

The National Predictive Services User Needs Assessment: Final Report

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July 12, 2007

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Executive Summary

This report presents findings from a user needs assessment commissioned by the National Predictive Services Group (NPSG). Following a needs assessment approach to program evaluation, we relied on the users and potential users of Predictive Services (PS) as our experts. Through use of an online survey, we had these experts tell us their opinions on current and potential products and services. Users and potential users were defined as employees in the federal and non-federal sectors with a defined membership in the fire management community. The report is organized so that the findings for the federal and non-federal sectors are presented, and then a number of appendices follow. Of particular interest to some readers will be Appendix F, which presents findings by job functions within the federal sector, and Appendix G, which presents findings for the non-federal sector by job function. This format allows readers to navigate to topics of key interest within the main body, and then to specific groups in which they have greater interest.

Federal sector respondents ($n=1,078$) were employed primarily in the Forest Service (FS), NOAA and National Weather Service (NWS), the Bureau of Land Management (BLM), and the National Park Service (NPS). Non-federal sector respondents ($n=305$) worked mostly in state and county agencies. The two sectors are reported on separately because we used different surveys for each.

Here are some key findings from the **federal respondents**:

Level of Expertise with PS

- A majority access Predictive Services (PS) information either daily or weekly during fire season. Outside of fire season access is more likely to be weekly or monthly. The two groups reporting the most frequent access were the multi-agency coordinators and non-NWS meteorologists. They were also the most familiar with products on the web, briefings and emails.
- A majority of PAO/information officers and support services respondents were not familiar with Predictive Services.

Opinions on Products and Services

- A majority or near-majority agreed that Predictive Services information was easy to understand, complete, accurate, timely, relevant, and accessible. Strongest agreement with these attributes was found among the multi-agency coordinators, FMOs¹/assistants, FBANs/LTANs/analysts, and fuels specialists.
- The one-fifth who had contacted Predictive Services to report a problem with a product or service, and the one-tenth who had made contact to suggest a new product or service, tended to rate Predictive Services as responsive to their concerns and suggestions.

¹ Fire management officers/assistants (FMOs/assistants); Fire behavior analysts/long term analysts/fire danger analysts

- Products and services provided by Predictive Services on a national scale that were used by a majority and also rated as useful by a majority included Incident Management Situation Reports, weekly fire weather/danger outlook, 10-day fire weather/danger outlook, live fuel moisture, dead fuel moisture, 7-day large fire potential, ERC and fuels charts, links to other services/websites, and the Interagency RAWWS program.
- Some products were not used by a majority, although groups who did use them often assigned high usefulness ratings.
- The vast majority expressed some, to a great deal of trust and confidence in PS information. Respondents who were most familiar with Predictive Services, and within some job groups, were most likely to indicate high levels of trust and confidence.

Reliance on and Taking Action Based on PS Information

- About one-fourth of all respondents rely on PS in making important decisions related to their job duties and functions; about one-third were likely to take action based on the information. Reliance and taking action based on PS was more likely among those who had trust and confidence in the information, and those most familiar with the products and services.

Barriers and Implications of Gathering, Reporting, and Use of Information

- More than half felt there was at least some overlap in the type of information that can be obtained from Predictive Services and other sources; this was not always viewed negatively.
- Among the subset of respondents with data gathering and reporting duties that are linked to PS, about one-third indicated they were likely to gather and report the data.
 - A majority or near majority agreed that failure to gather and report data could affect their unit's ability to make sound decisions, as well as having adverse impacts on firefighter safety.
 - About one-third felt they had the resources to gather field data necessary for reporting.
 - Almost half felt that their consistent upward reporting helped improved the quality of Predictive Services products and services, as well as the quality of products and services generated by others that use the data.
- Respondents were somewhat in agreement that they could access and apply PS information as part of their job duties. They were somewhat less in agreement with PS helping them to perform their jobs with greater precision.
- Potential inaccuracy of PS information was believed to decrease the ability to predict fire behavior by one-third of respondents. The same proportion felt inaccurate information would adversely impact firefighter safety.
- Primary barriers to not using the products and services included current management practices not requiring the types of information provided, not knowing how to use the products, needing information that is site specific, and not having thought about it. Not knowing how to use the products was mentioned more often by dispatchers and incident

management team members. Those most likely to choose the need for site specific information as a barrier were FMOs/assistants and incident management team members.

- Technology related issues were mentioned more often as barriers to use of the products by fire use team members, crew supervisors/other suppression personnel, and dispatchers.
- When asked to choose between Type I and Type II errors respondents tended to lean towards 'better safe than sorry' over 'don't cry wolf'. This indicated that an early response was preferred, even if it meant that it proved later to be a 'false alarm'.

New and Improved Products

- When asked preferred formats for information, respondents indicated a pattern of preference for maps over other format types. However, interest in specific formats varied greatly by job function.
- Only about one-tenth indicated that additional products or services should be added to what PS provides; a number of suggestions were offered and are provided verbatim in *Appendix F*.

Here are some key findings from the **non-federal respondents**:

Level of Expertise with PS

- More than half of the respondents access PS information during fire season and during a fire incident. FBANs/LTANs and dispatchers reported the most frequent access overall.
- Groups most familiar with the web products, briefings and emails were the FMOs/chiefs², fire environment analysts, dispatchers and FBANs/LTANs.

Opinions on Products and Services

- A majority agreed that PS information was easy to understand, complete, accurate, timely, relevant, and accessible.
- Some differences in ratings of PS attributes were found by job function and by familiarity. As with the federal sample, those most familiar with the products and services were more likely to rate the information positively.
- More than one-tenth who had contacted PS to report a problem with a product or service, and tended to rate PS as responsive to their concerns and suggestions.
- Average ratings suggest that PS had met most expectations, and respondents were somewhat satisfied. Administrators and supervisors, suppression personnel, and

² Fire management officers/fire chiefs (FMOs/chiefs); Fire behavior analysts/long term analysts (FBANs/LTANs)

incident management team members were more likely than other groups to report being very satisfied with the products and services.

- The vast majority expressed some, to a great deal of trust and confidence in PS information. Respondents who were most familiar with PS, and in particular job groups, were most likely to indicate high levels of trust and confidence.

Reliance on and Taking Action Based on PS Information

- About one-third of all respondents rely on PS in making important decisions related to their job duties and functions; the same proportion were likely to take action based on the information. Reliance and taking action based on PS was more likely among who had trust and confidence in the information, and those most familiar with the products and services.

Barriers to Use of Information

- More than half felt there was at least some overlap in the type of information that can be obtained from PS and other sources. Those who indicated there was overlap mentioned the National Weather Service most often when asked to state other sources.
- Primary barriers to not using the products and services included not having thought about it, needing information that is site specific, not being mandated to use the products, and current management practices not requiring the types of information provided.
- About half of the FBANs/LTANs/analysts need information that is site specific. FBANs/LTANs/analysts were almost twice as likely as any other group to cite a shortage of time among barriers preventing them from using PS.
- Technology-related issues were mentioned by about a tenth of FMOs/chiefs and incident management team members.

Key Implications

- Communication is needed to increase awareness of products and services. Some of this needs to be tailored to specific user groups.
- Training is needed to increase the understanding of how products can be applied to various fire management roles and responsibilities.
- A majority of respondents rated PS information positively, however strongly disagreed with timeliness as an attribute. Open ended comments suggest specific concerns about this and add insight into the perceptions that led to lower ratings. An improvement to timeliness of postings and updates of data is suggested from this finding.
- A majority rated PS information as accurate, although some strongly disagreed with this as an attribute. Again, open ended comments suggest specific concerns contributed to these lower ratings.

- Most respondents rated Predictive Services as accessible, however some did not. In particular, accessibility in the field seemed to be problematic. Solutions to the lack of access or difficulty in access may be particularly helpful to those on the ground.
- Overall the preferred format for data appears to be in maps. However, variation by job function suggests consideration. Some user groups were quite interested in particular types of data. A similar finding was revealed for the products and services offered. For both of these issues, it is important to identify the core audience/market for Predictive Services and then refine the products to meet needs indicated.
- A majority of respondents did not support adding new products and services. However others suggested innovativeness is a core responsibility of the program. Careful attention to suggestions for products and services offered in the appendices is warranted. Additional sensing with particular user groups, through listening sessions, may be needed.
- A number of respondents thanked us for doing this survey and for listening to users. In order to complete the loop however, actions derived from these survey results should be reported back to current and potential users.
- Trust and confidence showed some to a great deal of importance among the majority of respondents in both samples. In addition, trust issues were not revealed as significant barriers to use of products and services. Specific actions to build trust and confidence might include:
 - increase communication efforts so that people increase their awareness and familiarity with PS products and services;
 - target communication efforts so that messages address reflect the needs and interest of the products and services to particular user groups;
 - practice transparency in presentation of data including assumptions behind products, levels of accuracy and reliability, confidence, sources of error, and other salient data-related concerns;
 - report back to current users and prospective users how findings from this survey were applied.

Introduction

This report presents findings from a study initiated in 2005 through a request from the National Predictive Services Group (NPSG), a group chartered under the National Fire and Aviation Executive Board (NFAEB) that provides oversight, leadership, and strategic direction to the Predictive Services program. The NPSG identified a user needs assessment as one of its program-related goals, and contacted Heidi Bigler-Cole, MSc (social scientist at the Pacific Northwest Station) and Patricia Winter, Ph.D. (research social scientist at the Pacific Southwest Research Station) for assistance. A meeting was held in Riverside, wherein the NPSG met with the authors to discuss their needs for information and to gather recommendations. As a result, mini-proposals were requested from the authors, and this report provides findings from one of the proposed studies. The NPSG has played a central role through the execution of the user needs assessment. The assessment examines the Predictive Services program, which offers products and services through websites, briefings, and emails administered through the National Interagency Fire Center (NIFC) and the Geographic Area Coordination Centers (GACCs). The main purpose of Predictive Services is to integrate climate, weather, situation, resources status and fuels information into products that will enhance the ability of managers to make sound decisions for both short and long range strategic planning and resource allocation, and ensure the safety of firefighting and emergency personnel. This user needs assessment relies upon the perceptions of users and potential users of Predictive Services to assess current products and services as well as to identify areas where new products and services might be needed.

A Needs Assessment Approach to Evaluation

A framework for this program evaluation is found in needs assessment. According to Rossi, Freeman and Lipsey (1999) in a needs assessment, a program is assessed in light of the presenting conditions that make the program necessary. Current and prospective service recipients may be surveyed to explore such pertinent issues as target audience for the services or program, service utilization, services desired, shortcomings of existing services, and barriers to service utilization. Additional items of interest in a user needs assessment include: 1) A detailed examination of demographic characteristics of the target audience (e.g., gender or time in position of employment); 2) Need for specific products and services; 3) Program design, including preferred delivery systems (e.g., the internet and in-person briefings) and delivery styles (e.g., maps and graphs); and 4) Program operations (i.e., whether potential clients are actually using the products and services, and if not, why not).

Findings from this needs assessment can then be used in a formative evaluation process to guide adjustment of existing products and services, as well as development of new products and services. Instances of expensive and resource-intensive programs that are not subjected to rigorous evaluation abound (Rossi, Freeman and Lipsey 1999, Shinn 2006). Application of findings from a user needs assessment can help avoid developing and providing products and services that the target audience does not need or use. Evaluation should be a part of every serious risk communication effort (Slovic, Kraus and Covello 1990).

Crafting of Risk Messages to Meet Users' Needs

Multiple factors must be considered while examining risk, including wildland fire management and planning, and choosing the appropriate course of action. However, in any complex risk-related situation, there is a degree of uncertainty involved (Derby and Keeney 1981). This

uncertainty increases the importance of understanding how recipients receive and react to risk-related information.

All audience members targeted for risk-related information may not have the same information needs or interests; variability in message content is an important consideration in crafting risk-related messages. Multiple factors have been demonstrated to influence perceptions of risk and risk-related decisions including gender (Finucane and others 2000, Satterfield, Mertz and Slovic 2004, Siegrist 2000), age (Otani and others 1992), time in decision-making role and degree of experience with risk situation (Payne, Bettman and Johnson 1992, Reyna 2004), educational level (Vaughan and Nordenstam 1991), expertise in the topic area (including expert vs. layperson views, Fischhoff, Watson and Hope 1984, Plough and Krimsky 1987, Slovic 2000), and individual worldviews (e.g., culture, attitudes and values, Slovic and Peters 1998, Vaughan and Nordenstam 1991, Weber, Hsee and Sokolowska 1998). Contextual and situational factors further influence risk perceptions and decision-making (see for example Kneeshaw and others 2004).

In addition, trust in an information source and confidence in the information received has been repeatedly demonstrated as essential to how information will be perceived, responded to, and accepted (Borrie and others 2002, Cvetkovich and Winter 2003, Siegrist 2000, Siegrist, Cvetkovich and Roth 2000) and has direct applications to fire-management issues (Cvetkovich and Winter 2004, Shindler, Brunson and Cheek 2004, Winter, Vogt and Fried 2002, Winter, Vogt and McCaffery 2004). Trust in the information source tends to foster greater acceptance and belief in the risk-related message.

Methods

Respondents

A sample of email addresses representing users and potential users of Predictive Services products and services was compiled using key contact and snowball approaches. Sources of addresses included the National Predictive Services Group, a list of attendees to fire communication certification training, the National Wildland Fire Management Directory, contacts at state agencies, contacts at various Federal agencies, and online directories. Names and agency affiliations were used to verify addresses where possible, resulting in a list of 2,997 Federal contacts (our federal sample) and 997 individuals in state, county, and other non-federal entities across the United States (our non-federal sample). In addition to the selected email addresses, an additional number of individuals responded as 'volunteers' (individuals not in our original sample who were provided the link and participated in the survey). Some degree of volunteering was anticipated. Volunteering occurred when initial contacts forwarded the survey link to others within and outside their agency that they felt should also complete the survey, and at other times because initial contacts felt they were not the best person to complete the survey and forwarded it to another contact within their agency.

Federal respondents—The federal respondents included 1,078 individuals (with 63 volunteers representing 5.8% of the sample). The federal sample had a final response rate of 36.4 percent (after removal of the dropped emails for various errors from the working sample), with less than 1 percent of the sample refusing to participate (18 individuals). The majority was employed with

the USDA Forest Service (53.4%, *Figure 1*). Respondents had been in their current position of employment for an average of six years (median response, $n=702^3$).

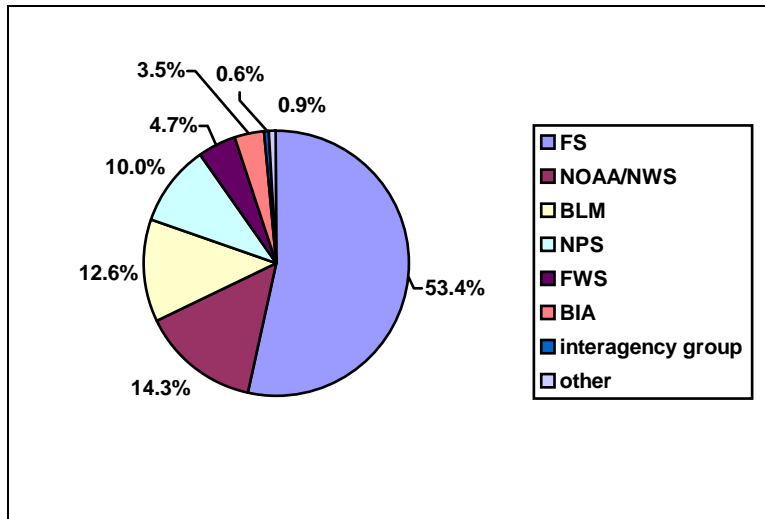


Figure 1. Employing agency—federal respondents.

We looked at agency and geographic distribution of our respondents and non-respondents (based on any reason for non-response). These findings appear as *Appendix A*.

A non-response bias check was conducted in which all non-respondents were separated into a unique database. Those not responding for known reasons were identified (these reasons included an incorrect email address—6.6%, out of the office for duration of the study period—.6%, no longer with the agency as indicated by automatic response—.4%, and refusals—.6%). The remaining email contacts were then placed in alphabetical order by email (to facilitate searches and arrive at an order that would not be linked to geographic location or agency) and a random sample was drawn (BIA addresses with the mail@pop.net addresses were excluded in this process, since there was no way to locate specific individuals attached to those addresses).

For those individuals selected, a search to verify email address was conducted and where possible an office telephone number was retrieved. When the individual or their phone number could not be retrieved from agency directories, the next individual in the sequence was selected. These selected individuals with email and telephone contacts were then assigned to our non-response survey sample (we included people who started, but did not complete an adequate amount of the survey in this process). A brief telephone survey was administered with those individuals we were able to reach to facilitate an understanding of our non-respondents. The survey instruments, protocol for the non-response bias check and a summary of findings appears as *Appendix B*.

³ Note that more than one-third of the respondents had years of employment set at 0 which could either indicate that they did not respond to the item or they had worked in the position for less than one year. Another possible explanation is a system feature within Question Pro that overwrites data as 0 when respondents enter their survey more than once. Cases with multiple records were carefully reviewed to retrieve any lost data, and the information provided represents all data that could be retrieved and reported with confidence.

A comparison of respondents from the original sample and the volunteers revealed that the volunteers were twice as likely to be employed within the Bureau of Indian Affairs (7.9 versus 3.3% of each sample) and Bureau of Land Management (22.2 versus 12%), and were less likely to be from the US Forest Service (31.7 versus 54.7%). The average years of employment in the current position was significantly different, with volunteers reporting fewer years (2.9 years for volunteers and 6.2 years for the original sample, $t=3.326$, $p=.001$). Further analyses examining differences between the original sample and volunteers failed to reveal significant trends, allowing combination of these two sample sources through the report⁴. Where differences were detected they are included in the report.

Non-federal respondents—The non-federal respondents included 305 individuals (28 volunteers, or 9.2% of the sample). The non-federal sample had a response rate of 37 percent (after removal of the dropped emails), with only 6 refusals. Most worked for state (*Figure 2*, 73.1%), or county agencies (9.5%). A few worked with consulting firms (3.9%), or with academic institutions (.7%); the remainder worked with local fire departments and a various other entities. The public respondents had been in their current position of employment for 5.7 years ($sd=9.7$ years, median response was less than one year).

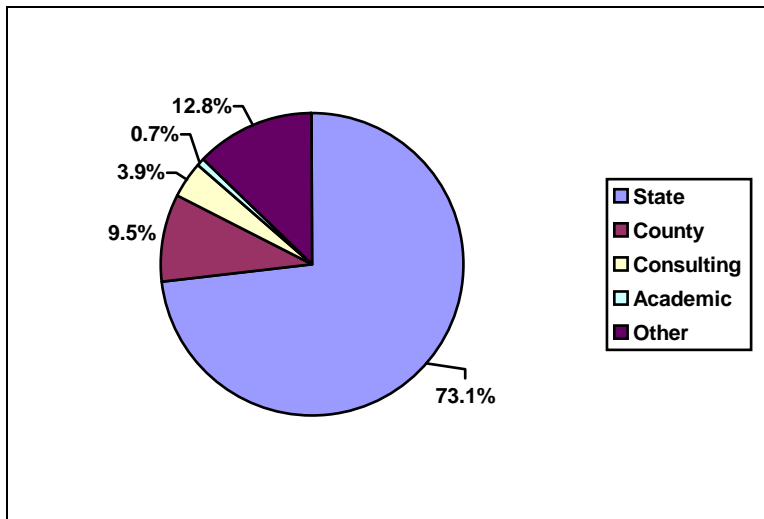


Figure 2. Employing agency—non-federal respondents.

A non-response bias check was conducted for the non-federal responses, but was constrained due to less readily accessible data (pre-existing central directories with phone numbers were not available to us, *Appendix C*). Non-respondent data are not included in the main body of this report.

A comparison of respondents from the original sample and volunteers revealed that volunteers were more likely to be from county agencies than original sample members (17.9% versus 8.4%) and were less likely to be from state agencies (60.7% versus 76.6%). The number of years in the current position was not significantly different, and gender distribution was similar for the two groups. The implications of these differences are not known, so significant

⁴ Additional details on these analyses can be provided upon request to the first author. Analyses that show significant differences are reported in the following sections of the report.

differences between the original sample and volunteers are presented in the report for any data where they were revealed.

The Survey

Two survey instruments were constructed, one for the Federal sample (*Appendix D*) and one for the non-federal sample (*Appendix E*). The non-federal respondents received a shorter version of the survey, with adjustments to Likert-type items so that each point on the scale was labeled. These changes were required to meet administrative approval (Office of Management and Budget) to fit within the Department of Interior's Customer Satisfaction blanket. Both surveys were posted on the web service Question Pro (www.questionpro.com). One implication of using two different survey forms, administered at different timeframes, with a different length and some different scales, is that findings from the federal sample are reported separately from the non-federal sample. While interim reporting to Predictive Services was facilitated by presenting parallel concepts where possible (for example ratings of accuracy of information), scientific rigor compels us to present each survey independently. The reader may be apt to compare findings from these two samples; however every caution should be exercised out of respect for the differences between the two surveys.

The federal and non-federal surveys (refer to *Appendices D* and *E* for the original surveys) addressed a variety of topics including sociodemographics (employing agency, years in current position, and gender), who the audience should be for Predictive Services' products and services (federal version only), preferred formats for the information provided (Federal version only), preferred products and services (federal version only, a list of 39 products and services currently available), degree of familiarity with the products and services (self-rated familiarity made up of three items asking about products on the web, briefings, and emails), acceptability of risk and tolerance for errors (federal version only, three items, two asking tolerance for false alarms pertaining to fire danger and inaccurate reporting of high fire potential and one item asking overall preference for margin of error), implications of risk in making decisions (federal version only, two items asking impacts of inaccurate reporting), trust and confidence (assessing degree of trust and confidence in the information provided), reliance on products and services, willingness to take action, and reliance on other sources all rated on a Likert-type scale, and facilitators (including applicability and benefit of using Predictive Services, asked in the federal version only) and barriers (list of 16 reasons why people might not rely on Predictive Services, and perceived overlap in the type of information provided) to utilization of the products and services. A series of open-ended items shed light on the facilitators underlying utilization of Predictive Services' products and services.

Procedures

Federal and non-federal respondents were sent an emailed invitation and brief letter of explanation for the study, along with a link to the survey site⁵. Three reminders were sent over the course of the data collection period, with a total of 42 days allowed for response. Each of the reminders contained a brief message and the link to the survey site. Reminders were sent to sample members who had not been removed from the sample because of email failures and those who had not completed surveys according to the web service. (See *Appendices D* and *E* for the message content from the initial mailing and each reminder.)

⁵ While we used Question Pro for the data collection portion of this assessment, we did not use their mailing feature. All emails were sent out through the Forest Service email database to facilitate tracking of messages and ease identification of the sender.

A slight variation in mailing procedures occurred between the federal and non-federal waves. Data were downloaded from the QuestionPro site and individual identifiers (used for tracking mailings) were removed.

Results: Federal Survey

Who Were the Respondents?

The majority (69.1%) was male. Respondents were primarily between 45 and 64 years of age (*Figure 3*).

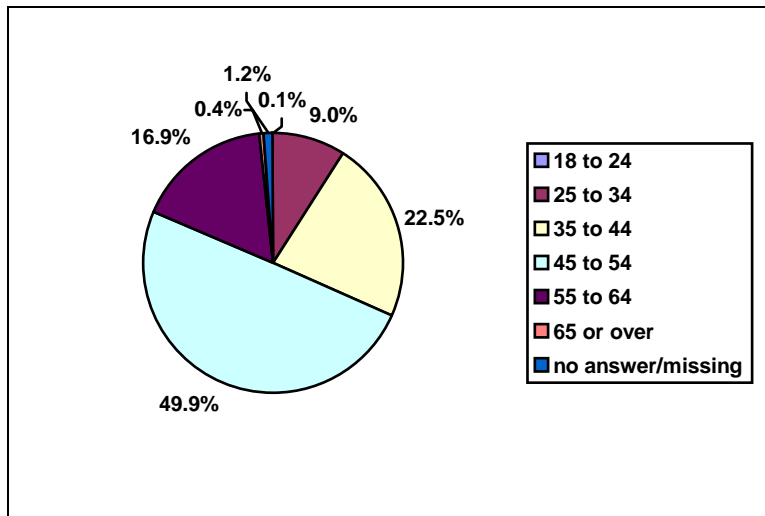


Figure 3. Age—federal respondents.

Educational background / degree or equivalent—Educational attainment was fairly high among the majority of respondents (*Figure 4*). A few (9.7%) had completed high school or the equivalent, while another tenth (10.3%) obtained an associate’s degree or equivalent. More than half (56.8%) had obtained a Bachelor’s level of education; another fifth (21.4%) had a master’s degree or equivalent. A few (1.4%) reported a doctorate or equivalent level of education. (Only .4% did not answer this item.) Areas of study were varied among respondents; however, the vast majority of mentions were either related to forestry/resource management/range management, or the natural sciences (272 and 237 mentions respectively). Fire science was mentioned 40 separate times, and social sciences were mentioned 38 times.

Journalism/communication and public affairs were mentioned 46 times. Management/business and public administration were mentioned 33 times. Other areas of study included education (19 mentions), planning and architecture (11 mentions), law and criminal justice (10 mentions), humanities and fine arts (9 mentions), liberal studies (12 mentions), and languages (11 mentions).

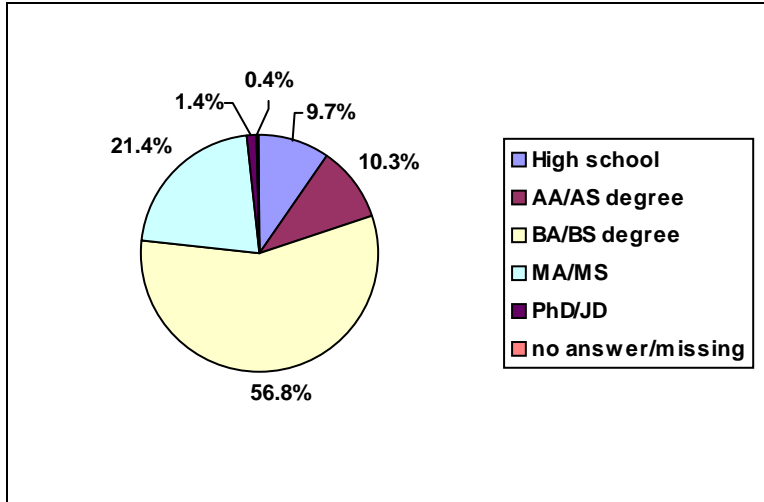


Figure 4. Educational attainment—federal respondents.

Geographic Area location—Respondents came from across the United States, with their home offices falling within the various established Geographic Areas (GAs, commonly referred to GACCs) shown below (*Figure 5*). In addition to examining their responses, we searched through federal employee directories available online to place people in various states and then regions that approximate the GACCs. This analysis showed that every GA had a minimum of at least 2.6% representation (28 respondents) within the usable data. A list of states and the numbers of respondents coming from those states is available upon request.

