.

The CRS is a valuable tool for documenting the broad range of collaborative activities between NIH and other HHS agencies over time. Analysis of the data from this system will provide a foundation upon which this evaluation and future evaluation activities can be built.

2. Methods

2.1 DATA

The NIH Reform Act of 2006 requires NIH to submit to the HHS Secretary an annual report on NIH and other HHS agency collaborations in order to encourage interagency collaboration and coordination. The first annual report was issued in 2006. The Office of Science Policy (OSP) collects data for the report from all 27 NIH Institutes and Centers as well as numerous offices situated within the Office of the NIH Director. Starting with the FY2011 reporting year, the NIH's Intra-HHS Collaborations Reporting System

(CRS) has been utilized, a web-based content management system that stores all reported data and facilitates annual data collection from all NIH ICs and numerous OD Offices. The reported collaborations captured in the CRS database include activities that were active at any point since FY2002.

The evaluation team used the FY2012 CRS data, the most recent and complete data available. These data consisted of 601 discrete collaborative activities (CAs) compiled from among the various NIH ICs and OD Offices.

2.2 MEASURES

The evaluation team used several CRS variables relevant to the purpose of Task 2. The main variables analyzed for this report are described below.

- Submitting NIH Institute or Center (IC).
- HHS Participating Agencies. For this analysis, we only report results for the five targeted agencies – Centers for Disease Control and Prevention (CDC), Food and Drug Administration (FDA), Substance Abuse and Mental Health Services Administration (SAMHSA), Administration for Children and Families (ACF), and Administration for Community Living (ACL).
- NIH Participating Institutes, Centers, and Offices.
- Collaboration Type (7 categories).
- Year Collaboration Originated.
- HHS Strategic Priority Alignment and NIH Strategic Priority Alignment: The CRS allows the submitting ICs and OD Offices to indicate whether their collaborative activities are aligned with the goals or objectives outlined in the HHS Strategic Plan (FY2010-2015) and the NIH Strategic Priorities outlined in the NIH Congressional Budget Justification (FY2011). The table in Appendix B.c provides a list of all of the strategic priorities.
- Products/Outputs (12 categories).
- Funding variables, including:
 - NIH Funding Contribution for FY2012 (\$ amount);
 - Funding Provided for FY2012 (Y/N); and
 - Funding Mechanism (7 categories).

2.3 ANALYSIS

The evaluation team used descriptive statistics to summarize the selected CRS variables across all collaborative activities and for those involving the targeted HHS agencies.

2.4 LIMITATIONS

While the CRS is a unique and valuable resource to NIH and other HHS agencies, there are several noteworthy limitations that potentially affect the usefulness and validity of the data.

- There is variability in how collaboration activity data are compiled, validated, and reported across the NIH ICs and OD Offices, leading to variability in data quality and completeness.

- The CRS includes both structured and non-structured data elements, and has limited quality controls built into the submission system, allowing for variability in formatting and completeness which results in inconsistencies with the data.
- Because data collection methods and content have changed over time, there are significant data inconsistencies across years. Data sets from FY2006-2008 contain minimal information. Data sets for FY2009 – 2011 have additional data fields but information contained within may be inconsistent. The data set for FY 2012 includes additional data fields and some definitions have changed from previous years.
- CRS data are only available for analysis in a single fiscal year format. The CRS does not currently provide the ability to export data for analysis in such a way that clearly and unambiguously links the same activity from year to year through unique identifiers (e.g., an activity identification number or a consistent name/title). While there are numerous examples of activities that have been reported every year since 2006, it may not be obvious which FY 2006 activity, for example, is the same as the FY 2012 activity still ongoing.
- The data are reported only by NIH staff and do not include information from collaborating agencies.
- The CRS does not provide fine-grain details about collaborating HHS agencies or the NIH and HHS employees who are involved in the CAs, limiting the ability to identify important collaborative relationships.

3. Results

3.1 Inter-Agency Collaborative activities

Overall, there were 601 distinct collaborative activities (CAs) for FY2012 (Table B.1). These CAs were submitted to the CRS by 31 ICs and OD Offices (see Appendix B.a for counts of submissions by all ICs and OD Offices). Among these CAs, the majority (86%) consisted of four collaboration types: (1) Committee, Advisory Group, or Work Group; (2) Research Initiative; (3) Meeting/Workshop; and (4) Resource Development (Figure B.1). The other collaboration types accounted for less than 15% of all reported CAs.

For the FY2012 data, the years in which the CAs originated range from 1957 to 2012 (Appendix B.b). Eighty-five percent of all CAs have originated since the year 2000, and 62% have originated since 2006 when NIH first began tracking and reporting intra-HHS collaborations.

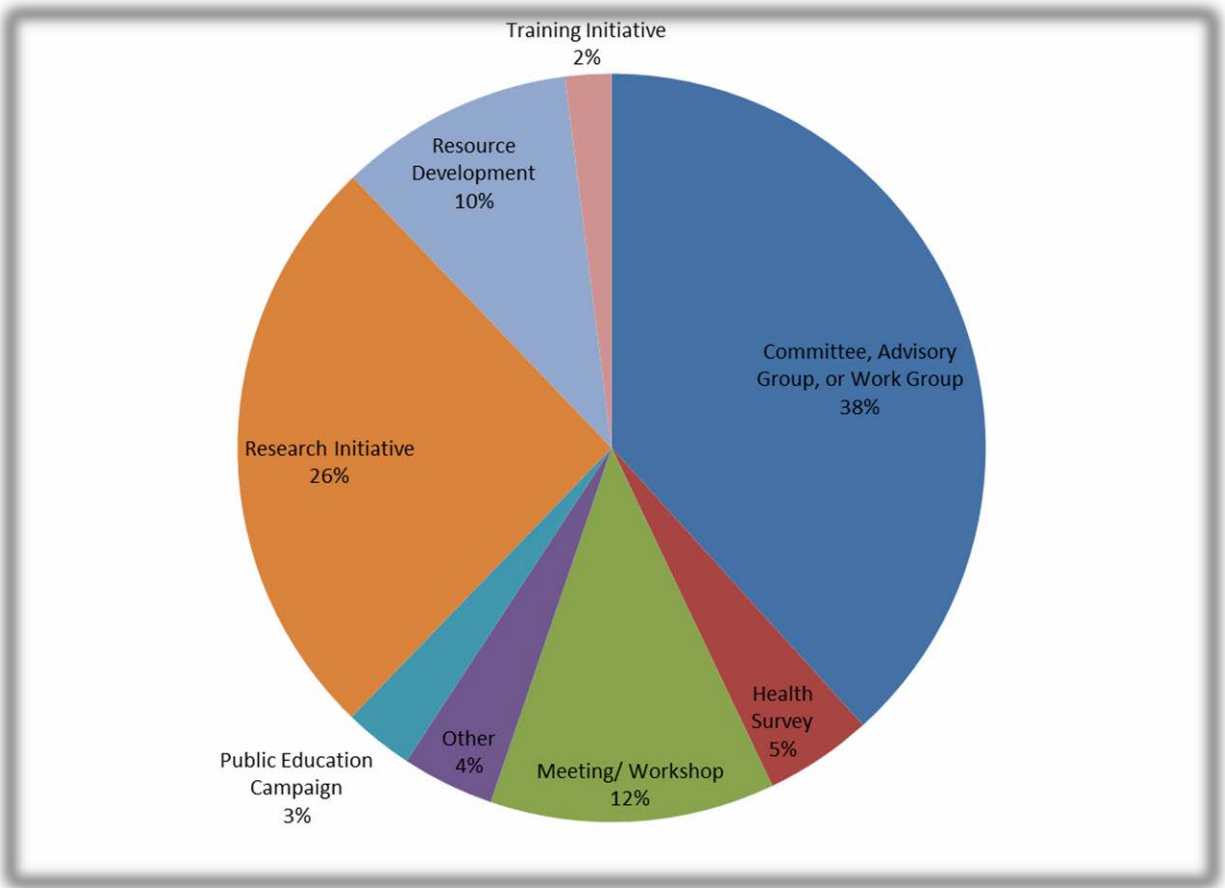


Figure B.1. Types of Collaborative activities, FY2012 (n=601).

Table B.1. Collaborative activities Overall and for the Five Targeted Agencies by Collaboration Type

Collaboration Type	All Agencies		One or More Targeted Agencies *		Five Targeted Agencies**									
					CDC		FDA		SAMHSA		ACF		ACL	
	#	%	#	%	#	%	#	%	#	%	#	%	#	%
Committee, advisory group, or work group	230	38.3	206	41.0	163	43.9	127	54.0	47	56.6	39	79.6	13	65.0
Health survey	28	4.7	24	4.8	22	5.9	2	0.9	1	1.2	1	2.0	0	0.0
Meeting/ workshop	74	12.3	56	11.1	38	10.2	28	11.9	10	12.0	5	10.2	1	5.0
Public education campaign	18	3.0	13	2.6	12	3.2	3	1.3	1	1.2	0	0.0	2	10.0
Research initiative	154	25.6	125	24.9	83	22.4	42	17.9	7	8.4	1	2.0	2	10.0
Resource development	61	10.1	49	9.7	36	9.7	20	8.5	10	12.0	2	4.1	1	5.0
Training initiative	12	2.0	11	2.2	4	1.1	6	2.6	1	1.2	0	0.0	0	0.0
Other	24	4.0	19	3.8	13	3.5	7	3.0	6	7.2	1	2.0	1	5.0
Agency Total ***	601	100.0	503	83.7	371	61.7	235	39.1	83	13.8	49	8.2	20	3.3

Source: NIH's Intra-HHS Collaborations Reporting System (CRS), FY2012.

* Applies to collaborative activities that include participation by one or more of the five targeted agencies.

** Counts for each targeted agency include collaborative activities that involve the targeted agency either alone or with one or more of any other HHS agency. Denominators for percentages are the total number of collaborative activities per agency (last row).

*** The denominator for the percentages listed in the Agency Total row is the total number of collaborative activities reported for FY2012 (n=601).

3.2 Collaborations Involving the Five Targeted Agencies

Across the 601 total CAs reported in FY2012, one or more of the five targeted agencies were involved in 503 (84%) (Table B.1). In terms of the total number of CAs in which each were involved, the targeted agencies varied considerably. For example, the CDC and FDA had high levels of involvement (62% and 39% of all CAs, respectively), while SAMHSA had moderate involvement (14%), and ACF and ACL had low involvement (8% and 3%, respectively).

While the targeted agencies were involved in all seven types of collaborative activities, some types of activities were more common than others (Table B.1):

- “Committee, Advisory Group, or Work Group” is the most common type of CA across all five of the targeted agencies, representing 44% to 80% of the total number of activities per agency.
- “Research Initiative” was a relatively common type of collaboration for the targeted agencies, especially for CDC and FDA.
- “Meeting/workshop” and “Resource Development” were also relatively common, especially for CDC, FDA, and SAMHSA.

As of FY2012, the five targeted agencies were co-participating in some of the same CAs. Figure B.2 provides a distribution of the number of targeted agencies participating in the same CAs, ranging from zero (none of the five agencies) to all five co-participating. In most cases, the targeted agencies were not co-participating in CAs with each other – 53% of all FY2012 CAs involved only one of the targeted agencies. But when they did co-participate, it was more common for one of the targeted agencies to participate with just one other (23%) than with three or more (8%). Table B.2 provides counts of the CAs in which the various pairings of agencies co-participated. From this table, we see that:

- CDC is a frequent co-participant with the other four agencies.
- FDA also co-participates with each of the other four agencies to a moderate extent.
- SAMHSA co-participates to a significant extent with ACF and ACL.

Table B.2. Co-Participation in NIH Collaborative activities between the Five Targeted Agencies.

Targeted Agency	CDC (n 371)		FDA (n 235)		SAMHSA (n 83)		ACF (n 49)		ACL (n 20)	
	#	%	#	%	#	%	#	%	#	%
	CDC	371	100.0	131	55.7	62	74.7	42	85.7	15
FDA	131	35.3	235	100.0	32	38.6	17	34.7	8	40.0
SAMHSA	62	16.7	32	13.6	83	100.0	23	46.9	11	55.0
ACF	42	11.3	17	7.2	23	27.7	49	100.0	6	30.0
ACL	15	4.0	8	3.4	11	13.3	6	12.2	20	100.0

Source: NIH’s Intra-HHS Collaborations Reporting System (CRS), FY2012.

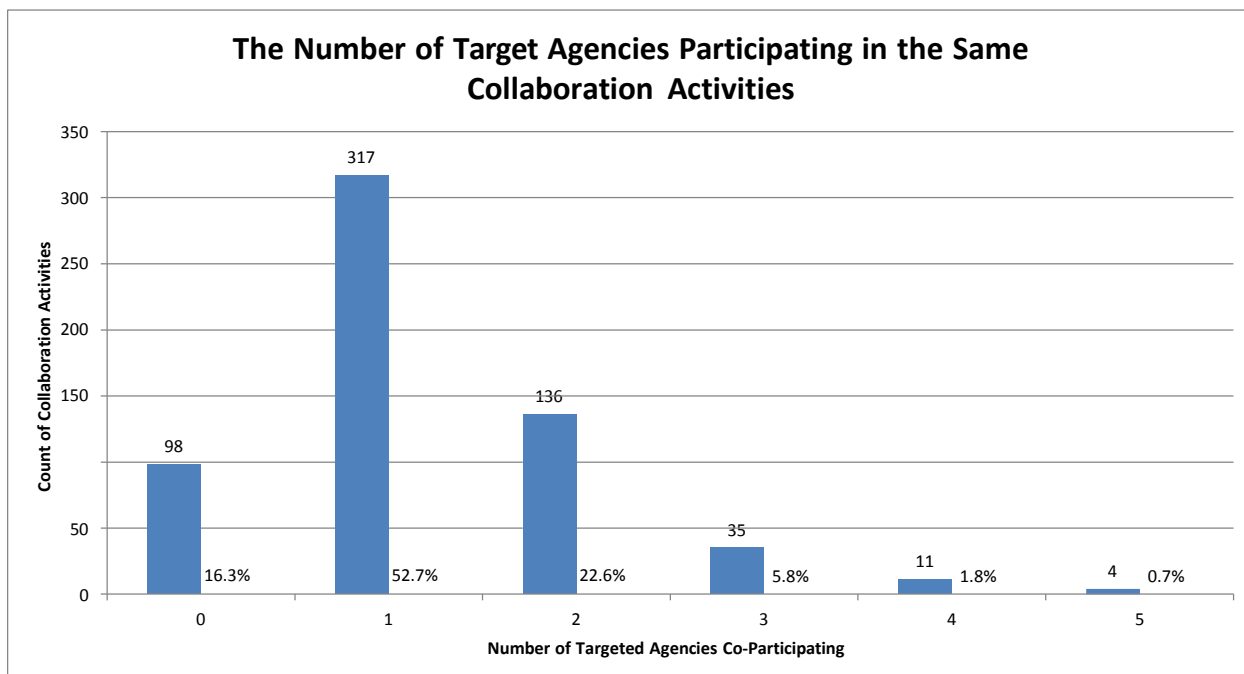


Figure B.2. Co-Participation in Collaborative activities among the Targeted Agencies, FY2012.

3.3 ICO collaborations with the Five Targeted Agencies

The table in Appendix B.a illustrates intra-HHS linkages by providing counts of CAs for each ICO by the five targeted agencies. The table also provides counts of the CAs submitted to the CRS for FY2012 by each ICO. Key findings are summarized below.

- All five of the targeted agencies had relatively high levels of collaboration with the National Institute of Child Health and Human Development.
- FDA and CDC had similar patterns of broad collaboration with several of the ICs and OD Offices. The highest levels of collaboration for both agencies were with the following four Institutes, including (percentages for FDA and CDC, respectively):
 - National Institute of Allergy and Infectious Diseases (35% and 24%);
 - National Cancer Institute (32% and 26%)
 - National Heart, Lung and Blood Institute (32% and 26%); and
 - National Institute of Child Health and Human Development (31% and 31%).
- FDA and CDC also had relatively high levels of collaboration with several other Institutes, including (percentages for FDA and CDC, respectively):
 - National Institute of Neurological Disorders and Stroke (26% and 15%).
 - National Institute of Diabetes and Digestive Kidney Diseases (23% and 16%);
 - National Institute of Mental Health (20% and 19%); and
 - National Institute on Drug Abuse (20% and 18%);

- National Institute of Environmental Health Sciences (18% and 15%);
- SAMHSA had relatively high levels of collaboration with several Institutes (including those that share a focus on substance abuse and/or mental health) such as:
 - National Institute on Drug Abuse (61%);
 - National Institute of Mental Health (47%);
 - National Institute on Alcohol Abuse and Alcoholism (35%);
 - National Heart, Lung and Blood Institute (25%); and
 - National Cancer Institute (24%).
- ACF collaborated most often with the National Institute of Child Health and Human Development (61%) and had relatively high levels of collaboration with:
 - National Institute on Drug Abuse (43%);
 - National Institute of Mental Health (39%); and
 - National Institute on Alcohol Abuse and Alcoholism (29%);
- ACL collaborated most often with Institutes that focus on diseases associated with advanced age, especially with the National Institute on Aging (70%) and the National Institute of Mental Health (55%).
- SAMHSA (16%), ACF (20%), and ACL (35%) all had relatively high levels of collaboration with Office of Behavioral and Social Sciences Research in the NIH Office of the Director.

3.4 Alignment with Strategic Priorities and Goals

The table in Appendix B.c provides counts of the number of CAs submitted for FY2012 that were aligned with each of the HHS or NIH priorities overall and by the five targeted agencies. Key findings are summarized below.

3.4.1 HHS Strategic Priorities

- CAs involving the targeted agencies were most commonly associated with strategic goals (1) Strengthen Health Care; (2) Advance Scientific Knowledge and Innovation, and (3) Advance Health, Safety, and Well-Being (Figure B.3).
 - For Goal 1, the two most commonly cited objectives were “1.2 Improve healthcare quality and patient safety,” and “1.3 Emphasize primary and preventive care linked with community prevention services.”
 - For Goal 2, the two most commonly cited objectives were “2.1 Scientific discovery to improve patient care,” and “2.2 Innovation to create shared solutions.”
 - For Goal 3, the three most commonly cited objectives were “3.1 Children and youth;” “3.4 Promote prevention and wellness;” and “3.5 Reduce the occurrence of infectious diseases.”
- Fewer CAs were associated with the other two strategic goals: (4) Increase Efficiency, Transparency, and Accountability; and (5) Strengthen Infrastructure and Workforce (Figure B.3).
 - For Goal 4, the most commonly cited objective was “4.3 Use HHS data to improve the health and well-being.”

- For Goal 5, the only objective cited was “5.5 Improve surveillance and epidemiology capacity.”
- Some CAs were aligned with strategic priorities that clearly reflected agency focus:
 - 41% (n=20) of CAs involving ACF were linked to objective “3.1 Children and Youth.”
 - 35% (n=7) of CAs involving ACL were linked to objective “1.3 Emphasize primary and preventive care linked with community prevention services.”

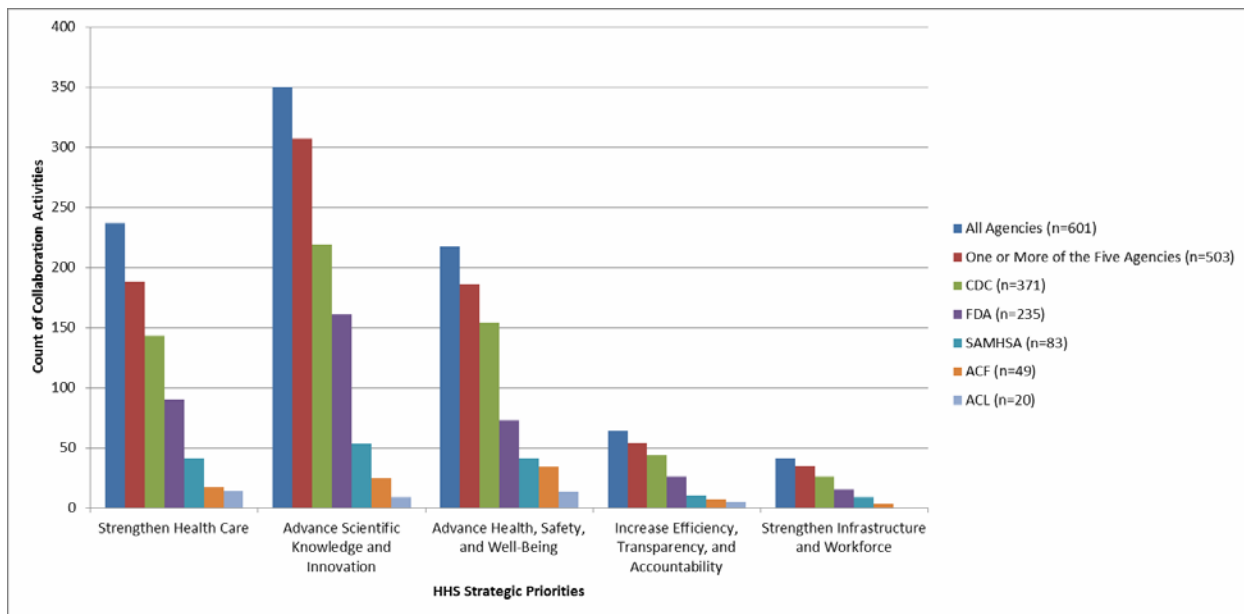


Figure B.3. Collaborative activities Aligned with HHS Strategic Priorities, FY2012.

3.4.2 NIH Strategic Priorities

- CAs involving the targeted agencies were most commonly associated with two of the four strategic priorities (Figure B.4).
 - The most commonly cited strategic priority overall (n=370, 62%) and for all five agencies (n=315, 63%) was “Translational science.”
 - The second most commonly cited strategic priority overall (n=190, 32%) and for all five agencies (n=173, 34%) was “Today’s basic science for tomorrow’s breakthroughs.” This priority was cited more often for CAs involving CDC and FDA than for the other three targeted agencies.

