

MEMORANDUM

Date: April 12, 2020

To: Margo Schwab, Desk Officer
Office of Management and Budget

From: Emilda B. Rivers, Director
National Center for Science and Engineering Statistics (NCSES)
National Science Foundation (NSF)

Via: Suzanne Plimpton, Clearance Officer
National Science Foundation (NSF)

Subject: Notification of data collection under generic clearance

The purpose of this memorandum is to inform you of NCSES's plan to collect data on users' needs under the generic clearance for survey improvement projects (OMB #3145-0174). This study is part of a larger set of activities assessing how well the current NCSES website, dissemination tools, and data products meet the needs of users.

Background

The National Center for Science and Engineering Statistics (NCSES) within the National Science Foundation (NSF) is the principal source for analytical and statistical reports, data, and related publications that describe and provide insight into the nation's science and engineering resources. The Center's publications and related content are released in electronic format on NCSES's various website URLs (<https://ncses.nsf.gov/>; <https://nsf.gov/statistics/>; <https://ncsesdata.nsf.gov/>).

NCSES will redesign its website and data dissemination systems to support content under a unified subdomain URL (<https://ncses.nsf.gov/>), supported by a new content management system (CMS) where possible. In preparation for a complete redesign of the main NCSES website and integrated data system (i.e., interactive table tool and metadata explorer), NCSES is looking to conduct two phases of user needs analysis, then to compile the results into a summary report that highlights existing gaps between user expectations and the site's current user interface.

This project involves two studies to prepare for the redesign of the NCSES website. The purpose of the first study (primarily user interviews with some usability testing) is to learn how participants use the current NCSES website, NCSES data and data products, and how these participants use and encounter comparable scientific data and products across the web. The second study (usability testing) will test new NCSES website designs (a "prototype"), developed per an understanding of users' needs. The results of both

studies will be used to develop a final user interface for the new website. This two-study project is a follow-on activity to an earlier project (described in a generic clearance memo dated December 20, 2019).

Recruitment

For both studies, NCSES plans to recruit participants that represent specific groups of data users (see Table 1 on page 3). They will not be representative of the general population. NCSES plans to recruit participants from the U.S. through targeted email and social media messages without regard to geography. (See Attachments A, G, P, Q, R, and S for the initial recruiting emails and social media messages.) To maximize response rates as well as reduce the burden of filtering out potential participants who do not have an interest in science and engineering statistics, for the most part, participants will be targeted on the basis of their past interactions with information on the science and engineering enterprise.

We will overrecruit participants in order to obtain a maximum of 21 participants for the interviews, and a maximum of 14 participants for the usability tests (35 participants in total). (This is detailed in Table 1 on page 3). Our sources of recruitment will be:

1. A list of approximately 50 individuals, including those who have contacted NCSES survey managers for assistance and from NCSES contractors who have been gathered through networks.
2. Subscribers to an NCSES email list. The list is approximately 21,230 people, though the number fluctuates periodically. (Note, emails must be delivered to this list in its entirety as it cannot be segmented.)
3. Posts on and direct recruitment through social media and a banner on the current NCSES website.

NCSES expects that response rates will vary drastically between groups; for example, academics who use NCSES data will be very likely to respond, while casual information seekers and members of the media will be less likely to respond. Participants will be recruited from each source in order to minimize potential burden.

NCSES and its contractor will recruit participants primarily through email invitations, messages to professional groups on social media, and messages to individuals through social media channels. (Recruiting messages are included in Attachments A, G P, Q, R, and S.) Names will be chosen from the lists to obtain a diverse pool on the basis of institutional affiliation.

Table 1: Description of Research Participants for User Interviews and Usability Testing