It is important to note that while respondents reported these GACCs as their ‘homes’ the ratings and comments gleaned from the survey data cannot be directly linked back to each of these GACCs except where respondents made specific comments about a particular GACC. The reader will see a bit later in this report that many respondents have accessed/used the services of multiple GACCs.

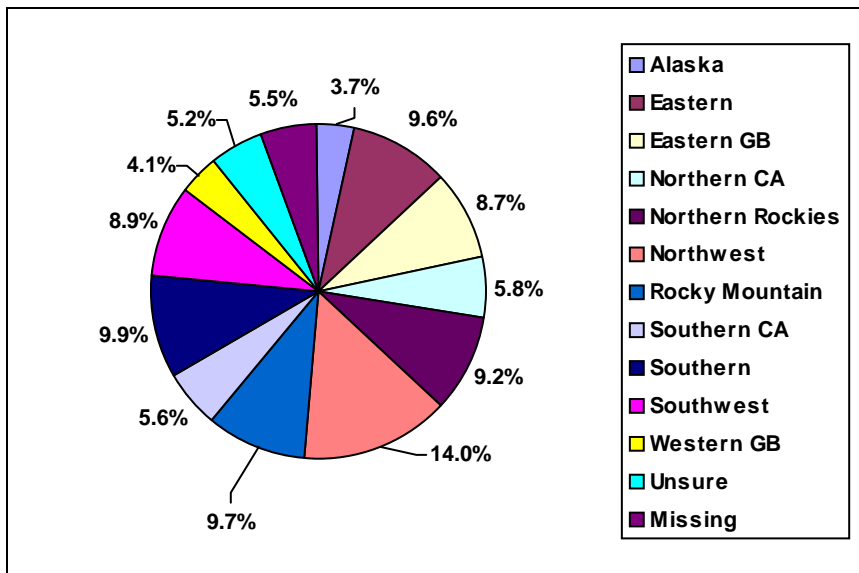


Figure 5. GAs—federal respondents.

Primary role or responsibility—Federal respondents were asked to ‘choose their hat’ for the remainder of the survey, by selecting their primary role or responsibility within their agency. A listing of 16 pre-set categories was provided, along with an ‘other’ category and fill-in option. About one-fourth of the sample served as PAO/information officers, with the balance reporting a variety of roles (*table 1*). The ‘other’ category was in part a function of the specificity imbedded in the role labels (e.g., ‘in the interagency coordination system’; or Forest/BLM FMO, which eliminated positions not in FS or BLM).

Table 1. Primary role or responsibility—federal respondents.

Role/Responsibility	n	%
Public affairs/information officers (PAO/information officers)	266	24.7
National Weather Service meteorologist (NWS meteorologist)	145	13.5
Forest/BLM District Fire Management Officer or Assistant (FMO/assistant)	123	11.4
Incident management team member	77	7.1
Crew supervisor/other suppression personnel in incident support	72	6.7
Fuels specialist	56	5.2
Fire Behavior/Long-Term Analyst for Incident Support (FBANs/LTANs)	37	3.4
Dispatcher in the Interagency Coordination System	34	3.2
Fire use team member in incident support	17	1.6
Fire research	15	1.4
Aviation	12	1.1
GACC manager/coordinator	11	1.0
Fire weather meteorologist in the interagency coordination system	10	.9
Multi-agency coordinator (NMAC/GMAC)	9	.8
Fire Behavior/Fire Danger Analyst within the interagency coordination system	8	.7
Intelligence within the interagency coordination system	3	.3
Other	181	16.8
	1,076	99.8

These responses required some grouping and re-categorization in order to allow a presentation of differences by job function. We blended the previous question along with job title to create the new groupings with input from the NPSG. These groupings serve as the basis for additional analyses, reported in *Appendix F*. Each of these functional groups offered a unique perspective that might lead to different programmatic decisions sometimes specific to a particular audience. The regrouped job functions appear below (*Figure 6*; note that two respondents did not provide sufficient job function information to be able to place them into a group).

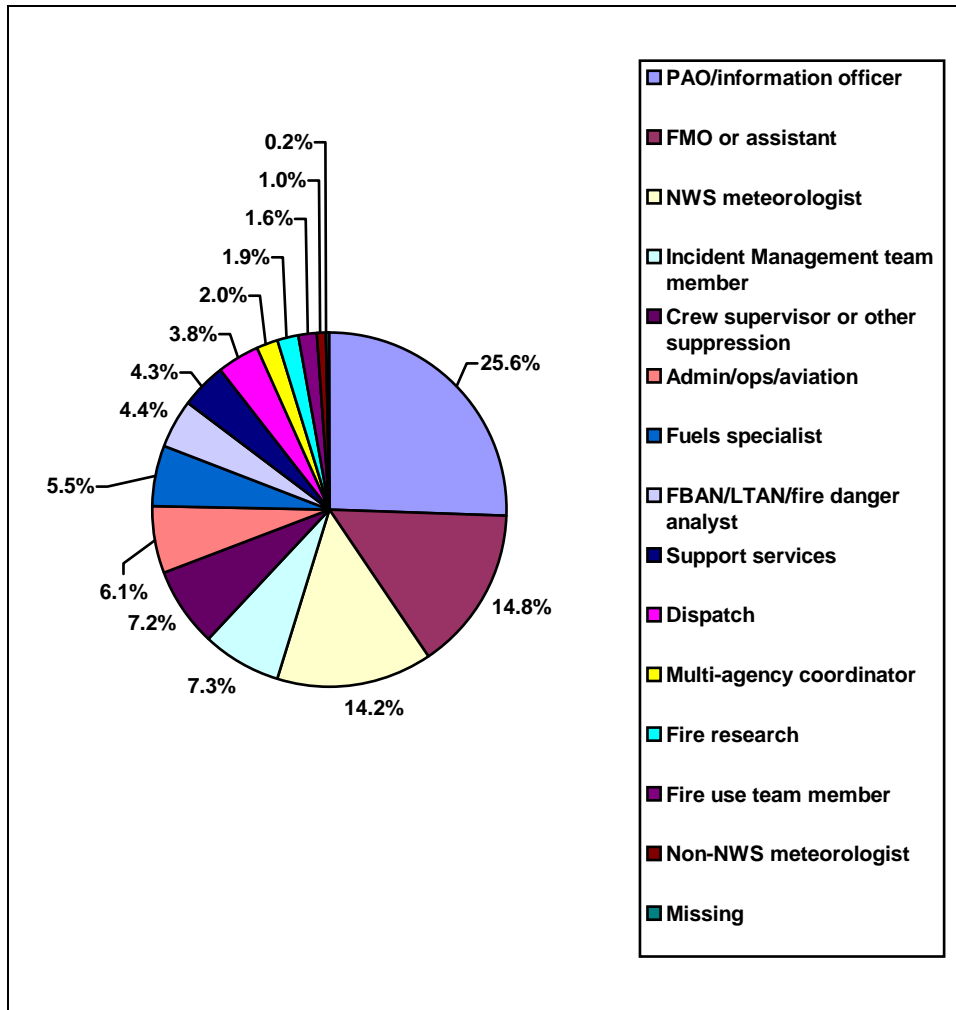


Figure 6. Job function groupings—federal respondents.

Level of geographic responsibility and scope of duties—Respondents’ level of geographic responsibility varied. About one-tenth reported their duties were incident specific (10.2%), or linked to their local unit (including forest, district, reserve, etc. at 40.9%). A few had duties that focused on county or state levels (2.5 and 8.3% respectively), and almost one-fifth (18.4%) had regional-level responsibilities. Responsibilities for the remainder were at the national (15.6%), or national and international (3.9%) level.

Some variation in level of responsibility by job function was evident. Four groups were more likely to report responsibility at the local level, including fire management officers or assistants (FMOs/assistants; 76.3%), support services (60.9%), dispatchers (56.1%), and fuels specialists (54.2%). Regional responsibilities were most characteristic of non-NWS meteorologists (63.6%) and multi-agency coordinators (68.2%).

The majority of respondents (56.8%) indicated that their work was specific to multiple agencies, while some (42.6%) had duties specific to their agency only. Five groups showed a greater proportion of responsibility to multiple agencies, including non-NWS meteorologists (81.8%), fire behavior analysts/long term analysts/fire environment analysts (FBANs/LTANs/fire environment

analysts, 78.7%), incident management team members (78.5%), multi-agency coordinators (77.3%), and fire researchers (76.2%).

Supervisory responsibilities varied. Number of people supervised on a routine basis was one (median, 45.2% had no supervisory responsibilities on a routine basis), on a seasonal and incident basis the average response was none (59.5% did not have supervisory responsibilities on a seasonal basis, and 51.0% did not have them on an incident-specific basis).

Almost half of the respondents (43.6%) had job responsibilities that included gathering and reporting data that is utilized by Predictive Services (e.g., situation reports, ICS-209s, NFDRS/WIMS). Among the respondents in this group ($n=470$), the duties were assigned as one of their primary responsibilities (41.1%), or assigned as part of a group that fulfills that responsibility (34.0%). Fewer (19.8%) held this set of duties when others with this routine responsibility were away from the office.

Groups with the greatest proportion of data gathering and reporting duties included the FMOs/assistants (61.9%), FBANs/LTANs/analysts (61.7%), and the dispatchers (61.0%). For each of these groups the responsibilities were most likely to be part of their primary duties.

A comparison of original sample members with the volunteers revealed that volunteers were more likely to have job responsibilities that included gathering and reporting data used by Predictive Services (43.2% of the original sample versus 65.6% of the volunteers).

What are their Levels of Experience with Predictive Services?

Federal respondents varied in their use and resulting familiarity with the products and services being evaluated.

Frequency of access and information acquisition—The frequency of accessing and obtaining information from Predictive Services was examined under two conditions, during fire season and outside of fire season. As might be expected, frequency of access was greatest during fire season (*table 2*). Almost one-fifth did not use access the services during fire season and more than one-fourth did not access the services outside of fire season.

Table 2. Frequency of accessing and obtaining information from Predictive Services—federal respondents.

Frequency	During Fire Season	Outside Fire Season
	%	%
Daily	37.5	5.0
Weekly	22.9	17.3
Monthly	4.4	19.9
Quarterly	1.2	8.0
Rarely	10.8	21.5
Not at all	22.9	27.6
Missing	.4	.6

Volunteer respondents (not in our original sample pool) were more likely to access information during fire season on a routine basis (36.8% of original sample accessed the information daily, while 50.8% of our volunteers accessed it daily). They were also more likely to access

information on a daily basis outside of fire season (4.7% of original sample, 11.1% of volunteers).

While frequency of access was greatest during fire season for the full sample, the proportions of six function groups showed the majority accessed Predictive Services daily during this season, including multi-agency coordinators (81.8%), non-NWS meteorologists (72.7%), dispatchers (63.4%), FMOs/assistants (59.4%), and fuels specialists (57.6%). Least likely to access the information during fire season were the PAO/information officers (50.0% marked not at all), and support services (54.3%). Outside of fire season, daily or weekly access was highest among the non-NWS meteorologists (72.7%) and the multi-agency coordinators (63.6%).

Specific circumstances for access/acquisition—In addition to frequency, respondents provided information regarding specific situations when they access or obtain information from Predictive Services. More than half reported accessing Predictive Services during fire season (61.1%), and during a fire incident (51.2%). Between one-fourth and approximately one-third listed other situations including when a prescribed burn is being planned (30.0%) and when a prescribed burn is taking place (27.0%). About one-fourth indicated none of the above situations applied to them (26.4%).

While several of the job function groups access Predictive Services across a variety of situations, three groups stand out as those reporting the greatest access across a variety of situations. These included FMOs/assistants, fuels specialists, and fire use team members. All reported a majority, or near majority accessing the information during fire season, during a fire incident, when a prescribed burn is being planned, and when a prescribed burn is taking place (for the actual numbers within each of these groups and situations refer to *Appendix F*).

Several respondents offered up additional circumstances or situations when they would access/obtain information from Predictive Services. These responses provide a glimpse into the diverse applications that survey respondents are finding for the information. They also indicate that a program designed for one set of purposes may find alternate uses in its application. The majority of uses mentioned were focused on planning throughout the year and during extreme events or incidents. The range of situations included those listed in *table 3*.

Table 3. Situations when information was accessed/obtained from Predictive Services—federal respondents.

General...

All year long/always; for all reasons

Specific types of incidents/situations...

Incidents involving risk

Pre-season for planning/projections

Red flag warnings

Multiple incidents in different areas

End of season

Times of high activity

Times of off-season activity

When making travel plans/heading to different area

When lightening is forecasted/occurring

When cyclones/floods/other severe events are forecasted/occurring

When hurricanes are forecasted/in season

During drought

Before leaving for an incident

During political situations

Tasks, general and specific...

To prepare for briefings

For all types of fire work

When detailed to a different job or assignment

Fire investigation

Research, to gather data, to examine trends, historical data

To prepare for MAC meetings

Pre-season preparation

To prepare situation reports

To prepare reports/projects

For general fire planning, including staffing/resources; long-term, short-term

To evaluate severity needs

For teaching/training purposes

For wildland fire use/prescribed burns/rehabilitation treatment events/planning

To prepare for media events/inquiries/contacts

Use of specific websites and services—Respondents were asked to indicate which Predictive Services websites they had visited, or which GACC services they had used (such as briefings), revealing that a majority had been to/used the National Interagency Coordination Center (NICC—59.1%). The Geographic Area Coordination Center sites from most to least mentioned were the Southwest (30.0%), Northern Rockies (26.3%), Northwest (25.2%), Rocky Mountain (25.0%), Eastern Great Basin (21.5%), Western Great Basin (21.2%), Southern (20.2%), Northern California (16.0%), Southern California (16.0%), Alaska (13.8%), and the Eastern site (12.2%; responses do not sum to 100% because respondents could select multiple sites). A few (7.1%) were not sure which if any sites they had visited/ GACCs they had used, while about one-tenth (11.7%) indicated they had not visited any of the listed sites.

Familiarity with the products and services—Federal respondents were asked to indicate how true or untrue the following statement was “I am unfamiliar with Predictive Services products

and services.” About one-third indicated this statement was true (30.1% selected a rating of 4, or 5, where 5=very true), and another tenth (14.7%) selected ‘somewhat true’. Over half felt familiar with the products and services (54.1% selected a 2 or 1, where 1=not at all true.⁶) Those groups most likely to mark very true on this question, indicating the least familiarity, were support services (65.3%), PAO/information officers (41.7%), and fire researchers (28.6%).

The majority of respondents was interested in Predictive Services products and services (*Figure 7*, 57.2% selected a 4 or 5, where 5=very true in response to “I am interested...; another 25.7% marked ‘somewhat true’). Groups least interested in Predictive Services (selected not at all true or ‘2’) included support services (43.5%), fire researchers (38.0%), and PAO/information officers (33.3%).

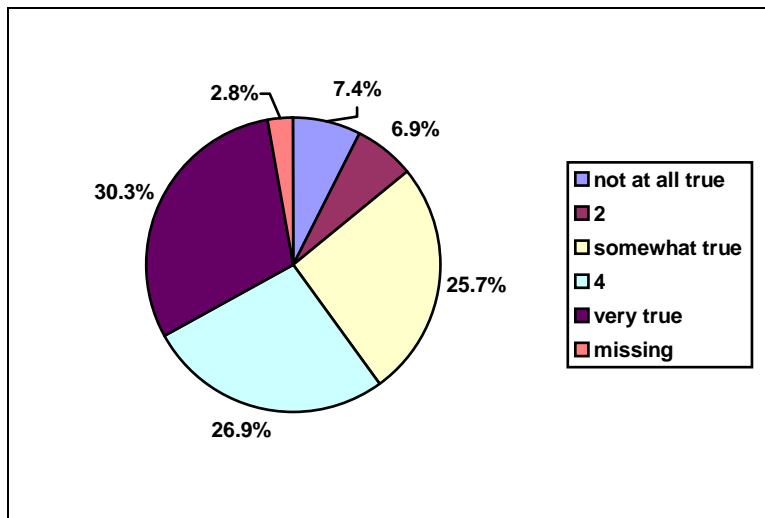


Figure 7. Interest in Predictive Services products and services—federal respondents.

Respondents were asked their familiarity with Predictive Services’ products on the web, the briefings, and the emails. Federal respondents were more familiar with the web products (*Figure 8*, $M=3.0$, $sd=1.4$, $n=1,009$), and the briefings (i.e., national, geographic, situational, or meteorological, $M=3.1$, $sd=1.4$, $n=1,006$), than with the emails (these contain current projections and/or information about Predictive Services, $M=2.4$, $sd=1.4$, $n=986$). It should be noted that the emails are sent to a specific fire audience and would, by their nature, be less familiar to the broad audience of respondents we surveyed. This is not a format that should be of equal familiarity to the others.

⁶ The reader should note that values ‘2’ and ‘4’ on the scale were not labeled in the Federal version of the survey, leaving the interpretation of those values to the respondent. Perceived distances between numeric values can vary by the respondent, so in many cases we present values together in this discussion, such as 1 and 2, or 4 and 5.

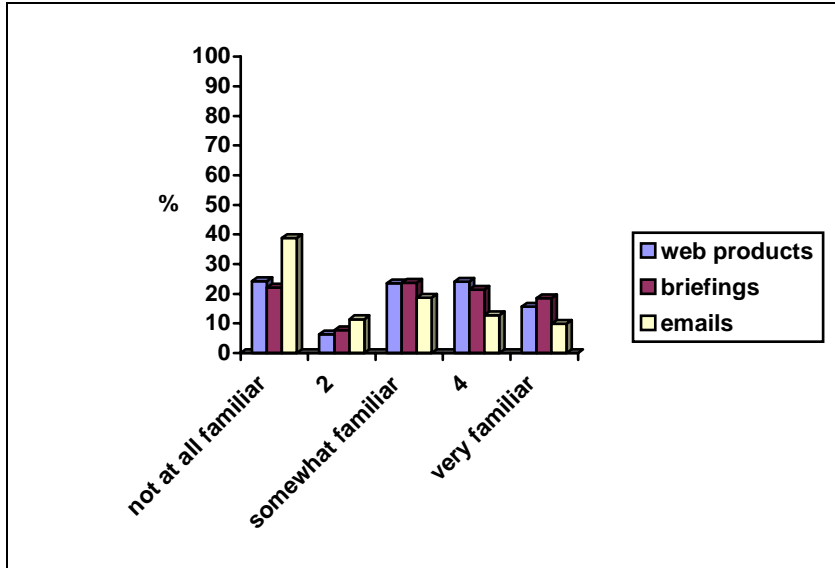


Figure 8. Familiarity with Predictive Services products on the web, briefings, and emails—federal respondents.

Familiarity with each of the types of products varied significantly by job function (web ANOVA $F_{13,1006} = 27.260, p < .001$; briefings ANOVA $F_{13,1003} = 21.828, p < .001$; emails ANOVA $F_{13,983} = 31.074, p < .001$). Non-NWS meteorologists were most familiar with the web products ($M=4.7$), as well as the briefings ($M=4.3$), and the emails ($M=4.0$). The multi-agency coordinators were also highly familiar with the web products ($M=4.2$), briefings ($M=4.4$), and the emails ($M=3.8$). FBANs/LTANs/analysts were among the most familiar with the web products ($M=4.1$) and the briefings ($M=4.2$). Least familiar with all three forms of products were the PAO/information officers and the support services respondents.

What are their Opinions of the Products and Services?

Ratings of Predictive Services information—Federal respondents were asked to rate six attributes of Predictive Services information. Each of these was assumed to be a desirable attribute, and in each case respondents were asked to mark either ‘don’t know,’ or to rate the information provided by Predictive Services on that attribute on the 1 to 5 scale, where 1 was equal to strongly disagree, and 5 was equal to strongly agree. A ‘3’ is a neutral position on the scale, and should be viewed as neither agreement nor disagreement with each attribute as characteristic of Predictive Services. Because of the importance of the attributes in terms of service quality, each is reported separately. Overall variation by job function was significant for all six attributes (ANOVAs, $p < .05$). The functional groups with higher ratings are reported when between group differences were significant. Two familiarity groups were created: those least familiar and those most familiar, using the median split of average familiarity with web products, briefings, and emails. All six attributes were rated higher (meaning that respondents were more likely to agree with these as positive characteristics of Predictive Services) by those most familiar with the Products and Services.

Respondents tended to agree that Predictive Services information was accessible ($M=3.8, sd = .9, n=768, Figure 9, 27.7\%$ marked ‘don’t know’ and 1.0% did not respond).

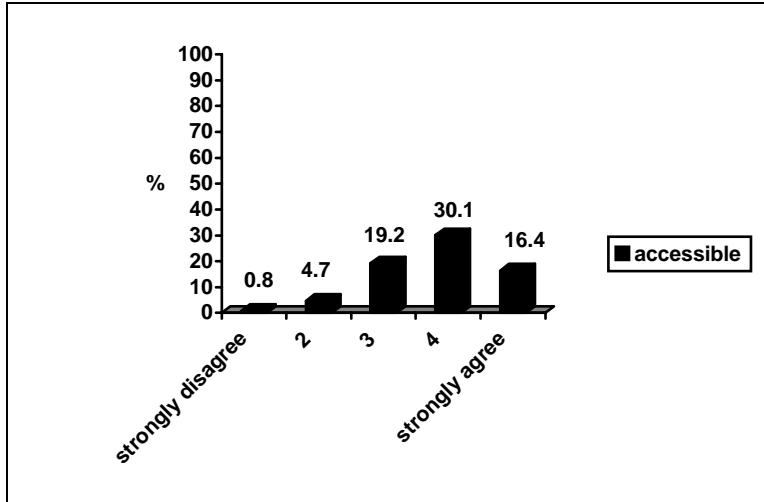


Figure 9. Ratings of accessibility of Predictive Services information—federal respondents.

Perceived accessibility varied significantly by job function (ANOVA $F_{13,766} = 3.047, p < .001$), however no one group was significantly different from another. The functional groups with a majority who agreed Predictive Services information was accessible included non-NWS meteorologists (90.9%), multi-agency coordinators (81.8%), FMOs/assistants (76.3%), FBANs/LTANs/analysts (74.5%), fire use team members (70.6%), fuels specialists (59.3%), and incident management team members (50.6%).

Overall familiarity with Predictive Services was associated with a significant difference as well. Those who were more familiar rated Predictive Services more favorably regarding accessibility ($t_{688} = -10.958, p < .001$; familiars $M=4.1$ versus unfamiliar at $M=3.4$).

A near-majority agreed that Predictive Services information was timely, although almost one-third disagreed with this as an attribute ($M=3.2, sd=1.7, n=940$, *Figure 10*, 11.5% marked ‘don’t know’ and 1.3% did not respond). Concerns regarding timeliness of information, including updating of information on the websites, were a recurring theme in open ended comments offered by respondents in other sections of the survey. In some cases respondents suggested other sources with overlapping information were more likely to be used as a resource because their information was updated more frequently.

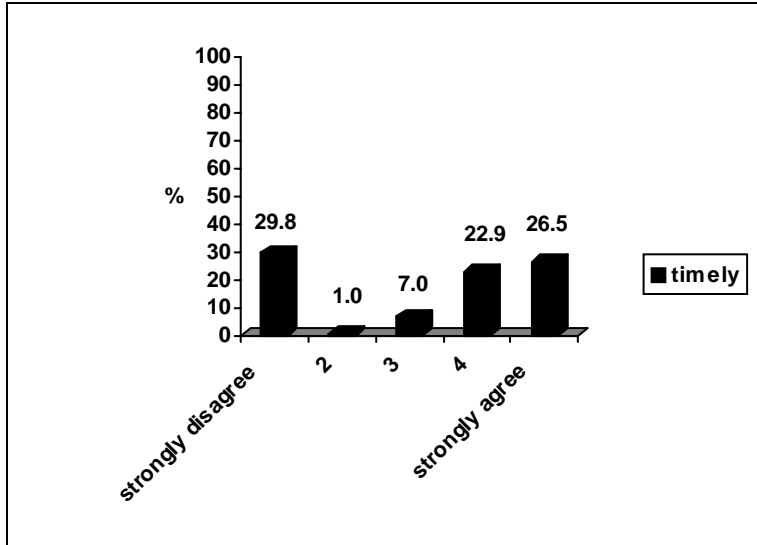


Figure 10. Ratings of timeliness of Predictive Services information—federal respondents.

Timeliness ratings varied significantly by job function (ANOVA $F_{13, 937} = 18.279$, $p < .001$) and six groups stood out with greater agreement that the information was timely. These groups included the multi-agency coordinators ($M=4.3$), FMOs/assistants ($M=4.2$), FBANs/LTANs/analysts ($M=4.1$), fuels specialists ($M=3.9$), incident management team members ($M=3.6$), and dispatchers ($M=3.4$).

A majority of the following groups agreed that the information was timely: FMOs/assistants (70.0%), fuels specialists (69.5%), FBANs/LTANs/analysts (63.8%), multi-agency coordinators (63.6%), incident management team members (62.0%), fire researchers (57.1%), non-NWS meteorologists (54.2%), crew supervisors/other suppression personnel (53.9%), and dispatchers (51.2%).

However, there were several groups with a fifth or more indicating they disagreed (disagreed or strongly disagreed) that the information was timely. These groups included support services (73.9%), PAO/information officers (54.3%), admin/ops/aviation (31.8%), NWS meteorologists (31.4%), fire use team members (29.4%), fire researchers (28.6%), and incident management team members (22.8%).

Familiarity with Predictive Services was associated with a significant difference in ratings. Those who were more familiar rated Predictive Services more favorably regarding timeliness ($t_{910} = -13.324$, $p < .001$; familiars $M=4.0$ versus unfamiliar at $M=2.7$).

Respondents were asked whether they agreed or disagreed that Predictive Services information was relevant. While a near-majority agreed that Predictive Services information was relevant, almost one-third disagreed with this as an attribute ($M=3.2$, $sd=1.7$, $n=875$, Figure 11, 17.6% marked 'don't know' and 1.2% did not respond).

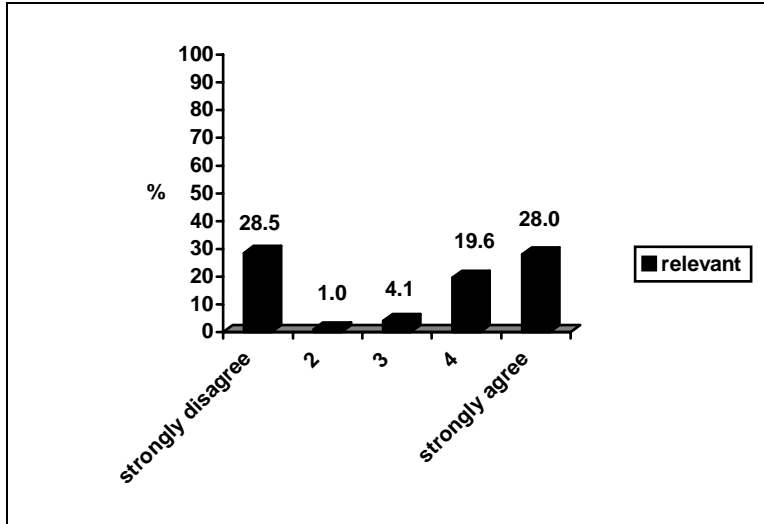


Figure 11. Ratings of relevance of Predictive Services information—federal respondents.