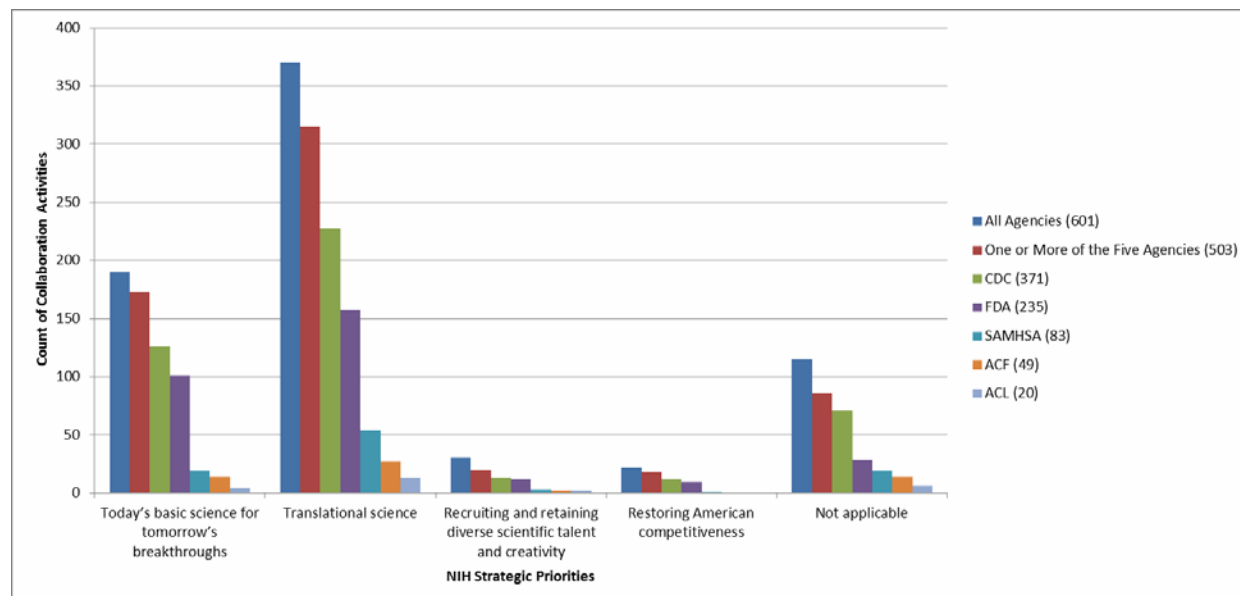


Figure B.4. Collaborative activities Aligned with NIH Strategic Priorities, FY2012.

3.5 Products & Outputs

The CAs that involved the targeted agencies produced a variety of products and outputs (Table B.3 and Figure B.5).

- For the CAs that involved one or more of the five targeted agencies, the most common types of products or outputs were:
 - Research tool development (20%);
 - Informational website or print materials (19%);
 - Research resource (16%);
 - Journal article (16%); and
 - Guidance, guidelines, or standards (12%).
- A substantial proportion of the CAs involving the ACF focused on the research tool development (31%).
- The types of products that are potentially associated with the application of NIH-sponsored research—e.g., guidance, guidelines, or standards (12%); clinical tool development (7%); best practices document (5%); white paper/policy recommendations (7%); and regulation or rule-making (2%)—are not well represented among the CAs involving one or more of the targeted agencies.
- About one third of all CAs involving the targeted agencies were categorized as “not applicable” regarding products/outputs.

Table B.3. Products and Outputs from Collaborative activities among the Five Targeted Agencies.

Products/Outputs*	All Agencies (n=601)		One or More Targeted Agencies** (n=503)		CDC (n=371)		FDA (n=235)		SAMHSA (n=83)		ACF (n=49)		ACL (n=20)	
	#	%	#	%	#	%	#	%	#	%	#	%	#	%
Best practices document	29	4.8	24	4.8	19	5.1	8	3.4	8	9.6	3	6.1	2	10.0
Clinical tool development	38	6.3	35	7.0	19	5.1	15	6.4	7	8.4	0	0.0	0	0.0
Guidance, Guidelines, or Standards	70	11.6	61	12.1	50	13.5	29	12.3	10	12.0	4	8.2	2	10.0
Informational website or print materials	109	18.1	95	18.9	69	18.6	42	17.9	22	26.5	11	22.4	7	35.0
Journal article	99	16.5	78	15.5	53	14.3	26	11.1	8	9.6	1	2.0	2	10.0
Regulation or rule-making	10	1.7	10	2.0	7	1.9	7	3.0	0	0.0	0	0.0	0	0.0
Research resource	97	16.1	78	15.5	51	13.7	37	15.7	16	19.3	4	8.2	5	25.0
Research tool development	127	21.1	98	19.5	67	18.1	39	16.6	15	18.1	15	30.6	2	10.0
Strategic Plan	13	2.2	13	2.6	11	3.0	10	4.3	3	3.6	0	0.0	1	5.0
White paper/Policy recommendations	38	6.3	33	6.6	22	5.9	20	8.5	3	3.6	4	8.2	2	10.0
Other	60	10.0	50	9.9	34	9.2	26	11.1	10	12.0	6	12.2	1	5.0
N/A	176	29.3	154	30.6	116	31.3	80	34.0	26	31.3	13	26.5	6	30.0

Source: NIH's Intra-HHS Collaborations Reporting System (CRS), FY2012.

* Some CAs produced multiple products/outputs, so percentages in columns do not add up to 100%.

** Applies to collaborative activities that include participation by one or more of the five targeted agencies.

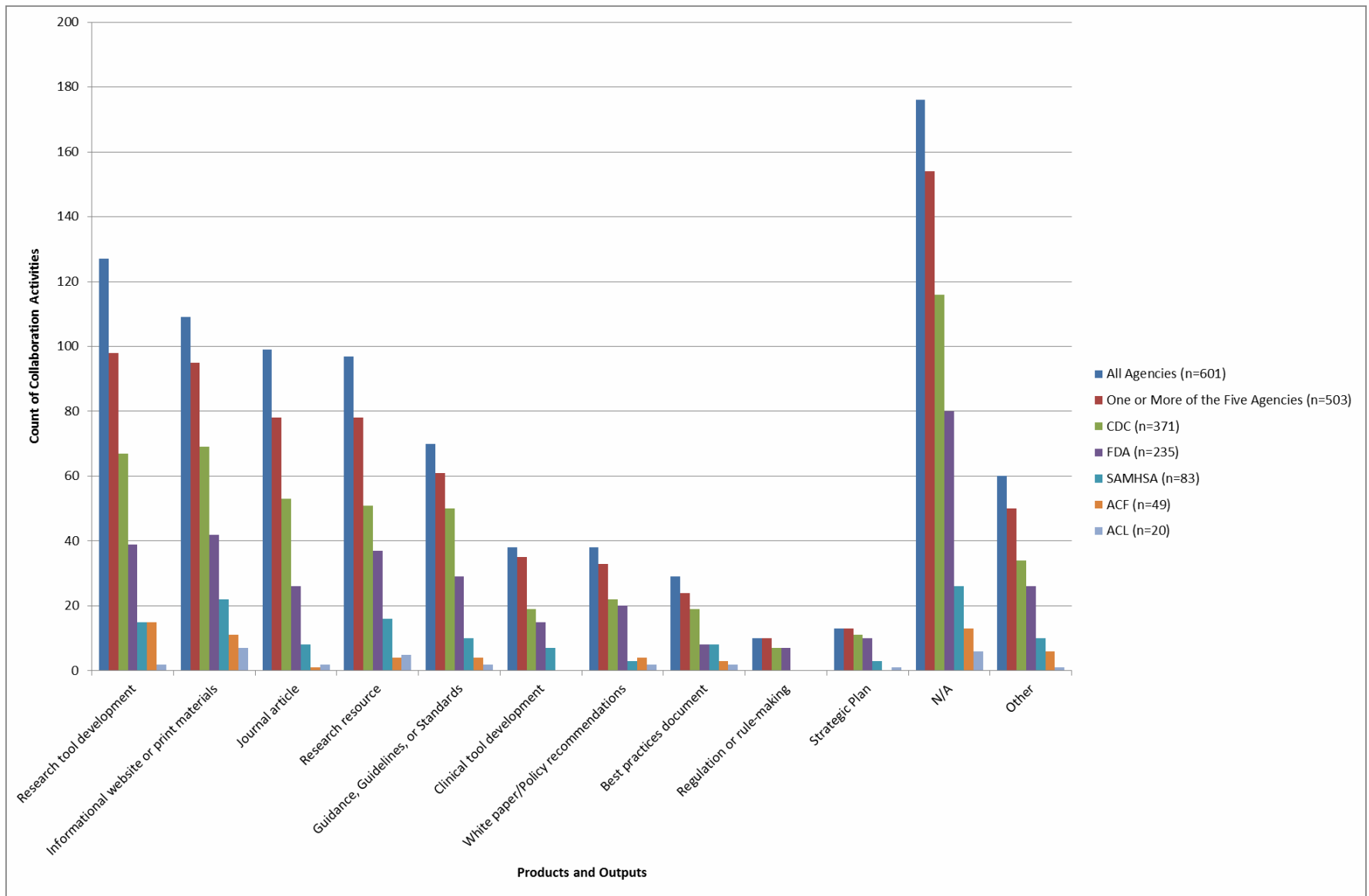


Figure B.5. Products and Outputs from Collaborative activities, FY2012.

3.6 Funding for Collaborative activities

Funding for NIH-HHS collaborative activities is represented in the CRS by NIH Funding Contributions for FY2012. In addition, the variable Funding Mechanism allows submitting ICs and OD Offices to specify the mechanisms by which funding is contributed to the CAs.

Not all CAs received NIH funding contributions for FY2012. The CRS includes a variable that allows users to indicate whether NIH provided funding for the fiscal year (Funding Provided for FY2012 [Y/N]). For the 214 CAs that did receive NIH funding contributions, the mean contribution was \$1,834,619 (Table B.4). For those CAs involving one or more of the five targeted agencies that received NIH funding contributions in FY2012 (n=174), the mean contribution was \$1,890,305.

Table B.4. Summary of Funding for Collaborative activities

NIH Funding Contribution for FY2012**	All Agencies	One or More Targeted Agencies
N	214	174
Mean	\$1,834,619.00	\$1,890,305.00
Median	\$254,436.50	\$260,462.50
Standard deviation	\$4,459,221.00	\$4,732,093.00
Minimum	\$1	\$1
Maximum	\$37,000,000.00	\$37,000,000.00

Source: NIH's Intra-HHS Collaborations Reporting System (CRS), FY2012.

Among the 214 CAs for which funding was provided for FY2012, the CRS includes information about the types of funding mechanisms that were used to support those activities (Table B.5). For the 174 CAs involving one or more of the five targeted agencies:

- The two most common types of funding mechanism for this set of CAs were Interagency Agreement and Contract.
- Grants and various other types of funding mechanisms were also used to support substantial proportion of these CAs.
- Memorandum of Understanding and Special Statutory Funding were not used extensively.

Table B.5. Funding Mechanisms for Collaborative activities

Funding Mechanism	All Agencies		One or More Targeted Agencies	
	#	%	#	%
Contract	59	27.6	45	25.9
Grant	37	17.3	28	16.1
Interagency Agreement	76	35.5	66	37.9
Memorandum of Understanding	5	2.3	4	2.3
Special Statutory Funding	3	1.4	3	1.7
Other	32	15.0	26	15.3
None	2	0.9	2	1.1
Total	214	100.0	174	100.0

Source: NIH's Intra-HHS Collaborations Reporting System (CRS), FY2012.

4. Discussion and Recommendations

Part of the purpose of examining the CRS data was to inform the sampling and analysis strategy for the web surveys of NIH and HHS employees and to gain insights into how NIH can continue to improve efforts to monitor and evaluate intra-HHS collaborations. Given the decision to target all identifiable personnel from NIH and the five HHS agencies involved in FY2012 collaborative activities, rather than a subset of those personnel, the results of the CRS data analyses are more pertinent to recommendations for developing the survey *analysis* strategy and for strengthening the CRS as a whole.

4.1 Recommendations for survey Analysis strategy

- Collaboration type may influence the opportunity or potential for utilizing and applying NIH-sponsored research in HHS programs. For example, “Committee, Advisory Group, or Work Group” may provide a greater opportunity for NIH staff to integrate research rather than a Research Initiative or Health Survey. *Survey data analysis should pay special attention to survey respondents who report involvement in CA types that provide a good opportunity for utilizing NIH-sponsored research.*
- Some ICs and OD Offices are common collaborators with the five agencies, either because their breadth and depth of scientific expertise makes them relevant for many different agencies or because the ICO focus is so highly relevant to a particular agency. *Survey data analysis should pay special attention to survey respondents who report being involved in collaborative activities affiliated with, the following common/highly-relevant ICs and OD Offices.*
 - National Cancer Institute;
 - National Heart, Lung and Blood Institute;
 - National Institute of Allergy and Infectious Diseases;
 - National Institute of Child Health and Human Development;
 - National Institute on Drug Abuse;
 - National Institute on Alcohol Abuse and Alcoholism;
 - National Institute of Mental Health;

- National Institute on Aging; and
- Office of Behavioral and Social Sciences Research.
- There are several types of collaboration products and outputs that are potentially associated with the application of NIH-sponsored research to public health programs, such as clinical tool development; best practices document; guidance, guidelines, or standards; white paper/policy recommendations; and regulation or rule-making. *Survey data analysis should pay special attention to survey respondents who report being involved with CAs creating these types of products or outputs.*

4.2 Monitoring and Evaluating Inter-Agency Collaborations

- One of the limitations of the CRS is that the data are only available in single fiscal year format. The database is currently not designed to export data in a way that allows for examining continuity of collaborative activities from FY to FY. This limits OSP's ability to reliably track a CA and to monitor overall changes in CAs over time, and reduces the usefulness of the data for evaluation, planning, and reporting. *Battelle recommends that the CRS be modified to better utilize unique identification numbers for each CA to facilitate continuity and tracking.*
- Another limitation of the CRS is that it does not provide fine-grain details about collaborating HHS agencies or the NIH and HHS employees who are involved in the CAs.
 - First, while there is sufficient detail for NIH ICs and OD Offices, there are not sufficient details about the organizational units within other HHS agencies, especially the larger ones (e.g., CDC, FDA). Without that fine-grained information about the agency units, it is more difficult to assess whether the ICs and OD Offices are making the right collaboration connections with their topically relevant counterparts.
 - Second, while the CRS does include a field for listing NIH points-of-contact (POC) for each CA, this information is not always reliable/up-to-date or submitted in a consistent format, nor does it provide information about the key collaborators or POCs in the other HHS agencies. This limits OSP's ability to conduct evaluations of collaborative activities.
 - *Battelle recommends that the CRS be modified to make the POC information more reliable/up-to-date and to include POCs for each of the participating HHS agencies.*

Appendices

Appendix B.a. Collaboration between NIH ICO's and the Five Targeted Agencies

Appendix B.b. Collaborative activities by agency and Year

Appendix B.c. HHS and NIH Strategic Priorities and the Five Targeted Agencies

Appendix B.a. Collaboration between NIH ICO's and the Five Targeted Agencies

Table B.6. Participation in Collaborative activities between NIH and the Five Targeted Agencies.

NIH Institutes	Submissions to CRS (n 601)		All Agencies (n 601)		One or More Targeted Agencies (n 503)		CDC (n 371)		FDA (n 235)		SAMHSA (n 83)		ACF (n 49)		ACL (n 20)	
	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%
National Cancer Institute	58	9.7	156	26.0	135	26.8	95	25.6	76	32.3	20	24.1	5	10.2	6	30.0
National Eye Institute	8	1.3	47	7.8	35	7.0	24	6.5	28	11.9	5	6.0	3	6.1	4	20.0
National Heart, Lung and Blood Institute	51	8.5	148	24.6	126	25.0	98	26.4	74	31.5	21	25.3	7	14.3	8	40.0
National Human Genome Research Institute	2	0.3	43	7.2	33	6.6	24	6.5	28	11.9	6	7.2	3	6.1	3	15.0
National Institute on Aging	23	3.8	86	14.3	73	14.5	53	14.3	38	16.2	14	16.9	7	14.3	14	70.0
National Institute on Alcohol Abuse and Alcoholism	8	1.3	60	10.0	54	10.7	44	11.9	28	11.9	29	34.9	14	28.6	6	30.0
National Institute of Allergy and Infectious Diseases	52	8.7	133	22.1	117	23.3	87	23.5	83	35.3	14	16.9	5	10.2	3	15.0
National Institute of Arthritis and Musculoskeletal and Skin Diseases	2	0.3	43	7.2	35	7.0	22	5.9	30	12.8	5	6.0	4	8.2	3	15.0
National Institute of Biomedical Imaging and Bioengineering	6	1.0	46	7.7	42	8.3	22	5.9	35	14.9	7	8.4	2	4.1	3	15.0
Eunice Kennedy Shriver National Institute of Child Health and Human Development	75	12.5	181	30.1	147	29.2	114	30.7	72	30.6	26	31.3	30	61.2	7	35.0
National Institute on Deafness and Other Communication Disorders	8	1.3	40	6.7	36	7.2	25	6.7	23	9.8	6	7.2	3	6.1	4	20.0
National Institute of Dental and Craniofacial Research	7	1.2	49	8.2	41	8.2	28	7.5	29	12.3	6	7.2	3	6.1	5	25.0
National Institute of Diabetes and Digestive Kidney Diseases	30	5.0	97	16.1	81	16.1	58	15.6	55	23.4	11	13.3	6	12.2	5	25.0
National Institute on Drug Abuse	36	6.0	114	19.0	104	20.7	68	18.3	48	20.4	51	61.4	21	42.9	7	35.0
National Institute of Environmental Health Sciences	23	3.8	74	12.3	70	13.9	57	15.4	42	17.9	7	8.4	5	10.2	5	25.0
National Institute of General Medical Sciences	2	0.3	37	6.2	32	6.4	19	5.1	27	11.5	7	8.4	3	6.1	2	10.0
National Institute of Mental Health	17	2.8	104	17.3	96	19.1	69	18.6	46	19.6	39	47.0	19	38.8	11	55.0
National Institute on Minority Health and Health Disparities	4	0.7	34	5.7	27	5.4	20	5.4	21	8.9	6	7.2	3	6.1	4	20.0
National Institute of Neurological Disorders and Stroke	18	3.0	97	16.1	86	17.1	55	14.8	60	25.5	11	13.3	7	14.3	6	30.0
National Institute of Nursing Research	0	0.0	49	8.2	43	8.5	31	8.4	30	12.8	9	10.8	5	10.2	5	25.0

NIH Centers	Submissions to CRS (n 601)		All Agencies (n 601)		One or More Targeted Agencies (n 503)		CDC (n 371)		FDA (n 235)		SAMHSA (n 83)		ACF (n 49)		ACL (n 20)	
	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%
National Library of Medicine	30	5.0	72	12.0	60	11.9	42	11.3	42	17.9	12	14.5	7	14.3	3	15.0
Center for Information Technology	0	0.0	9	1.5	8	1.6	5	1.3	5	2.1	2	2.4	1	2.0	0	0.0
Center for Scientific Review	0	0.0	23	3.8	20	4.0	12	3.2	16	6.8	2	2.4	1	2.0	0	0.0
Fogarty International Center	4	0.7	32	5.3	30	6.0	25	6.7	18	7.7	5	6.0	3	6.1	2	10.0
National Center for complementary and Alternative Medicine	4	0.7	39	6.5	34	6.8	25	6.7	22	9.4	7	8.4	3	6.1	5	25.0
National Center for Advancing Translational Sciences	5	0.8	48	8.0	41	8.2	25	6.7	32	13.6	7	8.4	4	8.2	3	15.0
NIH Clinical Center	19	3.2	42	7.0	32	6.4	13	3.5	27	11.5	1	1.2	0	0.0	0	0.0

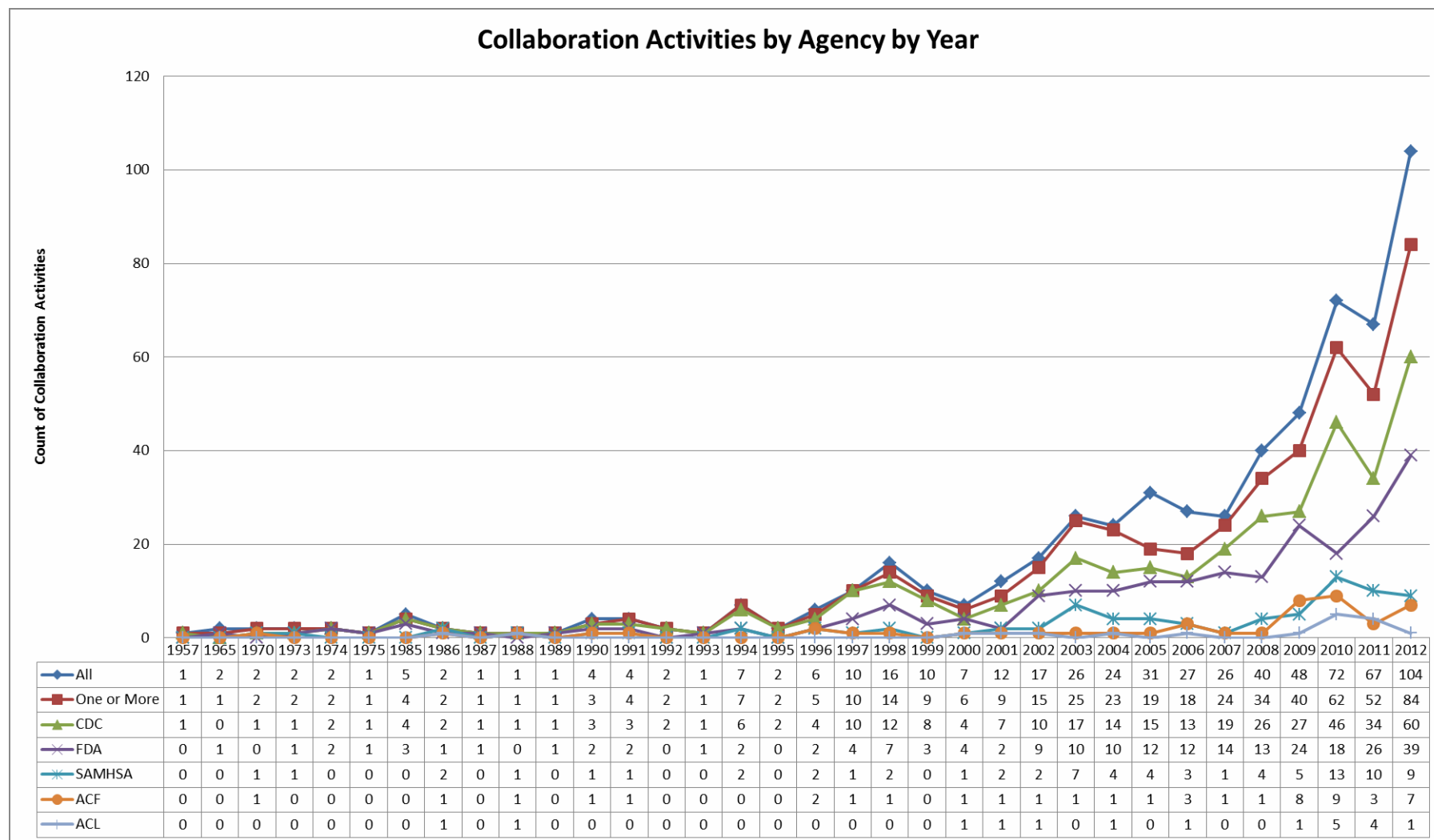
NIH Offices	Submissions to CRS (n 601)		All Agencies (n 601)		One or More Targeted Agencies (n 503)		CDC (n 371)		FDA (n 235)		SAMHSA (n 83)		ACF (n 49)		ACL (n 20)	
	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%
Office of AIDS Research	7	1.2	20	3.3	19	3.8	18	4.9	9	3.8	5	6.0	2	4.1	0	0.0
Office of Behavioral and Social Sciences	11	1.8	42	7.0	38	7.6	28	7.5	16	6.8	13	15.7	10	20.4	7	35.0
Office Of Disease Prevention	6	1.0	23	3.8	18	3.6	15	4.0	11	4.7	4	4.8	3	6.1	2	10.0
Office of Dietary Supplements	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Office of Strategic Coordination	0	0.0	5	0.8	5	1.0	2	0.5	4	1.7	1	1.2	1	2.0	0	0.0
Office of Portfolio Analysis	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Office of Program Evaluation and Performance	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Office of Research Infrastructure Programs	0	0.0	3	0.5	3	0.6	2	0.5	3	1.3	0	0.0	0	0.0	0	0.0
Office of Research on Women's Health	5	0.8	21	3.5	20	4.0	15	4.0	11	4.7	2	2.4	4	8.2	0	0.0
Office of Extramural Research (OER)	5	0.8	10	1.7	7	1.4	4	1.1	5	2.1	1	1.2	1	2.0	0	0.0
Office of Intramural Research	0	0.0	2	0.3	2	0.4	0	0.0	2	0.9	0	0.0	0	0.0	0	0.0
Office of Communications & Public Liaison	0	0.0	3	0.5	3	0.6	2	0.5	3	1.3	1	1.2	2	4.1	1	5.0
Office of Science Policy	74	12.3	23	3.8	19	3.8	12	3.2	17	7.2	0	0.0	0	0.0	0	0.0

NIH Offices	Submissions to CRS (n 601)		All Agencies (n 601)		One or More Targeted Agencies (n 503)		CDC (n 371)		FDA (n 235)		SAMHSA (n 83)		ACF (n 49)		ACL (n 20)	
	#	%	#	%	#	%	#	%	#	%	#	%	#	%	#	%
Office of Legislative Policy and Analysis	0	0.0	2	0.3	2	0.4	1	0.3	1	0.4	0	0.0	0	0.0	0	0.0

Source: NIH's Intra-HHS Collaborations Reporting System (CRS), FY2012.

