

SUPPORTING STATEMENT
U.S. Department of Commerce
National Oceanic & Atmospheric Administration
NWS Fire Weather Social and Behavioral Sciences Research
OMB Control No. 0648-XXXX

SUPPORTING STATEMENT PART B

B. Collections of Information Employing Statistical Methods

1. Describe (including a numerical estimate) the potential respondent universe and any sampling or other respondent selection method to be used. Data on the number of entities (e.g., establishments, State and local government units, households, or persons) in the universe covered by the collection and in the corresponding sample are to be provided in tabular form for the universe as a whole and for each of the strata in the proposed sample. Indicate expected response rates for the collection as a whole. If the collection had been conducted previously, include the actual response rate achieved during the last collection.

Survey

The general population survey will be stratified into three major regions: Western states, the Southern Plains, and the Southeastern United States. In other words, surveying will target regions that are specifically at risk for fire weather issues and will therefore likely have more relevant opinions to share.

Western states will include Arizona, California, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington and Wyoming.

Western Region States and Population	
State	Population
Arizona	7,431,344
California	38,965,193
Idaho	1,964,726
Montana	1,122,878
Nevada	3,194,176
New Mexico	2,114,371
Oregon	4,239,379
Utah	3,417,734
Washington	7,812,880
Wyoming	584,057
TOTAL REGIONAL POPULATION	70,864,738

United States Census Bureau

Southern Plains states will include Texas, Kansas, Oklahoma, Nebraska, and Colorado.

Southern Plains Region States and Population	
State	Population
Colorado	5,877,610
Kansas	2,940,546

Nebraska	1,978,379
Oklahoma	4,053,824
Texas	30,503,301
TOTAL REGIONAL POPULATION	45,353,660

United States Census Bureau

Southeastern states will include Mississippi, Alabama, South Carolina, Florida, Georgia, Tennessee, Kentucky, West Virginia, North Carolina, Virginia, Louisiana, and Arkansas.

Southeastern Region States and Population	
State	Population
Alabama	5,108,468
Arkansas	3,067,732
Florida	22,610,726
Georgia	11,029,227
Kentucky	4,526,154
Louisiana	4,573,749
Mississippi	2,939,690
North Carolina	10,835,491
South Carolina	5,373,555
Tennessee	7,126,489
Virginia	8,715,698
West Virginia	1,770,071
TOTAL REGIONAL POPULATION	87,677,050

United States Census Bureau

The total universe population is 203,895,448.

All survey respondents will be over the age of 18 years old. Marketing Systems Group (MSG) will conduct the sampling for the survey. For analysis, weighting will be applied to ensure that the regions exactly match U.S. Census data for residents 18 years old and older in the specified states, and then the regions will be properly weighted so that they will be in proper proportions for the overall regional results. The final sample will be representative of all residents 18 years old and older in Western states, the Southern Plains, and the Southeastern United States.

The sample size for the regions and estimated margins of error are included in the below table. Note that sample size was determined based on the financial parameters of the study, the desired timeline for fielding and completion, the goal of meeting a 95% confidence interval, and to meet the needs of the study.

Region	Final Sample Size/Estimated Margin of Error
Western States (70,864,738)	N=700 / +/-3.704%
Southern Plains (45,353,660)	N=700 / +/-3.704%
Southeast (87,677,050)	N=700 / +/-3.704%

As discussed in Q.2 below, online panel surveys are used for data collection. Because panelists opt in to

participate in panel surveys, response rates do not apply; however, MSG will use multiple reminders and contact attempts to ensure all sample quotas and goals are fulfilled.

Focus Groups

The focus groups will be conducted with Public Information Officers (PIOs) and fire weather practitioners at the national, regional, state, and local levels, including emergency managers, and fire behavior analysts. PIOs will be asked to participate because their unique experience providing information about fire weather allows them an understanding of how the public reacts to fire weather information, processes, and products, as well as the best methods, means, and mechanisms for receiving and disseminating information about wildfires. Fire weather practitioners will be asked to participate because NOAA/NWS would like to know more about their decision-making processes and their decision thresholds. Both groups will also be asked questions to understand opinions about probabilistic forecast information, as well as the utility of probabilistic forecast information when compared to deterministic forecast information. The specific individuals contacted for participation in the focus groups will be based on suggestions from NOAA and NWS fire weather analysts and the NOAA/NWS fire weather team for this project.