Perceived relevance varied significantly by job function (ANOVA $F_{13,872} = 16.340$, $p < .001$) and four groups stood out with greater agreement that the information was relevant. These groups included the multi-agency coordinators ($M=4.6$), FMOs/assistants ($M=4.2$), FBANs/LTANs/analysts ($M=4.3$), and incident management team members ($M=3.9$).

Groups with a majority who indicated the information was relevant included fuels specialists (69.5%), FMOs/assistants (65.1%), FBANs/LTANs/analysts (61.7%), crew supervisors/other suppression personnel (59.0%), fire researchers (57.1%), multi-agency coordinators (54.5%), incident management team members (54.4%), and NWS meteorologists (51.0%).

Some groups had a fifth or more who disagreed that the information was relevant including support services (71.7%), PAO/information officers (52.9%), admin/ops/aviation respondents (31.8%), fire researchers (28.6%), NWS meteorologists (26.1%), fire use team members (23.5%), and incident management team members (22.8%).

Overall familiarity with Predictive Services was associated with a significant difference. Those who were more familiar rated Predictive Services more favorably regarding relevance ($t_{910} = -12.006$, $p < .001$; familiars $M=4.0$ versus unfamiliar at $M=2.7$).

A majority agreed that Predictive Services information was accurate ($M=3.2$, $sd=1.7$, $n=984$, *Figure 12*, 7.1% marked 'don't know' and 1.6% did not respond). However, almost one-third disagreed with accuracy as an attribute of Predictive Services information. Comments on other sections of the survey addressed the issue of accuracy, where respondents indicated a need for presentation of the assumptions behind the information being presented, along with data sources, and confidence intervals or sources of error.

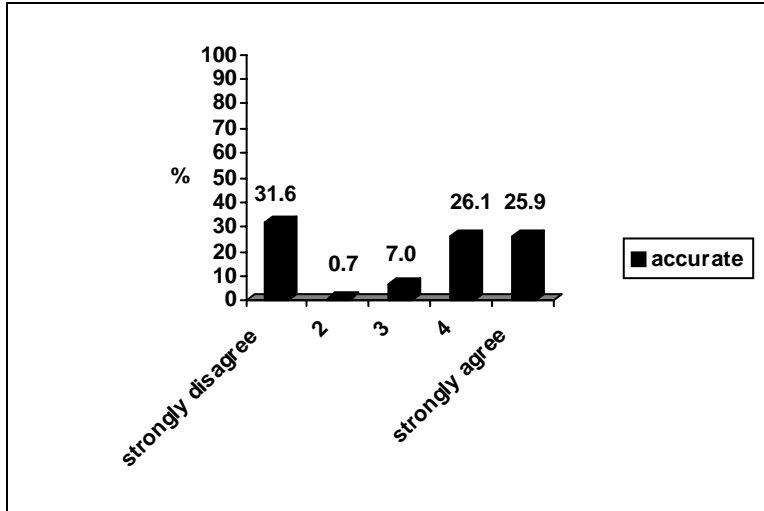


Figure 12. Ratings of accuracy of Predictive Services information—federal respondents.

Ratings of accuracy varied significantly by job function ANOVA $F_{13,981} = 19.433$, $p < .001$) and five groups stood out with greater agreement that the information was accurate. These groups included the multi-agency coordinators ($M=4.3$), FMOs/assistants ($M=4.1$), FBANs/LTANs/analysts ($M=4.2$), non-NWS meteorologists ($M=3.9$), and incident management team members ($M=3.9$).

Groups with a majority who agreed that the information was accurate included: multi-agency coordinators (81.9%), FMOs/assistants (76.9%), fuels specialists (76.3%), FBANs/LTANs/analysts (74.5%), fire researchers (61.9%), crew supervisors/other suppression personnel (57.7%), incident management team members (55.7%), non-NWS meteorologists (54.6%), NWS meteorologists (53.0%), and fire use team members (52.9%).

Those with a fifth or more who disagreed that the information was accurate included support services (73.9%), PAO/information officers (59.1%), admin/ops/aviation respondents (33.3%), NWS meteorologists (32.7%), fire use team members (29.4%), dispatchers (26.8%), fire researchers (23.8%), incident management team members (22.8%), and crew supervisors/other suppression personnel (20.5%).

Overall familiarity with Predictive Services was associated with a significant difference. Those who were more familiar rated Predictive Services more favorably regarding accuracy ($t_{975} = -14.593$, $p < .001$; familiars $M=4.0$ versus unfamiliar at $M=2.6$).

A majority also agreed that Predictive Services information was complete ($M=3.2$, $sd=1.7$, $n=971$, *Figure 13*, 8.4% marked 'don't know' and 1.5% did not respond). However, almost one-third disagreed with completeness as characteristic of Predictive Services information. Because respondents were not asked a follow-up question regarding sources of incompleteness, the reader should refer to the section addressing products or information that might be added to Predictive Services (see 'products or services that should be added' in the body of this report and in *Appendix F*).

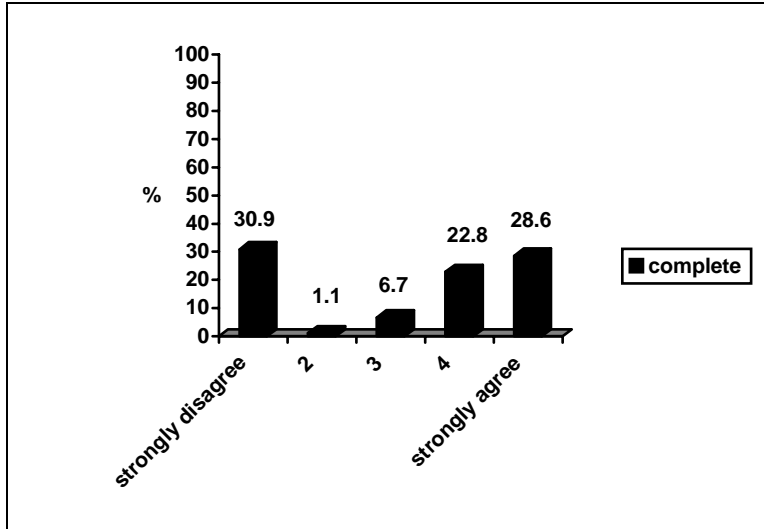


Figure 13. Ratings of completeness of Predictive Services information—federal respondents.

Perceived completeness of information varied significantly by job function (ANOVA $F_{13,968} = 18.593$, $p < .001$) and five groups stood out with greater agreement that the information was complete. These groups included the multi-agency coordinators ($M=4.5$), FMOs/assistants ($M=4.2$), FBANs/LTANs/analysts ($M=4.2$), non-NWS meteorologists ($M=3.7$), and incident management team members ($M=3.8$).

Groups with a majority who agreed that the information was complete included multi-agency coordinators (86.4%), FMOs/assistants (75.6%), fuels specialists (69.5%), FBANs/LTANs/analysts (66.0%), crew supervisors/other suppression personnel (60.2%), incident management team members (55.7%), NWS meteorologists (53.6%), and dispatchers (51.7%).

One-fifth or more of the following groups disagreed that the information was complete: support services (73.9%), PAO/information officers (56.9%), admin/ops/aviation (33.3%), NWS meteorologists (30.1%), fire use team members (29.4%), fire researchers (28.6%), crew supervisors/other suppression personnel (23.1%), and incident management team members (21.5%).

Overall familiarity with Predictive Services was associated with a significant difference. Those who were more familiar rated Predictive Services more favorably regarding completeness of information ($t_{954} = -14.647$, $p < .001$; familiars $M=4.0$ versus unfamiliar at $M=2.6$).

A majority agreed that Predictive Services information was easy to understand ($M=3.3$, $sd=1.7$, $n=944$, *Figure 14*, 11.1% marked 'don't know' and 1.3% did not respond). However, almost one-third disagreed that Predictive Services information was easy to understand.

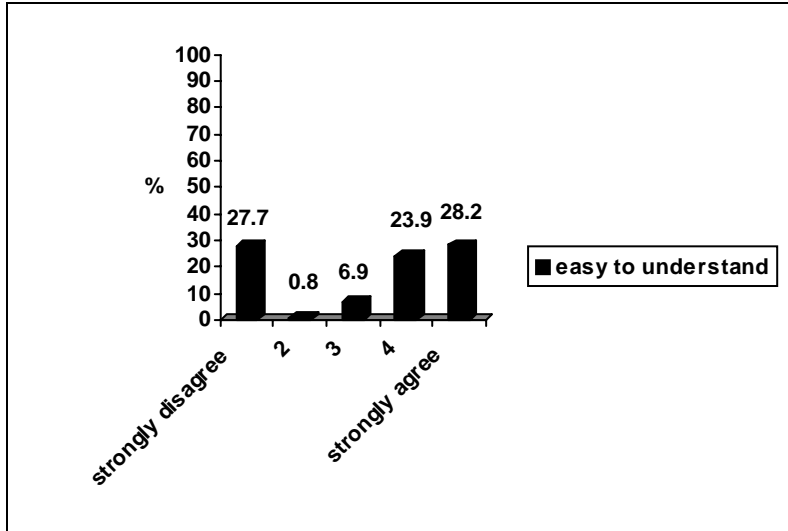


Figure 14. Ratings of ease of understanding of Predictive Services information—federal respondents.

Similar to the ratings on the other five attributes, ratings on ease of understanding varied by job function (ANOVA $F_{13,941} = 18.640, p < .001$) and for this attribute several groups stood out with greater agreement that the information was easy to understand. These groups included the multi-agency coordinators ($M=4.6$), FMOs/assistants ($M=4.2$), FBANs/LTANs/analysts ($M=4.4$), non-NWS meteorologists ($M=4.1$), fuels specialists ($M=3.9$), fire use team members ($M=3.7$), and dispatchers ($M=3.7$).

Groups with a majority who agreed the information was easy to understand included multi-agency coordinators (81.8%), FMOs/assistants (69.4%), FBANs/LTANs/analysts (68.1%), fuels specialists (67.8%), dispatchers (63.4%), fire researchers (61.9%), crew supervisors/other suppression personnel (57.7%), NWS meteorologists (56.9%), incident management team members (55.7%), non-NWS meteorologists (54.6%), and fire use team members (53.0%).

One-fifth or more of these groups disagreed that the information was easy to understand: support services (69.6%), PAO/information officers (53.3%), fire researchers (33.3%), admin/ops/aviation personnel (31.8%), NWS meteorologists (23.5%), fire use team members (23.5%), crew supervisors/other suppression personnel (20.5%), and incident management team members (20.3%).

As with the other five attribute ratings, overall familiarity with Predictive Services was associated with a significant difference. Those who were more familiar rated Predictive Services more favorably regarding ease of understanding ($t_{928} = -14.062, p < .001$; familiars $M=4.1$ versus unfamiliar at $M=2.7$).

Similarity and importance of similarity of GACC sites—Respondents were asked a series of questions to examine their perceptions regarding current similarity of format and quality across GACCs, as well as the importance of that similarity. This was asked in light of nationwide efforts to provide comparable products and formatting on the GACC websites.

Federal respondents rated how true the following statement was “The Predictive Services products and services available through the GACCs you selected (based on which GACCs they

had been to) are similar in format, quality, and the range of products and services offered. Very few rated the statement as untrue (13.0% answered either a 1=not at all true, or a 2), about one-third rated the statement as somewhat true (35.0% answered '3'), and about one-fifth rated the statement as true (20.9% answered either 4, or 5=very true; note that 31.2% did not answer this item as it was only applicable to people who had indicated use of multiple GACCs' products and services.) The fire use team members (6.7%) and the multi-agency coordinators (4.8%) were least likely to select ratings of 1 or 2, meaning they perceived the products to be at least somewhat similar across the GACCs.

Respondents were then asked to comment on their answer regarding similarity in format, quality, and range of products and services offered. Some respondents commented that they felt unable to make a fair comparison, either because it had been some time since they had visited some of the websites, or because they did not have enough familiarity with their content and quality to make fair comparisons. A variety of themes emerged among the comments where comparisons were made. A number of respondents remarked that NICC was quite different from the specific GACCs in its products and its purpose. The tendency was towards pointing out differences, rather than similarities, when comparing the GACCs.

Several comments were centered on formatting of products, including comments reflecting wide, to insignificant variations. A few comments focused on recent changes in format, moving towards similarity among the GACCs. "In the last few years, the predictive services products have become a lot more consistent and easier to find." Several respondents suggested that standardization would be helpful to them in being able to use the various sites. A contrary opinion was also represented, captured by this quote "Too much standardization is not good. When government says this is the way things have to be innovation stops and things don't progress from there."

Product content was a focus of several comments, including the recognition of geographic variability, and differences in timeframes for data (such as fire weather forecasts). Quality was also addressed in comments made, again with a wide variety of opinions expressed. While some reflected the opinion that the GACCs are similar in quality, others mentioned specific sites/GACCs as being of greater or lesser quality than others.

The final item addressing the similarity in format and quality theme asked respondents to rate importance. The majority indicated that similarity was important (*Figure 15*; 11.4% did not answer this item). Groups with a majority indicating similarity across GACCs was very important included multi-agency coordinators (50.0%), non-NWS meteorologists (55.6%), and FBANs/LTANs/analysts (58.7%).

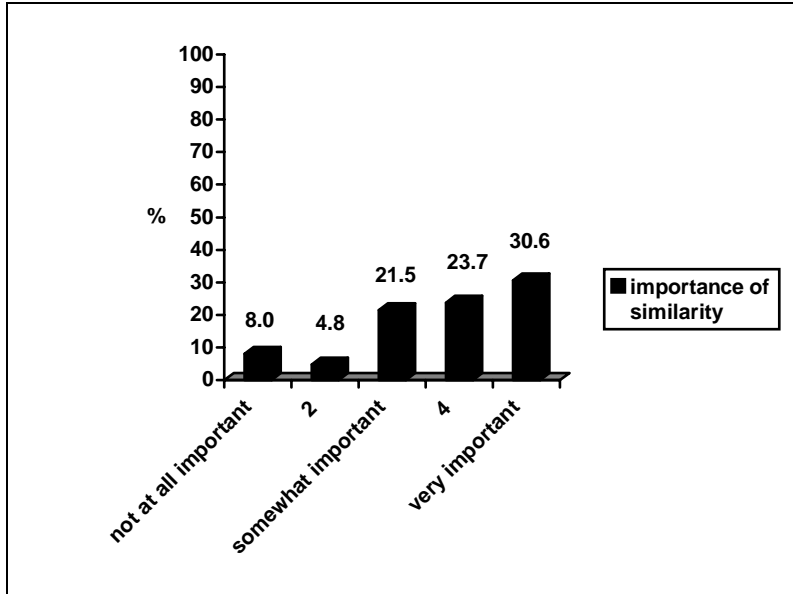


Figure 15. Importance of similarity of format and quality of GACC sites—federal respondents.

Satisfaction with Predictive Services contacts—About one-fifth of respondents (19.5%) had contacted Predictive Services to report a problem with a product or service. Those who had reported a problem rated the responsiveness of Predictive Services at 4.0 (mean, $n=204$, $sd=1.0$), indicating they were responsive (scale was 1 to 5, 1=not at all responsive, 5=very responsive). About one-tenth (11.9%) had contacted Predictive Services to suggest a new product or service. Using the same responsiveness scale as for reporting a problem, respondents who had suggested a new product or service rated Predictive Services responsiveness at 3.7 (M , $n=125$, $sd=1.2$).

Use and utility of products and services—Products and services available through Predictive Services were examined. The 39 specific listings included some products and services that are generated elsewhere, or that are available only on some sites, but not all. Respondents were asked first to indicate if they had not used each product, and then for those that they had used, to rate each according to its usefulness to them on a scale from 1 to 5, where 1=not at all useful and 5=very useful. To account for variations in availability and origin of products, sets of products and services are reported separately.

Some products might not be used by a majority of respondents, but still may be quite useful to those who do make use of them. An example of this appears below in *table 4*. Almost half of the respondents indicated they did not use the ROMAN real time fire weather and information report. However, the product received one of the highest average usefulness ratings within this set of products.

The first set of product ratings (*table 4*) are those that are shown on Predictive Services sites, but are produced through other agencies and provided as a courtesy to fire managers who might want a central location to find information.

In the first column of the table the service or product being rated is listed. The second column shows the percent of respondents who do not use the product or service (these are in order from least to greatest percentage not used). Then, only for those who use the product, an

average usefulness rating is presented. Ratings are on a scale from 1 to 5 (1=not at all useful, 5=very useful). The last column shows the standard deviation around the mean on each usefulness rating. Larger numbers indicate more variability in the sample of users of that product. 'N' denotes the number of users who rated that particular product or service.

Table 4. Use and utility of Predictive Services products and services provided by other agencies/groups—federal respondents.

Product or Service	% Not Used ¹	Usefulness <i>M</i>	SD, N
National fire weather outlook	18.6	3.68	1.0; 814
Red flag warnings	20.8	4.35	.9; 797
Drought information	22.2	3.95	.9; 772
Haines index	27.5	3.82	1.1; 722
7-day precipitation maps	32.5	3.54	1.0; 660
7 and 14-day precipitation percent of normal	33.3	3.42	1.0; 653
12-hour forecast maps	33.9	3.79	1.0; 643
MODIS active fire maps	34.3	3.64	1.0; 639
7 and 14-day average maximum temperature departure from normal	34.5	3.37	1.0; 641
7-day average maximum temperature maps	34.8	3.39	1.0; 629
Wind maps	38.6	3.76	1.0; 594
Observed fire danger images	42.7	3.66	.9; 553
ROMAN real time fire weather and information report	43.6	4.14	1.0; 540
Upper air soundings	60.1	3.46	1.2; 371

¹ This column reports the percentage of respondents who indicated that they had not used the product. Products are ordered from least to greatest % not used. The reader should not assume that the remaining respondents do use the product however, since some might not have provided an answer about the product. Those who use the products and provided ratings are reflected in the remaining columns in the table.

A set of products and services is produced by Predictive Services and is available on a limited scale (*table 5*, less than national, typically on a local and regional level). These products and services are offered on a limited scale to meet specific regional needs and interests.

Table 5. Use and utility of Predictive Services products and services provided by Predictive Services on a limited scale—federal respondents.

Product or Service	% Not Used	Usefulness <i>M</i>	SD, N
Interagency situation reports	19.4	4.14	.9; 804
Daily fire weather/danger outlook	21.7	4.13	.9; 795
Prescribed fire reports	44.0	3.46	1.0; 543
Smoke program reports	46.6	3.28	1.1; 505
Online briefings	49.4	3.57	1.0; 483

This final set of products and services is produced by Predictive Services (whether solely or in collaboration with others) and is available to the national audience (*table 6*). In addition, considering the percentage of respondents who rated each product or service, we provide the proportion of those who assigned ratings of 4 or 5 (indicating assessments of useful or very useful). This additional detail is presented because of its direct importance to Predictive Services at the national level. Again the reader should note that products used by a majority of respondents were not always rated as useful by a majority. *Appendix F* should be referred to

when needing to understand which products are used by, and of greatest use to, the various job function groups.

Table 6. Use and utility of Predictive Services products and services provided by Predictive Services on a national scale—federal respondents.

Product or Service	% Not Used	% With 4 or 5 Rating ¹	Usefulness <i>M</i>	SD, N
Incident Management Situation Reports	17.9	80.9	4.27	.9; 826
Weekly fire weather/danger outlook	22.5	68.8	3.93	.9; 777
Seasonal fire weather/danger outlook	22.6	46.1	3.37	1.1; 769
Monthly fire weather/danger outlook	25.7	45.5	3.39	1.1; 734
10-day fire weather/danger outlook	26.4	54.9	3.63	1.0; 730
Live fuel moisture	26.6	70.6	3.97	.9; 733
Dead fuel moisture	26.8	70.7	3.98	1.0; 720
7-day large fire potential	27.1	60.3	3.74	1.0; 720
Fire news and notes	32.6	47.5	3.51	1.0; 666
ERC and fuels charts	32.8	70.3	3.92	1.0; 661
Links to other services/websites	34.7	51.4	3.60	.9; 642
Multi-season fire weather maps	36.3	37.2	3.13	1.1; 615
Interagency RAWs program	38.3	67.1	3.97	1.0; 602
Reference links	42.0	48.0	3.49	1.0; 558
Training	53.7	45.3	3.42	1.1; 439
State of the fuels program	58.5	40.3	3.27	1.1; 380
Technological guidance and transfer	59.2	44.5	3.35	1.0; 375
Predictive service forms	59.3	33.1	3.14	1.0; 374
Regional monsoon update	62.2	42.3	3.26	1.2; 348

¹ This column considers only those who rated the product and is not based on all federal respondents.

Several of the usefulness ratings for the products in *table 6* varied significantly by job function. The incident management situation report ratings varied by function (ANOVA $F_{13,823} = 1.858$, $p < .05$), however between group differences were not significant. All of the other products in the above table showed a similar pattern, with significant overall variation in the absence of any significant between-group comparisons. What this means is that differences between job function groups were detected, but that no two groups were statistically significantly different from each other. However, the differences are most likely still of programmatic interest. For example, the reader might want to note how FBANs/LTANs/analysts view the products (as a user group with an expected probability of greater familiarity and use of products) versus PAO/information officers views' (as a group with a much lower expected probability of familiarity and use). In addition, developers of the products and services might have had specific user groups in mind, and the responses of those groups may provide insight into whether the intended customers are finding the products and services useful.

Other products not rated above and offered by respondents include the crew rotation list, the fire behavior forecast maps, on-site observation at the dispatch center, and long-term smoke transport and impacts. Another respondent mentioned the red flag fuels maps, and suggested they need more frequent updating to serve as the basis for red flag warnings to be issued by their office.

Overall satisfaction—A series of items designed to measure aspects of user satisfaction were included in the survey.

All federal respondents were asked to indicate the degree to which Predictive Services products and services have met their expectations and to rate their satisfaction with products and services. Responses indicate that Predictive Services had neither met nor failed to meet most expectations ($M=3.2$, $sd= .9$, $n=879$, *Figure 16*), and respondents were neither satisfied nor dissatisfied ($M=3.4$, $sd= .9$, $n=877$, *Figure 17*). These two findings are of some concern because it is most typical to find a trend towards satisfaction in customer surveys.

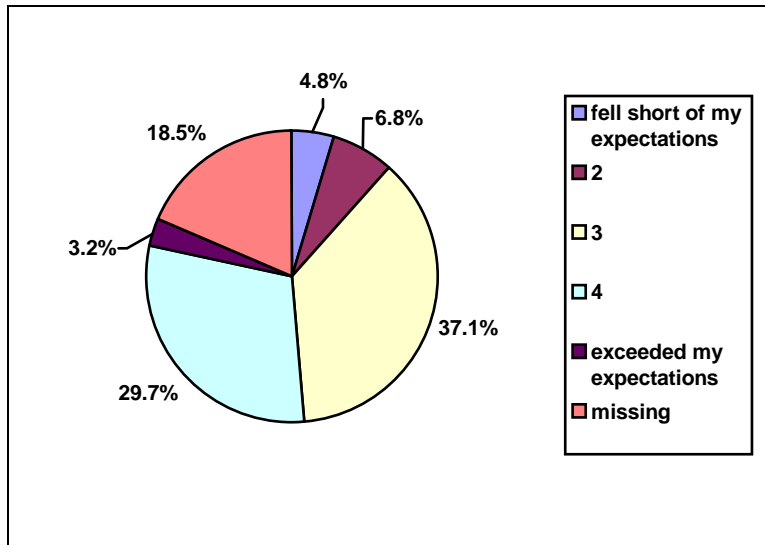


Figure 16. Ratings of degree to which Predictive Services met expectations—federal respondents.

Analyses revealed that expectations being met or not met varied significantly by job function (ANOVA $F_{13,876} = 3.934$, $p < .001$). One group stood out as most likely to indicate that Predictive Services had fallen short of their expectations (support services, $M=2.5$). The meteorologists outside of NWS provided significantly higher ratings on this item ($M=3.9$).

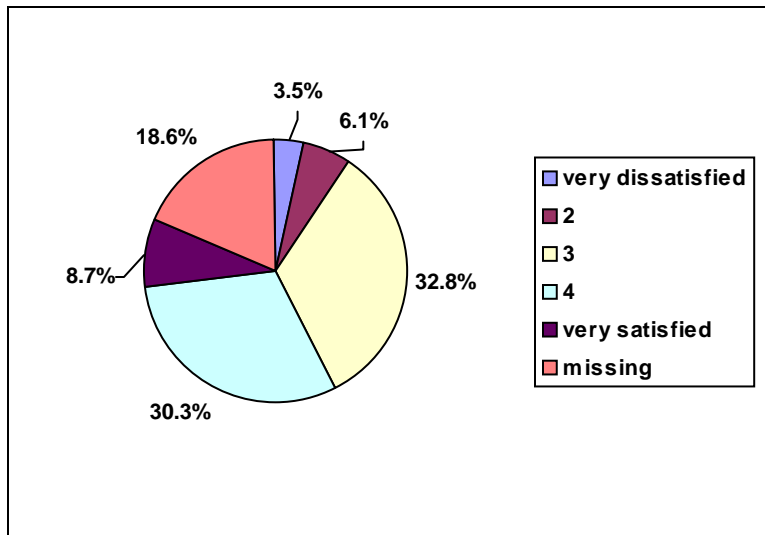


Figure 17. Ratings of satisfaction with Predictive Services products and services—federal respondents.

Similar to expectations met, ratings of satisfaction varied significantly by job function (ANOVA $F_{13,874} = 2.513, p < .001$), however, between group differences were not significant. Support services respondents had the lowest satisfaction ratings ($M = 2.9$), while fire use team members had the highest ($M = 3.8$).

Trust and confidence in the information—Federal respondents were asked to indicate the degree of trust and confidence they have in the information provided by Predictive Services. A majority expressed some to a great deal of trust and confidence (*Figure 18*, $M = 3.4, sd = 1.1, n = 949$; 12.0%, did not answer this item.) Ratings of trust and confidence varied significantly by job function (ANOVA $F_{13,946} = 6.225, p < .001$). Support services respondents indicated the lowest trust and confidence ($M = 2.4$), followed by the PAO/information officers ($M = 3.1$). Other groups below an average of 3.5 included crew supervisors or other suppression personnel, fire researchers, admin/ops/aviation, and fuels specialists. The groups with the highest trust and confidence were the non-NWS meteorologists and multi-agency coordinators.