Note: Percentages listed in columns are the percent of all collaborative activities (CAs) involving the Targeted Agency (see total in column heading) that also involve the corresponding NIH ICO (alone and/or in combination with other agencies and ICs and OD Offices). Some CAs involve multiple agencies and ICs and OD Offices, so percentages in columns do not add up to 100%.

Appendix B.b. Collaborative activities by agency and Year



Source: NIH's Intra-HHS Collaborations Reporting System (CRS), FY2012.

Appendix B.c. HHS and NIH Strategic Priorities and the Five Targeted Agencies

Table B.7.a Collaboration Activity Alignment with HHS Strategic Priorities by Targeted Agencies.

HHS Strategic Goals and Objectives		All Agencies (n 601)		One or More Targeted Agencies (n 503)		CDC (n 371)		FDA (n 235)		SAMHSA (n 83)		ACF (n 49)		ACL (n 20)	
		#	%	#	%	#	%	#	%	#	%	#	%	#	%
1	Strengthen Health Care	237	39.4	188	37.4	143	38.5	90	38.3	41	49.4	17	34.7	14	70.0
1.1	Improve healthcare coverage	18	3.0	15	3.0	13	3.5	8	3.4	7	8.4	3	6.1	1	5.0
1.2	Improve healthcare quality and patient safety	127	21.1	98	19.5	70	18.9	49	20.9	19	22.9	9	18.4	6	30.0
1.3	Emphasize primary and preventive care linked with community prevention services	33	5.5	27	5.4	23	6.2	8	3.4	10	12.0	4	8.2	7	35.0
1.4	Reduce the growth of healthcare costs while promoting high-value, effective care	4	0.7	4	0.8	3	0.8	2	0.9	1	1.2	0	0.0	0	0.0
1.5	Ensure access to quality, culturally competent care for vulnerable populations	4	0.7	3	0.6	0	0.0	2	0.9	1	1.2	1	2.0	0	0.0
1.6	Promote health information technology	41	6.8	31	6.2	26	7.0	13	5.5	7	8.4	1	2.0	1	5.0
2	Advance Scientific Knowledge and Innovation	350	58.2	307	61.0	219	59.0	161	68.5	53	63.9	25	51.0	9	45.0
2.1	Scientific discovery to improve patient care	143	23.8	123	24.5	83	22.4	76	32.3	16	19.3	7	14.3	2	10.0
2.2	Innovation to create shared solutions	73	12.1	63	12.5	44	11.9	39	16.6	11	13.3	8	16.3	1	5.0
2.3	Regulatory sciences to improve food and medical product safety	24	4.0	24	4.8	5	1.3	24	10.2	2	2.4	1	2.0	0	0.0
2.4	Understanding of what works in public health and human service practice	53	8.8	44	8.7	36	9.7	16	6.8	11	13.3	11	22.4	2	10.0
3	Advance Health, Safety, and Well-Being	217	36.1	186	37.0	154	41.5	73	31.1	41	49.4	34	69.4	13	65.0
3.1	Children and youth	63	10.5	50	9.9	36	9.7	13	5.5	12	14.5	20	40.8	1	5.0
3.2	Economic and social well-being	18	3.0	17	3.4	13	3.5	7	3.0	6	7.2	5	10.2	0	0.0
3.3	Accessibility and quality of supportive services for people with disabilities an	26	4.3	22	4.4	16	4.3	7	3.0	7	8.4	4	8.2	5	25.0
3.4	Promote prevention and wellness	93	15.5	84	16.7	71	19.1	39	16.6	27	32.5	15	30.6	9	45.0
3.5	Reduce the occurrence of infectious diseases	54	9.0	48	9.5	43	11.6	28	11.9	7	8.4	6	12.2	0	0.0
3.6	Emergency response	22	3.7	17	3.4	14	3.8	11	4.7	4	4.8	2	4.1	0	0.0
4	Increase Efficiency, Transparency, and Accountability	64	10.6	54	10.7	44	11.9	26	11.1	10	12.0	7	14.3	5	25.0

HHS Strategic Goals and Objectives		All Agencies (n 601)		One or More Targeted Agencies (n 503)		CDC (n 371)		FDA (n 235)		SAMHSA (n 83)		ACF (n 49)		ACL (n 20)	
		#	%	#	%	#	%	#	%	#	%	#	%	#	%
4.1	Program integrity and responsible stewardship	18	3.0	14	2.8	12	3.2	12	5.1	3	3.6	2	4.1	1	5.0
4.2	Fight fraud and work to eliminate improper payments	3	0.5	3	0.6	3	0.8	3	1.3	2	2.4	1	2.0	0	0.0
4.3	Use HHS data to improve the health and well-being	47	7.8	37	7.4	31	8.4	13	5.5	7	8.4	6	12.2	3	15.0
4.4	Improve performance to promote sustainability	8	1.3	8	1.6	7	1.9	6	2.6	3	3.6	1	2.0	0	0.0
5	Strengthen Infrastructure and Workforce	41	6.8	35	7.0	26	7.0	15	6.4	9	10.8	3	6.1	0	0.0
5.1	Invest in HHS workforce	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
5.2	Ensure U.S. healthcare workforce can meet increased demands	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
5.3	Enhance the public health workforce	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
5.4	Strengthen the human service workforce	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
5.5	Improve surveillance and epidemiology capacity	25	4.2	20	4.0	17	4.6	7	3.0	5	6.0	3	6.1	0	0.0
	Other	23	3.8	17	3.4	10	2.7	6	2.6	2	2.4	1	2.0	0	0.0

Table B.7.b Collaboration Activity Alignment with NIH Strategic Priorities by Targeted Agencies.

NIH Strategic Priorities		All Agencies (n 601)		One or More Targeted Agencies (n 503)		CDC (n 371)		FDA (n 235)		SAMHSA (n 83)		ACF (n 49)		ACL (n 20)	
		#	%	#	%	#	%	#	%	#	%	#	%	#	%
1	Today's basic science for tomorrow's breakthroughs	190	31.6	173	34.4	126	34.0	101	43.0	19	22.9	14	28.6	4	20.0
2	Translational science	370	61.6	315	62.6	227	61.2	157	66.8	54	65.1	27	55.1	13	65.0
3	Recruiting and retaining diverse scientific talent and creativity	30	5.0	20	4.0	13	3.5	12	5.1	3	3.6	2	4.1	2	10.0
4	Restoring American competitiveness	22	3.7	18	3.6	12	3.2	9	3.8	1	1.2	0	0.0	0	0.0
	Not applicable	115	19.1	86	17.1	71	19.1	28	11.9	19	22.9	14	28.6	6	30.0

Source: NIH's Intra-HHS Collaborations Reporting System (CRS), FY2012.

Note: Percentages listed in columns are the percent of all collaborative activities (CAs) involving the Targeted Agency (see total in column heading) that were linked to the corresponding strategic priority. Some CAs may be aligned with multiple strategic priorities, so percentages in columns do not add up to 100%.

Appendix C. Survey Methods

Survey Methods

We conducted a web survey of employees at NIH and the five targeted HHS agencies regarding their NIH-HHS collaboration experiences, practices, and attitudes, as well as ideas for improving and promoting intra-HHS collaboration. The survey was designed to include collaborators at NIH from all Institutes, Centers, and relevant Offices within the Office of Director (ICs and OD Offices), as well as both collaborators and non-collaborators in the targeted agencies.

Sampling Strategy

Prior to implementing the survey, we identified potential participants from among the targeted groups using a two-step process. First, the NIH collaborators were identified and an invitation list was built from two sources:

- The NIH Collaboration Reporting System (CRS): The CRS includes names of NIH employees listed as a point-of-contact (PoC) for each submitted collaboration activity.
- Additional collaborators provided by the ICs and OD Offices: Each ICO was asked to provide additional names of personnel who have been involved in collaborations with the five targeted agencies.

Second, we built an invitation list for collaborators and non-collaborators from the five targeted agencies using two methods:

- **Referral survey for NIH Collaborators:** We distributed a web-based “referral survey” to the NIH collaborators identified in step one. The NIH collaborators were asked to provide names, email addresses, and agency affiliation for their collaboration counterparts in the five targeted agencies. This method helped us compile a list of potential collaborators in the five targeted agencies.
- **Opt-in and referral survey for the five targeted agencies:** We asked contacts in the five targeted agencies to distribute a web-based “opt-in and referral survey” that allowed respective agency staff to personally volunteer for the survey, and also to refer us to their agency colleagues that might also be interested in participating. This method was primarily used to help us compile a list of potential non-collaborators, but also allowed us to collect additional names for collaborators as well.

Data Collection

The survey questionnaire was developed by Battelle in close collaboration with the OSP study team, along with Advisory Group input. Questions were designed to address the evaluation objectives. An initial web-based draft was pilot tested with 7 HHS employees from 3 HHS agencies (NIH=4, CDC=1, FDA=2) to assess overall clarity and understandability, plus to estimate time-to-complete. The final questionnaire was designed to be administered via the web with both collaborators and non-collaborators, and was estimated to take approximately 20 minutes to complete (see Appendix D for a copy). It included 62 questions over 22 web pages, and was divided into 9 sections:

- A. Agency Affiliation (Q1-7).
- B. NIH-HHS Collaboration Status (Q8-9); identifying collaborators and non-collaborators.
- C. General NIH-HHS Collaboration Experience (Q10-20).
- D. Defining Successful Collaborations (Q21-23).
- E. Most Successful NIH-HHS Collaboration Experience (Q24-36).
- F. Recommendations for Enhancing NIH-HHS Collaborations (Q37-38).
- G. Inter-Agency Collaboration Experience (Q39-53); *non-collaborators only*.
- H. General Attitudes and Opinions about Inter-agency Collaboration (Q54-55); all respondents.
- I. Respondent Characteristics (Q56-62); all respondents.

An informed consent statement was presented on the first page of the survey, and respondents were instructed that by clicking the “Next” button at the proceeding with the survey from there respondents provided their consent to participate. Section B is where the questionnaire was designed to identify collaborators and non-collaborators. In this section, we presented the working definition of NIH-HHS collaborations and asked respondents to indicate whether they were collaborators or non-collaborators based on that definition. NIH staff who identified as a non-collaborators were ineligible for the study and were dropped from the final analyses. Collaborators proceeded with sections C-F, while non-collaborators skipped to Section G. All respondents were able to complete sections H and I.

The survey was implemented on-line using Survey Monkey® over 7-week period from 4/7/14 to 5/19/14. An initial invitation was sent by email to all collaborators and non-collaborators identified through the sources and methods described above (n=1022), and included an explanation of the purpose of the study, as well as a hyperlink to the survey web page. Up to three follow-up invitations modeled on the initial invitation were sent to non-respondents.

Data Analysis

The analysis of the data from the survey was primarily descriptive, employing univariate statistical methods with tables and graphs for display and summarization. In this report, graphs that present survey results use a green color scheme. To facilitate visual comparisons between sub-groups among respondents (e.g., by agency affiliation), we calculated statistics for each group and displayed them side-by-side when appropriate. For exploratory analyses of interest, we used either bivariate techniques to assess statistical association between two categorical variables (chi-square test of independence) or multivariate techniques when multiple examining the relationships between a dependent variable and multiple independent variables. For the multivariate analyses, two analytical strategies were used:

- Ordered logistic or proportional odds modeling for ranked variables (excluding the Don’t Know response option). With this strategy, if a regression coefficient is positive it means the “odds” or probability of going to a more favorable rating on the ordered scale are *less*.
- Logistic regression for the dichotomous Yes/No questions (excluding the Don’t Know response option). With this strategy, if a regression coefficient is positive it means the “odds” of a favorable response (e.g., Yes) is *greater*.

Additional details on the multivariate analyses can be found in Appendix E.

Appendix D. Survey Questionnaire

NIH-HHS Collaborations Survey

Welcome and Informed Consent Page

Welcome to the NIH-HHS Collaborations Survey.

- The purpose of this survey is to help the National Institutes of Health (NIH) learn about HHS employees' perceptions of and experiences with interagency collaboration, generally, and specifically about the roles and contributions of NIH in your collaboration experiences.
- You have been invited to participate in this survey because of your current or past involvement with interagency collaborations, or because of the potential for future collaboration participation. Please answer the survey questions as best as you can based on your personal knowledge and experience.
- Your participation in this survey is completely voluntary. You may choose not to participate in this survey, or terminate your involvement at any time, without any penalty to you.
- You will not receive any financial payment for your time and effort (other than your normal salary, if applicable) for participating in this research study. However, your participation will be tremendously valuable to NIH as it seeks to enhance and foster interagency collaborations. The NIH will share a summary of the results to all participants who complete the survey.
- We will keep your identity private and your answers to the survey confidential in so far as permitted by law. We will prepare reports on the results of this study for the use of NIH and HHS leadership, but we will not include your name or any identifiable references to you.
- If you participate in this survey, you may be invited by NIH to participate in future data collection activities at a later time. Your participation in future data collection activity is completely voluntary and you may choose not to participate, or terminate your involvement at any time, without any penalty to you.
- The survey will take approximately 20 minutes to complete. If you need to stop before completing the survey, you will be able to return to the same page again by clicking on the survey link provided in the invitation email message.
- If you have any problems or technical issues with the survey website, please [click here](#) to send an email to our study contractor (Battelle Memorial Institute).
- If you have any questions and/or concerns about the survey, please contact the NIH Office of Science Policy within the Office of Director at 301-435-2140 or, sara.dodson@nih.gov.

The Institutional Review Board for the study contractor (Battelle Memorial Institute) has approved this study (IRB#00000284). If you have any questions about your rights as study participant, please contact the Battelle IRB Chairperson at 1-877-810-9530 ext. 500.

By clicking "Next" below, you are indicating that you have read and understood the information above, and you consent to participate in this survey.

<NEXT>

A. Agency Affiliation

To start with, we would like to confirm your HHS agency affiliation.

1. Current HHS agency affiliation (select from list)

- NIH
- CDC
- FDA
- SAMHSA
- ACF
- ACL
- Other, please specify: _____

[Variations of Question 2 – Organizational affiliation within Agencies]

2. Please tell us what _____ you are affiliated with at _____.

[Page break]

[Logic note - respondents only see this version of question 2 if they selected “NIH” for Q1]

2. Please tell us what NIH Institute, Center, or OD Office you are affiliated with.

[drop down list of ICO acronyms – see appendix]

[Go to top of page for Section B]

[Page break]

[Logic note - respondents only see this version of question 2 if they selected “CDC” for Q1]

3. Please tell us what Center/Division/Office you are affiliated with at CDC. (Drop-down list is in alphabetical order)

[drop down list of CDC org units– see appendix]

[Go to top of page for Section B]

[Page break]

[Logic note - respondents only see this version of question 2 if they selected “FDA” for Q1]

4. Please tell us what Office/Center you are affiliated with at FDA. (Drop-down list is in alphabetical order)

[drop down list of FDA org units– see appendix]

[Go to top of page for Section B]

[Page break]

[Logic note - respondents only see this version of question 2 if they selected “SAMHSA” for Q1]

5. Please tell us what Office/Center/Division you are affiliated with at SAMHSA. (Drop-down list is in alphabetical order)

[drop down list of SAMHSA org units– see appendix]

[Go to top of page for Section B]

[Page break]

[Logic note - respondents only see this version of question 2 if they selected “ACF” for Q1]

6. Please tell us what Office/Bureau/Division you are affiliated with at ACF. (Drop-down list is in alphabetical order)

[drop down list of ACF org units– see appendix]

[Go to top of page for Section B]

[Page break]

[Logic note - respondents only see this version of question 2 if they selected “ACL” for Q1]

7. Please tell us what Administration/Center/Office you are affiliated with at ACL. (Drop-down list is in alphabetical order)

[drop down list of ACL org units– see appendix]

[Go to top of page for Section B]

B. NIH-HHS Collaboration Experience

Next, we would like to ask some questions about your involvement with collaborative activities that include personnel from NIH and other HHS agencies, or “NIH-HHS Collaborations.”

For the purposes of this survey, an “NIH-HHS Collaboration” is defined as:

- **Organized interactions between personnel from NIH and one or more HHS agencies.** Group membership may be stable or can change over time, but an NIH participant should be involved most of the time.
- **The collaboration involves two or more interactions among the group during each year of the collaboration.** Interactions among the group of participants can include in-person meetings, conference calls, or web meetings.
- **The collaborative activity has a particular purpose or purposes.** The purposes of NIH-HHS Collaborations can be diverse, and may include (but are not limited to):
 - General inter-agency coordination and information sharing, including administrative services
 - Ad-hoc groups to address special issues
 - Co-development or implementation of:
 - Programs, services, and strategic plans
 - Policies, regulations, and white papers
 - Research and training initiatives
 - Meetings and workshops
 - Public education campaigns
 - Health surveys
 - Research or practice resources (e.g., Web materials, databases, registries, information clearinghouses)

8. Based on the definition above, are you currently or have you ever been involved with one or more NIH-HHS Collaborations?

- Yes
- No
- Don't Know

[Logic Note: if "Yes" to question 8, then classify as "NIH-HHS Collaborator" and respondent proceeds to next question, but they will skip Section G.]

[Logic Note: if "No" or "DK" to the above question then classify as "non-NIH-HHS Collaborator" and respondent skips to Section G.]

NIH-HHS Collaboration Experience for NIH Personnel

Next, we would like to ask some questions about your involvement with collaborative activities that include personnel from NIH and one or more HHS Collaborations.

For the purposes of this survey, an NIH-HHS Collaboration is defined as:

Organized interactions between personnel from NIH and one or more HHS agencies.

Group membership may be stable or can change over time, but an NIH participant should be involved most of the time.

The collaboration involves two or more interactions among the group during each year of the collaboration. Interactions among the group of participants can include in-person meetings, conference calls, or web meetings.

The collaborative activity has a particular purpose or purposes. The purposes of NIH-HHS Collaborations can be diverse, and may include (but are not limited to):

- General inter-agency coordination and information sharing, including administrative services
- Ad-hoc groups to address special issues
- Co-development or implementation of:
 - Programs, services, and strategic plans
 - Policies, regulations, and white papers
 - Research and training initiatives
 - Meetings and workshops
 - Public education campaigns
 - Health surveys
 - Research or practice resources (e.g., Web materials, databases, registries, information clearinghouses)

8. Based on the definition above, are you currently or have you ever been involved with one or more NIH-HHS Collaborations?

- Yes
- No
- Don't Know

[Logic Note: if "Yes" to question 8, then classify as "NIH-HHS Collaborator" and respondent proceeds to next question, but they will skip Section G.]

[Logic Note: if "No" or "DK" to the above question then classify as "non-NIH-HHS Collaborator" and since affiliated with NIH, respondent skips to Section H.

C. General NIH-HHS Collaboration Experience

[Logic Note: This section is only for respondents who have been classified as a "NIH-HHS Collaborator" – see Section B above]

For the questions in this section, we would like for you to think about your overall experiences with NIH-HHS Collaborations.

10. How often do you participate in NIH-HHS Collaborations in your current position?

- Rarely
- Occasionally
- Often
- Full-time

11. Over the course of your career, what has been your role(s) in the NIH-HHS Collaboration(s)? (Select all that apply)

- I serve(d) in an overall leadership capacity (e.g., chair, coordinator, facilitator, moderator)
- I serve(d) as a leader for a sub-group (e.g., committee, working group)
- I am(was) a participant (non-leadership)
- I am(was) my agencies' assigned representative/point of contact
- I provide(d) administrative or logistical support
- Other (please specify): _____

12. What have been the purposes of the collaborations that you have been involved in? (Select all that apply)

- Develop a health/human services program
- Develop practice guidelines/recommendations
- Develop a policy or regulatory guidance/recommendations
- Develop or conduct a research study, survey, or other data gathering activity
- Develop a report, journal publication, or concept/white paper

- Develop a funding opportunity or grant program
- Develop a data or informational resource (e.g., database, disease registry, information clearinghouse)
- Develop or conduct a public education campaign
- Develop or conduct a meeting or workshop
- Develop or conduct a training initiative
- General inter-agency coordination, strategic planning, and/or information sharing
- Other (please specify): _____

13. Which of the following products, outputs, or resources were developed as a result of the NIH-HHS Collaborations? (Select all that apply)

- Health/human services program
- Practice recommendations or guidelines
- Policy or regulatory guidance
- Health survey, research study, or research guidelines
- Information resource (e.g., Web materials, database, registry, or clearinghouse)
- Strategic plan or action plan
- Public education campaign
- Meeting or workshop Training initiative or program
- Report or publication (e.g., journal article, concept/white paper)
- No specific product/output/resource was produced
- Other (please specify): _____

14. How useful are each of these sources of information for identifying potential collaborators at other HHS agencies?

Objective	Not at all useful	Slightly useful	Moderately useful	Very useful	Extremely useful	Don't Use
a. Internet searches.						
b. HHS Global Directory.						
c. Published scientific or professional literature.						
d. Professional contacts and network.						
e. Other (please specify): _____						

15. Based on your overall experiences with NIH-HHS collaborations, how important do you think the following factors are for facilitating the success of an inter-agency collaboration?