There will be 4 focus groups in total. There will be 3 focus groups with fire weather decision-makers/practitioners and 1 focus group with public information officers. Each focus group with fire weather decision-makers/practitioners will have 7-10 participants. These focus groups will include fire managers, emergency managers, and fire behavior analysts. The focus group with Public Information Officers will also have 7-10 participants.

Screening will be conducted to recruit focus group participants that ensure good geographic representation and representation from a mix of resource-rich and non-resource-rich geographies. In each of the four focus groups (fire weather decision-makers/practitioners and Public Information Officers) recruitment will focus on including at least 2 participants from each of the 3 regions that the project will focus on (Western states, Southern Plains, and the Southeast). Focus groups recruitment for fire weather decision-makers/practitioners will also attempt to include a variety of participants at the national, regional, state, and local levels

The pool of potential focus group participants will be assembled using several sources: first, early interviews conducted during this project with fire weather contacts and partners from NOAA, Bureau of Land Management, the National Interagency Fire Center, the Fish and Wildlife Service, among others, yielded suggestions about fire weather practitioners and professionals that would be important to include in qualitative data collection. In addition, some of these interviewees recommended additional contacts that might have lists of fire weather professionals and Public Information Officers. Finally, some publicly available information might be used to ensure good representation of geographic regions. Focus group participants will be contacted by email and phone and focus groups will be conducted virtually. Potential focus group participants will complete a brief questionnaire that will be used to establish the best times to conduct the focus groups and to establish participants' region of work and role in decision-making. This will help create a varied group of participants with different perspectives. After dates have been established, the contractor team will contact participants again to confirm availability and work with each participant to ensure they have everything they need (including knowledge of virtual platforms where applicable) to participate.

2. Describe the procedures for the collection of information including:

- Statistical methodology for stratification and sample selection,

Survey

For cost-effectiveness and population coverage purposes, the researchers selected an online panel sampling frame for the survey of adults in fire weather states. The use of an online panel is especially important for this project due to the need to integrate graphics and visual tools into the questionnaire—these items will be reviewed and rated by survey respondents, which is a process that would not be possible in a telephone survey and would be too time-consuming and prohibitively expensive in either a mail survey or face-to-face interviews.

The use of online panels is an accepted research technique for the quantitative exploration of attitudes, opinions, perceptions, and participation rates.¹ Weighting adjustments are often used to ensure that the final dataset is reflective of the overall study population, and these techniques will be applied in this study. Online panels have been shown to perform well in instances when survey results are subject to verification, such as online surveys that accurately predicted the results of the 2012 presidential election.²

The research team will adhere to all best practices and established recommendations for the use of online panel research as documented in the relevant literature.³

Survey data will be processed and analyzed using SPSS for Windows software and proprietary software developed by team member Responsive Management. Data processing and analysis will include coding, preparation of straight tabulations, and preparation of study printouts. Data will be available in both hard copy and electronically in SPSS or Excel formats. The data analysis will include extensive cross-tabulations comparing sub-groups within the sample (e.g., by state/region, gender, income or education level, and age).

Focus Groups

The qualitative data collected from focus groups will be analyzed through direct observation of the focus groups by the facilitators themselves, through later observation and analysis of the recordings by other researchers, and through thematic categorization. The organization and development of findings will entail a third review of the personal interviews as part of the qualitative analyses.

Analyses of the qualitative data are performed in three iterations: 1) the actual focus group observation, 2) review of video and/or audio recordings and notes by other researchers, and 3) the development of findings.

Our team will employ several strategies to analyze the focus group data, especially as we identify commonalities, shared sentiments, overlapping attitudes, or diverging opinions on the key study topics.

¹ See the overview of Online Panels by the American Association for Public Opinion Research at <https://aapor.org/wp-content/uploads/2022/12/Online-Panels-508.pdf>.