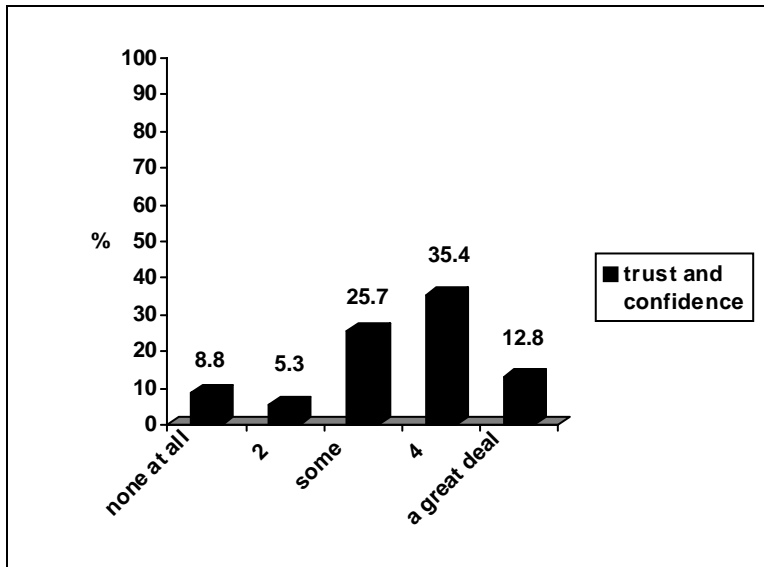


Figure 18. Ratings of trust and confidence in Predictive Services information—federal respondents.

Further analyses were conducted to improve understanding of variations in trust and confidence. No significant differences were found based on original sample vs. volunteers ($t=-1.073$, $p=.284$), educational attainment (ANOVA, $p=.163$), or age (ANOVA, $p=.425$). No relationship was found between number of people supervised (on a routine, seasonal, or incident basis) and trust and confidence (correlations, $p=.10$ or greater).

However, a significant difference was found based on gender, where males had greater trust and confidence in the information than females ($M=3.51$ vs. $M=3.23$, $t=3.487$, $p=.001$). This difference is a reflection of job function groups. Many more females were among the support services and PAO/information officer categories, groups that were less likely to be regular users of Predictive Services (see Appendix F for detailed comparisons by job function groups). In addition, respondents with fewer years in their current position had more trust and confidence in the information ($r=-.117$, $n=623$, $p=.003$).

A significant difference was also found by level of geographic responsibility, where respondents with incident specific and local responsibilities had lower trust and confidence in the information than those with greater geographic responsibilities (ANOVA $F_{6, 946} = 3.00$, $p=.007$).

Respondents who accessed the information more frequently, across more situations, and were more familiar with the products and services, had greater trust and confidence in the information. Respondents that accessed Predictive Services on a more frequent basis (daily, weekly, or monthly) during fire season as well as outside of fire season had more trust and confidence in the information (ANOVA $F_{5, 948} = 148.187$, $p<.001$ and ANOVA $F_{5, 945} = 115.773$, $p<.001$). In addition, total situations for which Predictive Services was accessed was correlated with trust and confidence ($r=.366$, $n=913$, $p<.001$). Finally, familiars had more trust and confidence ($M=3.80$, $n=456$) than unfamiliar ($M=3.20$, $n=493$; $t=-10.150$, $df=947$, $p<.001$).

Using each of the variables with a significant relationship with trust and confidence, we ran a multiple regression analysis⁷. Years in position was excluded from this analysis because of the large number of respondents with missing data on this item. These predictors accounted for 44 percent of the variation in trust and confidence ($R^2_{adj.} = .44$, ANOVA $F_{6, 862} = 112.495$, $p < .001^8$). In sum, job function, level of geographic responsibility, frequency of use, gender, and familiarity, were useful in explaining degree of trust and confidence in Predictive Services information reported by federal respondents.

Are Respondents Relying on and Taking Action Based on Predictive Services?

Reliance on products and services—A number of questions were asked to examine the degree to which respondents relied upon, and were likely to take action based upon Predictive Services information. The first of these measured reliance on products and services in making important decisions related to job duties and functions. While almost half (44.3%, *Figure 19*) indicated that they did not rely on Predictive Services (selected 1 or 2, where 1=not at all true when rating “I rely on Predictive Services’ products and services in making important decision related to my job duties/functions”), another fourth (26.7%) indicated that they *did* rely on the products and services in making important decisions (selected a 4 or 5, where 5 was very true).

Degree of reliance on Predictive Services was also queried. About one-third indicated little to no reliance on Predictive Services information (34.0% chose a rating of 1 or 2, where 1=none at all when asked “How much do you rely on the information provided by Predictive Services to assist in decision-making?”). About one-fourth (28.2%) indicated some reliance, and almost one-third indicated reliance (30.8% chose a 4 or 5 rating, where 5=a great deal).

Reliance varied significantly by job function (ANOVA $F_{13, 1000} = 18.128$, $p < .001$). Least likely to rely on Predictive Services were the support services respondents, while multi-agency coordinators and meteorologists outside NWS were most likely to rely on the information (refer to *Appendix F* for the numbers reporting each level of reliance by job function.)

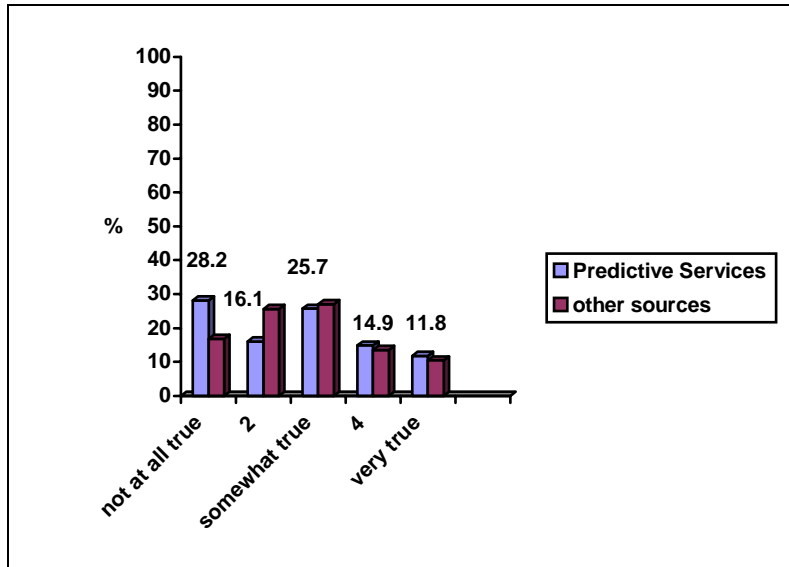
We used stepwise regression to predict the reliance on Predictive Services. Sixty percent of the variance in reliance ($R^2_{adj.} = .60$, ANOVA $F_{3, 900} = 454.694$, $p < .001$) was predicted by trust and confidence in the information ($t=14.963$), frequency of accessing Predictive Services during fire season ($t=-9.233$), and familiarity ($t=5.866$). (Variables excluded in the stepwise procedure included job function, level of geographic responsibility and gender). Those who are more familiar with the products and services, access the services more frequently, and have trust and confidence in the information, are more likely to rely on the information. This finding suggests that varying familiarity, levels of use, and trust in Predictive Services information is central to the differences by job function reported above.

About one-fourth (24.0%, *Figure 19*) indicated that they relied on other sources more heavily than the products and services provided by Predictive Services (chose a 4 or 5, where 5=very true), and another fourth (27.1%) indicated it was somewhat true. For those who chose a ‘4’ or ‘5’ rating, respondents were asked to specify the other sources relied on. The most frequently mentioned source was the National Weather Service, followed by a variety of local sources

⁷ This analysis employed all of the cross-checks for regression, including examinations of univariate and multivariate outliers. All guidelines for appropriateness of this analysis were satisfied. A total of 9 cases were removed as outliers.

⁸ Frequency of access outside of fire season was removed from the regression because of its strong relationship to frequency of access during fire season. Multicollinearity was thereby eliminated.

(e.g., “...Nothing replaces site specific information as a true measure of existing conditions and probable short term outlook.”) One respondent offered this comment suggesting the source would depend on the task at hand, “...I tend to look at a variety of products, depending on the problem I am working on.”



* The proportion of respondents in each category is shown for reliance on Predictive Services.

Figure 19. Reliance on Predictive Services and reliance on other sources—federal respondents.

The likelihood of taking action based on Predictive Services information was examined. About one-third were likely to take action based on Predictive Services information (31.1% chose a 4 or 5 rating, where 5=very likely, *Figure 20*), and another third (31.7%) were somewhat likely (9.2% did not provide a response). More than one-fourth (27.9%) were unlikely to take action based on Predictive Services information (chose ratings of 1 or 2, where 1=not at all likely). Likelihood of taking action varied significantly by job function (ANOVA $F_{13,976} = 13.052, p < .001$). The group least likely to take action based on the information was support services, most likely was the non-NWS meteorologists.

We used stepwise regression to predict the likelihood of taking action based on Predictive Services. Fifty-nine percent of the variance in likelihood of taking action ($R^{2\text{adj.}} = .59$, ANOVA $F_{3,882} = 420.218, p < .001$) was predicted by trust and confidence in the information ($t=18.990$), frequency of accessing Predictive Services during fire season ($t=-6.783$), and familiarity ($t=3.678$). (Variables excluded in the stepwise procedure included job function, level of geographic responsibility and gender). Those who are more familiar with the products and services, access the services more frequently, and have trust and confidence in the information, are more likely to take action based on the information. Again, this finding suggests that varying familiarity, levels of use, and trust in Predictive Services information is central to the differences by job function reported above.

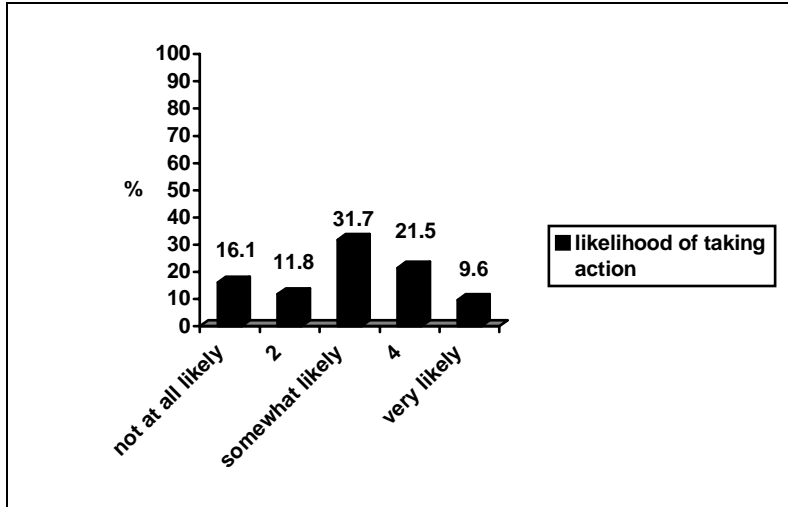


Figure 20. Likelihood of taking action based on Predictive Services information received, or gathered from a website—federal respondents.

Did Respondents offer Insights into Reliance and Barriers?

A series of items might offer insight beyond general satisfaction and trust into why respondents have, or have not relied on Predictive Services. These items include overlap with information that can be obtained elsewhere, beliefs about data reporting duties and impact of using Predictive Services information, and specific barriers to use.

Perceived overlap—Respondents were asked how true or untrue it was that there is overlap in the type of information that can be obtained from Predictive Services and other sources (rated on a scale from 1 to 5, 1=not at all true, 3=somewhat true, 5=very true). More than half felt there was overlap (*Figure 21*).

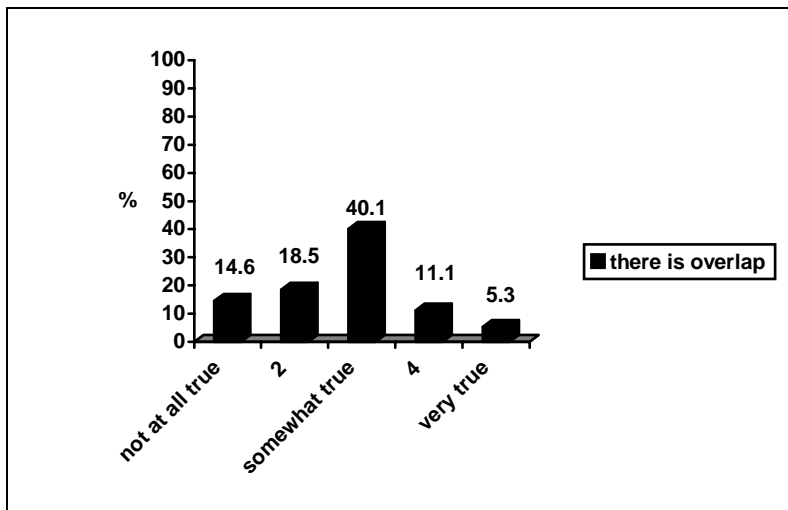


Figure 21. Perceived overlap of information from Predictive Services and other sources—federal respondents.

The issue of overlap was further explored through an open-ended item wherein respondents were asked to elaborate on their perceptions of overlap with other services. The bulk of these responses focused on the NWS, although regional and local weather services were also mentioned. Other source types included FBANs and similar personnel. It is noteworthy that some respondents consider the issue of overlap as a positive rather than negative characteristic. Several respondents noted that while content might be similar, presentation and/or analysis may make the information unique as exemplified in this quote:

There is overlap, but Predictive Services distributes a value added product that is specifically targeted to the fire community and provides weather information in a format that is tuned to the firefighter and not full of techno-speak. This is vitally important, because not understanding weather information and making a bad decision because of it is worse than not getting it at all.

Other comments suggested that overlap can be a source of confirmation, or a supplement to information that is provided elsewhere. Still others suggested that the overlap was at user request and reflective of a programmatic decision to place information where audiences had requested it. A few others commented that the overlap was a negative, viewed as a reflection of redundancies.

Beliefs about Predictive Services among those who had data gathering and reporting duties—

This subgroup of individuals was asked “How likely is it that you will gather and report data to Predictive Services?” About one-third indicated that they were likely to gather and report data (35.5% chose a 4 or 5 on the 5 point scale, where 1=not at all likely, 5=very likely; 9.6% did not provide a response; *Figure 22*).

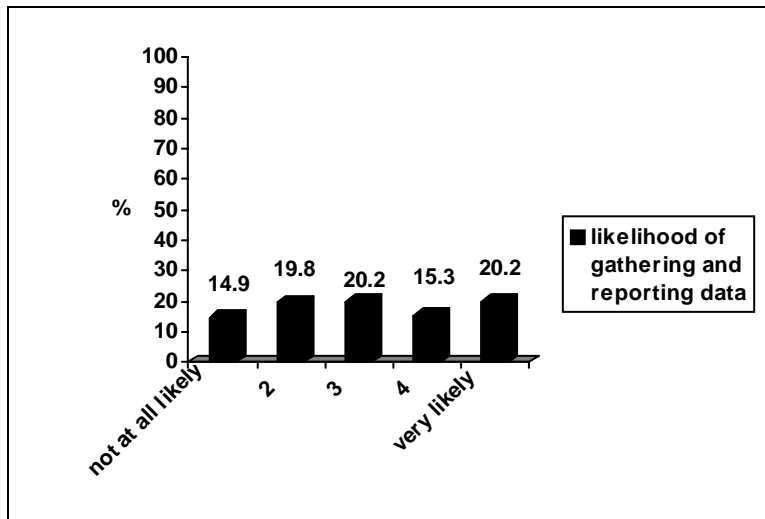


Figure 22. Likelihood of gathering and reporting data to Predictive Services—federal respondents with data gathering and reporting duties.

Respondents were somewhat mixed when rating agreement that they had the resources to gather field data for reporting ($M=3.0$, $sd=1.2$, $n=425$, rated on a 1 to 5 scale where 1=strongly disagree and 5=strongly agree; *Figure 23*), about one-third (31.7%) provided a rating of 4 or 5.

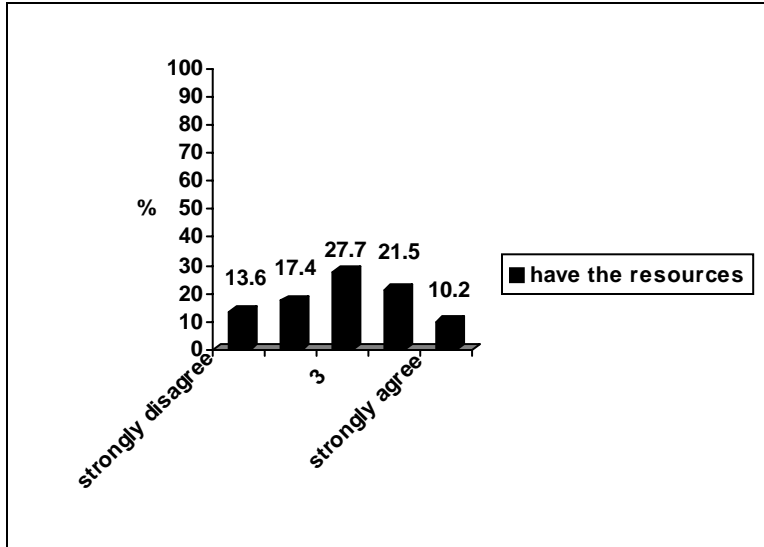


Figure 23. Degree of agreement or disagreement with “I have the resources (e.g., time/skills/personnel) to gather field data for Predictive Services reporting”—federal respondents with data gathering and reporting duties only.

This subgroup was also asked to rate five items focused on positive impact of reporting, and negative effects of not reporting. Each of these items was rated on a 1 to 5 scale, where 1=strongly disagree and 5=strongly agree. The first positive impact assessed was “My consistent upward reporting of data (e.g., 1300 obs. for RAWs) increases the reliability and quality of Predictive Services products and services”. Almost half (48.3%) selected a 4 or 5 on the scale; $M=3.5$, $sd=1.3$, $n=414$; *Figure 24*). The second positive impact assessed was “My consistent upward reporting of data (e.g., 1300 obs. for RAWs) increases the reliability and quality of products and services provided by groups and agencies that use the data from Predictive Services to generate their own products.” Again, almost half (47.2%) selected a 4 or 5 rating on the scale; $M=3.5$, $sd=1.3$, $n=407$; *Figure 24*).

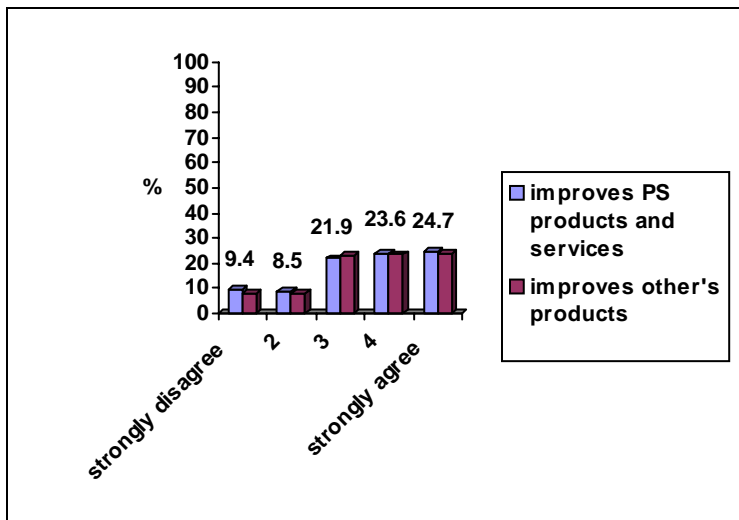


Figure 24. Degree of agreement or disagreement with positive outcomes of reporting data—federal respondents with data gathering and reporting duties only.

Responses indicate that the majority agrees there are adverse outcomes when/if data is not gathered and reported. This was assessed through two items “If I don’t collect and report Predictive Services data, it could affect my unit’s ability to make sound decisions to manage fire” (47.7% selected a 4 or 5 rating on the scale; $M=3.4$, $sd=1.4$, $n=414$; *Figure 25*). A majority indicated agreement with “If I don’t collect and report Predictive Services data it could adversely impact firefighter or public safety” (51.1% selected a 4 or 5 rating; $M=3.5$, $sd=1.3$, $n=414$; *Figure 25*).

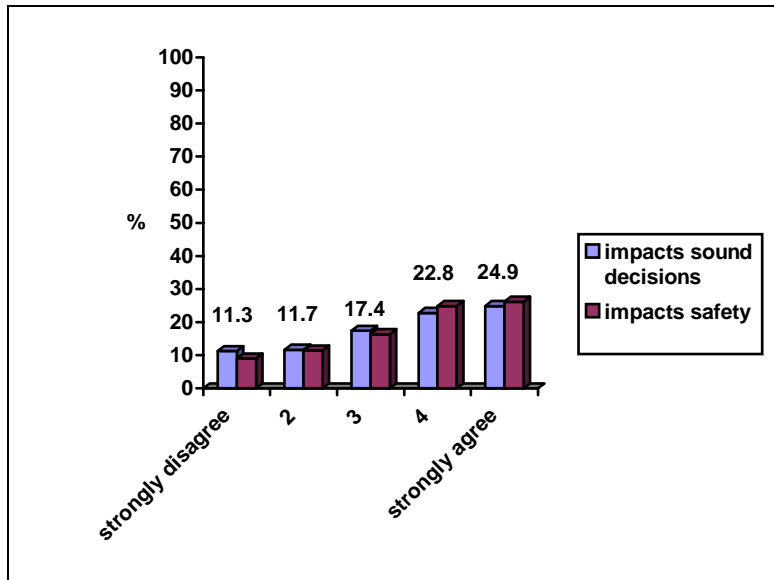


Figure 25. Degree of agreement or disagreement with adverse impacts of not collecting and reporting data—federal respondents with data gathering and reporting duties only.

Ratings of ability and impact of applying Predictive Services information—General ability to access and apply the information from Predictive Services, as well as its utility in job performance, was queried. For both items, respondents were asked to rate their agreement or disagreement with a statement, using a 5-point Likert scale where 1 was equal to strongly disagree and 5 was equal to strongly agree. Federal respondents were somewhat in agreement with “I can access and apply Predictive Services information as part of my job duties” ($M=3.8$, $sd=1.0$, $n=779$). However, they were in less agreement with “Predictive Services information helps me perform my job with greater precision” ($M=2.6$, $sd=1.0$, $n=728$).

Two general items examined perceived impacts of inaccuracies of Predictive Services information. The first was “Inaccurate Predictive Services information would decrease my ability to predict fire behavior.” Rated on a 1 to 5 scale, where 1=strongly disagree and 5 was strongly agree, the average was 3.4 (M , $sd=1.2$, $n=712$; *Figure 26*). About one-third did not answer this item (24.8% selected ‘don’t know’, and 9.2% did not select any answer). The second was “Inaccurate Predictive Services information used in my decision making may adversely impact firefighter or public safety.” Again, the average was at the mid-range of the scale ($M=3.5$, $sd=1.2$, $n=744$; *Figure 23*). About one-third also failed to indicate degree of agreement or disagreement with this item (21.7% marked ‘don’t know’, and 9.3% did not select any answer). In both items assessing perceived impacts of inaccuracies, less than one-fifth disagreed that errors would have a negative impact, about another fifth neither agreed nor disagreed, and

about one-third agreed to strongly agreed. The balance of the respondents did not have a clear opinion.

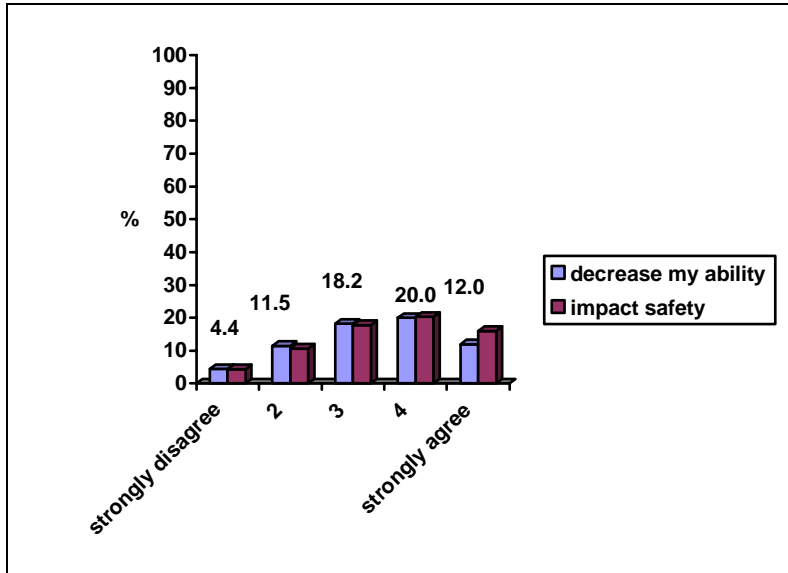


Figure 26. Impacts of inaccurate reporting of Predictive Services information—federal respondents with data gathering and reporting duties only.

Barriers to use of products and services—There were numerous reasons why respondents did NOT use the products and services offered by Predictive Services, although no one overwhelming reason or set of reasons emerged among the 16 offered as potential barriers (table 7). The most frequent reason provided was not having thought about using the products and services. A lack of trust was not frequently cited.

Table 7. Reasons why they had not used the products and services offered by Predictive Services—federal respondents.

Reason	Percent
I never thought about it.	26.9
My current management practices don't require the types of information provided by Predictive Services	14.7
I don't know how to use these products	14.1
I need information that is site specific	13.5
I am not mandated to use these products	9.6
I don't have the time to use these products	9.3
I don't know where to get advice about using these products	9.1
I don't know where to get the technology to use these products	5.5
I don't have the technology I need to use these products	4.0
I don't trust the products and services	3.5
I don't want to use these products	3.2
I don't think these products support my agency's current practices	1.7
Agency directives/guidelines instruct me to use other information	1.5
I don't have the money to use these products	1.4
I don't trust the advice I get about using these products	1.4
I don't trust information that is generated by multiple agencies	.9

Only those who marked “I don’t want to use these products” ($n=34$) were asked to explain their response. Themes emerged surrounding issues of quality (e.g., experimental rather than tested approaches; products not verified; conflicts about accuracy; not ground-truthed with user groups), scale (need incident specific; don’t need long term outlooks; generic rather than locally based), format (need maps of daily/weekly outlooks rather than text), lack of applicability (not applicable to current position), reliance on other sources (specifically National Weather Service), and lack of familiarity with Predictive Services.

Variations by job function regarding barriers to use of products and services were examined. None of the multi-agency coordinators selected “I had never thought about it” as a barrier. Fire researchers (28.6%) and support services (30.4%) were more likely than other groups to indicate “My current management practices don’t require...”. FMOs/assistants (21.9%) and incident management team members (22.8%) were more likely than other groups to indicate “I need information that is site specific.” Function groups most likely to indicate lack of time as a barrier included fuel specialists (16.9%), FMOs/assistants (16.9%), and crew supervisors/other suppression personnel (15.4%).