Participant Group	Source of Participants	How We Will Recognize Each Participant Type	Target # of Participants for Interviews	Target # of Participants for Usability Testing
Government Analysts	<ul style="list-style-type: none"> · Social media groups · Visitors to the current website · Contact lists from survey managers of government analysts · Authors of papers or other publications that use NCSES data or other science and engineering (S&E) data 	<ul style="list-style-type: none"> · Users employed by Statistical Agencies, Government Agencies, Policy Agencies, internal NSF e.g., survey owners · Users use data to prepare papers, publications, or analyses 	3	2
Media	<ul style="list-style-type: none"> · Contact lists from survey managers of press requests · Social media groups · Visitors to the current website 	<ul style="list-style-type: none"> · User prepares documents and uses data to support journalism or writing for public consumption (e.g., the topic is “education as a path to citizenship” and will use data on science and engineering in the U.S.) 	3	2
Academia	<ul style="list-style-type: none"> · Restricted use license holders · Authors of papers or other publications that use NCSES data or other S&E data · Contact lists from survey managers of university-based institutional researchers interested in academic benchmarking · Social media groups · Visitors to the current website 	<ul style="list-style-type: none"> · User is employed by a university or is a student and searches for data to support academic use · Authors prepare papers, publications, or analyses that use NCSES or other S&E data 	3	2

Nonprofit Organizations	<ul style="list-style-type: none"> · Contact lists from survey managers of people with nonprofit affiliations · Authors of papers or other publications that use NCSES data or other S&E data 	<ul style="list-style-type: none"> · User is employed by a nonprofit agency · Authors prepare papers, publications or analyses that use NCSES or other S&E data 	3	2
Industry	<ul style="list-style-type: none"> · Contact list from survey managers of people with industry affiliations · Social media groups · Visitors to the current website 	<ul style="list-style-type: none"> · User is employed by a for-profit, nongovernment, non-statistical/policy agency, non-NSF · Users use data to prepare papers, publications, or analyses 	3	2
Non-NCSES Users/Casual Information Seekers	<ul style="list-style-type: none"> · People registered for the RSS feed (random sample of non-.edu, non-.gov, and non-foreign addresses) · Contact lists from program managers of people who appear to be casual information seekers (i.e., they do not fall into the above categories) · Social media groups · Visitors to the current website 	<ul style="list-style-type: none"> · User may not be applying S&E data in a professional capacity · User may or may not be doing analysis of data, but is using summaries and descriptions to make decisions · User could, for example, be a mom looking for “the best science and engineering school for her son” 	6	4

Study Description

This project involves two studies:

1. *Exploratory interviews with site users of current NCSES website.*

This first study will use an exploratory and open-ended approach to learn how people use (or might use) the NCSES website, its data and products, and how they use and encounter scientific information across the web. Specifically, we seek to understand:

- a. What sites participants rely on for data and analytic information about the science and engineering enterprise.

- b. How participants use science and engineering data and related analytic information in their work.
- c. When and why participants visit NCSSES.
- d. How the structure, content, and functionality of the NCSSES website could be more valuable to participants.

A maximum of 21 semi-structured interviews of 45 minutes each will be conducted over a web-based videoconferencing platform. (The script is included in this package as Attachment M.) Should we interview multiple people from one organization, we will consider conducting them as group interviews.

Each interview will have two parts:

- a. A guided discussion about the participant's use of science and engineering data and data analyses.
- b. A series of tasks that participants will complete on the existing NCSSES website.

An NCSSES contractor will conduct the interviews and NCSSES staff, if available, will observe. NCSSES expects to field the instrument in the spring and early summer of 2020. The interviews will be conducted over a 3- to 4-week period.

Participants will be asked for their permission to record the sessions (audio and video) and whether clips and quotes from their session can be included in the final report. They will also be told that their participation in the research is voluntary, and they will be informed of the OMB control number (3145-0174). No sensitive information will be collected.

Once the interviews are complete, an NCSSES contractor will review them and synthesize the qualitative data to answer the research questions noted above.

2. Usability testing of a new NCSSES website prototype.

For the second study, a maximum of 14 participants will test a prototyped user interface, developed per an understanding of users' needs and documented requirements. The prototype will consist of static web designs that contain clickable "hot spots." These hot spot areas will link participants from one static design to another, thereby giving users the feeling that they are having a live website experience.

Through the usability test, NCSSES seeks to answer questions such as:

- a. Do participants find the navigation of the newly proposed prototype easy to use?
- a. Can they easily find and interact with data (e.g. download tables)?
- b. Can they easily find analytical information about statistical data?
- c. Do they find the new look and feel professional, clean, and appealing?

- d. Do they see the layouts as an improvement over the current website?
- e. How might the prototypes be improved further?

The user sessions will be guided, meaning an NCSES contractor will verbally provide participants with tasks (Attachment N). Participants will be asked to carry out the task, talking aloud as they go. Again, participants will be asked whether the session can be recorded by video and audio and whether clips or quotes from their session can be included in the final report.