Objective	Not at all important	Slightly important	Moderately important	Quite important	Extremely important	Don't Know
a. Clearly defined purpose and goals.						
b. Commitment of agency leadership.						
c. Participants who work well together and share information freely.						
d. Formal agreements that spell out relationships between partner organizations.						
e. Leaders who have the appropriate skills and expertise to manage the group.						
f. Formal, structured, and regularly occurring meetings with a pre-set schedule, an agenda, and a central convener.						
g. Clear mechanisms for tracking and monitoring progress.						
h. Participants have the appropriate level of authority to make decisions and the relevant skills and expertise.						
i. Resources are provided by one or more of the participating agencies, such as funding or administrative and logistical support.						

16. Based on your overall experience with NIH-HHS Collaborations, what do you think are the 3 most important factors that cause impediments to the success of NIH-HHS Collaborations? (Select only three)

- The time commitment required to participate
- Lack of clarity about the purpose of the collaboration
- Lack of clarity about participant roles and responsibilities
- Infrequent communication
- Lack of commitment among participants
- Lack of commitment or support from agency leadership
- Lack of authority among participants to make decisions
- Lack of funding or resources
- Ineffective leadership
- Philosophical difference among participants
- Other (please specify): _____

17. What are the most significant barriers to **initiating a new NIH-HHS Collaboration**?

[Comment box]

18. Overall, how satisfied are you with the NIH-HHS Collaborations in which you have participated?

- Very satisfied
- Satisfied
- Neutral
- Dissatisfied
- Very dissatisfied

19. How interested are you in participating in NIH-HHS Collaborations in the future?

- Extremely interested
- Very interested
- Moderately interested
- Slightly Interested
- Not at all interested

20. What could be done to encourage or better incentivize participation in NIH-HHS Collaborations among HHS personnel?

[Comment box]

D. Defining Successful Collaborations

[Logic Note: This section is only for respondents who have been classified as “NIH Collaborators” – see Section B above]

Next, we would like to understand how you would define a “successful” inter-agency collaboration in general (not just NIH-HHS Collaborations).

21. How important are the outcomes listed below for determining if an inter-agency collaboration is successful?

Objective	Not at all important	Slightly important	Moderately important	Quite important	Extremely important
a. Participants expanded their professional					
b. Participating agencies established new lines of communication for future collaborations.					
c. New inter-agency collaborations were initiated.					
d. New “spin-off activities” were initiated (not inter-agency					

APPENDIX D. Survey Questionnaire

Objective	Not at all important	Slightly important	Moderately important	Quite important	Extremely important
e. Participating agencies shared information that was not previously shared.					
f. Information or expertise from my agency was used to inform the work/meet the needs of other HHS agencies.					
g. The collaboration's main purpose or goal was achieved.					
h. The collaboration's intended products, outputs, or resources were					
i. A new or revised program, policy, or regulation is implemented.					
j. Long-term impacts on health practice were achieved.					
k. Other (please specify): _____ _____					

22. Have you ever participated in an NIH-HHS Collaboration that you considered overall to be especially challenging, problematic, and “unsuccessful”?

- Yes
- No
- Don't know

23. Have you ever participated in an NIH-HHS Collaboration that you would consider overall to be “successful”, even if there were particular problems or challenges?

- Yes
- No
- Don't know

[Logic Note: if “Yes” to question 23, then respondent is directed to top of first page in Section E.]

[Logic Note: if “No” or “Don't know” to question 23, then respondent skips Section E and goes to top of first page in Section H.]

E. Most Successful NIH-HHS Collaboration Experience

[Logic Note: Section E is only for respondents who have been classified as a “NIH-HHS Collaborator” based on response to question 3 (“Yes”) and also answered “Yes” to question 17 above]

In this section, we would like for you to think about one NIH-HHS Collaboration that you consider to have been your “most successful;” It can be a current or past collaboration;

24. In what ways was this particular collaboration successful? Please select any of the potential outcomes listed below that apply.

- Participants expanded their professional network.
- Participating agencies established new lines of communication for future collaborations.
- New inter-agency collaborations were initiated.
- New “spin-off activities” were initiated (not inter-agency collaborations).
- Participating agencies shared information that was not previously shared.
- Information or expertise from my agency was used to inform the work/meet the needs of other HHS agencies.
- The collaboration’s main purpose or goal was achieved;
- The collaboration’s intended products, outputs, or resources were created;
- A new or revised program, policy, or regulation was implemented.
- Long-term impacts on health practice were achieved.
- Other (please specify): _____

25. What was the purpose of this collaboration? (Select all that apply)

- Develop a health/human services program
- Develop practice guidelines/recommendations
- Develop a policy or regulatory guidance/recommendations
- Develop or conduct a research study, survey, or other data gathering activity
- Develop a report, journal publication, or concept/white paper
- Develop a funding opportunity or grant program
- Develop a data or informational resource (e.g., database, disease registry, information clearinghouse)
- Develop or conduct a public education campaign
- Develop or conduct a meeting or workshop
- Develop or conduct a training initiative
- General inter-agency coordination, strategic planning, and/or information sharing
- Other (please specify): _____

The next questions address how your most successful NIH-HHS Collaboration was initiated and how participants became involved.

26. How was this collaboration initiated? (Select one)

- Initiated by agency staff through personal connections and common interests
- Initiated in response to interest from outside stakeholders or advocacy groups
- Congressional mandate
- Directives from the Administration
- Directives from your Department or agency leadership

- Other (please specify): _____
- Don't Know

27. How important was method of initiation in determining the success of this collaboration?
(Select one)

- Extremely important
- Quite important
- Moderately important
- Slightly important
- Not at all important
- Don't know

28. How did you personally become involved in this collaboration? (Select one)

- Assigned to the collaboration by manager/supervisor
- Responded to a request for volunteers from a peer
- Responded to a request for volunteers from agency leadership
- Personally invited to participate by someone in professional network
- Helped initiate and/or organize the collaboration
- Other (please specify): _____

29. What was your incentive or motivation for participating in this collaboration? (Select all that apply)

- The collaboration was addressing an important health/human service issue
- The topic of the collaboration was relevant to my work and professional interests
- It would help me achieve work performance goals
- It would help me advance my career
- My supervisor asked me to do it
- I was interested in collaborating with a specific agency(ies) or an individual(s) involved with the collaboration
- I was interested in collaborating with NIH, or a specific NIH staff person.
- Other (please specify): _____

30. Which of the following products, outputs, or resources were developed or are under development as a result of this collaboration? (Select all that apply)

- Health/human services program
- Practice recommendations or guidelines
- Policy or regulatory guidance
- Health survey, research study, or research guidelines
- Information resource (e.g., Web materials, database, registry, or clearinghouse)
- Strategic plan or action plan
- Public education campaign
- Meeting or workshop Training initiative or program
- Report or publication (e.g., journal article, concept/white paper)
- No specific product/output/resource was produced
- Other (please specify): _____

31. What do you think were the 3 most important factors that enabled the success of this collaboration? (Select only three)

- Clearly defined purpose and goals.
- Commitment of agency leadership.
- Participants who work well together and share information freely.
- Formal agreements that spell out relationships between partner organizations.
- Leaders who have the appropriate skills and expertise to manage the group.
- Formal, structured, and regularly occurring meetings with a pre-set schedule, an agenda, and a central convener.
- Clear mechanisms for tracking and monitoring progress.
- Participants have the appropriate level of authority to make decisions and the relevant skills and expertise.
- Resources are provided by one or more of the participating agencies, such as funding or administrative and logistical support.

[New Page]

Next, we would like to know more about the roles and contributions of NIH in your “most successful” NIH-HHS collaboration.

32. What statement best describes the role that NIH played in initiating this collaboration? (Select one)

- NIH was the main initiator
- NIH was a co-initiator along with another agency(ies)
- NIH played a minor role – another agency(ies) took the lead
- NIH was not involved in initiating the collaboration at all
- Don't know

33. How important was NIH or NIH personnel for initiating this collaboration? (Select one)

- Extremely important
- Quite important
- Moderately important
- Slightly important
- Not at all important
- Don't know

34. What role did NIH play in carrying out the work of your most successful NIH-HHS Collaboration? (Select all that apply)

- Provided funding to support the collaborative activities and work
- Provided infrastructure and/or resources
- Assigned personnel to provide administrative and logistical support

- Provided information and data from NIH-sponsored research
- NIH personnel played a leadership role(s) within the collaboration
- NIH personnel served as scientific and subject matter experts for the collaboration
- Other: _____
- Don't know

35. How important was NIH or NIH personnel for carrying out the work of this collaboration?
(Select one)

- Extremely important
- Quite important
- Moderately important
- Slightly important
- Not at all important
- Don't know

36. How important was the use of NIH information or expertise for creating the products or outputs for your most successful collaboration? (Select one)

- Extremely important
- Quite important
- Moderately important
- Slightly important
- Not at all important
- Don't know

F. Recommendations for Enhancing NIH-HHS Collaboration

37. In general, do you have any specific suggestions for how NIH-HHS Collaborations could be improved?

[Comment box]

38. Are there specific topics or issues that could benefit from new or enhanced NIH-HHS collaborative efforts?

[Comment box]

G. Inter-Agency Collaboration Experience

[Logic Note: This section is for **Non-NIH** personnel (based on Q1) that answer No or Don't Know to Question 8 above and so are classified as a "non-NIH-HHS Collaborator," i.e., those without current or prior experience with NIH-HHS Collaborations.]

For the previous question, you indicated that you have never been involved in NIH-HHS Collaborations. However, we would also like to know about your experience with any inter-agency collaboration that has not involved NIH.

39. Are you currently or have you ever been involved with one or more collaborations that involve any HHS or federal agencies (but not NIH)?

- Yes
- No
- Don't Know

[Logic Note: if "Yes" to question 39, then classify as "Collaborator-non-NIH" and respondents proceed to question 40.]

[Logic Note: if "No" or "DK" to question 39, then classify as "non-Collaborator" and respondents skip to Question 50.]

40. How often do you participate in inter-agency collaborations in your current position?

- Rarely
- Occasionally
- Often
- Full-time

41. Over the course of your career, what has been your role(s) in inter-agency collaborations? (Select all that apply)

- I served in an overall leadership capacity (e.g., chair, coordinator, facilitator, moderator)
- I served as a leader for a sub-group (e.g., committee, working group)
- I was a participant (non-leadership)
- I was my agencies' assigned representative/point of contact
- I provided administrative or logistical support
- Other (please specify): _____

42. In your current position at HHS, what is your typical primary role in inter-agency collaboration(s)? (Select one)

- Not applicable – I am not currently involved in inter-agency collaborations
- I serve in an overall leadership capacity (e.g., chair, coordinator, facilitator, moderator)
- I serve as a leader for a sub-group (e.g., committee, working group)

- I am a participant (non-leadership)
- I am my agencies' assigned representative/point of contact
- I provide administrative or logistical support
- Other (please specify): _____

43. What have been the incentives or motivations for participating in inter-agency collaborations? (Select all that apply)

- The collaborations were addressing an important health/human service issue
- The topics of the collaborations were relevant to my work and professional interests.
- They would help me achieve work performance goals
- They would help me advance my career
- My supervisor asked me to do it
- I was interested in collaborating with a specific agency(ies) or individual(s) involved with the collaborations
- Other (please specify): _____

44. How useful are each of these sources of information for identifying potential collaborators at other HHS agencies?

Objective	Not at all useful	Slightly useful	Moderately useful	Very useful	Extremely useful	Don't use
a. Internet searches.						
b. HHS Global Directory.						
c. Published scientific or professional literature.						
d. Professional contacts and network.						
e. Other (please specify): _____						

45. Based on your overall experiences with inter-agency collaborations, how important do you think the following factors are for facilitating the success of an inter-agency collaboration?

Objective	Don't know	Not at all important	Slightly important	Moderately important	Quite important	Extremely important
Clearly defined purpose and goals.						
Commitment of agency leadership.						
Participants who work well together and share information freely.						

APPENDIX D. Survey Questionnaire

Objective	Don't know	Not at all important	Slightly important	Moderately important	Quite important	Extremely important
Formal agreements that spell out relationships between partner organizations.						
Leaders who have the appropriate skills and expertise to manage the group.						
Formal, structured, and regularly occurring meetings with a pre-set schedule, an agenda, and a central convener.						
Clear mechanisms for tracking and monitoring progress.						
Participants have the appropriate level of authority to make decisions and the relevant skills and expertise.						
Resources are provided by one or more of the participating agencies, such as funding or administrative and logistical support.						

46. What do you think are the 3 most important factors that enable the success of inter-agency collaboration? (Select only three)

- Clearly defined purpose and goals.
- Commitment of agency leadership.
- Participants who work well together and share information freely.
- Formal agreements that spell out relationships between partner organizations.
- Leaders who have the appropriate skills and expertise to manage the group.
- Formal, structured, and regularly occurring meetings with a pre-set schedule, an agenda, and a central convener.
- Clear mechanisms for tracking and monitoring progress.
- Participants have the appropriate level of authority to make decisions and the relevant skills and expertise.
- Resources are provided by one or more of the participating agencies, such as funding or administrative and logistical support.

47. Based on your overall experience with inter-agency collaborations, what do you think are the 3 most important factors that cause impediments to the success of collaborations?
(Select only three)

- The time commitment required to participate
- Lack of clarity about the purpose of the collaboration
- Lack of clarity about participant roles and responsibilities
- Infrequent communication
- Lack of commitment among participants
- Lack of commitment or support from agency leadership
- Lack of authority among participants to make decisions
- Lack of funding or resources
- Ineffective leadership
- Philosophical difference among participants
- Other (please specify): _____

48. What are the most significant barriers to **initiating a new inter-agency collaboration**?

[Comment box]

49. Overall, how satisfied are you with the inter-agency collaborations in which you have participated?

- Very satisfied
- Satisfied
- Neutral
- Dissatisfied
- Very dissatisfied

[Logic note: If respondent is not involved in any inter-agency collaborations – i.e., No or Don't know for Question 39 above, then they skip questions 40-49 and start again with Question 50 below]

Now, we would like to ask a few questions to get your thoughts about inter-agency collaborations that involve NIH and other HHS agencies.

50. What are the reasons that you have not been involved in NIH-HHS Collaborations?
(Select all that apply)

- I have not had the opportunity to participate in a collaboration with NIH.
- I am unfamiliar with the NIH personnel whose area of work is relevant to my own.
- I do not know how to identify potential collaborators at NIH.
- It is difficult to identify or contact potential collaborators at NIH.
- I have had negative experiences with NIH and do not want to work with that agency.
- My work is not relevant to the work done at NIH.
- Other: _____

51. How interested are you in participating in NIH-HHS Collaborations in the future?

- Extremely interested
- Very interested
- Moderately Interested
- Slightly interested
- Not at all interested

52. What could be done to encourage or better incentivize participation in NIH-HHS Collaborations among HHS personnel?

[Comment box]

53. Are there specific topics or issues that could benefit from new or enhanced NIH-HHS collaborative efforts?

[Comment box]

H. General Attitudes and Opinions about Inter-agency Collaboration

[Logic Note: This section is applicable to all respondents.]

Next, we would like to ask some questions about your opinions on inter-agency collaboration in general.

54. Please indicate your level of agreement or disagreement with the following statements about inter-agency collaborations in general.

Statement	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Inter-agency collaborations can achieve better outcomes than single agencies working alone.					
Inter-agency collaboration helps translate basic science research into beneficial health and human services and resources for the public.					
Inter-agency collaborations make things more complicated and can slow down the work					
Inter-agency collaborations enable HHS agencies to better fulfill their mission, strategic priorities, and goals and objectives.					
HHS personnel benefit from participating in inter-agency collaborations.					
It can be harder to make decisions with so many stakeholders involved.					
In general, I find collaborations to be a good use of my time.					

55. Please indicate your level of agreement or disagreement with each statement below about how your agency provides support for inter-agency collaboration in general.

Statement	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
My agency has a history of participating in inter-agency collaborations.					
Agency leadership is supportive of inter-agency collaboration.					
My agency provides incentives and/or rewards to personnel for participating in inter-agency collaborations.					
Colleagues and co-workers in my agency are supportive of participation in inter-agency collaborations.					
My supervisor values inter-agency collaborations.					
My agency provides funding to support inter-agency collaborations.					
My agency provides staff to support the work of inter-agency collaborations.					

I. Respondent Characteristics

Lastly, we would like to ask you some questions about yourself. While you do NOT have to answer any of these questions, this information will help us understand how experiences and opinions about collaborations differ by key respondent characteristics.

56. Federal government level:

- GS9
- GS10
- GS11
- GS12
- GS13
- GS14
- GS15
- SES
- Other
- Decline to answer

57. How long have you been working at your current agency?

- 5 years or less
- 6-10 years
- 11-20 years
- 21-30 years
- 31 years or more
- Decline to answer

58. How long have you been working in the Department of Health and Human Services overall (any agency or operating division)?

- Not applicable – I have only worked at my current agency.
- 5 years or less
- 6-10 years
- 11-20 years
- 21-30 years
- 31 years or more
- Decline to answer

59. If you have ever worked at another HHS agency, please indicate which one(s). (Select all that apply)

- Not applicable – I have only worked at my current agency
- Administration for Children and Families (ACF)
- Administration for Community Living (ACL)
- Agency for Healthcare Research and Quality (AHRQ)
- Centers for Disease Control and Prevention (CDC)
- Centers for Medicare & Medicaid Services (CMS)
- Food and Drug Administration (FDA)
- Health Resources and Services Administration (HRSA)
- Indian Health Service (IHS)
- National Institutes of Health (NIH)
- Substance Abuse and Mental Health Services Administration (SAMHSA)
- Office of the Secretary (OS)
- Decline to answer

60. Age?

- 19 years or younger
- 20-29 years
- 30-39 years
- 40-49 years
- 50-59 years
- 60 years or older

Decline to answer

61. Gender?

Male

Female

Other

Decline to answer

62. What is the highest degree you have received? (Please select only one)

High school graduate (or equivalent)

Bachelor's or Associate's degree

Graduate or professional degree

Decline to answer

Thank you for participating in the NIH-HHS Collaborations Study!

Appendix E. Multivariate Analysis Summary and Detailed Results

Multivariate Analysis Summary and Detailed Results

Analysis methods and interpretation:

There were two analytical strategies used:

- Ordered logistic (prop odds) for ranked variables from 1-5 (excluding Don't Know, and for these the lower outcome values were the "positive" direction), and
- Logistic for the Yes/No questions (excluding Don't Know).

With the prop odds model, if a coefficient is positive, it means the "odds" of going to a lower category (i.e. more favorable rating) are less.

With the logistic model, if a coefficient is positive, it means the "odds" of a favorable response (e.g., Yes) is greater.

Not all covariates could be used in each multivariate model due to either collinearity with the rest of the variables, or perfect prediction of the outcome. In the estimation tables an "(empty)" indicates this, with notes at the bottom if there was perfect prediction. Those are usually due to low cell counts, e.g., where there's an indicator with only 3 events and all 3 events checked "yes".

For the categorical covariates (IVs), one category has to be a reference and it's the one not explicitly stated in the estimation output, numerically it'll be the "lowest" option.

In the P>z column in the results tables below, an exact zero value is the result of rounding to three decimals, i.e. <0.0005

For the analysis results presented below, all p-values are marginal, meaning the significance associated with a small p-value is assessed given that the other covariates are in the model (and held constant). For the various outcomes, at the bottom of the tables sometimes there will be a note that a certain category was omitted because it perfectly predicted success or failure in a logistic model. In these cases, it means all respondents in a given category (sometimes not very many) responded in the same way and hence the coefficient could not be estimated.

Overall, the below highlights of significance should be taken as *possible* indications of a significant relationship, i.e. with a large grain of salt. No attempts were made to adjust for multiple testing, and so fishing for p-values less than 0.05 you would expect that about 1/20 of those results among the dozens below would in fact be due to chance.

Independent Variables

Independent Variables (IVs):

- Agency Affiliation (Q1)
- Role in Collaboration (Q11): Leadership vs. Non-leadership
 - Create new variable "Leadership Role" that is based on responses to Q11.
 - Leadership Role = 1 (label "Leadership") if they selected either or both:
 - 1. I serve(d) in an overall leadership capacity (e.g., chair, coordinator, facilitator, moderator)
 - 2. I serve(d) as a leader for a sub-group (e.g., committee, working group)
 - Leadership Role = 0 (label "Non-leadership") if they did not select any of the leadership options.
- Level of collaboration (derived variable based on Q8/9 and Q10)

- Had a successful or unsuccessful collaboration experience? (Q's 22 and 23, modified to be dichotomous Yes/No)
- Length of time at current agency (Q57)
- GS level (Q56)
- Purposes of Collaboration (Q12, Q25) – for both Q12 and Q25, we created the following dummy variables using the table below as a guide. All three variables should be included in the analyses.
 - Practice-oriented
 - Research-oriented
 - Practice-Research Mix

Collaboration Purpose (Q12, Q25)

Item	Category: Research (R), Practice (P), or Mix (M)?
Develop a health/human services program	P
Develop practice guidelines/recommendations	P
Develop a policy or regulatory guidance/recommendations	P
Develop or conduct a research study, survey, or other data gathering activity	R
Develop a report, journal publication, or concept/white paper	M
Develop a funding opportunity or grant program	M
Develop a data or informational resource (e.g., database, disease registry, information clearinghouse)	M
Develop or conduct a public education campaign	P
Develop or conduct a meeting or workshop	M
Develop or conduct a training initiative	M
General inter-agency coordination, strategic planning, and/or information sharing	M
Other (please specify): _____	

Summary of Results

- Q33: Importance of NIH for initiation of most successful collaboration
 - ACF employees were less likely to rate favorably the importance of NIH for initiation of their Most Successful Collaboration.
- Q35: Importance of NIH for carrying out the work of most successful collaboration
 - Respondents in leadership roles were more likely to rate favorably the importance of NIH for collaboration for carrying out the work of their Most Successful Collaboration.
 - In contrast, ACF employees were less likely to rate NIH’s importance favorably.
- Q36: Importance of NIH for creating the products or outputs of their most successful collaboration
 - Respondents in leadership roles were more likely to rate favorably the importance of NIH for creating the products or outputs.
 - In contrast, FDA and ACF employees were less likely to rate NIH’s importance in this area favorably.
- Q22: Likelihood of having an unsuccessful NIH-HHS collaboration:
 - Respondents in leadership roles were more likely to have had an unsuccessful NIH-HHS collaboration.