Technology-related issues were mentioned more often in a few cases. Fire use team members stood out as the group most likely to indicate they did not have the technology needed to use the products (11.8%). Two other groups selected “I don’t know where to get the technology I need...” as a barrier to use of the products (crew supervisors/other suppression personnel at 11.5% and dispatchers at 14.6%).

Lack of fit with the respondent’s agency context was mentioned most by one group. NWS meteorologists were the most likely among all of the function groups to select “I don’t think these products support my agency’s current practices” (7.2%), and not being mandated to use the products (17.0%).

Knowledge-related issues were cited. Not knowing how to use the products was mentioned by one-fifth or greater of the dispatchers (24.4%) and incident management team members (20.3%). Dispatchers (17.1%) and fire use team members (17.6%) mentioned not knowing where to get advice about using the products.

The other barriers were mentioned by less than 10% within any functional group and are therefore too minimal to present.

How can Existing as well as New Products and Services be Improved or Designed?

The following sets of items examine insights into how respondents use information, how they approach risk, who they feel the Predictive Services audience should be, how existing products and services could be modified, new services and products of interest, and preferred formats for information. Findings can facilitate an understanding of how best to modify existing products and services as well as to design and provide new products and services

How fire danger/fire information is used to support decision-making—Respondents were asked to indicate how they use fire danger/fire information to support decisions made regarding fire management. More than one-third of respondents used fire danger and fire information to make decisions about resource staffing (42.0%), in decision support about public use restrictions (40.2%), for severity requests (34.4%), and for resource allocation (34.1%).

Uses of the fire danger/fire information varied significantly by job function. Differences found included decisions about resource staffing ($X^2_{13}=276.29, p <.001$), public use restrictions ($X^2_{13}=186.83, p <.001$), severity requests ($X^2_{13}=360.64, p <.001$), and resource allocation ($X^2_{13}=261.97, p <.001$). Those groups most likely to use fire danger and fire information for all purposes except public use restrictions were the FMOs/assistants and the multi-agency coordinators. Regarding public use restrictions, PAO/ information officers and the FMOs/assistants used this type of information the most.

They were also asked to indicate if they used the fire danger/information to support decisions other than those listed above. A variety of answers were provided, reflective of a broad range of uses for the services and products. The range of uses includes: preparing for the issuance of red flag warnings and fire weather watches/warnings; making decisions regarding prescribed burns—including go/no go decisions and fire staffing levels; for public contact purposes—including education, information, news releases, and public safety; for incident management; and crew management including briefings, readiness, and training.

Tolerance for errors and inaccuracies—Respondents were asked to rate their tolerance for false alarms and inaccurate reporting (rated on a scale from 1 to 5, where 1=low tolerance and 5=high tolerance). While respondents did not indicate a high tolerance for either type of error, they were somewhat more tolerant of false alarms pertaining to fire danger ($M=2.8, sd=1.1, n=999$; *Figure 27*), than they were of inaccurate reporting of high fire potential ($M=2.5, sd=1.0, n=1,001$; *Figure 27*). However, ratings should not be taken as indicative of a pattern of tolerance for either type of error.

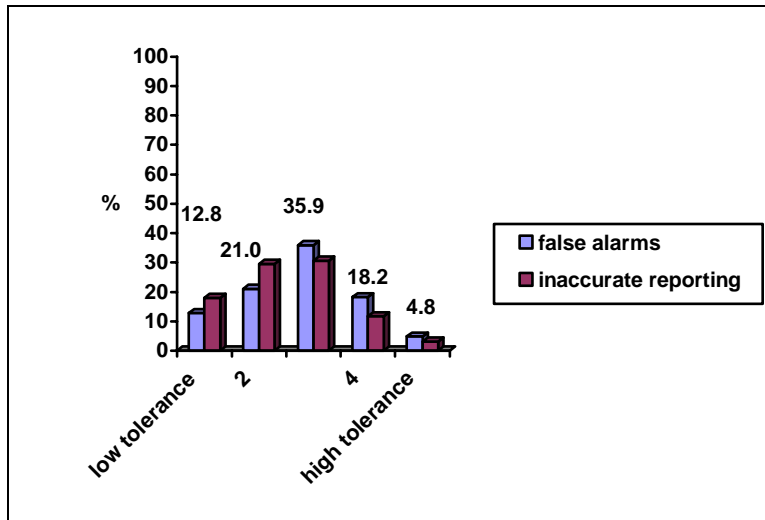


Figure 27. Tolerance for false alarms and inaccurate reporting—federal respondents.

In order to capture overall preferences for approaches to errors (“Although it is understood that accurate and reliable reporting of fire danger and high fire potential are desirable, margins of error are involved in predictions. In these cases, do you prefer that...”), respondents chose between two statements:

“Statements of danger or risk be issued with a greater margin of error allowing for an early response, knowing that this may lead to unnecessary alarms and response (Better safe than sorry)” —67.3 percent chose this statement as their preference.

“Statements of danger or risk should only be given with certainty, knowing that this may allow a few dangerous events to emerge that were not anticipated (Don’t cry wolf).” —23.9 percent chose this statement as their preference.

A few (8.7%) did not choose either statement as their preferred approach.

Audience identification—According to Federal respondents, the primary audiences for Predictive Services’ products should include: local and district fire managers (75.8%), regional and state fire managers (75.3%), national fire managers (65.5%), and to a lesser extent non-fire land managers (33.5%), and the public (27.0%; note that respondents could select multiple audience types, so responses do not sum to 100%).

When asked to identify others not included in the former list, respondents suggested that audiences include line officers, law enforcement officials, Department of Homeland Security, firefighters on the ground/in the field, incident management teams, dispatchers, the media, the National Weather Service, and people working in public affairs. While one respondent noted that the audience should be “anyone who could benefit...” another cautioned “It’s hard to serve too many masters...” In response to other items in the survey Federal respondents noted that products and presentation might need to vary by audience, and that different audiences (such as administrators and publics) might have very different information needs and interests. These responses speak to the importance of selecting and serving particular target audiences. While determination of the target audience will continue to be a responsibility of the program’s leaders, the diversity of audiences indicated by respondents suggests some anticipated utility for a wide array of users.

Preferred information formats—Respondents were asked to indicate their preferences for the style and format of presenting information. For each of 11 formats presented, a rating from 1 to 5 was requested (1=not at all useful, 5=very useful). Based upon the proportion of respondents assigning ratings of 4 or 5 to each format, the formats most to least useful were: information presented in regional or national maps (57.9%), satellite maps (52.0%), brief executive summaries of data (50.2%), radar maps (43.6%), brief annotations that accompany data presentations (43.6%), data in table form (43.2%), bar charts or figures that summarize data (38.1%), web-based ArcIMS maps with user-defined layers and scales (35.2%), data in text form (34.7%), data in spreadsheet form (30.8%), and non-web-based Geo database files (14.4%).

These formats were examined for significant variation by job function. All of the map formats listed showed differences by functional group. A significant difference was found for ratings of regional or national maps (ANOVA, $F_{13,877} = 2.816$, $p < .01$) and all of the non-NWS meteorologists rated this format as very useful. Satellite maps also varied significantly by function (ANOVA, $F_{13,868} = 4.025$, $p < .01$), with ‘very useful’ selected by a majority of non-NWS meteorologists (66.7%), and fire use team members (50.0%). Variations were also significant for radar maps (ANOVA, $F_{13,856} = 4.735$, $p < .01$), with non-NWS meteorologists again selecting this format as very useful (44.4%) more often than any other group.

Both formats involving additions of text varied significantly by functional group, including brief annotations that accompany data presentations (ANOVA, $F_{13,848} = 2.942$, $p < .01$; with fire researchers most likely to mark ‘very useful’ at 46.7%), and brief executive summaries of data (ANOVA, $F_{13,856} = 4.054$, $p < .01$).

Web-based ArcIMS maps with user-defined layers and scales were of greatest interest to non-NWS meteorologists (66.7% indicated these were very useful), and of least interest to crew supervisors/other suppression personnel (only 5.0% chose 'very useful'). This format varied significantly by functional group (ANOVA, $F_{13,831} = 3.277$, $p < .01$). The non web-based Geo database files were of lesser interest as a whole, however variation by functional group was significant (ANOVA, $F_{13,792} = 3.894$, $p < .01$). More than one-tenth of fire researchers (20.0%), fire use team members (18.8%), and fuels specialists (14.6%) indicated this format was very useful.

Bar charts or figures that summarize data as well as data in table format did not vary significantly by functional group. However, data in spreadsheet form (ANOVA, $F_{13,851} = 3.048$, $p < .01$) and data in text form (ANOVA, $F_{13,847} = 2.420$, $p < .01$) both varied by group. Dispatchers (27.8%) and fire researchers (26.7%) indicated that data in text form was very useful. About one-fourth of fire researchers (28.6%), FBANs/LTANs/analysts (25.0%), and fuels specialists (24.0%) said data in spreadsheet form was very useful.

They were also asked if there was another style or format for presenting information (not listed) that would be useful to respondents. Very few (3.5%) marked 'yes'. Several suggestions focused on visual and graphic displays including graphs, google earth, interactive maps, photos, videos, and Powerpoints. A few suggested limiting jargon. Others expressed interest in direct briefings, emails with updates, pager notification of weather events, and access to toll free numbers.

In addition, respondents were asked what information, if any, they would like to see in summary or synthesis form. A few respondents suggested that what they wanted was already available. Others requested results of the user needs assessment. Other items desired included: what resources are assigned and where, what resources are available; seasonal and historical trends; fire events by region and how weather and forecasts impacted operations; intended uses and limitations of data; weather trends – including lightening, drought, wind, and snow pack; total number of fires and areas; fire summaries when ended; fire danger; fuels; and danger ratings. Some of this might be specific enough to allow relocation of resources, for example:

Where is the highest risk today, by what (fire, flood, hurricane), at what time, with a degree of accuracy that would support the concepts of pre-positioning and total mobility. Also note where there is little or NO risk so those area managers will quit hanging on to tight resources they will not likely have a use for during the 'x' days.

Product and service improvement—Federal respondents were asked to complete the sentence “The information provided by Predictive Services would be more useful to me if...” Some respondents suggested the information would be more useful if they needed it for their jobs, or if they were more involved in the fire program. Others mentioned timeliness and accuracy, for example “...if information was kept up to date”, and “they had current and timely information that would be of use.” Others addressed specific issues related to accuracy, such as the need to state data sources, limitations of those sources, assumptions going into analyses, and confidence levels.

A number of respondents indicated that they have difficulty accessing Predictive Services information in the field. Suggestions were made to accommodate people working on slower computer systems and developing a protocol for providing email and phone updates. “...there was a way to receive automated email with the daily SIT report and other reports of choice rather than having to go to the bookmarked page to retrieve them.” One mentioned that the

original addresses given no longer work, making some information inaccessible. General ease of access in terms of being able to locate the information, as well as a more user-friendly format to the sites, was mentioned. Overall, respondents expressed a need to contact potential customers and highlight available products. Some suggested they needed more time to understand and apply the products. Training on how to use these products was also suggested. "...there was a summary or overview of all of the various products and services available. I sometimes just stumble into a new service or don't use some services frequently enough to be thoroughly familiar."

Along similar lines to the question above, respondents were asked how the existing products and services could be modified to better meet their needs. A wide variety of modifications were mentioned. Some focused on establishing consistency between GACCs, including the type of information, its presentation format, and its quality. Others mentioned an interest in more timely updates of information, and keeping information current. Some focused on access and making the websites more user-friendly. Others expressed interest in interactive web based maps. Some wanted improved accuracy and inclusion of confidence intervals with the data. Improved fuels information was of interest. Still others wanted more site specific information. Interest in data to assist with prescribed burns was mentioned. Several respondents expressed the opinion that the products were fine as is and met their needs. (These responses are listed verbatim by job function in *Appendix F* to more effectively target specific user group needs.)

Products or services that should be added to what Predictive Services provides—Federal respondents were most likely to indicate that there are not products and services that should be added (59.5%). However, about one tenth (13.3%) felt there were additions that could be made.

Respondents specified a number of products and services that should be added to what Predictive Services provides in order to better meet their needs. Some suggested integrating with the NWS and other services, others focused on serving a unique niche, distinct from what is already provided elsewhere. Some mentioned an interest in increasing the information about what Predictive Services provides to lead to increased use—so an education and outreach component was of interest. Others mentioned the need to update as technology improves. A number listed specific types of information or products of interest to them including live fuel moistures, easy access to archived data for research, improved fuels information and maps, smoke modeling predictions and other smoke related products, and open access to BLM lightning data. Others wanted increased access to personnel and a point person to answer questions that arise. (Similar to the responses on existing product improvements, verbatim responses by job function can be found in *Appendix F*.)

Were There Additional Comments?

As is customary for such surveys, we offered the opportunity for respondents to provide any comments on the survey or additional thoughts on Predictive Services. We received a number of responses, which are captured according to main themes. Some comments were focused on the survey, regarding concerns about its length (took too much time to complete), a desire for more explanation of what Predictive Services is and what it does before completing the survey, and confusion about inclusion in the survey sample (due to perceived lack of job fit with questions being asked, for example "This survey was a waste of my time since I am not familiar with the company or its products. It has no bearing on my usual duties"). Other comments focused on the survey were positive and were thanking Predictive Services for conducting the survey, for example "I am glad that you are conducting this survey. It indicates that there is a willingness on at least some in Predictive Services to provide true customer service. That's a

good thing.” Some comments indicated that due to the survey, respondents had become aware of the services and products and would look into using them.

Federal respondents offered up a number of positive comments for Predictive Services, such as “I think that Predictive Services provides an excellent product. Something that is truly needed by fire managers. Keep up the good work.” Others provided positive remarks along with suggestions to advertise more: “Thanks for the products you do create! I think you could probably get out to meet your customers more and advertise all the products you do have available to use. I’m sure we would use more products for reference and decision making if we knew they existed.” Training was another theme emerging among the many compliments “I think overall Predictive Services is doing a great job. Focus this year on training and educating folks on what is out there and how to use it correctly to help them do their jobs.” Other comments encouraged continuing standardization of products.

The issue of overlap was mentioned, and the waste of resources represented by redundancies in available information. Others focused on the need to continue to coordinate with NWS to provide information:

I would like to see continued effort to strengthen the relationship between the National Weather Service and Predictive Services, not only from the Regional levels, but also at the National level. Let’s reduce duplication of weather prediction services as much as possible, and build a more complimentary relationship.

Some respondents referred to the need to streamline the information by paring it down and eliminating redundancies, while others felt the information needed to be updated more frequently.

While some complained about cost of the service and viewed it as a tradeoff for what might be more essential (such as crews on the ground), one respondent offered up this comment on value:

This is one of the few government programs that more than pays for itself. A single Type 1 team deployment costs a minimum of \$500,000 - \$1,000,000. Every time PS information allows us to catch a fire early, the government saves at least that amount of money. That fact should be at the forefront of every public contact that PS makes.

Results: Non-Federal Survey

Who Were the Respondents?

Non-federal respondents were asked a series of questions about personal characteristics and agency roles and responsibilities to better understand who responded. The vast majority was male (83.3%), another 6.2 percent did not indicate gender.

Educational background / degree or equivalent—Educational attainment was fairly high among the majority of non-federal respondents (*Figure 28*).

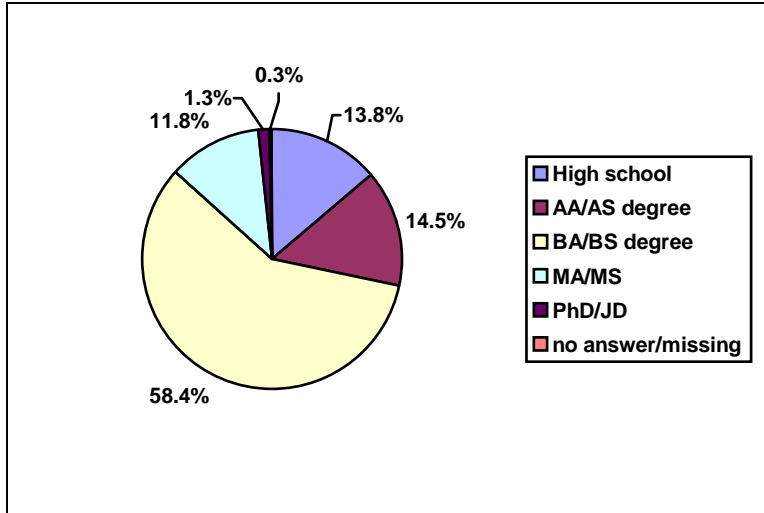


Figure 28. Educational attainment—non-federal respondents.

Respondents were asked to list what area their degree or an equivalent was in. The majority of responses (59.1%) fell into forestry/resource management/range management, although 13.1% mentioned fire science-related degrees, 8.0% listed the natural sciences, 5.8% listed business or management, 4.4% listed the humanities or fine arts, 3.6% listed education, 3.6% listed journalism or communication and 2.9% listed other specialties.

Home office Geographic Area location—Respondents came from across the United States, with their home offices falling within the various Geographic Areas (GAs) shown below (*Figure 29*).

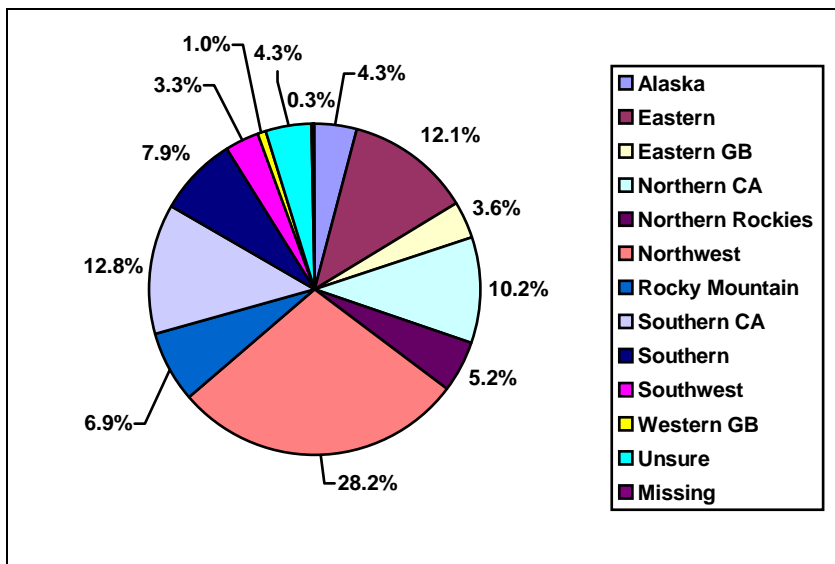


Figure 29. GAs—non-federal respondents.

Primary role or responsibility—Respondents were primarily incident management team members, crew supervisors or other suppression personnel, public affairs/information officers, or fire behavior/long term analysts (*table 8*).

Table 8. Primary role or responsibility—non-federal respondents.

Role/Responsibility	N	%
Incident management team member	60	19.7
Crew supervisor/other suppression personnel in incident support	46	15.1
Public affairs/information officers	31	10.2
Fire Behavior/Long-Term Analyst for Incident Support	31	10.2
Dispatcher in the Interagency Coordination System	25	8.2
Intelligence within the interagency coordination system	9	3.0
Fuels specialist	4	1.3
Fire use team member in incident support	4	1.3
Fire weather meteorologist in the interagency coordination system	4	1.3
Fire research	1	.3
Other	90	29.5
	305	100.0

Similar to the federal respondents, these job categories were somewhat diffuse and a number of individuals chose ‘other’. In order to address this we examined job title and primary role to create job function categories with input from the NPSG (*Figure 30*).

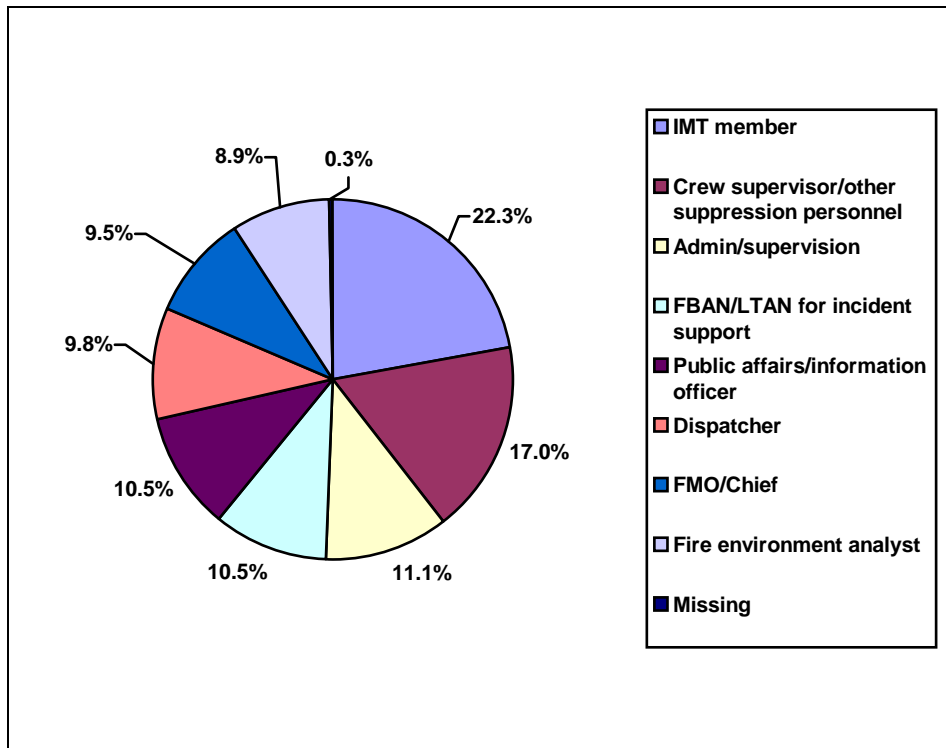


Figure 30. Job function groupings—non-federal respondents.

What are their Levels of Experience with Predictive Services?

Specific circumstances for access/acquisition—Non-federal respondents provided information regarding specific situations when they access or obtain information from Predictive Services. More than half reported accessing Predictive Services during fire season (73.1%), and during a fire incident (52.5%). About one-fourth of non-federal respondents access Predictive Services

when a prescribed burn is taking place (23.6%); about one-fifth indicated none of the above situations applied to them (19.7%).

Other situations were varied and numerous, but several respondents suggested they access Predictive Services information prior to fire season.

FBANs/LTANs and dispatchers were more likely to access Predictive Services information during fire season than the non-federal respondents were overall (93.8 and 86.7% respectively), while PAO/information officers were least likely (50.0%). FBANs/LTANs and dispatchers also reported access during a fire incident that was higher than the overall access for the non-federal respondents (84.4 and 70.0% respectively). The non-federal suppression personnel and fire environment analysts were least likely to access Predictive Services information during a fire incident (36.5 and 37.0% respectively). Prescribed burns were an occasion where fire environment analysts and FBANs/LTANs were more likely to access Predictive Services than the group as a whole (33.3 and 37.5%); whereas PAO/information officers and incident management team members were least likely to access the information on this occasion (9.4 and 0% respectively). PAO/information officers had the greatest percentage indicating that did not access Predictive Services information under any of the former situations (37.5%).

Use of specific websites and services—Of the 305 non-federal respondents, a near majority had been to the National Interagency Coordination Center website or was audience to one of their briefings (NICC—45.2%). The Geographic Area Coordination Center sites from most to least visited or used were the Northwest (26.2%), Northern Rockies (16.7%), Northern California (16.7%), Southern (16.7%), Southern California (16.4%), Southwest (16.4%), Rocky Mountain (14.8%), Eastern (13.4%), Alaska (8.5%), Eastern Great Basin (7.9%), and Western Great Basin (7.9). A few (6.6%) were not sure which if any sites they had visited, while about one-tenth (9.8%) indicated they had not visited any of the listed sites.

Familiarity with the products and services—Respondents were asked their familiarity with Predictive Services' products on the web, the briefings, and the emails. Non-federal respondents were more familiar with the briefings (i.e., national, geographic, situational, or meteorological, $M=3.2$, $sd=1.3$, $n=287$; *Figure 31*), and the web products ($M=3.1$, $sd=1.2$, $n=288$), than with the emails (these contain current projections and/or information about Predictive Services, $M=2.5$, $sd=1.3$, $n=287$).

The group most familiar with Predictive Services products was the FBANs/LTANs (briefings $M=3.8$, web products $M=3.8$, and emails $M=2.7$). Least familiar were the PAO/information officers (briefings $M=2.3$, web products $M=2.3$, and emails $M=1.6$).

These three familiarity items were combined (averaged) to create a scale. This scale was useful as an indicator of combined familiarity with products and services. Scores on this scale varied significantly by job function (ANOVA $F_{7, 289} = 5.281$, $p < .001$). Using Scheffes tests for differences between groups (detects significant differences between pairs), least familiar were the PAO/information officers ($M=2.1$, $n=29$) and most familiar with the products were FMOs/chiefs ($M=3.1$, $n=29$), fire environment analysts ($M=3.1$, $n=27$), dispatchers ($M=3.3$, $n=29$), and FBANs/LTANs ($M=3.5$, $n=32$). Examining each separately (web, briefings and emails) showed significant variation by job function as well (ANOVAs, $p < .05$).

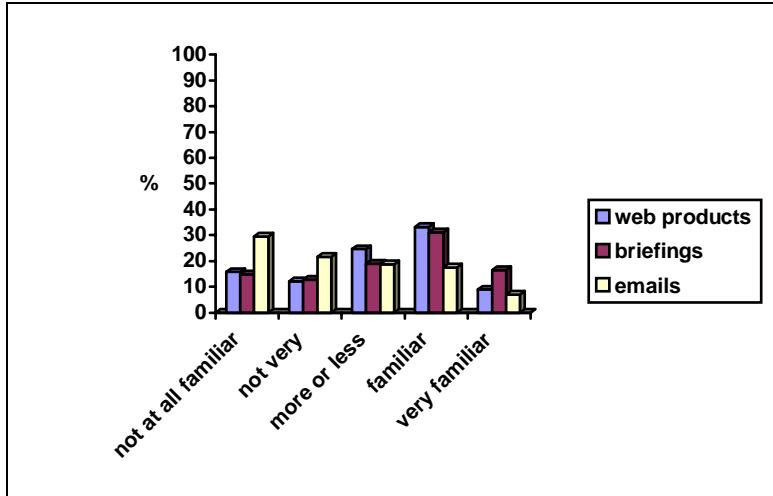


Figure 31. Familiarity with Predictive Services products on the web, briefings, and emails—non-federal respondents.

What are their Opinions of the Products and Services?