² See “Which Polls Fared Best (and Worst) in the 2012 Presidential Race,” by Nate Silver/The New York Times, November 10, 2012, available at <https://archive.nytimes.com/fivethirtyeight.blogs.nytimes.com/2012/11/10/which-polls-fared-best-and-worst-in-the-2012-presidential-race/>.

³ Porter, C. O. L. H., Outlaw, R., Gale, J. P., & Cho, T. S. (2019). The Use of Online Panel Data in Management Research: A Review and Recommendations. *Journal of Management*, 45(1), 319-344. <https://doi.org/10.1177/0149206318811569>

Strategies of qualitative analysis may include:

- *Constant comparison analysis* to assess whether key themes and concepts that emerge in one group are also present in the other groups.^[1]
 - *Classical content analysis* to identify the frequency and occurrences of key words, ideas, and other sentiments that are used by participants.^[2]
 - *Keywords-in-context analysis* to explore how key words used to describe probabilistic forecasting, job descriptions, communication needs, and other topics relate to other overarching themes or impressions.^[3]
- Estimation procedure,

Multiple estimate procedures may be utilized as part of the data analysis. Point estimates will be used to estimate the population value for certain survey findings, such as the percentage of residents in the Southern Plains region who have taken specific actions related to fire weather. In other cases, an interval estimate may be used to identify a confidence interval or range of values, such as the range of individuals in a specific region who have received information related to fire weather.

Descriptive analyses will be used to examine the sample characteristics, while inferential statistics may be used to project these analyses to make statements about the populations as a whole, where applicable. Nonparametric analyses can be performed on data that are entirely categorical (e.g., gender) or entirely ordinal (i.e., increasing levels of agreement with a statement), and parametric analyses can be performed on interval data (e.g., age). Univariate procedures examine relationships and differences among individuals on a single characteristic. Multivariate procedures examine these same relationships and differences among individuals using multiple characteristics.

The descriptive analysis will entail a summary of attitudes, perceptions, opinions, and characteristics in graphs and tables. The exact method to be used to summarize the data will be dependent on the data characteristics (i.e., whether the data are categorical, ordinal, or interval). Categorical and ordinal data will be summarized as percentages and sometimes in the form of measures of central tendency using medians. Interval data will be summarized in the form of central tendency using the mean.

If inferential analysis is employed, this stage will examine the relationships and differences among the attitudes, perceptions, opinions, and characteristics being measured in the study. Selection of the type of statistical tests to be used will begin by deciding whether the questions are best answered by examining differences (e.g., analysis of variance) or by examining relationships (e.g., Pearson product-moment correlation). Within these two broad categories of differences and relationships are a multitude of statistical tests. The best one for each situation will be selected depending on whether the analysis is descriptive or inferential, whether the data are parametric or nonparametric, and whether the analysis is univariate or multivariate. In special cases, unique or less common analyses will be applied to clarify

^{[1][1]} Strauss A. 1987. *Qualitative analysis for social scientists*. Cambridge, UK: University of Cambridge Press.

^{[2][2]} Morgan D. L. 1997. *Focus groups as qualitative research* (2nd ed.). Thousand Oaks, CA: Sage.

^{[3][3]} Fielding N. G., Lee R. M. 1998. *Computer analysis and qualitative research*. Thousand Oaks, CA: Sage.

results that are otherwise difficult to interpret. P-values will be calculated to determine the statistical significance of the relationship between variables. For example, a .05 p-value or 95% confidence level indicates that the relationship did not occur by chance, meaning that if the survey were conducted 100 times on different samples that were selected in the same way, the findings of 95 out of the 100 surveys would fall within the sampling error range.

- Degree of accuracy needed for the purpose described in the justification,

Survey findings will be reported at a 95% confidence interval, which is most commonly used because it offers the best balance between the reliability and precision of the results. For each regional sample of residents 18 years old and older in Western states, the Southern Plains, and the Southeastern United States, the sampling error is estimated to be at most plus or minus 3.704 percentage points. This means that if the survey were conducted 100 times on different samples that were selected in the same way, the findings of 95 out of the 100 surveys would fall within plus or minus 3.704 percentage points of each other. Sampling error will be calculated following the data collection using the formula described below, based on a sample size of approximately 700 respondents in each region.