- In contrast, CDC employees were less likely than NIH employees to report having an unsuccessful NIH-HHS collaboration.
- Q23: Respondents were more likely have had a successful collaboration if:
 - They served in a leadership role.
 - They were classified as a high or medium level collaborator.
 - They participated in practice-based collaborations.
- Q27: The importance of the method of initiation for their most successful collaboration:
 - Respondents more likely to rate favorably if:
 - They had served in leadership roles and
 - They have served for more than 30 years in their current position.
 - Respondents were less likely to rate favorably if their collaborations were initiated in response to outside stakeholders.
- Q18: Likelihood of being satisfied with NIH-HHS collaborations.
 - Respondents were more likely to report being satisfied if they:
 - Were ACL staff
 - Served in a leadership role
 - Were a high/medium level collaborator
 - Had reported having a successful collaboration
 - And participated in research-based collaborations.
- Q19: Interest in future NIH-HHS collaborations.
 - Respondents were more likely to report being highly interested in future collaborations if:
 - They were CDC, FDA, SAMHSA, and ACL employees.
 - They served in a leadership role.
 - They had reported a successful collaboration.
 - They had participated in research-based collaborations.
 - Respondents were less likely to report being highly interested in future collaborations if:
 - They have worked in their current position for 21-30, or 31 plus years, or have a job category of SES.

Collaboration Initiation:

Q33. Importance of NIH for Collaboration for Initiation of the Most Successful Collaboration?

5-point importance scale, where Extremely important =1 and Not at all important =5

Ordered Logistic	Regression
Number of obs	324
LR chi2(19)	24.24
Prob> chi2	0.1869
Log Likelihood	-409.46844

Variable	Coef.	Std. Err.	z	P>z	[95% Conf.	Interval]
q0033a						
q0001						
CDC	0.0589056	0.2781783	0.21	0.832	-0.48631	0.604125
FDA	0.2901615	0.3017848	0.96	0.336	-0.30133	0.881649
SAMHSA	0.5926523	0.4444524	1.33	0.182	-0.27846	1.463763
ACF	1.708859	0.6359831	2.69	0.007	0.462355	2.955363
ACL	0.3479175	0.7342899	0.47	0.636	-1.09126	1.787099
LeadershipRole	-0.2901397	0.224772	-1.29	0.197	-0.73068	0.150405
CollaborationLevel2	-0.5216336	0.4464502	-1.17	0.243	-1.39666	0.353393
CollaborationSuccess	0	(omitted)				
q0057a						
6-10 years	8.82E-07	0.3497949	0	1	-0.68558	0.685586
11-20 years	-0.0413126	0.3420003	-0.12	0.904	-0.71162	0.628996
21-30 years	0.0063789	0.3777378	0.02	0.987	-0.73397	0.746731
31 years or more	0.1691124	0.5059243	0.33	0.738	-0.82248	1.160706
q0056a						
GS12	1.469587	0.921521	1.59	0.111	-0.33656	3.275735
GS13	-0.2161978	0.4617569	-0.47	0.64	-1.12123	0.688829
GS14	0.0856879	0.3798485	0.23	0.822	-0.6588	0.830177
GS15	-0.030156	0.3583919	-0.08	0.933	-0.73259	0.672279
SES	0.3172083	0.577847	0.55	0.583	-0.81535	1.449767
practice_q25	0.1951396	0.2259865	0.86	0.388	-0.24779	0.638065
research_q25	-0.3034433	0.2299615	-1.32	0.187	-0.75416	0.147273
mixed_q25	-0.1880456	0.2587134	-0.73	0.467	-0.69511	0.319023
Ancillary Parameters: Cutpoints						
/cut2	-0.6426927	0.7062236			-2.02687	0.74148
/cut3	0.5285565	0.7049414			-0.8531	1.910216
/cut4	1.174812	0.7113086			-0.21933	2.568951
/cut4	2.03373	0.728644			0.605614	3.461846

Interpretation: Using the proportional odds model for the 5 category outcomes. With the prop odds model, if a coefficient is positive, it means the “odds” of going to a lower category (i.e. more favorable rating) are less. The fact that affiliation with ACF has a positive and significant coefficient means that **respondents who report affiliation with ACF are less likely to rate favorably the importance of NIH for initiation of their Most Successful Collaboration.**

Collaboration Implementation:

Q35. Importance of NIH for Collaboration for Carrying Out the Work of the Most Successful Collaboration?

5-point importance scale, where Extremely important =1 and Not at all important =5

Ordered Logistic	Regression
Number of obs	326
LR chi2(19)	36.98
Prob> chi2	0.0118
Log Likelihood	-409.46844
Pseudo R2	0.0561

Variables	Coef.	Std. Err.	z	P>z	[95% Conf.	Interval]
q0035a						
q0001						
CDC	0.5018254	0.292322	1.72	0.086	-0.07112	1.074766
FDA	0.5193396	0.3205512	1.62	0.105	-0.10893	1.147608
SAMHSA	0.2221956	0.4800216	0.46	0.643	-0.71863	1.163021
ACF	1.998821	0.5993043	3.34	0.001	0.824207	3.173436
ACL	-0.9690928	1.142747	-0.85	0.396	-3.20884	1.27065
LeadershipRole	-0.6795541	0.2353332	-2.89	0.004	-1.1408	-0.21831
CollaborationLevel2	-0.9158001	0.4827883	-1.9	0.058	-1.86205	0.030448
CollaborationSuccess	0	(omitted)				
q0057a						
6-10 years	-0.1211525	0.3582053	-0.34	0.735	-0.82322	0.580917
11-20 years	-0.3960476	0.3594945	-1.1	0.271	-1.10064	0.308549
21-30 years	-0.4926396	0.3953468	-1.25	0.213	-1.26751	0.282226
31 years or more	-0.1688876	0.5555214	-0.3	0.761	-1.25769	0.919914
q0056a						
GS9	1.872141	1.580279	1.18	0.236	-1.22515	4.969431
GS12	-0.8437233	0.9849125	-0.86	0.392	-2.77412	1.08667
GS13	-0.7433323	0.4793563	-1.55	0.121	-1.68285	0.196189
GS14	-0.0799779	0.3907467	-0.2	0.838	-0.84583	0.685872
GS15	-0.367164	0.3766845	-0.97	0.33	-1.10545	0.371124
SES	-0.499385	0.6928222	-0.72	0.471	-1.85729	0.858522
practice_q25	0.1463921	0.2387648	0.61	0.54	-0.32158	0.614363
research_q25	-0.1440769	0.2432801	-0.59	0.554	-0.6209	0.332743
mixed_q25	-0.1816513	0.270184	-0.67	0.501	-0.7112	0.3479
Ancillary Parameters: Cutpoints						
/cut1	-1.134504	0.73384			-2.5728	0.303796
/cut2	0.669058	0.7369151			-0.77527	2.113385
/cut3	1.883972	0.7712268			0.372395	3.395548

Interpretation: Using the proportional odds model for the 5 category outcomes. With the prop odds model, if a coefficient is positive, it means the “odds” of going to a lower category (i.e. more favorable rating) are less. The fact that LeadershipRole has a negative and significant coefficient means that **respondents who report participating in a leadership role in any current or previous collaboration are more likely to rate favorably the importance of NIH for collaboration for carrying out the work of their Most Successful Collaboration. In contrast, affiliation with ACF has a positive and significant coefficient, so respondents affiliated with ACF are less likely to rate favorably.**

Collaboration Outputs:

Q36. Importance of NIH for Creating the Products or Outputs for the Most Successful Collaboration?

5-point importance scale, where Extremely important = 1 and Not at all important = 5

Ordered Logistic	Regression
Number of obs	342
LR chi2(19)	38.28
Prob>chi2	0.0055
Log Likelihood	-350.36261
Pseudo R2	0.0518

Variable	Coef.	Std. Err.	z	P>z	[95% Conf.	Interva l]
q0036a						
q0001						
CDC	1.142658	0.2798059	4.08	0	0.594249	1.691068
FDA	0.9175828	0.3096851	2.96	0.003	0.310611	1.524554
SAMHSA	0.5192488	0.4583695	1.13	0.257	-0.37914	1.417636
ACF	1.314989	0.6081206	2.16	0.031	0.123095	2.506884
ACL	-0.388156	0.8706409	-0.45	0.656	-2.09454	1.318309
Leadership Role	-0.5522493	0.2236751	-2.47	0.014	-0.99064	-0.11385
CollaborationLevel2	-0.6735369	0.4871703	-1.38	0.167	-1.62837	0.281299
CollaborationSuccess	0	(omitted)				
q0057a						
6-10 years	-0.2168246	0.3532556	-0.61	0.539	-0.90919	0.475544
11-20years	-0.3467781	0.3507228	-0.99	0.323	-1.03418	0.340626
21-30 years	-0.7038773	0.3879458	-1.81	0.07	-1.46424	0.056483
31years or more	0.1750342	0.5448989	0.32	0.748	-0.89295	1.243016
q0056a						
GS12	-1.035947	0.8687397	-1.19	0.233	-2.73865	0.666752
GS13	-0.8727144	0.457636	-1.91	0.057	-1.76966	0.024236
GS14	-0.3973481	0.374806	-1.06	0.289	-1.13195	0.337258
GS15	-0.3467287	0.3545276	-0.98	0.328	-1.04159	0.348133
SES	-0.7880594	0.6915243	-1.14	0.254	-2.14342	0.567303
practice q25	-0.094811	0.226931	-0.42	0.676	-0.53959	0.349966
research q25	0.02742	0.2268411	0.12	0.904	-0.41718	0.47202
mixed q25	0.2776521	0.2703154	1.03	0.304	-0.25216	0.807461
Ancillary Parameters: Cutpoints						
/cut1	-0.9566483	0.7387228			-2.40452	0.491222
/cut2	1.057705	0.7418318			-0.39626	2.511669
/cut3	2.28917	0.7654608			0.788895	3.789446
/cut4	4.3727	1.004832			2.403266	6.342135

Interpretation: Using the proportional odds model for the 5 category outcomes. With the prop odds model, if a coefficient is positive, it means the "odds" of going to a lower category (i.e. more favorable rating) are less. The fact that LeadershipRole has a negative and significant coefficient means that **respondents who report participating in a leadership role in any current or previous collaboration are more likely to rate favorably the importance of NIH for creating the products or outputs of their Most Successful Collaboration. In contrast, affiliation with FDA or ACF means respondents affiliated with either of those two agencies are less likely to rate favorably.**

Unsuccessful Collaboration Experience:

Q22. Have you ever participated in an NIH-HHS Collaboration that you considered overall to be especially challenging, problematic, and “unsuccessful”?

Yes vs; No/Don’t know;

Logistic	Regression
Number of obs	326
LR chi2(19)	35.5
Prob> chi2	0.0082
Log Likelihood	-190.66468
Pseudo R2	0.0852

Variables	Coef.	Std. Err.	z	P>z	[95% Conf. Interval]
q0022_yes					
q0001					
CDC	-0.8318444	0.333245	-2.5	0.013	-1.48499 -0.1787
FDA	0.0151557	0.344757	0.04	0.965	-0.66056 0.690867
SAMHSA	-1.02067	0.677318	-1.51	0.132	-2.34819 0.30685
ACF	0.1022216	0.710124	0.14	0.886	-1.2896 1.494038
ACL	0	(empty)			
LeadershipRole	0.8255046	0.274622	3.01	0.003	0.287256 1.363753
CollaborationLevel2	0.8511555	0.618041	1.38	0.168	-0.36018 2.062493
CollaborationSuccess	0	(omitted)			
q0057a					
6-10 years	-0.156096	0.438089	-0.36	0.722	-1.01473 0.702542
11-20 years	0.3287021	0.421496	0.78	0.435	-0.49741 1.154818
21-30 years	0.3502404	0.465371	0.75	0.452	-0.56187 1.26235
31 years or more	0.63982	0.622727	1.03	0.304	-0.5807 1.860342
q0056a					
GS9	0	(empty)			
GS12	-0.4279188	1.202091	-0.36	0.722	-2.78398 1.928137
GS13	-0.5273471	0.561825	-0.94	0.348	-1.6285 0.573809
GS14	-0.0477135	0.433192	-0.11	0.912	-0.89675 0.801327
GS15	0.1479831	0.411167	0.36	0.719	-0.65789 0.953856
SES	-0.4851279	0.826144	-0.59	0.557	-2.10434 1.134085
Ancillary Parameters: Cutpoints					
practice_q25	-0.0167821	0.263779	-0.06	0.949	-0.53378 0.500215
research_q25	0.3485744	0.265812	1.31	0.19	-0.17241 0.869556
mixed_q25	-0.3854045	0.304996	-1.26	0.206	-0.98319 0.212376
cons	-1.769602	0.90752	-1.95	0.051	-3.54831 0.009104

note: 6.q0001 != 0 predicts failure perfectly

6.q0001 dropped and 7 obs not used

note: 1.q0056a != 0 predicts failure perfectly

1.q0056a dropped and 1 obs not used

Interpretation: Using the logistic model, if a coefficient is positive, it means the “odds” of a favorable response (e.g., Yes) is greater. The fact that LeadershipRole has a positive and significant coefficient means that **respondents who report participating in a leadership role in any current or previous collaboration are more likely than respondents who have not served as leaders to report “Yes” they have had an unsuccessful NIH-HHS collaboration. In contrast, respondents affiliated with CDC are less likely than NIH respondents to report having an unsuccessful NIH-HHS collaboration.**

Successful Collaboration Experience:

Q23. Have you ever participated in an NIH-HHS Collaboration that you would consider overall to be “successful”, even if there were particular problems or challenges?

Yes vs; No/Don’t know;

Logistic	Regression
Number of obs	330
LR chi2(16)	53.37
Prob> chi2	0
Log Likelihood	-73.846788
Pseudo R2	0.2654

Variables	Coef.	Std. Err.	z	P>z	[95% Conf.	Interval]
q0023_yes						
q0001						
CDC	-0.7395159	0.576696	-1.28	0.2	-1.86982	0.390787
FDA	-0.5058386	0.611841	-0.83	0.408	-1.70502	0.693347
SAMHSA	0	(empty)				
ACF	-1.303749	1.115138	-1.17	0.242	-3.48938	0.881881
ACL	-1.287476	1.082884	-1.19	0.234	-3.40989	0.834938
LeadershipRole	1.463602	0.508633	2.88	0.004	0.466699	2.460505
CollaborationLevel2	2.403355	0.595501	4.04	0	1.236194	3.570515
q0057a						
6-10 years	-0.6035562	0.735962	-0.82	0.412	-2.04602	0.838903
11-20 years	-0.3476081	0.739739	-0.47	0.638	-1.79747	1.102255
21-30 years	-0.6934599	0.826238	-0.84	0.401	-2.31286	0.925938
31 years or more	0	(empty)				
q0056a						
GS9	0	(empty)				
GS12	0.2806982	1.807187	0.16	0.877	-3.26132	3.82272
GS13	-0.7618639	1.074406	-0.71	0.478	-2.86766	1.343933
GS14	-1.084917	0.987122	-1.1	0.272	-3.01964	0.849807
GS15	0.1001821	0.968789	0.1	0.918	-1.79861	1.998974
SES	0	(empty)				
practice_q12	1.354544	0.526505	2.57	0.01	0.322613	2.386474
research_q12	1.053848	0.567854	1.86	0.063	-0.05913	2.166822
mixed_q12	0.6095686	0.660054	0.92	0.356	-0.68411	1.903251
_cons	-0.2774099	1.284859	-0.22	0.829	-2.79569	2.240868

note: CollaborationSuccess omitted since it predicts outcome perfectly

note: 4.q0001 != 0 predicts success perfectly

4.q0001 dropped and 22 obs not used

note: 5.q0057a != 0 predicts success perfectly

5.q0057a dropped and 21 obs not used

note: 1.q0056a != 0 predicts success perfectly

1.q0056a dropped and 1 obs not used

note: 8.q0056a != 0 predicts success perfectly

8.q0056a dropped and 9 obs not used

Interpretation: Using the logistic model, if a coefficient is positive, it means the “odds” of a favorable response (e.g., Yes) is greater.

Importance of Collaboration Initiation Method to Success:

27. How important was method of initiation in determining the success of this collaboration? (Select one)

5-point importance scale, where Extremely important =1 and Not at all important =5

Ordered Logistic	Regression
Number of obs	311
LR chi2(20)	35.87
Prob> chi2	0.0159
Log Likelihood	-376.53637
Pseudo R2	0.0455

Variables	Coef.	Std. Err.	z	P>z	[95% Conf.	Interval]
q0027a						
q0001						
CDC	0.3015179	0.2762655	1.09	0.275	-0.23995	0.842988
FDA	-0.4151705	0.3252224	-1.28	0.202	-1.0526	0.222254
SAMHSA	0.2911991	0.4579034	0.64	0.525	-0.60628	1.188673
ACF	0.2502483	0.6143635	0.41	0.684	-0.95388	1.454379
ACL	-0.3450475	0.8538161	-0.4	0.686	-2.0185	1.328401
LeadershipRole	-0.4986191	0.2255297	-2.21	0.027	-0.94065	-0.05659
CollaborationLevel2	-0.8575738	0.4885739	-1.76	0.079	-1.81516	0.100013
q0057a						
6-10 years	-0.4454588	0.3608914	-1.23	0.217	-1.15279	0.261875
11-20 years	-0.4344986	0.3509717	-1.24	0.216	-1.12239	0.253393
21-30 years	-0.3786937	0.3886139	-0.97	0.33	-1.14036	0.382976
31 years or more	-1.56401	0.598283	-2.61	0.009	-2.73662	-0.3914
q0056a						
GS12	0.3232675	0.8304734	0.39	0.697	-1.30443	1.950965
GS13	0.63234	0.4600845	1.37	0.169	-0.26941	1.534089
GS14	0.4506745	0.3944012	1.14	0.253	-0.32234	1.223687
GS15	0.4731526	0.378003	1.25	0.211	-0.26772	1.214025
SES	1.185401	0.6496424	1.82	0.068	-0.08787	2.458677
q0026a						
Initiated in response to interest from outside stakeholders	1.091628	0.3831398	2.85	0.004	0.340688	1.842569
Congressional mandate	0.1259648	0.3879042	0.32	0.745	-0.63431	0.886243
Directives from the Administration	-0.0968409	0.4800889	-0.2	0.84	-1.0378	0.844116
Directives from your Department or agency leadership	-0.0523089	0.3241706	-0.16	0.872	-0.68767	0.583054
Ancillary Parameters: Cutpoints						
/cut1	-1.384617	0.7070499			-2.77041	0.001176
/cut2	0.2441663	0.7008403			-1.12946	1.617788
/cut3	1.833009	0.7187253			0.424334	3.241685
/cut4	2.345448	0.7379851			0.899024	3.791872

Interpretation: Using the proportional odds model for the 5 category outcomes, if a coefficient is positive, it means the “odds” of going to a lower category (i.e. more favorable rating) are less. The reference category for q0026 is “Initiated by agency staff through personal connections and common interests”. The reference category for q0057 is “5 years or less”.

Overall Satisfaction with NIH-HHS Collaborations:

18. Overall, how satisfied are you with the NIH-HHS Collaborations in which you have participated?

5-point satisfaction scale, where 1=Very satisfied and 5=Very dissatisfied

Ordered Logistic	Regression
Number of obs	401
LR chi2(21)	68.38
Prob> chi2	0
Log Likelihood	-411.7471
Pseudo R2	0.0767

Variables	Coef.	Std. Err.	z	P>z	[95% Conf.	Interval]
q0018						
q0001						
CDC	-0.4079077	0.2570376	-1.59	0.113	-0.91169	0.095877
FDA	-0.502634	0.2765759	-1.82	0.069	-1.04471	0.039445
SAMHSA	-0.6276895	0.4341002	-1.45	0.148	-1.47851	0.223131
ACF	-0.4908669	0.6111196	-0.8	0.422	-1.68864	0.706906
ACL	-1.303258	0.6028083	-2.16	0.031	-2.48474	-0.12178
LeadershipRole	-0.5737869	0.2144438	-2.68	0.007	-0.99409	-0.15348
CollaborationLevel2	-1.382948	0.3844416	-3.6	0	-2.13644	-0.62946
CollaborationSuccess	-1.221819	0.3258774	-3.75	0	-1.86053	-0.58311
q0057a						
6-10 years	0.187348	0.3130969	0.6	0.55	-0.42631	0.801007
11-20 years	0.1606384	0.3181086	0.5	0.614	-0.46284	0.78412
21-30 years	0.3300997	0.3521253	0.94	0.349	-0.36005	1.020253
31 years or more	0.6274884	0.4939455	1.27	0.204	-0.34063	1.595604
q0056a						
GS9	-14.01291	936.7086	-0.01	0.988	-1849.93	1821.902
GS12	-0.2206951	0.8366434	-0.26	0.792	-1.86049	1.419096
GS13	0.2727958	0.4112669	0.66	0.507	-0.53327	1.078864
GS14	0.0615426	0.3477478	0.18	0.86	-0.62003	0.743116
GS15	0.0464694	0.329773	0.14	0.888	-0.59987	0.692813
SES	0.1963765	0.6398917	0.31	0.759	-1.05779	1.450541
practice_q12	0.2357454	0.1991207	1.18	0.236	-0.15452	0.626015
research_q12	-0.5644328	0.2132268	-2.65	0.008	-0.98235	-0.14652
mixed_q12	0.0011469	0.3613038	0	0.997	-0.707	0.709289
Ancillary Parameters: Cutpoints						
/cut1	-3.339692	0.6632196			-4.63958	-2.03981
/cut2	-0.8647333	0.6405788			-2.12025	0.390778
/cut3	0.8351159	0.6557374			-0.45011	2.120337
/cut4	2.546526	0.8265756			0.926468	4.166584

Interpretation: Using the proportional odds model for the 5 category outcomes, if a coefficient is positive, it means the “odds” of going to a lower category (i.e. more favorable rating) are less.