Ratings of Predictive Services information—Non-federal respondents rated six attributes of Predictive Services information including accessibility, timeliness, relevance, accuracy, completeness, and ease of understanding. Ratings varied by job function and these patterns are reported. However, variations by job function were not statistically significant (ANOVAs, $p > .05$).⁹ However, familiarity was a significant influence in ratings for the majority of attributes. Findings linked to familiarity are reported as each attribute is presented. We went about these analyses by splitting respondents into two groups based on the median response on average familiarity. Ratings of attributes were different in five out of six cases.

Respondents tended to agree that Predictive Services information was accessible ($M=4.2$, $sd=.8$, $n=234$, *Figure 32*, 18.4% marked ‘don’t know’ and 4.9% did not respond). Fire environment analysts and dispatchers were the groups most likely to strongly agree that the information was accessible (48.1 and 46.7% respectively). The PAO/information officers were least likely to strongly agree (only 9.4%) and were most likely to mark ‘don’t know’ (40.6%). Respondents less familiar with Predictive Services were less likely to view it as accessible ($M=3.8$, $n=99$ versus $M=4.4$, $n=135$, $t_{232} = -5.810$, $p < .001$).

⁹ The unequal numbers of respondents within the job function groupings and somewhat low numbers in some groups required a second look. We also ran nonparametric Kruskal Wallis tests for k independent samples and again found a lack of statistical significance.

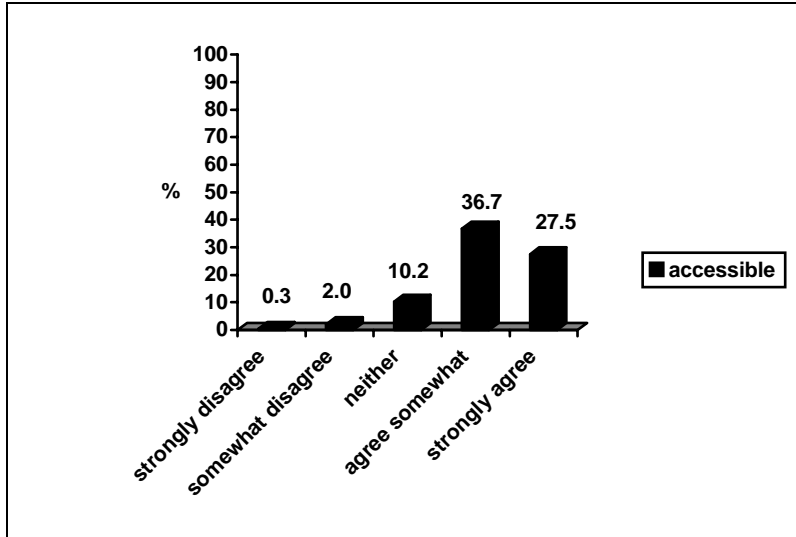


Figure 32. Ratings of accessibility of Predictive Services information—non-federal respondents.

A majority also agreed that Predictive Services information was timely ($M=3.9$, $sd=.9$, $n=233$, *Figure 33*, 18.0% marked ‘don’t know’ and 5.6% did not respond). Three groups were most likely to agree that the information was timely, including dispatchers (33.3%), fire environment analysts (29.6%), and administrators and supervisors (29.4%). Again, PAO/information officers were least likely to strongly agree (9.4%), and most likely to mark don’t know (43.8%). Respondents less familiar with Predictive Services were less likely to view it as timely ($M=3.7$, $n=97$, versus $M=4.1$, $n=136$, $t= -3.803$, $p < .001$).

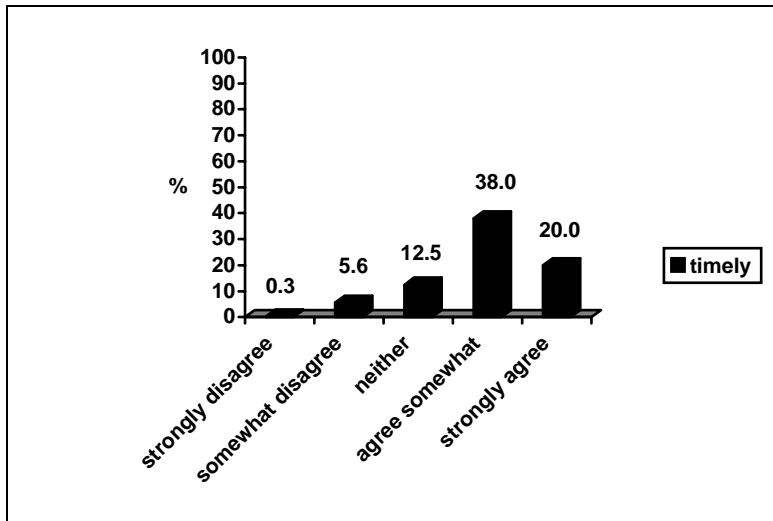


Figure 33. Ratings of timeliness of Predictive Services information—non-federal respondents.

Respondents were asked whether they agreed or disagreed that Predictive Services information was relevant. A majority agreed that Predictive Services information was relevant (either agreed somewhat or strongly agreed, $M=4.1$, $sd=.9$, $n=231$, *Figure 34*, 18.4% marked ‘don’t know’ and 5.9% did not respond). Fire environment analysts were most likely to strongly agree that the information was relevant (44.4%). While PAO/information officers were more willing to indicate the information was relevant than they were to strongly agree with other attributes, a large

proportion of respondents in this group marked don't know (43.8%). Respondents less familiar with Predictive Services were less likely to view it as relevant ($M=3.9$, $n=96$, versus $M=4.3$, $n=135$, $t= -2.896$, $p < .01$).

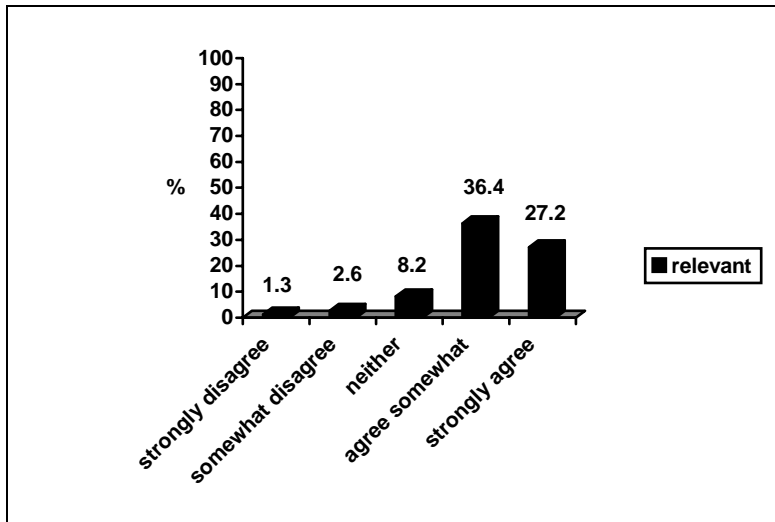


Figure 34. Ratings of relevance of Predictive Services information—non-federal respondents.

A majority agreed that Predictive Services information was accurate ($M=3.8$, $sd=.9$, $n=230$, *Figure 35*, 19.3% marked 'don't know' and 5.2% did not respond). Considering the proportions of strong agreement among all the attributes rated, accuracy received the lowest percentage in 'strongly agree'. Administrators and supervisors were almost twice as likely to strongly agree that the information was accurate when compared to FMOs/chiefs (17.6 versus 10.3%). The PAO/information officers were most likely to mark 'don't know' (46.9%). No differences were found when comparing those less and more familiar with Predictive Services on ratings of accuracy ($t=-1.583$, $p=.115$).

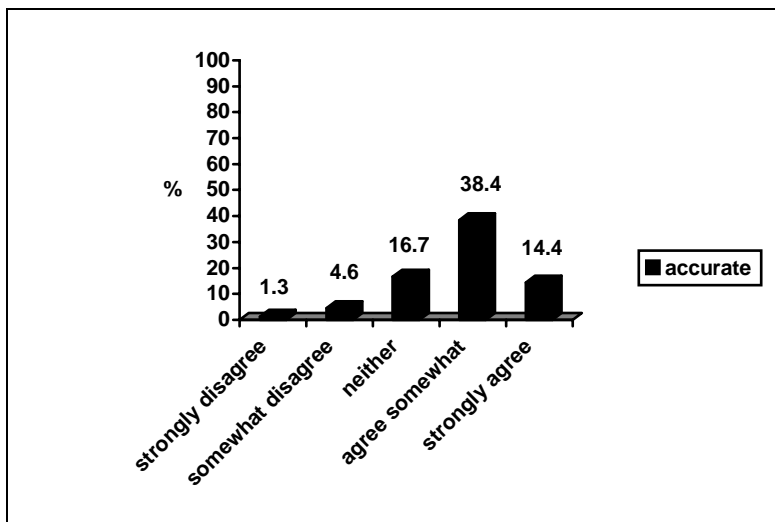


Figure 35. Ratings of accuracy of Predictive Services information—non-federal respondents.

A majority also agreed that Predictive Services information was complete ($M=3.9$, $sd=.8$, $n=232$, *Figure 36*, 18.4% marked 'don't know' and 5.6% did not respond). The administrators and supervisors and dispatchers were most likely to strongly agree that the information was complete (29.4 and 26.7% respectively), while PAO/information officers were the group most likely to mark 'don't know' (43.8%). Respondents less familiar with Predictive Services were less likely to view it as complete ($\chi=3.7$, $n=96$, versus $\chi=4.0$, $n=136$, $t= -2.184$, $p= .03$).

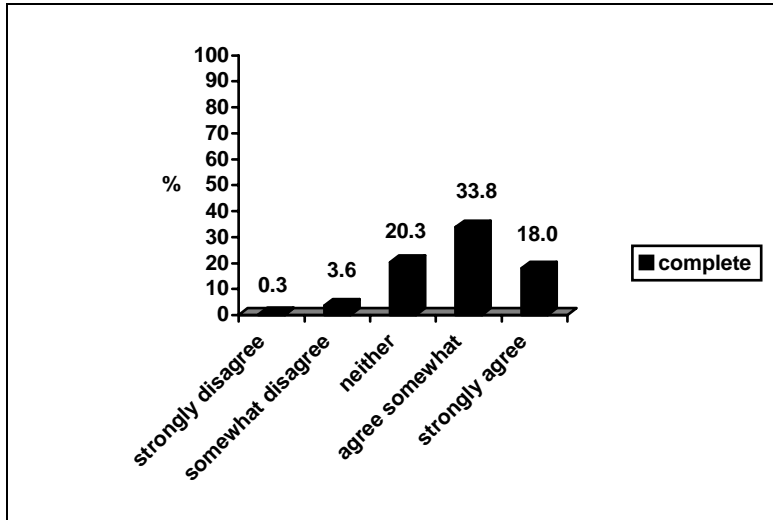


Figure 36. Ratings of completeness of Predictive Services information—non-federal respondents.

A majority agreed that Predictive Services information was easy to understand ($\chi=3.9$, $sd=.9$, $n=232$, *Figure 37*, 18.4% marked 'don't know' and 5.6% did not respond). However, almost one-tenth disagreed with Predictive Services information as easy to understand. Dispatchers and administrators/supervisors were most likely to strongly agree that the information was easy to understand (30.0 and 26.5 respectively), while PAO/information officers were most likely to mark 'don't know' (43.8%). Respondents less familiar with Predictive Services were less likely to view it as easy to understand ($\chi=3.7$, $n=96$, versus $\chi=4.0$, $n=136$, $t= -2.591$, $p= .01$).

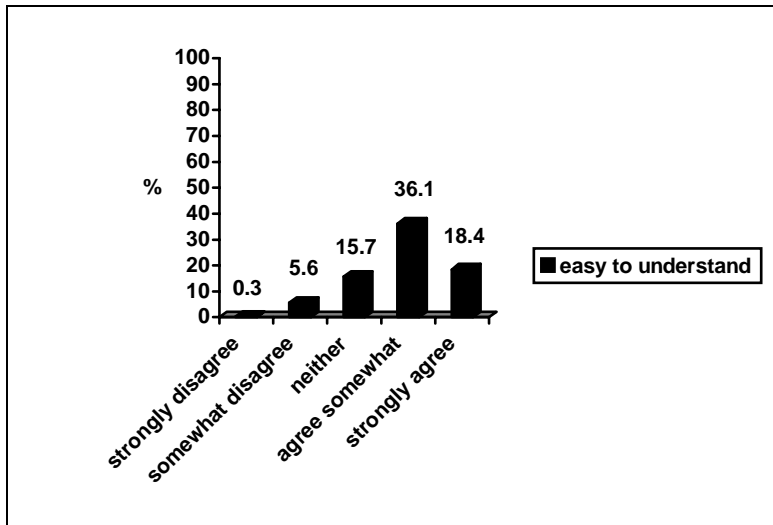


Figure 37. Ratings of ease of understanding of Predictive Services information—non-federal respondents.

Satisfaction with Predictive Services contacts—More than one-tenth (14.8%) of the non-federal respondents had contacted Predictive Services to report a problem with a product or service. The majority (70.6%) of those reporting a problem felt Predictive Services was responsive ($\chi=3.8$, $sd= 1.1$, $n=51$, on a 1 to 5 scale where 1=not at all responsive and 5=very responsive). More than one-fourth of dispatchers, FBANs/LTANs and fire environment analysts had contacted Predictive Services to report a problem (33.3, 31.3, and 25.9% respectively). The majority found them to be responsive.

Overall satisfaction—Responses indicate that Predictive Services had met most non-federal respondents' expectations ($\chi=3.0$, $sd= .9$, $n=213$, *Figure 38*). A near majority reported that the products and services had met most to all of their expectations. A greater percentage of administrators and supervisors (32.4%) and dispatchers (26.6%) indicated that Predictive Services had met or exceeded their expectations. However, dispatchers were also the most likely of any group to report that Predictive Services had fallen short of their expectations (6.7%). These variations by job function for expectations and for satisfaction were not statistically significant (ANOVAs, $p > .05$).

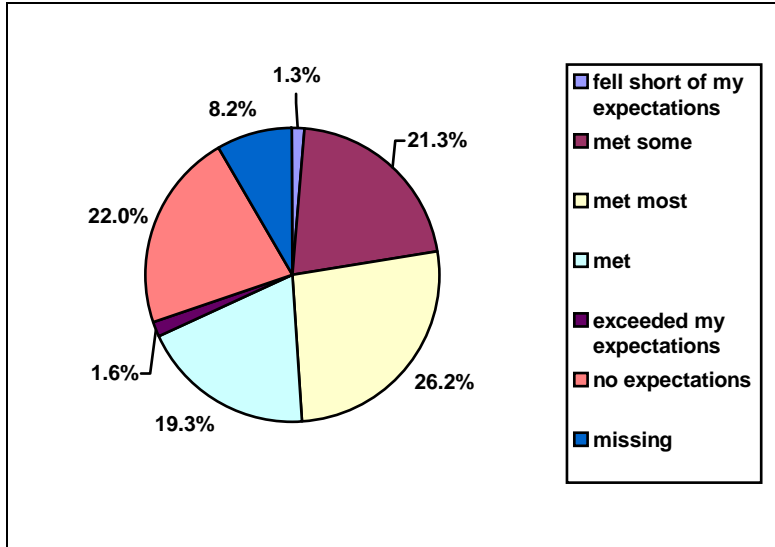


Figure 38. Ratings of degree to which Predictive Services met expectations—non-federal respondents.

Non-federal respondents were, on average, somewhat satisfied with the products and services ($\chi=3.8$, $sd= .8$, $n=253$, *Figure 39*). About half (50.6%) of the non-federal respondents were somewhat or very satisfied with Predictive Services products and services and very few (3.6%) were dissatisfied. Administrators and supervisors, suppression personnel, and incident management team members were more likely than the other groups to report being very satisfied with the products and services (20.6, 19.2, and 16.2% respectively).

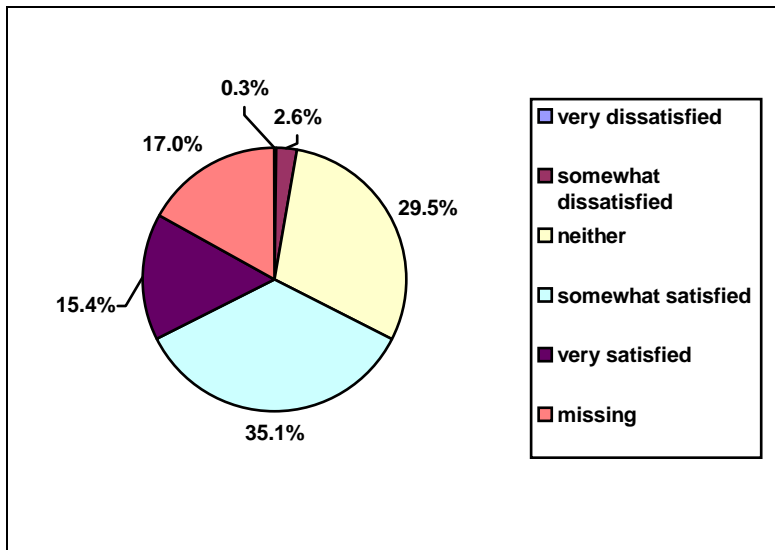


Figure 39. Ratings of satisfaction with Predictive Services products and services—non-federal respondents.

Trust and confidence in the information—Non-federal respondents were asked to indicate the degree of trust and confidence they have in the information provided by Predictive Services. A majority expressed some, to a great deal of trust and confidence (*Figure 40*, $\chi=3.4$, $sd=.9$,

n=280; 8.2%, did not answer this item.) Considering those groups who had the greatest proportion marking ‘much’ or ‘a great deal,’ trust and confidence was highest among FMOs/chiefs (58.6%), FBANs/LTANs (56.2%), incident management team members (51.4%), and administrators and supervisors (50.0%). However, incident management team members were among the groups with a tenth or more indicating ‘none at all’ (IMTs 14.7%, suppression personnel 13.5%, and PAO/information officers 12.5%). Variation in trust and confidence by job function was not statistically significant (ANOVA $p > .05$).

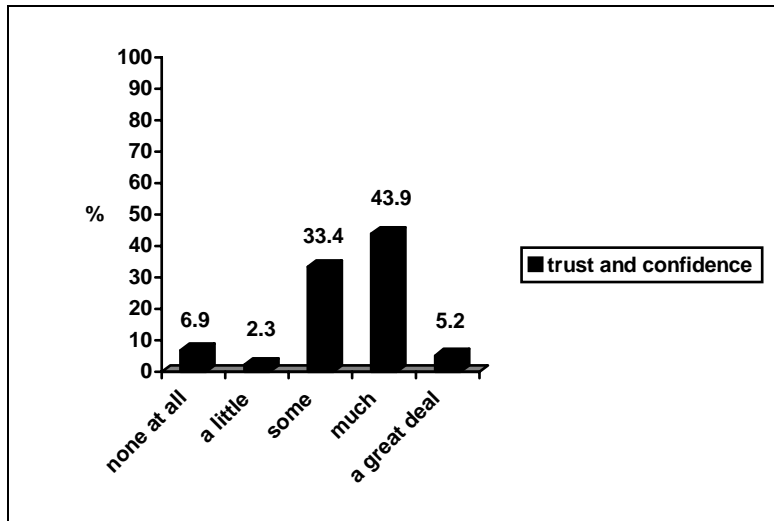


Figure 40. Ratings of trust and confidence in Predictive Services information—non-federal respondents.

Further analyses were conducted to improve understanding of variations in trust and confidence. No significant difference was found based on educational attainment (ANOVA, $p=.597$) or number of years in position ($p=.378$). However, a significant difference was found based on gender, where males had greater trust and confidence in the information than females ($M=3.45$ vs. $M=3.10$, $t=1.997$, $p=.047$). A difference was also found based on original sample vs. volunteers and those added upon request, such that the original sample had somewhat less trust and confidence ($M=3.37$ vs. $M=3.78$, $t=-3.364$, $p=.001$).

Respondents who accessed the information across more situations, and were more familiar with the products and services, had greater trust and confidence in the information. In addition, total situations for which Predictive Services was accessed was correlated with trust and confidence ($r=.372$, $n=273$, $p<.001$). Finally, familiars had more trust and confidence ($M=3.69$) than unfamiliar ($M=3.13$; $t=-5.196$, $df=252$, $p<.001$).

Using each of the variables with a significant relationship with trust and confidence, we ran a multiple regression analysis¹⁰. These predictors accounted for 31 percent of the variation in trust and confidence ($R^2_{adj.} = .31$, ANOVA $F_{4,245} = 28.552$, $p < .001$). In sum, range of situations where Predictive Services information is used/accessed ($t=3.059$), gender ($t= -1.396$), original

¹⁰ This analysis employed all of the cross-checks for regression, including examinations of univariate and multivariate outliers. All guidelines for appropriateness of this analysis were satisfied.

sample/added later ($t=1.593$), and familiarity ($t=7.278$) were useful in explaining degree of trust and confidence in Predictive Services information reported by non-federal respondents.

Are Respondents Relying on and Taking Action Based on Predictive Services?

Reliance on products and services—Degree of reliance on Predictive Services was queried. About one-fourth indicated little to no reliance on Predictive Services information (23.3% chose a rating of 1 or 2, where 1=none at all when asked “How much do you rely on the information provided by Predictive Services to assist in decision-making?”). About one-third (37.0%) indicated some reliance, and almost one-third indicated reliance (32.4% chose a 4 or 5 rating, where 5=a great deal). The groups most likely to rely on Predictive Services (chose much to a great deal) were the dispatchers (46.6%) and administrators/supervisors (44.1%). The PAO/information officers were least likely to indicate reliance (25.0% chose none at all). Reliance did not vary significantly by job function (ANOVA $p > .05$).

Reliance on Predictive Services to assist in decision making was examined through stepwise multiple regression. Trust and confidence ($t=12.091$), familiarity ($t=3.649$), and number of situations where Predictive Services is used ($t=3.278$) accounted for 60 percent of the variation in reliance ($R^2_{adj.} = .60$, ANOVA $F_{3,244} = 124.573$, $p < .001$). Variables excluded in this procedure were gender and original sample/added later. In sum, respondents who were more familiar with the products and services, trust the information more, and access it across more situations were more likely to rely on the information.

However, other sources were not necessarily relied on more heavily than the products and services provided. Specifically, almost half indicated that the statement “I rely on other sources more heavily than the products and services provided by Predictive Services” was not at all true (11.8%), or not very true (35.1%). About one-fourth (28.2%) found that statement to be more or less true, and a few found it to be true (12.8%), or very true (4.3%; 7.9%, did not respond to this item). Fire environment analysts were the group most likely to report reliance on other sources (29.6% chose true or very true). Other sources relied on were varied and included the National Weather Service, other websources, state, regional, and local sources.

The likelihood of taking action based on Predictive Services information was examined. About one-third were likely to take action based on Predictive Services information (38.0% chose a 4 or 5 rating, where 5=very likely, *Figure 41*), and another third (39.7%) considered it a possibility (8.2% did not provide a response). About one-tenth (14.1%) were unlikely to take action based on Predictive Services information (chose ratings of 1 or 2, where 1=not at all likely). Four groups were the most likely to take action based on Predictive Services information (marked likely or very likely) including administrators/supervisors (50.0%), FMOs/chiefs (44.8%), fire environment analysts (44.4%), and dispatchers (43.4%). PAO/information officers were least likely (28.2% chose highly unlikely or unlikely). Variations in likelihood of taking action by job function were not statistically significant (ANOVA $p > .05$).

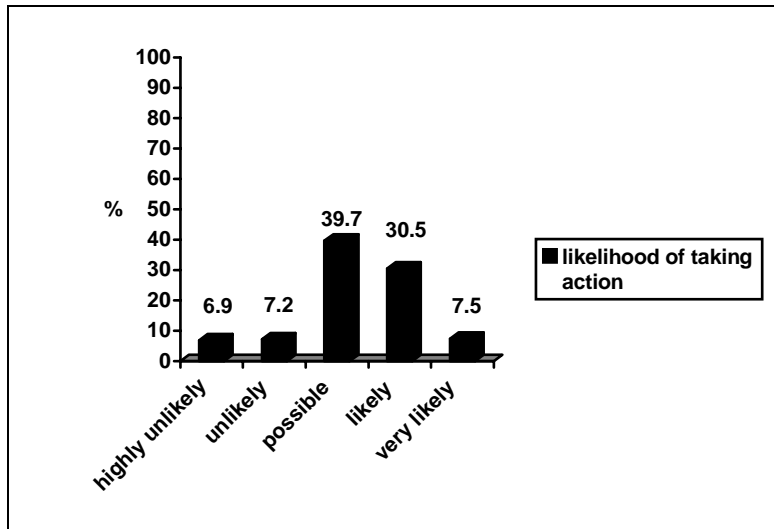


Figure 41. Likelihood of taking action based on Predictive Services information received, or gathered from a website—non-federal respondents.

Similar to reliance, likelihood of taking action was examined through stepwise multiple regression. Using the same predictors for reliance, we accounted for 50 percent of the variation in taking action ($R^2_{adj.} = .50$, ANOVA $F_{3,241} = 79.717$, $p < .001$). Excluded variables included gender and original sample/added later. The most influential contributor was trust and confidence ($t = 10.143$, $p < .001$). This suggests that respondents with greater trust and confidence in Predictive Services information were more likely to take action based on it. In addition, familiarity ($t = 2.869$) and total situations where the information was accessed ($t = 2.225$) were significant predictors. Those who were more familiar with the products and services and accessed them across more situations were more likely to take action based on the information.

Did Respondents offer Insights into Reliance and Barriers?

Perceived overlap—Respondents were asked to indicate how true or untrue the statement “I think there is overlap in the type of information that I can obtain from Predictive Services and other sources” was. A few (4.9%) indicated this was not at all, or not very true (33.8%). More than one third (39.7%) felt it was more or less true. About one-tenth indicated that it was true (9.5%) or very true (2.0%; 10.2%, did not answer this item.) To summarize, a majority felt there was overlap in the type of information they could obtain from Predictive Services and other sources. The group most likely to indicate there was overlap was the FBANs/LTANs (18.8% chose true or very true). However, these differences by job function were not statistically significant (ANOVA $p > .05$). Those who indicate there was overlap tended to mention the National Weather Service and state sources. Some commented that the overlap was good.

Barriers to use of products and services—Respondents reported various reasons why they had not used the products and services offered by Predictive Services, with about one-third or more reporting that they had not thought about it, or needed information that is site specific (*table 9*).

Table 9. Reasons why they had not used the products and services offered by Predictive Services—non-federal respondents.