Sampling Error Equation

$$B = \left(\sqrt{\frac{N_p(.25)}{N_s} - .25} \right) (1.96)$$

Where: B = maximum sampling error (as decimal)
 N_p = population size (i.e., total number who could be surveyed)
 N_s = sample size (i.e., total number of respondents surveyed)

Derived from formula: p. 206 in Dillman, D. A. 2000. *Mail and Internet Surveys*. John Wiley & Sons, NY.

Note: This is a simplified version of the formula that calculates the maximum sampling error using a 50:50 split (the most conservative calculation because a 50:50 split would give maximum variation).

- Unusual problems requiring specialized sampling procedures, and

The research team does not anticipate any unusual problems requiring specialized sampling procedures.

- Any use of periodic (less frequent than annual) data collection cycles to reduce burden.

Periodic data collection cycles will not be employed for this study; instead, the research team will administer the survey in a single data collection period that is expected to span several weeks. Interviews will be conducted continuously with panel members, with the research team monitoring regional and demographic quotas throughout the data collection.

3. Describe methods to maximize response rates and to deal with issues of non-response. The accuracy and reliability of information collected must be shown to be adequate for intended uses. For collections based on sampling, a special justification must be provided for any collection that will not yield "reliable" data that can be generalized to the universe studied.

Survey

Because panelists opt in to participate in panel surveys, response rates do not apply; however, MSG will use multiple reminders and contact attempts to ensure all sample quotas and goals are fulfilled. Non-respondents will be replaced to help achieve responses from more targeted respondents.

For the survey component of the research, information about experience with wildfires, information received during wildfires, preferences for future information, information about perceptions of risk related to wildfires, and opinions and attitudes about probabilistic forecasts will be collected.

Focus Groups

Information collected in the focus groups will include information about risk assessment and decision-making by fire weather practitioners, information about decision-making timing and thresholds, and attitudes toward and opinions on the usefulness of deterministic and probabilistic information. The Public Information Officer focus group will also collect information about their role as a communicator with the public and with practitioners, challenges in communication and the sharing of information, needs related to communicating and being an intermediary, and opinions and attitudes about probabilistic forecasts.

The information collected during this process will aid NOAA/NWS in better understanding public and partner opinions about probabilistic forecast information, including its overall usefulness to different groups, preferences for probabilistic or deterministic information, and how easy or difficult probabilistic forecast information is to understand when compared to deterministic forecast information. In addition, this research will help NOAA/NWS begin to develop a better understanding of opinions based on and actions taken because of information provided by NOAA/NWS and other fire weather agencies.

4. Describe any tests of procedures or methods to be undertaken. Testing is encouraged as an effective means of refining collections of information to minimize burden and improve utility. Tests must be approved if they call for answers to identical questions from 10 or more respondents. A proposed test or set of tests may be submitted for approval separately or in combination with the main collection of information.

Internal cognitive testing has been employed as a first step in identifying burdens and improving utility. This testing was completed prior to submitting the survey for approval. Before fully launching the survey with the public, a pretest will be conducted with a small sample of around 100 respondents. The pretest will be conducted only to ensure that all data are coming in correctly and that no changes need to be made to the coded survey. Following approval of the instrument, no changes will be made to the content

of the survey.

After all surveys are obtained, research associates and statisticians will check each survey to ensure clarity and completeness. Additionally, analysts will review all individual survey responses to identify other illegitimate responses. For example, surveys that are completed in an unrealistically brief timeframe suggesting that respondents are clicking through responses without reading and evaluating the questions. A related concern, “straight-lining,” is when respondents select (for example) the first or same response options throughout the survey. Survey responses to open-ended questions will be reviewed for coherency and general consistency with other answers in the data set. Surveys of questionable quality will be removed prior to data analysis.

5. Provide the name and telephone number of individuals consulted on statistical aspects of the design and the name of the agency unit, contractor(s), grantee(s), or other person(s) who will actually collect and/or analyze the information for the agency.

The IBSS team (IBSS Corporation, Responsive Management, and Acclivity Associates) will collect and analyze information for the agency.

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