Interest in future NIH-HHS Collaborations:

19. How interested are you in participating in NIH-HHS Collaborations in the future?
 5-point Interest scale, where 1=Extremely interested and 5=Not at all interested

Ordered Logistic	Regression
Number of obs	401
LR chi2(21)	122.7
Prob> chi2	0
Log Likelihood	-405.43405
Pseudo R2	0.1314

Variables	Coef.	Std. Err.	z	P>z	[95% Conf.	Interval]
q0019						
q0001						
CDC	-0.9606671	0.2685949	-3.58	0	-1.4871	-0.43423
FDA	-1.525902	0.2917409	-5.23	0	-2.0977	-0.9541
SAMHSA	-0.9528251	0.4389394	-2.17	0.03	-1.81313	-0.09252
ACF	-1.26335	0.6550898	-1.93	0.054	-2.5473	0.020602
ACL	-1.407032	0.5950197	-2.36	0.018	-2.57325	-0.24081
LeadershipRole	-0.7510316	0.2158975	-3.48	0.001	-1.17418	-0.32788
CollaborationLevel2	-1.491978	0.3907623	-3.82	0	-2.25786	-0.7261
CollaborationSuccess	-1.333749	0.3236974	-4.12	0	-1.96818	-0.69931
q0057a						
6-10 years	0.2545541	0.3199019	0.8	0.426	-0.37244	0.88155
11-20 years	-0.1601225	0.3263331	-0.49	0.624	-0.79972	0.479479
21-30 years	0.8072134	0.3607138	2.24	0.025	0.100227	1.5142
31 years or more	1.036383	0.4859371	2.13	0.033	0.083963	1.988802
q0056a						
GS9	-12.65497	461.0533	-0.03	0.978	-916.303	890.9928
GS12	-0.7636435	0.8227525	-0.93	0.353	-2.37621	0.848922
GS13	-0.1384592	0.4194565	-0.33	0.741	-0.96058	0.68366
GS14	-0.4161706	0.357286	-1.16	0.244	-1.11644	0.284097
GS15	0.3023419	0.3358179	0.9	0.368	-0.35585	0.960533
SES	1.59191	0.5697426	2.79	0.005	0.475235	2.708585
practice_q12	-0.0661237	0.2026305	-0.33	0.744	-0.46327	0.331025
research_q12	-0.7456467	0.2192047	-3.4	0.001	-1.17528	-0.31601
mixed_q12	-0.0599999	0.3725199	-0.16	0.872	-0.79013	0.670126
Ancillary Parameters: Cutpoints						
/cut1	-4.234351	0.6914477			-5.58956	-2.87914
/cut2	-2.077403	0.6657275			-3.38221	-0.7726
/cut3	-0.0805559	0.6672336			-1.38831	1.227198
/cut4	2.317312	0.92827			0.497936	4.136687

Interpretation: Using the proportional odds model for the 5 category outcomes, if a coefficient is positive, it means the “odds” of going to a lower category (i.e. more favorable rating) are less.

Appendix F. Interview Methods

Interview Methods

We conducted in-depth interviews with a sample of survey respondents from the five targeted agencies in order to obtain a more nuanced understanding of how inter-agency collaboration works, the value that diverse individuals place on collaboration, and the barriers and facilitators to collaboration. The intent of these interviews was to understand non-NIH perspectives on these issues, while the perspectives of NIH personnel will be addressed in the Phase 2 study (see Introduction).

Sampling Strategy

We interviewed two groups of survey respondents, based on their self-reported level with experience with NIH-HHS collaborations:

- **No/Low collaborators:** Non-collaborators and those with low levels of self-reported experience, and
- **Medium/High collaborators:** those moderate to high levels of self-reported collaboration experience.

Our goal was to interview a total of 45 survey respondents, with 6 Medium/High collaborators and 3 No/Low collaborators from each of the targeted agencies, resulting in a total of 15 non-collaborators and 30 collaborators. Below we describe the interview sampling strategy that was used to identify interviewees.

1. Potential participants for the interviews were selected from among five federal agencies (ACF, ACL, CDC, FDA, SAMHSA) as follows:
 - a. Three non-collaborators/low collaborators from each agency (15 total)
 - b. Six medium/high collaborators from each agency (30 total)
2. Potential participants were identified from the following survey questions:

Q8 (Based on the definition above, are you currently or have you ever been involved with one or more NIH-HHS Collaborations?)

- Responses to this question were used to identify collaborators and non-collaborators.
“Yes” = collaborators

No” or “don’t know” = non-collaborators

Q10 (How often do you participate in NIH-HHS Collaborations in your current position?)

- Responses to this question were used to stratify collaborators into levels of collaboration involvement:
“Rarely” = low collaborator

“Full-time”, “Often”, or “Occasionally” = medium/high collaborator

3. Low collaborators were combined with non-collaborators.
4. Respondents in the medium/high collaborator group were further stratified by those respondents who indicated that they have had both successful and unsuccessful experiences (“Yes” to Q22 and Q23) and those that responded “Yes” to only one of those two questions, or responded “No” to both. Respondents who have answered “Yes” to both Q22 and Q23 will be given higher priority (i.e., selected first) over other respondents.

5. Participants in both categories (non/low and medium/high) were assigned random numbers.
6. Potential participants were then selected based on ascending order of the random numbers until we reached the desired number of respondents. If an individual declined, or didn't respond after 7 days, we will move to the next participant on the list. This process was repeated weekly until the desired number of participants was reached.

Recruitment Strategy

Based on the sampling strategy above, a list of eligible survey participants was generated in Excel. Any individual who participated in the interview pilot study was removed from the list. A recruitment email was then sent to potential participants requesting their participation in an interview. For those individuals who responded and agreed to participate in a phone interview, an appointment was scheduled at a time that was convenient for them. Once an appointment time was confirmed, an outlook invitation was sent to the participant. For individuals who did not respond, a reminder email was sent approximately one week after the initial mailing.

After it was determined that there was a need to fill some categories, the search was expanded as indicated in step 4 of the sampling strategy to include survey respondents who answered "Q23 Yes Q22 No". The excel spreadsheet was then updated removing any duplicates, and the same recruitment strategy as indicated above was followed until we reached the desired number of interviews. Ultimately, we were unable to obtain all 3 interviews with no/low collaborators among ACF, but we were able to complete an additional no/low collaborator among CDC. Therefore, we were able to complete the anticipated number of overall interviews as indicated below in Table F.1.

Table F.1. Interview Status

Interview Status	ACF		ACL		CDC		FDA		SAMHSA		Total	
	No/	Med/	No/	Med/	No/	Med/	No/	Med/	No/	Med/	No/	Med/
	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High
Invited	5	10	10	8	26	17	13	24	10	4	64	63
Completed	2	6	3	6	4	6	3	6	3	6	15	30
Expected	3	6	3	6	3	6	3	6	3	6	15	30
Remaining	1	0	0	0	0	0	0	0	0	0	0	0

Data Collection

We used two different semi-structured interview instruments to guide the interviews: one tailored to Medium/High NIH-HHS collaborators and the other tailored for non-collaborators. While the questions on the instruments differed by collaboration status, both addressed similar topics and had some overlap in the questions. The main topics for the Medium/High collaborator interviews included:

- The initiation of collaborations
- The benefits of collaboration
- Use of NIH-sponsored scientific research and evidence in collaborations
- Factors that facilitate successful collaborations
- Factors that inhibit successful collaborations

- Perspectives on collaborating with NIH
- Suggestions for increasing and improving NIH-HHS collaborations
- Opportunities for future NIH-HHS collaborations

The No/Low collaborator instruments included similar questions, but also include additional questions about reasons for not collaborating, or not collaborating very much with NIH, plus potential benefits and challenges of collaborating with NIH. Interview questions were open-ended to allow participants to respond in detail in their own words. The interviewer used built-in probing questions when necessary to solicit additional details for the main question. Copies of the interview instruments can be found in Appendix G.

Data Analysis

The interviewer made digital recordings of each interview (except in one case where a participant declined to be audio recorded, so detailed notes were taken instead), which were transcribed verbatim for the purpose of analysis. Battelle staff used qualitative content analysis methods (via the qualitative data analysis software program QSR NVIVO, version 9) to review the interview data and identify themes related to the interview questions and evaluation objectives. To analyze the interviews, Battelle staff developed a codebook based on the interview guide and important themes that emerged during the data collection (Table F.2). The codebook included definitions and/or examples of each code. Segments of the interview text were then coded with one or more codes. Reports were generated for each major theme, and analysts assessed the prominence of each theme and summarized the associated data.

Table F.2. Interview Data Analysis Codebook

Code	Name	Definition / Meaning	Clarification/Examples (examples are shown in quotes)	Interview Question # Collaborator / Non Collaborator
1	Why Collaborate	Indicates the reasons why staff generally collaborate with other federal agencies		2 / 2
1.1	To utilize expertise from other agencies		<i>... "they have expertise that we don't usually have and deal with subjects that we don't often deal with" ..</i>	
1.2	To leverage resources		Collaborating can sometimes allow agencies to gain access to resources they might not normally have - such as additional funding or	
1.3	Commonality		<i>"Once we realized that we were all doing this work outside of the partnership we said, "Well, this is really foolish. We should do this</i>	
1.4	Directed by leadership		<i>"sometimes partnerships are dictated from the higher level leadership of</i>	
1.6	To network with other agencies		Collaborating can allow agency staff to meet colleagues at other agencies, which can lead to	
1.7	Do not collaborate			
1.8	Other			
1.9	Share information			

Code	Name	Definition / Meaning	Clarification/Examples (examples are shown in quotes)	Interview Question # Collaborator / Non Collaborator
1.10	Include perspective of others		"We have to have multiple collaborator insight on the kinds of data that we need to make a regulatory decision."	
2	Initiation of Collaboration	Describes how collaborations are usually started		2 / 2
2.1	Interested staff/agency members initiate		Interested staff contacts other agency staff with similar interests to facilitate collaboration. <i>"Usually, it's based on personal relationships with colleagues"</i>	
2.2	Leadership/management dictates		Agency leadership has extensive network of contacts and directs staff to participate in collaborative activities	
2.4	Other			
2.5	Requirement			
2.6	Develops informally and from networking		Collaboration may develop when people connect and network during conferences about a common topic of	
2.7	Don't know		Participant doesn't know or is not sure	
2.8	Personal connections and common interests		Combination of 2.1 and 2.6	
3	Are collaborations encouraged by leadership	Indicates whether leadership is supportive of collaborations		2 / 2
3.1	Yes			
3.2	No			
3.3	Sometimes			
3.4	Elaboration	Elaborates on topic	For example, if participant says it depends or does not have a clear answer	
4	Use of scientific research in collaborations	Describes how scientific research might be used in a collaboration		3 / 3
4.1	to inform work		Scientific research informs the work the agency is focused on conducting. It can supply the evidence	
4.3	To justify work		Scientific research can be used to justify policy positions	
1.5	It is a job or legislative requirement		<i>"it's usually a job requirement"</i>	
4.4	Collaboration intended to develop research			
4.5	Other			
5	Have collaborations applied results of NIH-funded research?	Indicates whether NIH funded research has been applied to collaborations		3 / 3
5.1	Yes			
5.2	No			
5.3	Not sure			
5.4	Don't understand question			

Code	Name	Definition / Meaning	Clarification/Examples (examples are shown in quotes)	Interview Question # Collaborator / Non Collaborator
5.5	Elaboration of topic		Add quotes that elaborate on the question	
7	Factors that make a collaboration successful	Lists the factors that participants believe contribute to a successful collaboration		4,7 / 6
7.1	Good communication		Participants have good communication skills and demonstrate respect when talking with others in the	
7.2	Support of leadership		Leadership allows staff to spend significant time on the partnership and recognizes the amount of time that it	
7.3	Interested participants		Participants are engaged and willing to devote the time necessary to do the work. They care about the	
7.4	Clear participant roles		Each participant has an understanding about their particular role in the	
7.5	Common purpose/mission		<i>"They were focused on achieving an important goal rather than focused on</i>	
7.6	Dedicated time or resources		Staff has time that is specifically dedicated to the	
7.7	A designated facilitator		A designated facilitator conducts administrative tasks such as scheduling and preparing information for	
7.9	Trust and Respect		Trust needs to be developed as some confidential issues may emerge during the	
7.10	Purpose of the collaboration is to solve an important problem		Goal of the collaboration is informed by the need to address an important problem.	
7.11	Authority to act		Individual who is leading the collaboration must have the authority to make decisions, elicit confidence of the group, and move the work forward.	
7.12	NIH involvement		A key success factor is NIH involvement in the	
7.13	Clear purpose and goals		"it is important to have clearly articulated aligned goals and timelines amongst	
7.14	Agency-staff understand each other			
7.16	The right people at the table		relevant qualifications, expertise, etc.	
7.17	Good rapport		Members know each other, get along	
7.18	Mutual benefits		Both agencies benefit from collaboration	
7.19	Good leader/manager			
7.20	Other			
7.21	Written agreements		For example, MOUs	
7.22	Accomplishments		Includes feeling a sense of	
7.23	Sound science			

Code	Name	Definition / Meaning	Clarification/Examples (examples are shown in quotes)	Interview Question # Collaborator / Non Collaborator
8	Frequency of successful collaboration	Indicates how often participants think their collaborations are successful	Note: these categories will be somewhat subjective based on participants' interpretation since specific criteria were not	4 / na
8.1	Never			
8.2	Sometimes			
8.3	Usually			
8.4	Always			
8.5	Not sure			
8.6	All collaborations have some successful elements			
10	Factors that make a collaboration unsuccessful/Challenges in collaborating	Lists the factors that participants believe contribute to an unsuccessful collaboration		5, 8 / 7
10.1	Lack of relevant staff qualifications		Staff does not understand the topic and has no background in the subject matter. The wrong people at the table.	
10.2	Disinterested/ non-committed participants		Participants are not engaged and do not want to devote the time or energy to the collaboration. Participant not willing to go	
10.3	Lack of common goals		The participants have differing goals or objectives for the collaboration. There is difference of opinion	
10.4	Ineffective leader		The leader cannot make decisions and lacks skills to lead the group or build	
10.5	Lack of relevant staff qualifications		Staff does not understand the topic and has no background in the subject matter. The wrong people at the table.	
10.6	Unrealistic expectations		The goals or timeline necessary to accomplish the work may be unrealistic. There is not enough time to accomplish tasks. Project not based on a real world	
10.7	Participant turnover		Staff turnover delays collaboration since it takes time to inform new participants about the process and goals	
10.8	Lack of dedicated resources		The collaboration could lack resources to conduct	
10.10	Lack of Commonality/understanding each other/Bringing different groups together		<i>"You have a convergence of multiple agencies on specific tasks...when they contribute their specific areas of expertise, they have to understand what all the other partners are doing."</i> Could also include the process of agencies getting to know each	

Code	Name	Definition / Meaning	Clarification/Examples (examples are shown in quotes)	Interview Question # Collaborator / Non Collaborator
10.11	Not in best interests to collaborate		"When you're in the labs at NIH, it's not really the best thing in the world to be collaborative because you're trying to establish your ability to be a permanent scientist there." Too much of individual	
10.12	Not well organized		Group was not well organized	
10.13	inability or unwilling to act		"At NIH people were fairly terrified to do anything about	
10.14	Unclear goals		Lacking clearly defined or specific goals	
10.15	Personal characteristics of collaborators		ego, attitude,	
10.16	Other			
10.17	No trust or respect			
10.19	Not feeling valued			
10.20	Poor communications			
10.21	Not having anything in writing			
10.22	Administrative and/or govt hurdles			
11.1	Size and complexity of NIH		Participant discusses the size and/or complexity of NIH. This can be a benefit (lots of resources) or a challenge (hard to navigate)	
11.2	Research expertise		NIH is focused on research issues and not as much on evaluation, policy, etc. Strong focus on discovery science	
11.3	Autonomy of NIH staff		NIH staff seem to work more autonomously than other government staff.	
11.4	No differences			
11.5	Other			
11.6	Access to resources		NIH has a lot of funding and resources	
11.7	Easy to deal with			
11.8	Physical location			
12	Benefits to collaborating with NIH	Lists the potential benefits to collaborating with NIH		6, 7 / na
12.1	Access to scientific knowledge and expertise		NIH employs scientific experts... "one of the main benefits is the kind of scientific cachet, especially when it's a scientific issue that should be well informed by science"	
12.2	NIH reputation of doing high quality work		NIH is perceived as doing high quality work	
12.3	Size of agency as a benefit		Participant mentions size as a benefit	
12.4	NIH can provide additional resources		NIH may provide financial resources	
12.5	Intellectual freedom among NIH staff		"Intellectual curiosity of a lot of NIH employees is something that is encouraged	
12.6	Basic science expertise		Expertise specific to basic/discovery	
12.7	Other			

Code	Name	Definition / Meaning	Clarification/Examples (examples are shown in quotes)	Interview Question # Collaborator / Non Collaborator
12.8	Share common interests			
13	Challenges to collaborating with NIH	Lists the potential challenges to collaborating with NIH		6, 8 / na
13.1	Size and complexity of NIH		Participant mentions a challenge related to NIH size or complexity such as difficulty in navigating the agency.	
13.2	Lengthy clearance process		<i>"The level of clearance required on the creation of written products that go to the general public is a barrier to efficiently moving forward with"</i>	
13.3	Location of NIH		NIH is not within close proximity to some other agencies and it is a challenge	
13.4	Potential conflicts of interest		NIH sponsors investigational drugs that other agencies may be reviewing.	
13.5	Lack of experience working together		1) Staff is not comfortable working with other agencies due to their lack of experience working together. 2) Staff of other agencies may not be aware of work NIH is conducting that may be	
13.6	Not sure who to contact/Unaware of staff and projects suited to collaboration		There is a challenge to know what work is taking place and how to locate the right people for a collaboration.	
13.7	non collaborative attitude at NIH		NIH staff attitudes/Ego. If HHS staff doesn't like working with NIH because NIH staff may seem arrogant. Also the perception that NIH doesn't	
13.8	Different approaches		<i>"The kinds of things that are generated at NIH don't directly help regulatory"</i>	
13.10	Requires additional resources		staff, time, etc.	
13.11	Lack of NIH engagement		Staff or leadership not engaged	
13.12	Lack of real world implementation			
13.13	Bureaucracy		Administrative and gov't hurdles	
13.14	Narrow staff skills			
14	Things that NIH does well	Describes the things that participants believe NIH does well in a collaboration		6 / na
14.2	Knowledge and expertise		<i>"...NIH certainly does cutting edge science in many areas"</i>	
14.4	Disseminates research			
14.5	Collaborative spirit		NIH staff are very engaged and dedicated. <i>"I would say that kind of collaborative spirit, more people than not have"</i>	
14.6	Access to resources		Funding or people	
14.7	Other			

Code	Name	Definition / Meaning	Clarification/Examples (examples are shown in quotes)	Interview Question # Collaborator / Non Collaborator
15	Things that NIH does poorly	Describes the things that participants believe NIH does poorly in a collaboration		6 / na
15.1	Consumer materials too complex		Scientists at NIH develop materials intended for consumers but with a high-reading level that is geared toward the scientific	
15.3	Translating basic research		Sometimes NIH scientists are not good at translating science to the "real world"	
15.4	Communicating with other agencies			
15.5	Other			
15.6	Administrative hurdles			
16	Recommendations for NIH to improve collaboration	Identifies ways that NIH could improve their collaborations with other federal agencies		9 / na
16.1	Encourage collaborations more		Agencies need to be encouraged to work together	
16.2.	Encourage agency work-exchanges		Encourage short-term assignments where NIH staff would work at other HHS agencies for a few	
16.3	More communication about opportunities		Provide a list of collaborations that involve NIH.	
16.5	Broaden employee perspective		<i>"It would be nice to put people forward for projects who are able to translate research and data into everyday language."</i> Should include more consideration of "real world"	
16.6	Mentor employees to collaborate		teach employees the skills needed to	
16.8	Other			
16.9	Minimize administrative hurdles			
17	Are there opportunities for collaborating with NIH that are not being utilized	Indicates whether participant thinks there are opportunities for collaborating with NIH that are not being used		10 / 5
17.1	Yes			
17.2	No			
17.3	Maybe or unsure			
17.4	List of Opportunities		This code is to provide a list of all opportunities that participants might mention	
18	Why opportunities are not being utilized	Indicates why opportunities for collaborating with NIH are not being used		10 / 5
18.1	NIH culture and structure		NIH culture is distinct from other agencies... <i>"there are very different roles between our review staff and laboratory staff, so translating that gap could be challenging..."</i>	
18.2	Not sure how to engage with NIH		Agency staff does not know who to contact or how to contact relevant staff at NIH	

Code	Name	Definition / Meaning	Clarification/Examples (examples are shown in quotes)	Interview Question # Collaborator / Non Collaborator
18.3	Need buy-in from directors			
18.5	Lack of time or resources			
18.7.	Agency differences			
18.8..	Staff turnover			
18.9	Non-collaborative interests		Includes non-collaborative attitude and not in best interests of staff to collaborate	
19	Things HHS could do to facilitate collaborations	Identifies things that HHS could do to facilitate and encourage interagency collaborations		11 / 8
19.1	Better communication about HHS agency activities		1) They could publish or post a functional directory of who does what in each of the agencies and they could use it to inform agencies about HHS activities. 2) have a database of current work instead of waiting until the work is	
19.2	Encourage agencies to work together more		1) There is a "mission-driven myopia" that impacts the ability for agencies to work together. 2) Agencies can become territorial and protective of information from their agency	
19.3	Blend funds from public-private partnerships		Allow public and private funding to be combined	
19.5	Allow more staff to attend conferences to network			
19.6.	Other			
19.7	Minimize administrative hurdles			
20	Factors that made an NIH collaboration particularly successful	Lists the factors that participants believe contribute to a successful collaboration		7 / na
20.1	Good communication		Participants have good communication skills and demonstrate respect when talking with others in the	
20.2	Support of leadership		Leadership allows staff to spend significant time on the partnership and recognizes the amount of time that it	
20.3	Interested participants		Participants are engaged and willing to devote the time necessary to do the work. They care about the	
20.4	Clear participant roles		Each participant has an understanding about their particular role in the	
20.5	Common purpose/mission		<i>"They were focused on achieving an important goal rather than focused on</i>	
20.6	Dedicated time and resources		Staff has time that is specifically dedicated to the	