Reason	Percent
I never thought about it.	40.0
I need information that is site specific	31.5
I am not mandated to use these products	22.3
My current management practices don't require the types of information provided by Predictive Services	10.8
I don't have the time to use these products	9.5
I don't know where to get advice about using these products	9.5
Agency directives/guidelines instruct me to use other information	5.9
I don't know where to get the technology to use these products	5.2
I don't have the technology I would need to use these products	4.6
I don't have the money to use these products	4.6
I don't think these products support my agency's current practices	4.3
I don't want to use these products	1.6
I don't trust information that is generated by multiple agencies	1.3
I don't trust the products and services	1.0
I don't trust the advice I get about using these products	.7

These barriers to use of products and services varied by job function. Specifically about half of PAO/information officers (53.1%) and incident management team members (48.5%) had never thought about using Predictive Services. About half of fire environment analysts (55.6%) and FBANs/LTANs (46.9%) need information that is site specific. Mention of this barrier varied significantly by job function ($\chi^2 = 15.680$, $p < .03$). Fire environment analysts (33.3%) and suppression personnel (30.8%) were among those most likely to report they were not mandated to use the products. FBANs/LTANs were almost twice as likely as any other group to report that they did not have the time to use the products (25.0% versus 11.8% or less among other groups). More than one-tenth of PAO/information officers (18.8%) and FBANs/LTANs (15.6%) indicated their current management practices did not require the types of information provided. Not knowing where to get advice about using the products was reported as a barrier by more than one-tenth of fire environment analysts (18.5%), suppression personnel (15.4%), and PAO/information officers (12.5%). More than one-tenth of fire environment analysts (14.8%) and FMOs/chiefs (13.8%) felt the products did not support their agency's current practices. Agency directives and guidelines instructing them to use other products were mentioned by a tenth or more of the PAO/information officers (12.5%), fire environment analysts (11.1%), and dispatchers (10.0%). About one-tenth of FMOs/chiefs (10.3%) did not have the technology to use the products. Not having the money to use the products was mentioned by nearly one-tenth of the FBANs/LTANs (9.4%) and the PAO/information officers (9.4%). Nearly one-tenth of incident management team members (8.8%) indicated that they did not know where to get the technology to use the products. The other barriers were rarely mentioned among all eight job function groups.

Product and service improvement—Improvements in products and services were mentioned by several of the non-federal respondents. Common themes within these suggestions were focused on accuracy of information, recency of information, site and area specificity, and more information on what was available and how to use it. Verbatim responses to the question “The information and services provided by Predictive Services would be more useful to me if...” are presented in *Appendix G*. This Appendix supplies a unique view of product and service interests by the various job functions.

Were There Additional Comments?

As is typical for customer satisfaction surveys (the focus of the survey for non-federal participants), we invited additional comments on Predictive Services or the survey itself. Overall the comments were mostly positive regarding Predictive Services and usefulness of the products. Some respondents wanted more information about the products and services. A few offered input on the survey itself. There were several suggestions or comments about specific services, GACCs or issues that add additional insight into the needs and interests of these non-federal respondents. One suggested some disappointment at not being able to respond more to issues of additional services and products and product improvements. This is reflective of the constraint in our non-federal survey version that required focus on current products and services and assessment of satisfaction in compliance with our OMB approval. Verbatim comments in *Appendix G* provide an opportunity to see specific suggestions on products and services that may be helpful in improving services and products.

Discussion

A considerable number of federal and non-federal employees, including those directly and only peripherally engaged in fire management, participated in this survey. Responses are not considered to be representative of the users and prospective users of Predictive Services as a whole because we were not able to construct either a census or random sample of employees within these sectors. However, responses offer valuable insights into the perspectives of those who participated and are of interest in examining the current opinions of Predictive Services products, services, and service delivery. In addition, while somewhat more a focus among our federal respondents by virtue of question items that were included, we can glean insights into additional products and services that might be offered.

The largest proportion of our federal sample was made up of PAO/information officers. This came about through sources available to us that might be involved in fire management. In compiling our sample we found that potential respondents might have multiple job identifications, so we asked respondents to 'choose a hat' for the purposes of the survey. We then grouped these respondents to facilitate meaningful comparisons by job function types.

PAO/information officers and support services were the two groups least familiar, least likely to use and rely on the products and services, and least likely to provide favorable ratings about products and services. In spite of this lack of familiarity, the tendency to indicate they were not interested in the products and services, and the tendency to rate the information unfavorably, open ended comments made by many of these respondents suggested some interest and intent to look into the products and services further. Needs and interests in products seemed distinctly different for the PAO/information officers, leaning towards information that would facilitate contacts with media and the public. For these groups an informational/educational program to feature products available and how they might meet their needs could be helpful in increasing familiarity as well as improving impressions about the products.

The two groups that came across as the most familiar and most satisfied overall with the products and services were the multi-agency coordinators and the non-NWS meteorologists. It is interesting to note however, that while the multi-agency coordinators repeatedly showed up as a group rating information favorably (considering the six attributes selected), non-NWS meteorologists did not always appear in the majority providing favorable ratings. The ratings and remarks provided should lend valuable insights into understanding why this might be so.

The remaining groups varied in their ratings and perspectives and each may be of interest depending on who the key constituents for Predictive Services are determined to be.

Among the non-federal respondents we adopted a similar approach, grouping some common job functions to facilitate analysis. As a whole, these respondents were more familiar with, and more positive towards the products and services. It is important to note however that representation of a particular group as much less familiar and much less satisfied with the products and services was not as strong a factor in the non-federal sector.

This sector of respondents was more likely to cite the need for site-specific information as a barrier to use of the products and services. Consideration will need to be given to the service delivery requirements in this particular case. Comments suggest that the products and services seem federal-centric. Program leaders will need to determine how to address this service gap, if appropriate.

Trust and confidence in the information provided by Predictive Services, and familiarity with the products and services, were highly significant in predicting who would rely upon, and take action based upon the information. While trust and confidence did not seem to be lacking among a majority, comments focused on issues of accuracy and consistency with other sources, as well as timeliness in updating the information should be considered. Job groups expressing less agreement with desirable attributes may be of particular help in understanding whether or not the core markets are viewing the products favorably. A number of suggestions are offered by respondents that may be helpful towards that end.

Overall the findings and evaluations tend to be positive among those most central to fire management and decision making. A number of suggestions for improvements of current products and services, as well as some ideas for additional products and services, are offered by respondents. It was made very clear, however, that additional communication and training efforts are a pressing need, to improve awareness of what is available and how it can be used. This is an important investment to make in the near future of the Predictive Services program.

Whether or not additional products and services should be added in the immediate future needs to be carefully considered. The expectation that this cutting edge innovation is to be a characteristic of Predictive Services was noted. Additional sensing may be necessary to effectively tailor the products and services to meet the needs of key markets.

Acknowledgments

The authors thank the following individuals and groups for their assistance in this assessment:

All of the federal and non-federal respondents who participated.

The National Predictive Services Group (special thanks to Tom Wordell, Gerry Day, and Rick Ochoa) for their funding and tremendous collaboration in this assessment

Jaimie Chamberlin (contractor with PNW)

Deanne McCollum (formerly with the Wildland Recreation and Urban Culture's Research Work Unit)

Ebony Odunikan and Ariana Brooks (contractors with PSW)

Gloria Sierra (formerly with the Wildland Recreation and Urban Culture's Research Work Unit)

And a special thanks to Nancy E. Knap of PSW who assisted with getting numbers into graphs, tables, and text in Appendix F and helped verify information reported; and to David Olson of PSW who provided assistance through survey construction and helped verify information reported.

Literature Cited

- Borrie, W.T.; Christensen, N.; Watson, A.E.; Miller, T.A.; McCollum, D.W. 2002. Public purpose recreation marketing: a focus on the relationships between the public and public lands. *Journal of Park and Recreation Administration*. 20(2): 49-68.
- Cvetkovich, G.T.; Winter, P.L. 2003. Trust and social representations of the management of threatened and endangered species. *Environment and Behavior*. 35(2): 286-307.
- Cvetkovich, G.T.; Winter, P.L. 2004. Seeing eye-to-eye on natural resource management: Trust, value similarity, and action consistency/justification. In: Tierney, P.T., Chavez, D.J. (technical coordinators). *Proceedings of the Fourth Social Aspects and Recreation Research Symposium; 2004 February 4-6; San Francisco, CA*. San Francisco, CA: San Francisco State University: p. 46-50.
- Derby, S.L.; Keeney, R.L. 1981. Risk analysis: understanding 'how safe is safe enough" Risk Analysis. 1:217-224.
- Finucane, M.L.; Slovic, P.; Mertz, C.K.; Flynn, J.; Satterfield, T.A. 2000. Gender, race, and perceived risk: the 'white male' effect. *Health, Risk & Society*. 2(2): 159-172.
- Fischhoff, B.; Watson, S.R.; Hope, C. 1984. Defining risk. *Policy Sciences*. 17: 123-139.
- Kneeshaw, K.; Vaske, J.J.; Bright, A.D.; Absher, J.D. 2004. Situational influences of acceptable wildland fire management actions. *Society and Natural Resources*. 17: 477-489.
- Otani, H.; Leonard, S.D.; Ashford, V.L.; Bushroe, M.; Reeder, G. 1992. Age differences in perception of risk. *Perceptual and Motor Skills*. 74: 587-594.
- Payne, J.W.; Bettman, J.R.; Johnson, E.J. 1992. Behavioral decision research: a constructive processing perspective. *Annual Review of Psychology*. 43: 87-131.
- Plough, A.; Krinsky, S. 1987. The emergence of risk communication studies: social and political context. *Science, Technology, & Human Values*. 12(3/4): 4-10.
- Reyna, V. F. 2004. How people make decisions that involve risk: a dual-processes approach. *Current Directions in Psychological Science*. 13(2): 60-66.
- Rossi, P.H.; Freeman, H.E.; Lipsey, M.W. 1999. *Evaluation: a systematic approach*. Thousand Oaks, CA, Sage Publications.
- Satterfield, T.A.; Mertz, C.K.; Slovic, P. 2004. Discrimination, vulnerability, and justice in the face of risk. *Risk Analysis*. 24(1): 115-129.
- Shindler, B.; Brunson, M.W.; Cheek, K.A. 2004. Social acceptability in forest and range management. In: Vaske, J.J.; Manfredo, J.J.; Bruyere, B.L.; Field, D.R.; Brown, P.J. (Eds.) *Society and natural resources: a summary of knowledge*. Jefferson, Missouri, Modern Litho.: 147-158.

Shinn, M. 2006. Waltzing with a monster: bringing research to bear on public policy. Presented at the Sixth Biennial SPSSI Convention; Social Justice: Research, Action and Policy, Long Beach, CA, June 23-25.

Siegrist, M. 2000. The influence of trust and perceptions of risks and benefits on the acceptance of gene technology. *Risk Analysis*. 20(2): 195-203.

Siegrist, M.; Cvetkovich, G.; Roth, C. 2000. Salient values similarity, social trust, and risk/benefit perception. *Risk Analysis*. 20(3): 353-362.

Slovic, P. 2000. Informing and educating the public about risk. In: Slovic, P. (ed.) *The perception of risk*. London, Earthscan Publications, Ltd: 182-198.

Slovic, P.; Peters, E. 1998. The importance of worldviews in risk perception. *Risk Decision and Policy*. 3(2): 165-170.

Slovic, P.; Kraus, N.; Covello, V.T. 1990. What should we know about making risk comparisons? *Risk Analysis*. 10(3): 389-392.

Vaughan, E.; Nordenstam, B. 1991. The perception of environmental risks among ethnically diverse groups. *Journal of Cross-Cultural Psychology*. 22(1): 29-60.

Weber, E.U.; Hsee, C.K.; Sokolowska, J. 1998. What folklore tells us about risk and risk taking: cross-cultural comparisons of American, German, and Chinese proverbs. *Organizational Behavior and Human Decision Processes*. 75(2): 170-186.

Winter, G.; Vogt, C.A.; McCaffery, S. 2004. Examining social trust in fuels management strategies. *Journal of Forestry*. 102(6): 8-15.

Winter, G. J.; Vogt, C.; Fried, J.S. 2002. Fuel treatments at the wildland-urban interface: common concerns in diverse regions. *Journal of Forestry*. 15-21.

Appendix A: Analysis of Federal Non-Respondents

A comparison of the original sample selected for the Federal survey and the final respondents by agency shows the two are similar to each other, with minor variations by agency (*Figure A-1*). The largest loss of respondents due to incorrect/non-functioning email addresses was within the BIA.

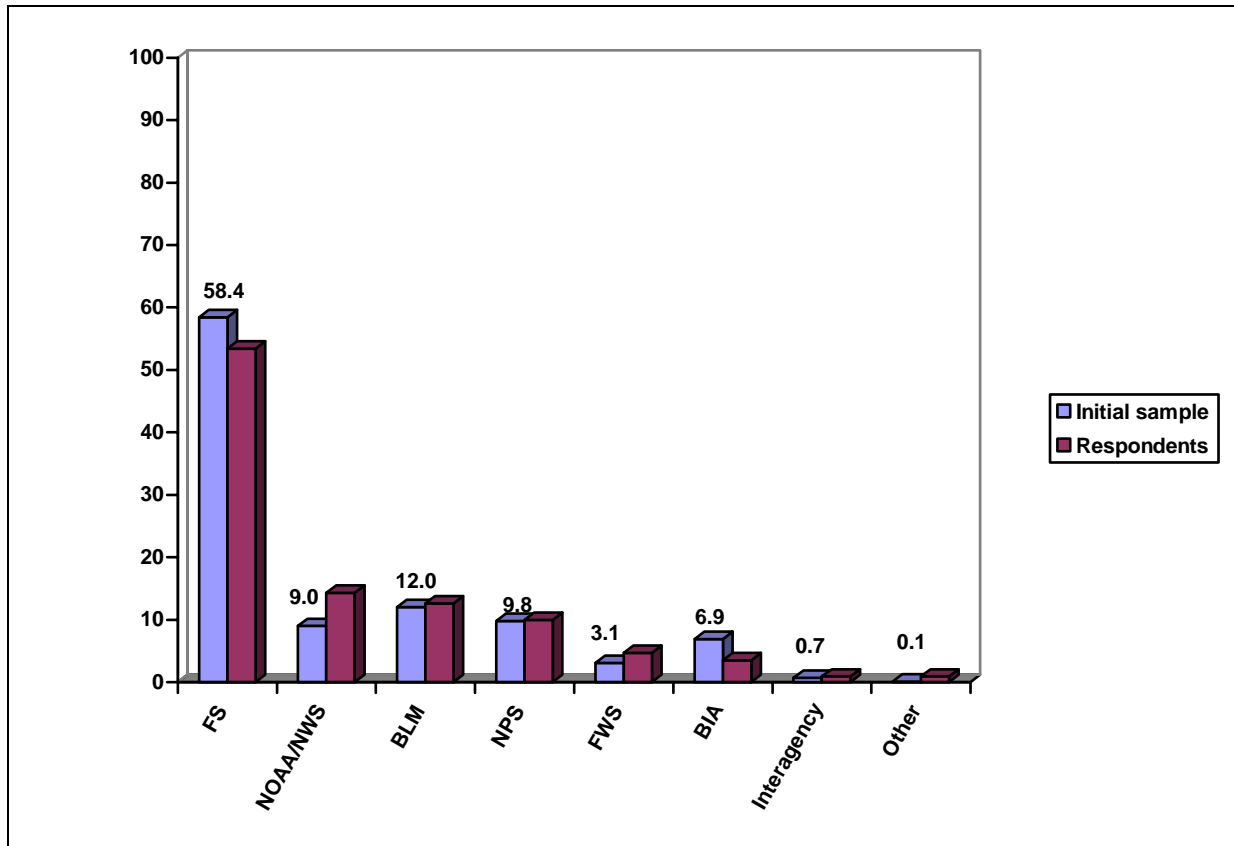


Figure A-1. Initial sample and respondents' employing agencies—federal sample.

The distribution of respondents and non-respondents across states and U.S. possessions is shown below (*table A-1*).

Table A-1. Federal respondents and non-respondents compared by state/possession.

State/Possession	Respondents		Non-Respondents	
	n	%	n	%
Alabama	5	.5	6	.3
Alaska	39	3.6	42	2.2
Arizona	49	4.5	86	4.5
Arkansas	4	.4	8	.4
California	136	12.6	286	14.9
Colorado	69	6.4	107	5.6
Connecticut	1	.1	0	0
Delaware	0	0	0	0
District of Columbia	18	1.7	39	2.0
Florida	15	1.4	20	1.0
Georgia	19	1.8	32	1.7
Hawaii	1	.1	4	.2
Idaho	84	7.8	128	6.7
Illinois	5	.5	7	.4
Indiana	3	.3	6	.3
Iowa	2	.2	1	<.1
Kansas	2	.2	4	.2
Kentucky	8	.7	8	.4
Louisiana	4	.4	11	.6
Maine	3	.3	5	.3
Maryland	4	.4	6	.3
Massachusetts	3	.3	6	.3
Michigan	10	.9	19	1.0
Minnesota	21	1.9	24	1.3
Mississippi	7	.6	10	.5
Missouri	11	1.0	8	.4
Montana	74	6.9	95	4.9
Nebraska	5	.5	11	.6
Nevada	28	2.6	36	1.9
New Hampshire	2	.2	10	.5
New Jersey	0	0	1	<.1
New Mexico	25	2.3	76	4.0
New York	4	.4	3	.2
North Carolina	9	.8	18	.9
North Dakota	5	.5	4	.2
Ohio	0	0	5	.3
Oklahoma	3	.3	7	.4
Oregon	103	9.6	138	7.2
Pennsylvania	7	.6	6	.3
Rhode Island	0	0	0	0
South Carolina	5	.5	0	0
South Dakota	10	.9	13	.7
Tennessee	6	.6	0	0
Texas	15	1.4	14	.7
Utah	38	3.5	63	3.3
Vermont	2	.2	5	.3
Virginia	17	1.6	24	1.3
Washington	45	4.2	43	2.2
West Virginia	6	.6	6	.3
Wisconsin	17	1.6	19	1.0
Wyoming	18	1.7	31	1.6
Guam	0	0	2	.1
Puerto Rico	1	.1	1	<.1
Not identified	110	10.2	389	20.3
Total	1,078	100	1919	100

Appendix B: The Federal Non-Response Bias Check

Background

A non-response bias check was deemed necessary given our actual response rate. In spite of our generous response time period and a number of reminder messages, we had many individuals who did not participate. As discussed in the beginning of this document, we knew the reason for non-response of many individuals, including invalid email addresses, no longer employed with the agency, or away from the office during the study period. This bias check was to explore the underlying reasons for non-response among those who were not already accounted for.

Selection

Trying to contact everyone would have been too intensive an effort for our timeframe and personnel. Instead, we elected to draw a random sample from our non-respondents ($n=1,919$). We ordered all email addresses of non-respondents whose reasons for non-response remained unknown (1,762), placing them in alphabetical order in two sets. The first set was those who had started the survey but not completed it sufficiently to be included as a respondent. The second set was those who had not started the survey. We then drew a random sample, taking every 15th name on the list and locating a working telephone number through online directories. When the individual could not be located in these directories we took the next name down on the list, searching for that person's contact information. As the calls were taking place we garnered additional resources and drew an additional sample, taking every 7th name on the same list. This process of selection resulted in a pool of 217 non-respondents, including 11 who had started the survey but did not complete a sufficient portion to provide usable data (represented 12.3% of our total pool of non-respondents).

Procedure

A total of five telephone call attempts were possible to any one individual on the list. On the first call we attempted to leave a message when we were not able to reach the individual. This worked well given the considerable number of voicemails that we reached. On subsequent calls we did not leave a message in order to avoid annoying a person or inadvertently filling up a voicemail box if someone was away for an extended period. When three calls had been made, varying day of week and time of day (considering business hours in different parts of the United States), and all contact attempts had been unsuccessful the person was dropped from additional calls. When the three calls somehow fell into timeframes when breaks might be most likely (such as lunch break), or fell onto the same day of the week, as much as two additional contact attempts were made. Using these steps we were able to contact 135 individuals, 122 (56.2%) who agreed to answer our questions.

Of the 217 people selected for follow-up, the majority (69.1%) worked for the Forest Service. Other agencies included National Park Service (12.9%), BLM (12.0%), NOAA (4.1%), Fish and Wildlife Service (.9%), and other (.5%; we did not have the specific federal agency for one respondent - .5%). Bureau of Indian Affairs could not be included in this follow-up due to the lack of an online directory for that agency, and a majority of generalized email addresses (pop.net) in our sample.

Across the five calls possible, the outcome for the 217 respondents is outlined in *table B-1*.

Table B-1. Results of non-respondent follow-up calls—federal sample.

Disposition	Call 1	Call 2	Call 3	Call 4	Call 5
	n	n	n	n	n
Left message	136	5	0	0	0
No answer/no voicemail	11	99	48	19	0
Wrong number	11	1	1	0	0
Retired	3	0	0	0	0
Refused	5	4	3	0	0
No longer with agency	9	1	0	0	0
Other	4	1	2	2	0
Scheduled call back	0	0	0	1	0
Completed interview	37	38	33	11	3
Dropped for no contact	0	0	20	17	19
Total	216	153	109	50	22

After the first call we did not try to leave messages, and then included no answer/transferred to voicemail within the same category. We did not want to annoy potential respondents and when a first message had been left we felt that was sufficient.

We were able to code a majority of our non-respondents by gender based on contact names, voicemail recordings, etc. About half of our non-respondent follow-up sample was male (50.7%), and about half was female (40.6%, we were not sure about 3.2% based on email addresses and other indicators.)

Key Findings

We reached 8 of the 11 non-respondents who had started the survey. One did not recall starting it (12.5%), while the rest did (87.5%). They had not completed the survey because of failures in computer access, forgetting to go back in, time constraints, and not being familiar enough with Predictive Services to answer the questions. Among those who had not started the survey at all, the majority did not remember receiving the emails inviting them to participate. A few that we reached did not agree to continue with our follow-up interview because they felt too unfamiliar with Predictive Services, they don't like surveys, and they did not have enough time to talk with us.

We had 122 individuals agree to answer a series of brief questions for follow-up. The majority are assigned work that applies to multiple agencies (55.7%). Most (56.6%) had visited a Predictive Services website or used the services through one of the GACCs. Among those who had visited one or more GACC sites or used their briefings (69), 81.1% reported use during fire season, 50.7% during a fire incident, 34.8% when a prescribed burn is being planned, 27.5% when a prescribed burn is taking place, and 15.9% under other situations. The other situations included daily, monthly, before fire season, during extreme weather events, for gathering public information and educational materials, and to look at new products.

The GACC websites they had been to, or services they had used included: NICC (50.7%), Southwest (39.1%), Eastern Great Basin (36.2%), Northern Rockies (30.4%), Rocky Mountain (27.5%), Southern (26.1%), Western Great Basin (26.1%), Northwest (26.1%), Southern California (23.3%), Northern California (23.2%), Eastern (21.7%), and Alaska (15.9%).

Of interest was the degree of familiarity with the website, briefing, and email products. They were more familiar with the web products (*Figure B-1*, $\chi=2.1$, $sd=1.4$, $n=122$), and the briefings (i.e., national, geographic, situational, or meteorological, ($\chi=2.8$, $sd=1.7$, $n=122$), than with the emails (these contain current projections and/or information about Predictive Services, $\chi=2.0$, $sd=1.4$, $n=122$).

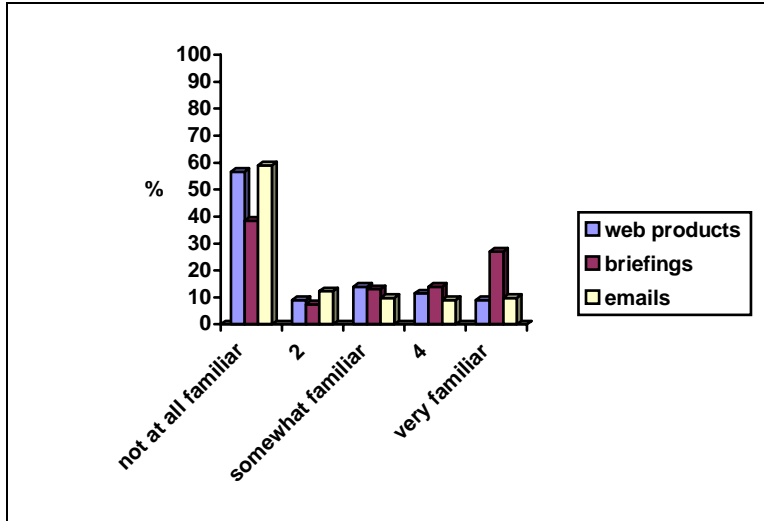


Figure B-1. Familiarity with Predictive Services products on the web, briefings, and emails—federal non-respondent follow-up participants.

Conclusions

This non-respondent bias check allowed for additional verification of our sample frame in that some original sample members were no longer with the agency or did not have correct contact information. While there were some that we were not able to contact, those we did reach suggest to us that non-respondents were probably less familiar with the products and services than our federal respondents. The ratings on familiarity of each product provide support for this argument. Concerning other measures, gender distribution, agency, and focus on use of GACC services and websites were fairly similar to our respondents.

Survey Version Used with those who Did Not Complete Online Survey

email address STATE Date of Interview _____
Name

Gender M F

I am working with Dr. Patricia Winter and am following up with people who were sent invitations to complete an online survey about National Predictive Services.

According to our records, you entered the survey system and answered some of the questions.

1) Do remember doing this?

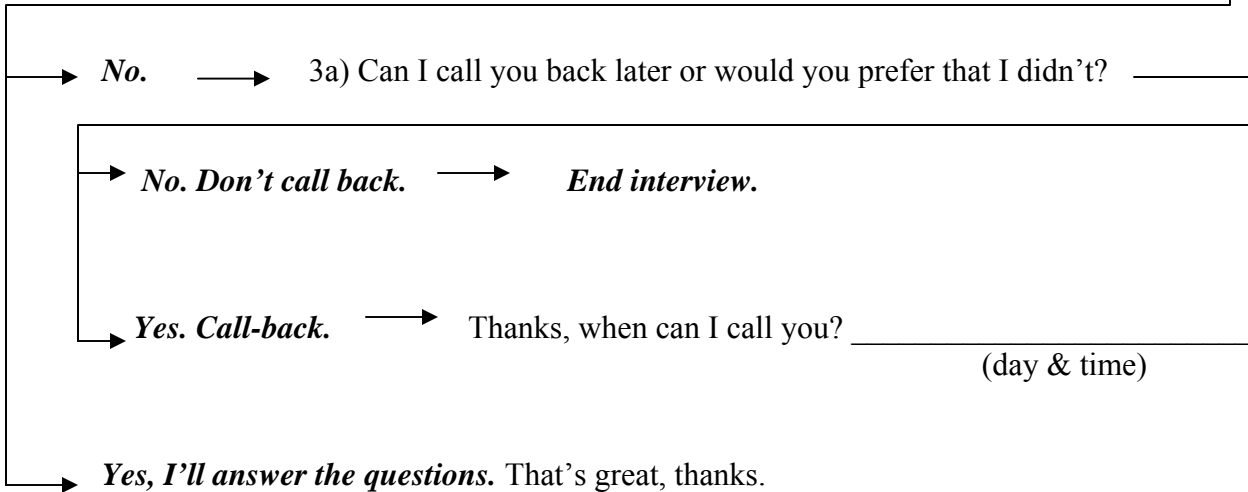
2) Can I ask why you didn't complete it?