An NCSES contractor will conduct the testing sessions and select NCSES staff, if available, will observe. NCSES expects to field the instrument in the fall of 2020. The interviews will be conducted over a 4-week period.

Once the user testing sessions are complete, an NCSES contractor will review them and synthesize the qualitative data to answer the research questions noted above.

It should be noted that the prototypes will also be tested among a small number of NCSES staff. They are not listed in the table above, as OMB approval is not required for including them in the study.

Burden Information

For first study (user interviews), NCSES expects to invite a maximum of 21,280 people with the goal of obtaining a maximum of responses from 21 users.

There is a possibility that participants will overlap with the previously approved generic clearance project since we are using some of the same sources of recruitment. As such, there may be some response fatigue. With this said, NCSES calculates the burden information as follows: It is assumed that all of those solicited will read the invitation ($21,280 * 1 \text{ minute} = 355 \text{ hours}$) but only 1% of those solicited (213 people) will respond to the invitation by completing the screener ($213 * 5 \text{ minutes} = 18 \text{ hours}$). NCSES expects the recruiting process for user interviews to result in approximately 373 hours of burden ($355 \text{ hours} + 18 \text{ hours} = 373 \text{ hours}$).

The estimated time for completion of the 21 user interviews is 20 hours, including time for scheduling each respondent ($21 * 55 \text{ minutes} = 20 \text{ hours}$). Thus, the total burden estimate for the first study is 393 hours ($373 + 20$).

For the second study (usability testing), NCSES expects to recruit a maximum of 14 participants. NCSES will invite those who completed interviews in the first study, and those who completed the screener but were not selected to participate in an interview. If 14 usability sessions are not completed as a result of those invitations, NCSES will send another solicitation to the listserv of 21,280 people. NCSES assumes that all of those solicited will read the invitation ($21,280 \text{ people} * 1 \text{ minute} = 355 \text{ hours}$) but based on previous experience only .5% of those solicited (106 people) will respond to the invitation by completing the screener. ($106 * 5 \text{ minutes} = 9 \text{ hours}$). This reduced

completion percentage (1% for the initial solicitation, but only .5% for this solicitation) reflects the likelihood of response fatigue. NCSES expects this process to result in up to approximately 364 hours of recruiting burden (355 hours + 9 hours = 364 hours).

The estimated time for completion of the usability study is 13 hours, including time for scheduling each respondent (14 * 55 minutes = 13 hours). Thus, the total burden estimate for the second study is 377 hours (364 + 13).

The total burden for both interviews and usability testing are estimated to be 770 hours (393 + 377).

Incentive Payments

Amazon gift cards worth \$40 will be sent to each user research and usability testing participant as an honorarium upon completion of an interview or usability test (employees of the U.S. Federal Government will not be eligible to receive a gift card). The gift cards represent tokens of appreciation for the participants' time and effort and are not considered payment for their time as professionals.

Contact Information

The contact person for questions regarding this data collection is:

May Aydin, Ph.D.
Program Director
National Center for Science and Engineering Statistics
National Science Foundation
703-292-4977
maydin@nsf.gov

Attachments

Attachment A: Initial recruiting email for user interviews

Attachment B: Screener for all research participants

Attachment C: User interview scheduling email for eligible participants

Attachment D: Confirmation email for user interviews

Attachment E: Day-of reminder email for user interviews

Attachment F: Thank-you email for user interviews

Attachment G: Initial recruiting email for usability tests

Attachment H: Usability testing scheduling email for eligible participants

Attachment I: Confirmation email for usability test

Attachment J: Day-of email for usability test

Attachment K: Thank-you email for usability testing participants

Attachment L: Thank-you email for non-eligible participants

Attachment M: User needs assessment interview guide

Attachment N: Protocol for usability testing of NCSES website prototype

Attachment O: Interview consent form

Attachment P: Social Media Invitation, User Interviews (Group)

Attachment Q: Social Media Invitations, Usability Testing (Group)

Attachment R: Social Media Invitation, User Interviews (Email to Individual)

Attachment S: Social Media Invitations, Usability Testing (Email to Individual)

cc: May Aydin

Rebecca L. Morrison