Code	Name	Definition / Meaning	Clarification/Examples (examples are shown in quotes)	Interview Question # Collaborator / Non Collaborator
20.7	A designated facilitator		A designated facilitator conducts administrative tasks such as scheduling and preparing information for	
20.9	Trust and Respect		Trust needs to be developed as some confidential issues may emerge during the	
20.10	Purpose of the collaboration is to solve an important problem		Goal of the collaboration is informed by the need to address an important problem.	
20.11	Authority to act		Individual who is leading the collaboration must have the authority to make decisions, elicit confidence of the group, and move the work forward.	
20.12	NIH involvement		A key success factor is NIH involvement in the	
20.13	Clear purpose and goals		"it is important to have clearly articulated aligned goals and timelines amongst	
20.15	Complementary agency skills		Agencies can support each other (i.e. one has evaluation capabilities, one doesn't.	
20.16	The right people at the table		relevant qualifications, expertise, etc.	
20.17	Good rapport		Members know each other, get along	
20.18	Mutual benefits		Both agencies benefit from collaboration	
20.19	Good leader/manager			
20.20	Other			
21	Factors that made an NIH collaboration particularly challenging	Lists the factors that participants believe contribute to an unsuccessful collaboration		8 / na
21.1	Lack of leadership/agency support		Agency or leadership does not support the collaboration. This can be for a variety of reasons including limited agency resources to support collaboration or lack of consensus on importance of	
21.2	Lack of relevant staff qualifications		Staff does not understand the topic and has no background in the subject matter. The wrong people at the table.	
21.3	Disinterested/ non-committed participants		Participants are not engaged and do not want to devote the time or energy to the collaboration. Participant not willing to go	
21.5	Ineffective leader		The leader cannot make decisions and lacks skills to lead the group or build	
21.6	Unrealistic expectations		The goals or timeline necessary to accomplish the work may be unrealistic. There is not enough time to accomplish tasks. Project not based on a real world	
21.8	Lack of dedicated resources		The collaboration could lack resources to conduct	

Code	Name	Definition / Meaning	Clarification/Examples (examples are shown in quotes)	Interview Question # Collaborator / Non Collaborator
21.10	Lack of Commonality/understanding each other/Differences in perspective		"You have a convergence of multiple agencies on specific tasks...when they contribute their specific areas of expertise, they have to understand what all the other partners are doing." Could also include the process of agencies getting to know each	
21.11	Not in best interests to collaborate		"When you're in the labs at NIH, it's not really the best thing in the world to be collaborative because you're trying to establish your ability to be a permanent scientist there." Too much of individual	
21.12	Not well organized		Group was not well organized	
21.13	inability or unwilling to act		"At NIH people were fairly terrified to do anything about	
21.14	Unclear goals		Lacking clearly defined or specific goals	
21.15	Personal characteristics of collaborators		ego, attitude,	
	<u>Codes specific to NON-Collaborators</u>			
22	Reasons for not collaborating with NIH	Identifies the reasons why staff may not be collaborating with NIH		na / 4
22.1	Lack of awareness of NIH activities		Agency staff is not aware of NIH work that might be relevant for agency	
22.2	Concern about conflict of interest		NIH sponsors investigational drugs that other agencies may be reviewing.	
22.4	Different agency goals		NIH works on basic research but agency does program	
22.5	NIH staff attitudes/Ego		Perception that they are "looked down upon" by NIH. Perception that NIH doesn't want to collaborate	
22.6	Limited time		Staff doesn't have time to collaborate	
22.7	Not sure			
22.8	Due to administrative hurdles			
22.9	The opportunity has not presented itself		There has not been an opportunity to	
23	What NIH could contribute to a collaboration	Identifies the things that non-collaborators think NIH could contribute to a potential collaboration		na / 4
23.1	Scientific knowledge & expertise		NIH has the scientific knowledge and expertise in	
23.2	Resources		NIH has the ability to contribute staff or funding to the collaboration	
23.3	Not sure			
22.3	Not pertinent to staff role		Staff role at their agency is very specific and not pertinent to collaborating	

Code	Name	Definition / Meaning	Clarification/Examples (examples are shown in quotes)	Interview Question # Collaborator / Non Collaborator
11	Factors that make NIH collaboration different	Identifies the factors that participants think make an NIH collaboration different than non-NIH collaborations		6 / na

Appendix G. Interview Questionnaires

Interview Guide – Collaborators

Phone script and informed consent:

The Office of Science Policy within the NIH Office of Director is conducting a study to better understand the processes and outcomes of collaborations between NIH and the agencies of the Department of Health and Human Services (HHS). The primary purpose of this interview is to explore why HHS agencies collaborate, what factors contribute to the success of collaborative efforts, and what factors hinder success; We would also like to understand NIH's specific role and contributions in your collaboration experiences. You are being asked to participate in this interview because you recently responded to the web survey for that study and indicated that you have participated in NIH-HHS collaborations. If you agree to participate in the interview, we will ask you some more in-depth questions about your experiences collaborating with NIH. This interview will take about 30 minutes of your time.

Your participation is completely voluntary. You can decide whether or not to participate. If you do agree to participate, you may stop at any time. You may also choose to not answer any questions. Should you choose to participate, your answers will be maintained in a secure manner, and you will not be identified by name or description in any reports.

Do you have any questions for me?

Would you be willing to participate in the interview?

- Yes/No

We would also like to record the interview for transcribing purposes only. Once the interviews have been transcribed, the recordings will be deleted.

Would you be willing to have the interview recorded?

- Yes/No

Interview Questions:

1. Can you start by telling us a little about your role with (AGENCY)?
2. Can you talk a bit about why you generally collaborate with other agencies?
Probe: Can you talk a little about your role in collaborations?
Probe: How are collaborations usually initiated?
Probe: Are collaborations encouraged by your leadership?
3. How has scientific research been used in your collaborations, if at all?
Probe: Are any of your collaborations related to or use NIH funded research?
Probe: Have any of your collaborations applied the results of NIH-funded research to the programs and/or services your office works on?"

Now I would like you to take a second to think about some of your most successful and least successful collaborations (whether this was with NIH or another outside agency).

4. In thinking about your most successful collaborations, what about them made them successful?

Probe: How often would you consider your collaborations to be successful?

Probe: If you could design the perfect collaboration, what would be the key piece/pieces or most important factors?

5. Can you talk about what factors generally contribute to an unsuccessful collaboration?

Probe: Does it include lack of agency buy-in, lack of leadership support, staff qualifications?

Probe: What do you think are the most crucial factors contributing to an unsuccessful collaboration?

Now, I would like you to think about your collaborations with NIH.

6. Is there anything that makes an NIH-involved collaboration different from other collaborations?

Probe: Are there specific reasons for or benefits to collaborating with NIH?

Probe: Are there any specific barriers to collaborating with NIH or things that make the process more challenging?

Probe: Are there things that NIH does really well or really poorly?

7. Is there an NIH collaboration that comes to mind that was particularly successful?

If yes: Can you provide the name or a brief description of the collaboration?

Probe: What was it about that collaboration that made it successful?

Probe: What was NIH's role in the collaboration?

Probe: Was the NIH involvement a key factor in its success?

8. Is there an NIH collaboration that you think was particularly challenging?

If yes: Can you provide the name or a brief description of the collaboration?

Probe: What was it about that collaboration that made it a challenge?

Probe: Was the NIH involvement a key factor in its challenges?

Probe: Did NIH provide research results or evidence that helped inform your work?

Probe: Was that collaboration ultimately successful?

9. Do you have any specific recommendations that would help NIH improve its collaborative interactions?

Probe: Is there anything else NIH can do to facilitate the quality and quantity of interactions/opportunities with your agency?

10. Are there opportunities for collaborating with NIH that are not being utilized?

Probe: If so, what are these?

Probe: Why do you think these opportunities not currently being utilized?

11. Are there things that HHS could do to facilitate how agencies and leadership identify collaborations? Support collaborations? Conduct collaborations?

12. Is there anything else that you would like to tell us?

Interview Guide – Non-Collaborators

Phone script and informed consent:

The Office of Science Policy within the NIH Office of Director is conducting a study to better understand the processes and outcomes of collaborations between NIH and the agencies of the Department of Health and Human Services (HHS). The primary purpose of this interview is to explore why HHS agencies collaborate, what factors contribute to the success of collaborative efforts, and what factors hinder success; We would also like to understand NIH's specific role and contributions in your collaboration experiences. You are being asked to participate in this interview because you recently responded to the survey and indicated that you have not participated in NIH-HHS collaborations or have not participated in many NIH-HHS collaborations. If you agree to participate in the interview, we will ask you some more in-depth questions about your experiences collaborating with non-NIH agencies. This interview will take about 30 minutes of your time.

Your participation is completely voluntary. You can decide whether or not to participate. If you do agree to participate, you may stop at any time. You may also choose to not answer any questions. Should you choose to participate, your answers will be maintained in a secure manner, and you will not be identified by name or description in any reports.

Do you have any questions for me?

Would you be willing to participate in the interview?

- Yes/No

We would also like to record the interview for transcribing purposes only. Once the interviews have been transcribed, the recordings will be deleted.

Would you be willing to have the interview recorded?

- Yes/No

Interview Questions:

1. Can you start by telling us a little about your role with (AGENCY NAME).
2. Can you talk a bit about why you might generally collaborate with other agencies?
Probe: Can you talk a little about your role in collaborations?
Probe: How are collaborations usually initiated?
Probe: Are collaborations encouraged by your leadership?
3. Have any of your collaborations applied the results of NIH-funded research to the programs and/or services your office works on?"
4. Now in thinking specifically about NIH, are there reasons for not collaborating or not collaborating very much with NIH?
Probe: Can you talk about some of the benefits that there might be to collaborating with NIH?
Probe: What could NIH contribute to a collaboration?
Probe: Can you talk about some of the challenges that there might be to collaborating with NIH?
5. Are there opportunities for collaborating with NIH that are not being utilized?
Probe: If so, what are these?
Probe: Why are these opportunities not currently being utilized?
6. Is there a federal collaboration that you were involved with that comes to mind that was particularly successful?
Probe: What was it about that collaboration that made it successful?
7. Is there a collaboration that you think was particularly challenging?
Probe: What was it about that collaboration that made it a challenge?
Probe: Was that collaboration ultimately successful?
8. Are there things that HHS could do to facilitate how agencies and leadership identify collaborations? Support collaborations? Conduct collaborations?
9. Is there anything else that you would like to tell us?

Appendix H. Additional Tables

Table 17. Collaborative activities Overall and for the Five Targeted Agencies by Collaboration Type.

Collaboration Type	All Agencies		One or More Targeted Agencies		Five Targeted Agencies**									
	#	%	#	%	CDC		FDA		SAMHSA		ACF		ACL	
	#	%	#	%	#	%	#	%	#	%	#	%	#	%
Committee, advisory group, or work group	230	38.3	206	41.0	163	43.9	127	54.0	47	56.6	39	79.6	13	65.0
Health survey	28	4.7	24	4.8	22	5.9	2	0.9	1	1.2	1	2.0	0	0.0
Meeting/ workshop	74	12.3	56	11.1	38	10.2	28	11.9	10	12.0	5	10.2	1	5.0
Public education campaign	18	3.0	13	2.6	12	3.2	3	1.3	1	1.2	0	0.0	2	10.0
Research initiative	154	25.6	125	24.9	83	22.4	42	17.9	7	8.4	1	2.0	2	10.0
Resource development	61	10.1	49	9.7	36	9.7	20	8.5	10	12.0	2	4.1	1	5.0
Training initiative	12	2.0	11	2.2	4	1.1	6	2.6	1	1.2	0	0.0	0	0.0
Other	24	4.0	19	3.8	13	3.5	7	3.0	6	7.2	1	2.0	1	5.0
Agency Total ***	601	100.0	503	83.7	371	61.7	235	39.1	83	13.8	49	8.2	20	3.3

Source: NIH's Intra-HHS Collaborations Reporting System (CRS), FY2012.

* Applies to collaborative activities that include participation by one or more of the five targeted agencies.

** Counts for each targeted agency include collaborative activities that involve the targeted agency either alone or with one or more of any other HHS agency. Denominators for percentages are the total number of collaborative activities per agency (last row).

*** The denominator for the percentages listed in the Agency Total row is the total number of collaborative activities reported for FY2012 (n=601).

Table 18. Products and Outputs from Collaborative activities among the Five Targeted Agencies.

Products/Outputs*	All Agencies (n=601)		One or More Targeted Agencies** (n=503)		CDC (n=371)		FDA (n=235)		SAMHSA (n=83)		ACF (n=49)		ACL (n=20)	
	#	%	#	%	#	%	#	%	#	%	#	%	#	%
Best practices document	29	4.8	24	4.8	19	5.1	8	3.4	8	9.6	3	6.1	2	10.0
Clinical tool development	38	6.3	35	7.0	19	5.1	15	6.4	7	8.4	0	0.0	0	0.0
Guidance, Guidelines, or Standards	70	11.6	61	12.1	50	13.5	29	12.3	10	12.0	4	8.2	2	10.0
Informational website or print materials	109	18.1	95	18.9	69	18.6	42	17.9	22	26.5	11	22.4	7	35.0
Journal article	99	16.5	78	15.5	53	14.3	26	11.1	8	9.6	1	2.0	2	10.0
Regulation or rule-making	10	1.7	10	2.0	7	1.9	7	3.0	0	0.0	0	0.0	0	0.0
Research resource	97	16.1	78	15.5	51	13.7	37	15.7	16	19.3	4	8.2	5	25.0
Research tool development	127	21.1	98	19.5	67	18.1	39	16.6	15	18.1	15	30.6	2	10.0
Strategic Plan	13	2.2	13	2.6	11	3.0	10	4.3	3	3.6	0	0.0	1	5.0
White paper/Policy recommendations	38	6.3	33	6.6	22	5.9	20	8.5	3	3.6	4	8.2	2	10.0
Other	60	10.0	50	9.9	34	9.2	26	11.1	10	12.0	6	12.2	1	5.0
N/A	176	29.3	154	30.6	116	31.3	80	34.0	26	31.3	13	26.5	6	30.0

Source: NIH's Intra-HHS Collaborations Reporting System (CRS), FY2012.

* Some CAs produced multiple products/outputs, so percentages in columns do not add up to 100%.

** Applies to collaborative activities that include participation by one or more of the five targeted agencies.

Table 19. Additional Outcomes Related to Collaboration Success

Other Outcomes for Determining Success of Inter agency Collaboration (Q21)* (respondent's importance rating)**	Other Outcomes Applicable to Respondent's Most Successful" NIH HHS Collaboration (Q24)*
Program objectives optimized (more and better research) and resources effectively utilized (funds, expertise) (5 - Extremely important)	Long-term impacts on health practice were initiated
A lasting collaboration between partners is maintained. (5 - Extremely important)	Domains that aren't really any agency's purview, so get lost, were able to be addressed
The importance of the outcomes listed depends on the specific collaboration. It depends on the goal. (5 - Extremely important)	The product was not as important as the process, which led to further interactions.
Some percentage of the projects may reach ""null findings"" in which it may not be appropriate to expect changes in program, policy or regulation. Better: Agencies acted appropriately to translate findings. (5 - Extremely important)	After almost a decade of not having 1 single product application being delivered to FDA from academia, NICHD changed their approach and we now have a dozen products in the pipeline. This will help improve health care of children.
Resources were shared to achieve a common goal (4 - Quite important)	Ongoing collaboration where it is hoped that the main purpose is achieved with health impact
Participants learned new information they will apply to their other individual work activities (4 - Quite important)	Long term collaborator was maintained
I think it's hard to have long-term impacts achieved in the short-term -- but it will be good to identify shared outcomes, especially short-term or intermediate outcomes... (4 - Quite important)	Ongoing so can't say overall goal achieved or outputs created, but milestones were achieved. Expect long term impacts on health to be achieved.
Note: I have never seen long term impacts assessed, so I assume they are only slightly important (3 - Moderately important)	Information was shared among several agencies which led to greater enlightenment regarding the health issue
Greater understanding of other agencies mission and goals (3 - Moderately important)	
Coordination of work leading to better use of allocated funds (4 - Quite important)	
Result in significant improvement of knowledge in field	
Redundancy was eliminated; administrative/contracting activity was reduced	
Long term infrastructure improvements were attained or designed.	

* Not all respondents who selected the "Other" response for Q21 or Q24 specified or described the outcome.

** Not all respondents who specified "Other" outcomes ranked those outcomes.

Appendix I. Gaps and Opportunities for New Collaborations – Respondents’ Suggestions

Sources:

- NIH-HHS Collaborations Survey, 2014
- NIH-HHS Collaborations Interviews, 2014

Survey Questions:

- Q 38. Are there specific topics or issues that could benefit from new or enhanced NIH-HHS collaborative efforts (for NIH-HHS Collaborators; responses in black text)
- Q 53. Are there specific topics or issues that could benefit from new or enhanced NIH-HHS collaborative efforts? (for Non-NIH-HHS Collaborators; responses in blue text)

Interview Questions:

- Q 5 and 10. Are there opportunities for collaborating with NIH that are not being utilized (green text)?

Response to Survey Questions:

Collaboration Status	Number of Non Missing Responses	% of Total Responses
NIH-HHS Collaborators	125/449	28%
Non-NIH-HHS Collaborators	16/36	44%

Topics and Issues Suggested by Respondents, Organized by Categories (alphabetical):

- Affordable Care Act
 - Topics relevant to the ACA would be timely.
 - Issues related to health care delivery and the Affordable Care Act
 - Role of ACA in relation to behavioral health services.
 - In this era of ACA and expanded prevention services, there is a need to figure out how to improve health care and community-based collaborations for delivery of prevention services, especially for children and adolescents, and to get them paid

- Aging and Elder Care
 - Elderly Care
 - Efforts in aging regarding medical care or retirement benefits
 - Elder abuse and mistreatment
 - aging issues: especially around the topic of elder abuse, the clinical course, antecedents, and outcomes of the different forms of abuse, neglect, and exploitation, especially the clinical, social, and psychological predictors and outcomes; risk and protective factors for abuse, neglect, and exploitation; screening for abuse, neglect, or exploitation in clinical and other settings;
 - Development of aging-friendly evidence based programs. Dissemination of cutting edge information on aging related issues.
 - Demonstrating the intersection between transportation (access) and health/wellness of older adults. Older adult oral health - how community based oral health programs (education based and access based) can improve the oral health/wellbeing.

- I think that there are opportunities, one of the projects that I work on with NIH right now is with NIA to recruit older adults into NIA research. I think that there are greater opportunities for that to occur, but from my agency's standpoint, from the agency that I contract with and their standpoint, the resources are limited from my agency to connect people to research. That is not a function of my agency in writing. It's not in their mission necessarily, but they have access to people that NIA and NIH are trying to connect with.
- Behavioral Health and Substance Abuse
 - Integrating behavior health care into general medical practice
 - Substance abuse,
 - In behavioral health, need collaborative research between NIH and SAMHSA on resilience programs
 - Collaborative efforts around initiatives relating to substance abuse and/or substance use disorder
- Cancer
 - Currently we are working on general cancer survivorship and there are quite a lot of work to done in this area. In the future, the collaborative workgroup will focusing on specific cancer sites. So, we have more work to do.
 - NCI and/or NIEHS need to work more closely with FDA to improve predictive tools for cancer risk during pre-market product evaluations and post market evaluations of cancer incidence from consumer exposure to FDA regulated products with known or suspected potential for carcinogenesis.
- Cross-Cutting or Shared Topics across Agencies
 - Generally, the more cross-cutting and complex public health issues would benefit most from departmental collaborations (e.g., topics related community health, health disparities, etc.).
 - Many, too many to list.
 - Any health issue that crosses NIH and CDC and other HHS agencies.
 - Topics relevant across agencies, such as regulatory policy and compliance, would be particularly helpful.
 - There are many areas in which NIH research can and should inform policies implemented by other HHS agencies.
 - Every program can benefit from new or enhanced collaborative efforts. If you get great minds communicating, great things will happen
 - Of course. Almost all our work could benefit from collaboration
 - I'm sure there are many. Anything involving a products will involve FDA for example. Any areas of research that overlap with other agencies should be carefully examined on a continual basis.
 - Sure - lots of public health topics would benefit from collaboration. At the least it could diminish duplicative efforts and wasteful spending. Should happen across the board - heart disease experts @ NIH should connect with heart disease experts @ CDC; and so forth for all topics.
 - Too long to list topics... Integration between the FDA, CDC and NIH can happen for multiple science related projects.
 - SAMHSA/NIH Institutes Knowledge Exchange Initiative
 - Well, in terms of the communication ones I think there is lots we could to and welcome opportunities to talk about that together.
- Data and Methods Sharing
 - We need to publish data and associated metadata (annotation, description, classification, etc.) that is useful and usable by the outside world, especially in the area of drugs. The NLM, CMS, CDC, and ONC all have a stake in this area.
 - Data sharing and capacity building in utilizing data integration.

- Access to patient data at FDA and NIH.
 - Standards and Interoperability tools collaboration can be efficiently done with all the agencies and standard workgroups
 - Data preservation, what should be preserved and by whom (and the appropriate funding would need to be allocated), as it is very frustrating to not be able to get to a web resource that is no longer available. Social media best practices, this is beginning to be addressed, although there still seems to be so much "red tape" to get anything done or set up using social media. It would also be really, really useful to have any evaluation tools (these usually cost money, why not negotiate for HHS wide access instead of agency by agency) and how to best use these tools to measure impact.
 - There should probably be more collaboration in the area of data mining and text mining.
 - Establishing a centralized database of Investigational New Drug (IND) applications submitted by NIH clinical investigators working at the NIH Clinical Center. Due to confidentiality rules, FDA is not able to share information with NIH. This information would be particularly useful regarding drug repurposing initiatives.
 - lack of integration re data elements in public health records and research
 - Integrating systems computational biology and microbiomics and "omics" data exchange standards
 - Global interactions/requirements
 - Data management technology
 - Clinical research training
 - Clinical research process improvement
 - - Enhance collaborative efforts around research participation awareness - if more people knew about existing research registries & got relevant info on how they could sign up if interested, this could speed the time from recruitment to scientific discovery, thereby saving money required to recruit for individual studies. Savings could be used to fund additional research.
 - Verification Validation and Uncertainty Quantification issues related to behavioral models and simulations. This is a topic of great importance and one that pertains to NIH, NSF, CDC, FDA, DOE (energy) and DoD. Possibly others.
 - Clinical pharmacology trials that could be conducted by the NIH to answer relevant research questions that are not being evaluated by pharm industry. Closer collaboration between FDA and NIH on designing NIH sponsored clinical trials prior
 - Monitoring and improving population health through eHealth. Focusing on the measured impact of HIT in public health (e.g. health outcomes, economic impact on resources, delivery of health care).
 - My main focus is producing public use data products using NCHS surveys and I have not been involved in collaborative efforts with NIH. I know that our National Ambulatory Medical Care Survey team has worked with NIH on survey questions regarding Complementary and Alternative Medicine; I suppose there could be additional topics or issues related to data we can collect in our provider surveys that would be relevant to possible collaboration. Our branch chief would be in a better position to speak about that.
 - global civil registration and vital statistics improvement
 - measures of quality of life based on health status
 - I'll say yes, survey cooperation.
- Diagnostic Tests
 - Diagnostic test development for parasitic diseases
 - Basic science for diagnostics development, laboratory staff participating in program activities in the field, career opportunities for lab scientists to apply their skills in programs, opportunities for epidemiologists to collaborate with bench
- Drugs and Medical Products
 - Post approval meetings of FDA products to discuss research areas that may be needed as products reach the market.
 - Drug development strategies and attendant challenges

- Health Disparities
 - Addressing Health Disparities in the United States
 - Disease-specific public health prioritization for unmet medical needs based on the needs of the patient communities
 - Health disparities
 - HHS Public Health efforts focused on minority populations.

- Health Services Research
 - Health services research.
 - health care,
 - Health outcome research from various agency's perspectives
 - Use health services data to understand better how health care can be personalized
 - Personalized medicine,
 - Perhaps there are additional areas of collaborations between NIH and the health service delivery agencies in HHS such as HRSA and SAMSHA.
 - [Much in the way of effectiveness of medical interventions.](#)

- Maternal and Child Health
 - child development,
 - Define NIH pediatric research needs with CDC epidemiology expertise
 - Maternal and child health, developmental origins of health and disease
 - Developmental disabilities such as cerebral palsy and ADHD and genetic disorders.
 - Development of endpoints for neonatology. This area of therapeutics is still the ""wild west"" and we need to develop some fundamental underlying science if we are to be able to ""measure response"" to therapies.
 - Developmental neurotoxicity biomarker validation
 - I recently published provisional guidelines for maternal lifting at work (occupational lifting during pregnancy) with CDC/NIOSH and DOD (Department of Defense) collaborators. It would be helpful to know if there is anyone at NIH-HHS interested
 - Neuroscience and child maltreatment;
 - Childhood injury is the leading cause of morbidity and mortality. A collaborative to form a public health/information campaign would be useful
 - Hormonal contraception devices or drugs that women use and their effects on STI susceptibility and disease transmission.
 - Perinatal HIV elimination Pediatric HIV

- Miscellaneous Topics
 - rare disease drug development
 - Disability research across federal Departments.
 - Diabetes, new sources of beta cells, imaging, structure of clinical trials in this field.
 - Osteoporosis: Development of markers for fracture to be used in clinical trials of new products.
 - Brain computer interfaces.
 - Probably many possible areas of collaboration in health communication and information technologies.
 - Microbiome paradigm merging ecosystem, systems level view of biological systems, creating infrastructures for improving health and well-being.
 - New technologies for multiplex pathogen detection in the clinical and donor setting;
 - New therapies for emerging infectious diseases,
 - HIV/AIDS
 - Interagency agreements on how to facilitate development of biomedical products to counteract threat agents whether biological, chemical, or rad/nuclear; or against emerging diseases

Interagency agreement on how to facilitate the development of animal models and other resources to achieve the above

- Sleep research implementation and dissemination of research findings on effective prevention and intervention programs
- In oral health, resources for research within HHS are limited, but there are key questions that could be addressed through NIH grants. Having a coordinated research agenda informed by public health practice for oral health could help align NIH
- Blood safety (transfusion)
- Organ safety (transplant)
- Understand/predict better the impact of climate change on health (food, water, microbiome, influence of travel among people in various parts of the world, etc.
- Since FDA doesn't fund cessation research this is a gap and NIH should be moving to use their funds to address this gap.
- Research on military families has broad interest across the NIH. This is a very timely and important topic for NIH to collaborate and share information.
- [There are many issues related to bioequivalence that could benefit from additional research.](#)
- [This may not be the kind of collaboration that you have in mind, but I would think that the use of NIH as an educational resource. There are lectures and we hear about them and go to them and so on. There may be some other kind of mechanism in the courses or longer seminars and stuff maybe. Honestly, certainly in this field in this particular geographic area and perhaps I should say this offline, but my sense is that it's just not the greatest in terms of the academics in this area, except of course for Johns Hopkins which is in Baltimore. It's not like being in Boston or New York, you know, again except for Johns Hopkins and NIH, because there is a lot of scientific expertise on campus. I wish there were a better way to access it.](#)

- Obesity and Nutrition

- Childhood Obesity
- Obesity
- National Nutrition Plan
- Food Safety

- Regulatory Issues

- performance of clinical trials for regulatory purposes
- Any regulatory action requiring research to inform decisions.
- regulatory policy and compliance
- harmonization of regulations
- NCATS and the role of the CTSA's to train up the US science and clinical trial investigator base in regulatory science as it relates to translational science. Most academic based researchers and investigators are totally unaware of regulatory evidentiary standards and requirements and this impacts both the mentoring of new scientists by those unaware of the regulatory science side

- Translation, Dissemination, and Implementation

- Translating research to practice
- More collaborations around translating research to practice. Federal programs should lead the way on this.
- Identifying potential topics for research and identifying effective interventions that are ready for adoption.
- In my experience at SAMHSA I think the field could benefit from more collaboration around translational science and evaluation. Helping the mental health and substance abuse fields use current evidence based practices and helping to improve the evaluation of SAMHSA's discretionary grant programs.

- More links between groups with research and implementation expertise. Program directors often have limited understanding of implementation challenges and health delivery programs.
 - Interactions between NIH translational efforts and FDA to allow a better understanding of regulatory guidance and how to implement it efficiently.
 - Science to practice flow of information.
 - Translating basic science findings (NIH) into actual field evaluations (CDC). For example, investigating the role of schistosomiasis and other helminth infections on transmission of HIV and other viral infections.
 - Dissemination and Implementation research.
 - Health promotion and prevention.
 - Public health information and consumer information, how to best reach these populations and what types of information works best and for whom.
 - More results from NIH sponsored Evidence Based Practices research made available to HHS agencies and the public.
 - translational science
 - In the arena of HIV implementation science/operational research a broader group of grantees or studies represented could be useful to sharing information because of the tendency of NIH grantees to use randomized trials and the need in new areas of research for other methods and study topic.
 - Implementation and Dissemination Research activities - moving interventions into scalable public health domains - improving the understanding of translational research from bedside to community
 - Dissemination and implementation research.
 - [Translational and programmatic research](#)
 - [One that I hope to be able to facilitate in my new role is since SAMHSA has a number of evaluations contracts, there aren't a lot of scientists on staff. There aren't a lot of people with in-depth knowledge of scientifically rigorous evaluations. I think that having SAMHSA and NIDA collaborate on those evaluation projects would be very valuable for both organizations. In most of these instances, SAMHSA is putting a bunch of money into a discretionary grant program that is looking at the delivery of some sort of evidence-based practice in real-world treatment settings.](#)
- Violence Prevention and Treatment
 - Research and evaluation of Violence Prevention and its associated relationships with chronic disease.
 - The White House college sexual assault initiative could benefit from participation from various NIH ICs. NIAAA has done significant work on college drinking which is associated with sexual assault. NIAAA has a College Presidents Working Group
 - Trauma-informed practice
 - Domestic violence
 - Suicide prevention Crisis Intervention
 - [I think given the scope and prevalence of domestic violence, for instance, that one in three women experience domestic violence in their lifestyle — I think that there should be a dedicated focus area that would create the opportunity to have discussions about the research needs, research plans, and the implementation.](#)
- Recommendations for Improving Identification and Initiation of New Inter-Agency Collaborations
 - It always comes down to effective leadership. What we learned from leading the vitamin D initiative is that other important topics in public health nutrition can only be addressed if there is leadership that people can believe in.
 - Would need to be prioritized by the HHS/NIH leadership, to ensure sufficient support.
 - Funding needs to be stable
 - NIH funded research findings that could potentially "inform" future directions for program/policy development in health serving agencies appears to be underutilized. for example, mechanisms to facilitate the transfer of new advances in mundane societal fundamentals such as QOL, pain, sleep,

diet, technology etc. to service agencies appear on the very slow trickle of translation and transfer through intermediates such as the media, changes in medical practice, pioneering provider models, changes in third party reimbursement guidelines. This communication gap or "disconnect" may contribute to the appearance of a relatively low yield from the NIH investment. While the typical NIH headline discovery of a gene etc. is important, it may not impact society/medicine for decades. Relatively little programmatic and communication priority is afforded to how NIH research could potentially contribute to solving immediate (if mundane) challenges faced by health serving Federal agencies. In fact, similar NIH opportunities for collaboration exist across the Federal bureaucracy - DOT, DoD, etc. At the Federal level, barriers appear to reflect the pressure of fiscal management during a tight budget, and perhaps the natural human tendency to view the status quo as a "safe harbor"? Management aimed at preserving established silos is perceived as having lower sociopolitical and career risk compared to agendas for change? Collaboration/coordination may not be a high priority consideration for management compared to the need to preserve/maintain Federal support for existing activity silos and customers.

- clear guidelines about what can be shared among committee members concerning planned FOAs so that duplication can be avoided as well as improved coordination among agencies
- The Secretary of HHS should place a very high priority on collaborative endeavors and it should be part of every agency head's position description.
- Recruit and select staff with appropriate expertise, interest and "authority" for the collaboration.
- Yes, as described above- enable and support opportunities for interagency agreements.
- Always- but at some point we are just meeting and no one is doing the work.
- Increasing the understanding of the roles and goals of our sister agencies.
- Informing other agencies about current research. Sharing of ideas.
- Have collaborative efforts include HHS and other HHS-agency level goals and priorities, since other HHS agencies may need to focus more intensely on those areas, and would benefit to a larger extent by accomplishing multiple objectives (e.g. NIH's, HHS's) with the same personnel.
- Certainly. These will emerge when staff recognize common goals and commitments across agencies. Agencies with overlapping objectives should meet periodically to discuss potential opportunities.
- Yes. Understanding of different scientific viewpoints and priorities.
- Intra-agency research could be better coordinated and work could be more collaborative (relying on people's expertise even if they are in different agencies). View the concept (better health) as a product/service of the government rather than of each agency or branches within agencies.
- The NIH has overlapping interests with CDC, NSF, FDA, NIST, DOE, DARPA, ONR etc. - there should be a means of identifying counterparts with shared interests and regular networking opportunities to exchange information
- I actually have great relationships with a few colleagues at NIH and we communicate through calls and meetings on a regular basis -- but I am still struck with how much information is available that we are not able to access on a more frequent basis that could help with our ongoing program planning, etc.... Some of this is time and others it's just the format--- I tried to stay up to date on the published literature -- but program office staff could really benefit from brief syntheses of the latest research (3-5 page summaries on a topic).
- Cross-cutting issues, including drug abuse and Alzheimer's disease, are under the purview of multiple agencies. Ensuring that all are on the "same page" and speak with one voice (more-or-less) could be a useful goal from collaborative efforts
- Overall better strategy for developing linkages between discovery science at NIH and applied science at FDA through cross training, e.g. NIAID infectious disease fellows working at CDER or NIDA follows working with CDER on medication programs
- scientific support for FDA from NIH staff FDA integration into the NIH grant announcement and review process
- I think we need to 'rethink' the habit of thinking that research 'informs' practice. Interagency collaborations can't really do that if one agency thinks they are the holder of knowledge and that they are 'giving' it to others.
- Many topics lend themselves to these collaborative efforts. Leveraging resources is critical in these budget restricted times.

- FDA could be more open to letting us scientists do collaborative research projects with NIH labs. Not being able to keep my hand in research has really impeded my CV and my sense of still being a scientist.
- To get creative juices flowing, information/research sharing meetings that are truly encouraged/supported by senior leadership; otherwise they won't be attended by the correct people. I would LOVE to know what some of the NIDA and NIAAA people
- Recognize contributions of each partner.

Appendix J. Strengthening the CRS Report

1. Introduction

The mission of the National Institutes of Health (NIH) is to generate knowledge that will be used in enhancing health, lengthening life, and reducing illness and disability. This mission is vital to the larger mission of the Department of Health and Human Services (HHS) to protect the health of all Americans and to provide essential human services. NIH's contribution toward fulfilling the mission of HHS is enhanced when there is efficient uptake and utilization of the knowledge generated by NIH research and programs by the other HHS agencies. Direct collaborations are thought to be an important way to promote the efficient and effective translation of knowledge to application.

This report presents a synthesis of results, insights, and suggestions about strengthening NIH's ability to collect data on collaborations among HHS agencies. It is part of the overall findings from the first phase of a three phase study on the flow of information between NIH and other HHS agencies and their collective impact on public health. The goal of the first phase was to capitalize on currently available data on NIH collaborations with other HHS agencies and further examine how collaborations are, or can be, used to support the translation of scientific research and discovery to applications in health and human services. Building on the first phase, Phase 2 will assess the means by which other HHS agencies inform the policies and priorities of NIH. Finally, Phase 3 will employ a case study approach to examine how NIH works with other HHS agencies to influence public health outcomes.

1.1 Intra-HHS Collaborations Reporting System (CRS)

The NIH Reform Act of 2006 requires NIH to submit to the HHS Secretary an annual report on NIH and other HHS agency collaborations in order to encourage interagency collaboration and coordination. The NIH Office of Science Policy (OSP) collects data for the report from all 27 NIH Institutes and Centers as well as numerous offices situated within the Office of the NIH Director. Since 2011, NIH has utilized the Intra-HHS Collaborations Reporting System (CRS), a web-based content management system that stores all submitted data, facilitates annual data collection, and makes final report data available to the public (see NIH's Report on Collaborations with Other HHS Agencies). Information captured in the CRS includes a general description of current and past collaborations, participating NIH Institutes and Centers (ICs) and HHS agencies, NIH points of contact, budget information, and other external information. The reported collaborations documented in the CRS database include activities that were active at any point since FY2002.

The CRS was initially designed and developed primarily to support reporting requirements. As such, the CRS is a valuable tool for understanding the broad range of collaborative activities between NIH and other HHS agencies over time. However, while there have been improvements over the years to enhance data quality and expand content/usefulness, it is not currently optimized to serve as a collaboration evaluation and promotion resource. Thus, there are opportunities to build on the initial foundations laid by the current CRS to enhance NIH's overall ability to monitor and improve intra-HHS collaborations in the future.

1.2 Purpose

The purpose of this report is to identify areas for improvement and to provide suggestions for strengthening NIH's ability to collect data on collaborations among HHS agencies and then to use that data to promote effective and impactful collaborations. This report addresses improvements that can be made in the short and medium term to the CRS to make it a more useful, and easier to use, tool for monitoring and evaluating inter-agency collaborations.

The bulk of this report is organized to address five main issues currently facing NIH for collecting collaboration information and using that data to improve collaboration processes and outcomes:

- **Collaboration Continuity over Time:** Updating and tracking multi-year collaborations is problematic.
- **Data Quality:** CRS design and data collection/reporting procedures affect data quality and usefulness.
- **Collaboration Topics:** Collaboration topics and content not easily identified and searchable.
- **Collaborator Information:** Information on collaborating agencies and individuals is limited.
- **Awareness and Access to CRS:** Awareness of and access to CRS data across HHS agencies is limited.

For each of these five issues, this report describes the limitation or problem of the current CRS, and then provides suggestions for improvements for the short-, medium-, and long-term.

The report also provides suggestions and considerations for developing a long-range vision and set of goals for reporting and supporting intra-HHS collaborations beyond the scope of the CRS.

2. Collaboration Continuity

Currently, the CRS is structured around fiscal years (FY), instead of around the collaborative activities (CAs). This means that the data are only available for analysis in a single fiscal year format. There is not a consistent identifier (e.g., an activity identification number or a consistent name/title) that stays connected to a collaboration activity from year to year. As a consequence, the CRS does not currently provide the ability to clearly and consistently link the same collaborative activities that continue over multiple years. While there are numerous examples of activities that have been reported every year since 2006, it may not be obvious which FY 2006 activity, for example, is the same as the FY 2012 activity still ongoing. Thus, updating and tracking multi-year collaborations is problematic.

Suggestions

- **Medium-term:** Work with CRS vendor to redesign underlying database to facilitate better continuity of collaboration activity records across FYs:
 - Eliminate creating new records for each CA for each new fiscal year.
 - Report Submitters should be able to log in to CRS, filter by ICs and OD offices to find relevant CAs, and then be able to:
 - Update data fields as-needed.
 - Update CA status, e.g., “Active/Ongoing” or “Completed” (plus the date/year when it ended).
 - Search and filter existing CAs by status
 - Enable automatic time and user stamps for each update. This will help OSP and Report Submitters keep track of what has/has not been updated.

3. Data Quality

The CRS's design, and the data collection procedures that have been used, affect the quality and usefulness of the collaboration data. For example:

- Data collection methods and variables have changed over time. This leads to data inconsistencies across the years.
- There is variability in how collaboration activity data are compiled, validated, and reported across the NIH's ICs and OD offices. The ICs and OD offices have different ways of compiling and reporting info. This leads to variability in data quality and completeness between ICs and OD Offices, both within and across reporting years.
- While improvements have been made over the years, there remain limited controls built into the electronic submission system, leading to inconsistent data formatting within FYs. CRS data require "cleaning" and reformatting to be useful for analysis.
- The CRS includes both structured and non-structured data elements, and there remain limited quality controls built into the submission system, allowing for variability in formatting and completeness which results in inconsistencies with the data.

Suggestions

- **Short-term:** Work with CRS vendor to continue to enhance data quality and formatting controls to the extent possible without sacrificing flexibility – too much control or rigidity may also limit complete reporting.
- **Medium-term:** The suggestions for Collaboration Continuity listed above could help – if records carry over from FY to FY with minimal revisions, then lower risk of errors and inconsistencies.

4. Collaboration Topics

Within the current CRS design, information about collaboration topics is only found in the Collaboration Title and Description data fields. The information that is provided is dependent on what Report Submitters decided to include in the titles/descriptions. There are no data fields that allow for Report Submitters to list subject matter topics or keywords. This limits ability of OSP (or other data users) to easily sort, group, or filter CRS data for topics of interest. This also limits ability to easily link CAs to agency priorities that are based on specific health topics.

Suggestions

- **Medium-term:** Consider adding data fields to capture topical key words for each CA:
 - Emphasis could be placed on:
 - Major health topics, especially those part of missions and priorities for the ICs and OD offices.
 - Population demographics and groups of interest.
 - Pre-determined lists enhance consistency and comparability, but may miss new/emerging or unanticipated topics.

- An example of an established subject matter list is the MESH-term system developed for the National Library of Medicine.
- User-generated lists may make it easier to capture full variety, but may be applied inconsistently and limit comparability.
 - One solution is to include an “Other, Please Specify” option for this data field in addition to the pre-determined list. The topics that are specified can be reviewed and integrated into the system for future use.

5. Collaborator Information

The CRS does not provide fine-grain details about collaborating HHS agencies or the NIH and HHS employees who are involved in the CAs, limiting the ability to identify important collaborative relationships.

- Lower-level organizational units represented by the Non-NIH participants are not reported/identified.
- There is insufficient detail about the lower-level organizational units within the HHS OPDIVS represented by the participants. Without that more fine-grained information about the units, it is difficult to assess whether the ICs and OD Offices are making the right collaboration connections with their topically relevant counterparts.
- While the CRS does include a field for listing NIH points-of-contact (POC) for each CA, this information is not always reliable/up-to-date or submitted in a consistent format, nor does it provide information about the key collaborators or POCs in the other HHS agencies.

Overall, this limits the ability to understand intra-HHS collaborations as a network phenomenon. Difficult to identify important collaborative relationships at agency/individual levels. Furthermore, this situation also limits OSP’s ability to conduct evaluations of collaborative activities.

Suggestions

- **Medium-term:** Consider adding data fields to capture key CA participants from other non-NIH agencies
 - Ideally, request one per operating division listed in the HHS Participating Agencies data field.
 - Consider linking partner referral fields to HHS personnel directory? It will make Easier data entry, less empty data fields.
- **Long-term:** Consider adding data fields (linked to non-NIH participants?) to capture lower-level units within other HHS agencies.
 - This will enhance understanding of the linkages between agency units with similar topical interests and missions.

6. Awareness and Access to CRS

In general, there is very low awareness and knowledge about CRS among HHS agencies and staff. Access to current CRS data is limited to authorized NIH-only users. Publicly available CRS data is limited in content and may be out-of-date, point-of-contact information is not always provided. This makes it

difficult for HHS employees (non-NIH) to search for and identify existing collaborations and collaborators. This limits the ability to use CRS as a way to foster and facilitate intra-HHS collaboration

Suggestions

- **Short-term:** Build greater awareness of the online CRS reports and data sets among non-NIH OPDIVs:
 - Focus on agency leadership at multiple levels.
 - This could foster use of the CRS to identify collaboration opportunities and gaps among the other HHS agencies, and could ultimately create increased demand for CRS data.
- **Medium-term:** Work with CRS Vendor to create intra-HHS portal to allow access to data:
 - Key word searching (or by topic if data fields are added).
 - Filtering by operating division (NIH ICs and OD offices and/or HHS agency)

7. Long-Range Vision and Goals

Beyond the short- and medium-term considerations for improving the current CRS, the results of the current study suggest ways that the CRS could evolve to support both reporting AND promoting inter-agency collaborations. This is consistent with intention of Congressional mandate: Annual Reporting to **Increase** Interagency Collaboration and Coordination (Section 104 of the National Institutes of Health Reform Act of 2006).

A long-range vision and set of goals should include the following considerations:

- Increase awareness and access to CRS data across HHS operating divisions. As awareness and access to the data grow, demand for the data may grow as well, increasing support across HHS for systematic data collection and reporting.
- Include more useful data and improved search functions – lets HHS personnel use it to find potential collaborators and collaborative activities across operating divisions.
- Integrate the CRS (or alternative future system) with existing systems to allow easy linkage to personnel directories and collaboration technologies.
- Greater use of social media & collaboration resources for better tracking and documentation of intra-HHS collaboration. Online spaces for collaborations could become a useful tool for individual collaborative activities, facilitating better communications and file-sharing among collaborators, and allowing NIH another tool for tracking and evaluating collaborative activities across HHS. Examples of existing resources include:
 - Yammer: enterprise-level social networking site for HHS employees: (<https://about.yammer.com/product/features/>);
 - Microsoft SharePoint;
 - Max Federal Community (<https://max.omb.gov/maxportal/home.do>).

Some benefits of this long-range view could include:

- Promotion and support for collaborations, including both the initiation and process of collaborations.

- More fully capturing data on who is participating and what they are doing –participant profiles are linked to expertise and agency units.
- Better capture of data on the inter-organizational networks among agencies.
- Greater support across HHS for systematic data collection and reporting about inter-agency collaborations. This could lead to greater resources to implement the suggestions and the long-range plan reflected in this report.

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