Just categorize what they say. Multiple responses OK

- _____ Time constraint
- _____ Not familiar enough to answer the questions
- _____ Survey issue (too long, problems with system, didn't like questions)
- _____ Don't like surveys
- _____ Had someone else complete instead
- _____ Other _____

3) Would you mind taking about 5 minutes now to answer a few questions?

It really helps us in understand better who participated and who didn't. _____



Go to page 2.

Page 2.

4) How many years have you been in your current position of employment? _____ years

5) Is your work specific to your agency only, or with multiple agencies? (**check one.**)
 _____ my agency only
 _____ multiple agencies

Instruction Q6a-c:

On a scale from 1 to 5, with 1 being not at all familiar and 5 being very familiar,

6a) How familiar would you say you are with the Predictive Services products on their website?
 _____ (number from 1 to 5)

6b) And the briefings? (*hint: national, geographic, situation, meteorological*)
 _____ (number from 1 to 5)

6c) And the emails with current projections or information?
 _____ (number from 1 to 5)

7) From the following list, are there any particular situations where you go to Predictive Services for information? **Read each option. Multiple responses OK.**

- _____ Never
- _____ During a fire incident
- _____ During fire season
- _____ When a prescribed burn is being planned
- _____ When a prescribed burn is taking place
- _____ Other _____

8) When you go to online, which of the following GACCs have you used?

_____	NICC	_____	Rocky Mountain
_____	Alaska	_____	Southern California
_____	Eastern	_____	Southern
_____	Eastern Great Basin	_____	Southwest
_____	Northern California	_____	Western Great Basin
_____	Northern Rockies	_____	Not sure
_____	Northwest	_____	

9) Do you have any general comments that I can pass on to the National Predictive Services Group about its products and services?

Thank you for your time. Your help means a lot to us.

If you would like any more information or you have any questions, I can give you Dr. Winter's contact information. Do you need that?

If yes,

(951) 680-1557

pwinter@fs.fed.us

Survey Version Used with those who did Not Start Survey

Email address STATE Date of Interview _____
Name

Gender M F

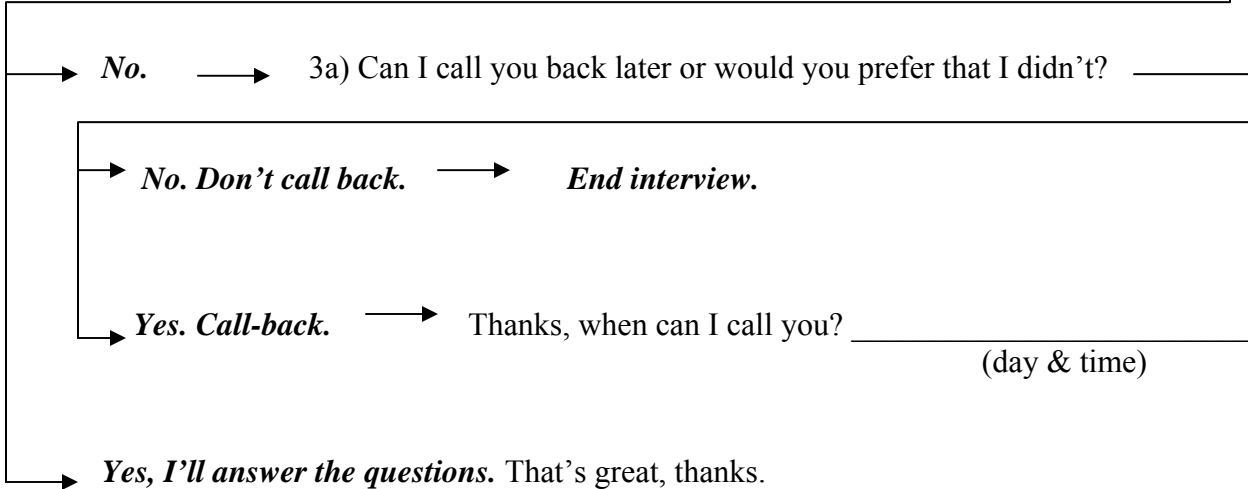
I am working with Dr. Patricia Winter and am following up with people who were sent invitations to complete an online survey about National Predictive Services.

According to our records, you have not as yet entered the survey system.

1) Do you remember getting the survey? yes no

2) Would you mind taking about 5 minutes now to answer a few questions?

It really helps us in understand better who participated and who didn't. _____



Go to page 2.

Page 2.

4) How many years have you been in your current position of employment? _____ years

5) Is your work specific to your agency only, or with multiple agencies? (**check one.**)
 _____ my agency only
 _____ multiple agencies

Instruction Q6a-c:

On a scale from 1 to 5, with 1 being not at all familiar and 5 being very familiar,

6a) How familiar would you say you are with the Predictive Services products on their website?
 _____ (number from 1 to 5)

6b) And the briefings? (*hint: national, geographic, situation, meteorological*)
 _____ (number from 1 to 5)

6c) And the emails with current projections or information?
 _____ (number from 1 to 5)

7) From the following list, are there any particular situations where you go to Predictive Services for information? **Read each option. Multiple responses OK.**

- _____ Never
- _____ During a fire incident
- _____ During fire season
- _____ When a prescribed burn is being planned
- _____ When a prescribed burn is taking place
- _____ Other _____

8) When you go to online, which of the following GACCs have you used?
Multiple responses OK.

_____	NICC	_____	Rocky Mountain
_____	Alaska	_____	Southern California
_____	Eastern	_____	Southern
_____	Eastern Great Basin	_____	Southwest
_____	Northern California	_____	Western Great Basin
_____	Northern Rockies	_____	Not sure
_____	Northwest	_____	

9) Do you have any general comments that I can pass on to the National Predictive Services Group about its products and services?

Thank you for your time. Your help means a lot to us.

If you would like any more information or you have any questions, I can give you Dr. Winter's contact information. Do you need that?

If yes,

(951) 680-1557

pwinter@fs.fed.us

Appendix C: Non-Federal Non-Response Bias Check

Non-respondents from the non-federal sample were more difficult to track. By taking the email address for each of our non-federal sample members, we identified the state where each potential respondent was employed. For each state we then looked at the total number of individuals in our original sample, the number of respondents (including those few who were dropped later for incomplete data), the number of volunteers (are excluded from our response rate calculation), the number excluded from our sample (because of delivery failures, retirements, or inability to contact during study period), and the valid response rate. Some states were not represented in the final set of respondents, though one can see from *table C-1* that an effort was made to include as many states as possible. Valid response rates varied widely. One of the main concerns with this sample is the large number of potential respondents lost due to invalid email addresses. The western states had lower valid response rates than ideal. The number of respondents from these states is still considerable. Some states seem under represented among the final respondents. Volunteers were excluded from this analysis.

Table C-1. Non-federal respondents and non-respondents compared by state/possession.

	Respondents	Excluded	Non-Respondents	Valid Response Rate
State/Possession	n	n	n	%
Alabama	0	7	0	0
Alaska	12	27	10	54.5
Arizona	3	3	5	33.3
Arkansas	0	0	2	0
California	70	23	84	45.5
Colorado	3	21	4	42.9
Connecticut	0	0	2	0
Delaware	1	1	3	25.0
District of Columbia	0	0	0	0
Florida	6	18	7	46.1
Georgia	1	7	9	10.0
Hawaii	2	0	0	100.0
Idaho	6	4	4	60.0
Illinois	0	0	1	0
Indiana	5	1	1	83.3
Iowa	1	0	0	100.0
Kansas	1	3	2	33.3
Kentucky	1	3	2	33.3
Louisiana	0	0	4	0
Maine	0	1	0	0
Maryland	3	1	2	60.0
Massachusetts	0	2	2	0
Michigan	2	1	0	66.6
Minnesota	9	20	12	42.9
Mississippi	0	0	2	0
Missouri	0	3	1	0
Montana	5	9	9	35.7
Nebraska	0	0	0	0
Nevada	0	0	4	0
New Hampshire	0	0	1	0
New Jersey	3	0	4	42.9
New Mexico	1	3	4	20.0
New York	2	0	3	40.0
North Carolina	8	3	1	88.9
North Dakota	0	6	0	0
Ohio	1	0	0	100.0
Oklahoma	1	11	0	100.0
Oregon	43	26	114	27.9
Pennsylvania	0	0	3	0
Rhode Island	0	1	1	0
South Carolina	1	0	1	50.0
South Dakota	6	2	7	46.1
Tennessee	1	0	0	100.0
Texas	0	2	0	0
Utah	4	3	2	66.7
Vermont	0	3	1	0
Virginia	4	0	3	57.1
Washington	24	9	51	32.0
West Virginia	0	2	0	0
Wisconsin	4	2	2	66.7
Wyoming	3	3	6	33.3

Appendix D: Federal Survey Messages and Instrument

Messages:

SUBJECT: Predictive Services needs your input! Please respond by March 6th.

Greetings Member of the Fire Management Community!

A survey seeking feedback on Predictive Services is being conducted on behalf of the National Predictive Services Group. Predictive Services (www.nifc.gov/nicc/index.htm) provides timely fire and weather related information to fire managers and others user groups. We want to know about your information needs and interests as a user or potential user of Predictive Services. Your answers are vital in helping to shape the future of the products and services offered by Predictive Services. Even if you are somewhat unfamiliar with Predictive Services we hope that you will participate. Your insights and opinions will be greatly appreciated!

*****The National Weather Service (NWS) recently conducted a Customer Satisfaction Survey that was issued in early November 2005. It is important to note that the information we are gathering in this survey is unique to Predictive Services and was not covered in the recent NWS survey. Therefore we ask that you complete this survey even if you have already responded to the NWS Customer Satisfaction questionnaire.*****

Please participate by using the link below, which will take you to our web-based interactive survey. The survey takes approximately 12 to 18 minutes to complete and your answers will be anonymous. Please do not forward this survey invitation, it is linked to your unique respondent ID.

If you have questions about this survey, or you would prefer to complete the survey by mail or fax, you may contact Dr. Patricia Winter by sending an email to predictive_services@fs.fed.us or by calling her at 951-680-1557. If you have difficulty with the survey site please send Dr. Winter a message and an alternate form of participation will be arranged.

In advance of your participation, we thank you for your time and assistance!

[\(This message was sent on 1/24/06 to all sample members.\)](#)

Reminder message....

SUBJECT: REMINDER: Predictive Services still needs your input! Responses must be submitted by March 6th.

Hello again!

We recently sent you an invitation to participate in a survey about Predictive Services. We have not yet heard from you. Please take a few minutes now and click on the link below so that we can include your answers in our assessment. We understand that your time is valuable and you have our thanks for assisting us in shaping the future of Predictive Services. If you have any questions please address them to Dr. Patricia Winter at predictive_services@fs.fed.us.

Thank you for your time!

[\(This message was sent on 2/2, and only to users who had not completed the full survey.\)](#)

Reminder message....

SUBJECT: REMINDER: Predictive Services still needs your input! Responses must be submitted by March 6th.

Hello again!

We recently sent you an invitation to participate in a survey about Predictive Services. We have not yet heard from you. We will close the survey site on March 6th, so we need your participation before that date. Please take a few minutes now and click on the link below so that we can include your answers in our assessment. We understand that your time is valuable and you have our thanks for assisting us in shaping the future of Predictive Services. If you have any questions please address them to Dr. Patricia Winter at predictive_services@fs.fed.us.

Thank you for your time!

(This message was sent 2/17, and only to users who had not completed the full survey.)

Reminder message....

SUBJECT: Our Predictive Services survey site is about to close...We still want your input! RESPOND BY MARCH 6TH!

Dear Member of the Fire Management Community

We have sent two previous messages inviting you to participate in an online survey regarding Predictive Services. We still don't have your completed survey, and time is short! We are closing the survey on March 6th, so if you plan on participating please do so now by clicking on the link below. Remember, this survey only takes about 12 to 18 minutes to complete and the results will be used to help shape the future products and services you receive from Predictive Services. We want to be sure the products and services meet your needs wherever possible...so please provide us with your answers today.

On behalf of the National Predictive Services Group and our evaluation team, thank you! Questions about this survey or the survey invitation may be directed to Dr. Patricia Winter at predictive_services@fs.fed.us.

(This message was sent 2/24 to anyone who had not yet completed the full survey.)

PLEASE READ THE FOLLOWING BEFORE YOU BEGIN THE SURVEY!

Welcome to the Predictive Services User Needs Assessment Survey! This survey will take approximately 12 to 18 minutes to complete, including time for reviewing questions and entering your answers. Response times may vary depending on how much detail you enter for the open-ended items.

Your answers are anonymous and will only be reported in group form. Of course, your participation is voluntary so if there is any item that is uncomfortable for you to answer you may skip it. However, complete surveys are of much higher value in the overall evaluation we are conducting. Please keep your responses succinct for questions with narrative comments, limiting them to 850 characters, or approximately 130 words. If responses are longer than this the program may cut off part of your answer.

Please note: This is an interactive web-based survey. If you decide to leave the survey during the process of completion you may do so by clicking Save Page and Continue Later. Be sure to complete all items on the page, since the program will assume closing a page means that you are finished with that page. You will then see a prompt to enter, and confirm, your email address. Once this is done the program will display a message that an email has been sent to the address provided. When you want to return to the survey either locate this message in your email inbox, or your original invitation that first led you to this page, and click the link to return. Do not leave the survey by simply closing your web browser.

It is important to remember that when you view a page and move to the next one the program assumes you have completed that page of the survey, whether you have entered your responses or not. Therefore, do not move from one page to the next until you have entered your answers. You will not be able to go back and review your answers or make changes. If you leave and then re-enter the survey the program takes you to the point in the survey where you left off, not to the beginning.

Thank you for your time and valued participation. Please start the survey now by clicking on the CONTINUE button below.

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***Important...

Before you proceed with the survey please enter your email address in the space provided below. This will be used for tracking purposes only and will ensure that once you complete the survey you will be removed from our reminder and follow-up email lists. Your email will NOT be attached to the rest of your data when retrieved in order to maintain anonymity.

You must enter your email address to continue:

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General Housekeeping/Descriptive Items

Before we get started on the survey, here are a few general housekeeping/descriptive items we need you to complete.

1 a. Which agency best describes your current employer? (mark only one)

1. Bureau of Indian Affairs
2. Consulting firm
3. County agency
4. Federal interagency group
5. NOAA
6. State agency
7. Tribal government
8. University or academic institution
9. USDA Forest Service
10. US Fish and Wildlife Service
11. USDI Bureau of Land Management
12. USDI National Park Service
13. Other (please specify) _____

1 b. What is your job title?

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1 c. For the purposes of this survey, you will be categorized into a group of respondents. Please select from one of the categories below, and then as you proceed, please answer the questions given that primary role or responsibility. (You might think of this as choosing your hat for the balance of this survey.) (*mark only one*)

1. Aviation
2. Crew supervisor/Other suppression personnel in Incident Support
3. Dispatcher in the Interagency Coordination System
4. Fire behavior/Long-term analyst for Incident Support
5. Fire behavior/Fire danger analyst within the Interagency Coordination System
6. Fire research
7. Fire use team member in Incident Support
8. National Weather Service meteorologist
9. Fire weather meteorologist in the Interagency Coordination System
10. Forest/BLM District Fire Management Officer or Assistant
11. Fuels specialist
12. Geographic Area Coordination Center manager/coordinator
13. Intelligence within the Interagency Coordination System
14. Incident Management Team member
15. Multi-agency coordinator (National Mobilization Agency Coordinator/Geographic Mobilization Agency Coordinator)
16. Public affairs/information officer
17. Other (please specify) _____

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1 d. How many years in your current position of employment?

1 e. Within your current scope of duties, what level of geographic responsibility do you have? *(mark the highest level that applies)*

1. incident specific
2. local unit - includes forest, district, reserve, etc.
3. county
4. state
5. regional
6. national
7. includes national and international

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Q 1f. Which Geographic Area Coordination Center does your home office fall within? *(select one from the drop down list)*

1. Alaska GACC
2. Eastern GACC
3. Eastern Great Basin GACC
4. Northern California GACC
5. Northern Rockies GACC
6. Northwest GACC
7. Rocky Mountain GACC
8. Southern California GACC
9. Southern GACC
10. Southwest GACC
11. Western Great Basin GACC
12. I'm not really sure, my home office is in (please specify state)

1 g. And within that scope of duties, is your work specific to: (mark only one)

1. my agency only
2. multiple agencies

1 h. And as a part of your job duties, how many people do you directly supervise?

(if these numbers vary please fill in each that applies to you, if you do not have supervising duties please enter '0' in each box)

1. on a routine basis
2. on a seasonal basis
3. on an incident or project basis

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1 i. What is your educational background? (mark highest level)

1. High school or equivalent
2. Associates degree or equivalent
3. Bachelors degree or equivalent
4. Masters degree or equivalent
5. Doctorate or equivalent

Degree or equivalent in

--

1 j. Your gender:

1. male
2. female

1 k. Mark the category that contains your age:

1. 18 to 24
2. 25 to 34
3. 35 to 44
4. 45 to 54
5. 55 to 64
6. 65 or over
7. Don't wish to answer

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General Familiarity with Predictive Services Products and Services

This next set of questions will help us know how familiar you are with Predictive Services products and services, including which ones you might have used. Even if you feel that the products and services are unfamiliar to you, please respond to each item. If you are unsure, mark 'don't know'.

How familiar are you with:

	don't know	not at all familiar 1	2	somewhat familiar 3	4	very familiar 5
2 a. The Predictive Services products on the web?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2 b. The briefings (i.e., national, geographic, situational, or meteorological) offered by Predictive Services?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2 c. The emails with current projections/information from Predictive Services?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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2 d. How often do you access/obtain information from Predictive Services? (*please mark one from each column below*)

During Fire Season

1. daily
2. weekly
3. monthly
4. quarterly
5. rarely
6. not at all

Outside of the Fire Season

1. daily
2. weekly
3. monthly
4. quarterly
5. rarely
6. not at all

2 e. Are there any specific situations during which you access/obtain information from Predictive Services? (*check all that apply*)

1. during a fire incident
2. during fire season
3. when a prescribed burn is being planned
4. when a prescribed burn is taking place
5. none of the above
6. Other (please specify situations) _____

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2 f. Which of the following, if any, of the Predictive Services websites or GACC services (such as briefings) have you used? (*please check all that apply*)

1. NICC (National Interagency Coordination Center)
2. Alaska GACC
3. Eastern GACC
4. Eastern Great Basin GACC
5. Northern California GACC
6. Northern Rockies GACC
7. Northwest GACC
8. Rocky Mountain GACC
9. Southern California GACC
10. Southern GACC
11. Southwest GACC
12. Western Great Basin GACC
13. I'm not really sure
14. none of the above

If you selected multiple GACCs please indicate how true or untrue the following statement is:

	not at all true 1	2	somewhat true 3	4	very true 5
The Predictive Services products and services available through the GACCs you selected are similar in format, quality, and the range of products and services offered.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Please comment on your answer:

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Please indicate how true or untrue each of the following statements is by marking the number that best describes your feelings.

	not at all true 1	2	somewhat true 3	4	very true 5
2 g. I rely on Predictive Services products and services in making important decisions related to my job duties/functions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	not at all true 1	2	somewhat true 3	4	very true 5
2 h. I think there is overlap in the type of information that I can obtain from Predictive Services and other sources.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If you selected a 4 or 5, please specify the other sources:

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	not at all true 1	2	somewhat true 3	4	very true 5
2 i. I rely on other sources more heavily than the products and services provided by Predictive Services.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If you selected a 4 or 5, please specify the other sources:

	not at all true 1	2	somewhat true 3	4	very true 5
2 j. I am unfamiliar with Predictive Services products and services.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	not at all true 1	2	somewhat true 3	4	very true 5
2 k. I am interested in Predictive Services products and services.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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General Assessment of Predictive Services Products and Services

The following questions will help us gather your general assessment of Predictive Services products and services.

Please read the following statements, and indicate your degree of agreement with each by marking the number that best describes your feelings. The information provided by Predictive Services is...

	don't know	strongly disagree 1	2	3	4	strongly agree 5
3 a. accessible	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3 b. timely	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3 c. relevant	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3 d. accurate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3 e. complete	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3 f. easy to understand	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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	none at all 1	2	some 3	4	a great deal 5
3 g. How much trust and confidence do you have in the information provided by Predictive Services?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	not at all 1	2	some 3	4	a great deal 5
3 h. How much do you rely on the information provided by Predictive Services to assist in decision-making?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	not at all likely 1	2	somewhat 3	4	very likely 5
3 i. How likely are you to take action based on Predictive Services information that you receive, or gather from a website?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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- 3 j. Have you contacted Predictive Services to report a problem with a product or service?
 1. Yes
 2. No

	not at all responsive 1	2	3	4	very responsive 5
If yes, please rate how responsive Predictive Services was regarding this problem or problems.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- 3 k. Have you contacted Predictive Services to suggest a new product or service?
 1. Yes
 2. No

	not at all responsive 1	2	3	4	very responsive 5
If yes, please rate how responsive Predictive Services was regarding this suggestion.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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	fell short of my expectations 1	2	3	4	exceeded my expectations 5
3 l. To what extent have Predictive Services products and services met your expectations?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	very dissatisfied 1	2	3	4	very satisfied 5
3 m. Considering everything, how satisfied are you with the products and services provided by Predictive Services?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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Predictive Services Information and Job Fit

The following questions will help us to determine the fit between your job and the products and services that Predictive Services provides.

	low tolerance 1	2	3	4	high tolerance 5
4 a. Rate your tolerance level for false alarms pertaining to fire danger.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4 b. Rate your tolerance level for inaccurate reporting of high fire potential.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4 c. Although it is understood that accurate and reliable reporting of fire danger and high fire potential are desirable, margins of error are involved in predictions. In these cases, do you prefer that: *(mark only one)*

1. Statements of danger or risk be issued with a greater margin of error allowing for an early response, knowing that this may lead to unnecessary alarms and response. (Better safe than sorry.);or
2. Statements of danger or risk should only be given with certainty, knowing that this may allow a few dangerous events to emerge that were not anticipated. ('Don't cry wolf.')

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Do your job responsibilities include gathering and reporting data that is utilized by Predictive Services such as: situation reports, ICS-209's, NFDRS/WIMS, etc.?

If this is part of your duties mark yes, if not mark no and you will skip to 4k.

1. Yes
2. No

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4 d. Is your responsibility for gathering and reporting data that is utilized by Predictive Services: *(check only one)*

1. assigned when others with routine responsibility are away
2. assigned as part of a group that fills this function as you are able
3. one of your primary responsibilities

	not at all likely 1	2	3	4	very likely 5
4 e. How likely is it that you will gather and report data to Predictive Services?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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	strongly disagree 1	2	3	4	strongly agree 5
4 f. I have the resources (e.g., time/skills/personnel) to gather field data for Predictive Services reporting.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4 g. My consistent upward reporting of data (e.g., 1300 obs for RAWs) increases the reliability and quality of Predictive Services products and services.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4 h. My consistent upward reporting of data (e.g., 1300 obs for RAWs) increases the reliability and quality of products and services provided by groups and agencies that use the data from Predictive Services to generate their own products.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4 i. If I don't collect and report Predictive Services data, it could affect my unit's ability to make sound decisions to manage fire.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4 j. If I don't collect and report Predictive Services data it could adversely impact firefighter or public safety.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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The following four questions apply to everyone who accesses Predictive Services products and services.

	don't know	strongly disagree 1	2	3	4	strongly agree 5
4 k. Inaccurate Predictive Services information would decrease my ability to predict fire behavior.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4 l. Inaccurate Predictive Services information used in my decision making may adversely impact firefighter or public safety.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4 m. I can access and apply Predictive Services information as part of my job duties.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4 n. Predictive Services information helps me perform my job with greater precision.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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Assessing the Specific Predictive Services Products and Services that are Available

We now turn to specific products that are located on one or more Predictive Services websites or through one or more GACCs.

5 a. For each item, please indicate whether or not you have used the product or service. If you **have not used** the product or service mark ' not used.' If you **have used** the product or service, please rate the usefulness to you on a 1 to 5 scale where 1=not at all useful and 5=very useful.

	NOTUSED	not at all useful 1	2	3	4	very useful 5
Daily fire weather/danger outlook	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Weekly fire weather/danger outlook	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7-day large fire potential	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10-day fire weather/danger outlook	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Monthly fire weather/danger outlook	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Seasonal fire weather/danger outlook	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Multi-season fire weather maps	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12-hour forecast maps	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7-day precipitation maps	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7-day average maximum temperature maps	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7 and 14-day precipitation percent of normal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7 and 14-day average maximum temperature departure from normal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
National fire weather outlook	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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5 a. (cont.) For each item, please indicate whether or not you have used the product or service. If you **have not used** the product or service mark 'not used'. If you **have used** the product or service, please rate the usefulness to you on a 1 to 5 scale where 1=not at all useful and 5=very useful.

	NOTUSED	not at all useful 1	2	3	4	very useful 5
Regional monsoon update	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Red flag warnings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Incident management situation reports	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
MODIS active fire maps	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Haines index	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Live fuel moisture	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Dead fuel moisture	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Drought information	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ROMAN real time fire weather and information report	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Interagency situation reports	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Smoke program reports	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ERC and fuels charts	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wind maps	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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5 a. (cont.) For each item, please indicate whether or not you have used the product or service. If you **have not used** the product or service mark 'not used'. If you **have used** the product or service, please rate the usefulness to you on a 1 to 5 scale where 1=not at all useful and 5=very useful.

	NOTUSED	not at all useful 1	2	3	4	very useful 5
Upper air soundings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Prescribed fire reports	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fire news and notes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Predictive service forms	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Reference links	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Links to other services/websites	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Observed fire danger images	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Online briefings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
State of the fuels program	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Interagency RAWs program	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Technological guidance and transfer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Training	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Other (please specify)

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5 b. Indicate how you utilize fire danger/fire potential information to support decisions that you make with regard to fire management: *(check all that apply)*

1. severity requests
2. resource allocation
3. resource staffing
4. public use restrictions
5. Other (please specify) _____

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5 c. There are many reasons why people might NOT use the products and services offered by Predictive Services. Please tell us which, if any, of the following reasons applies to you. (*check all that apply*)

1. I never thought about it
2. My current management practices don't require the types of information provided by Predictive Services
3. I need information that is site specific
4. I don't have the time to use these products
5. I don't have the money to use these products
6. I don't have the technology I need to use these products
7. I don't think these products support my agency's current practices
8. I am not mandated to use these products
9. Agency directives/guidelines instruct me to use other information
10. I don't know where to get the technology I need to use these products
11. I don't know how to use these products
12. I don't know where to get advice about using these products
13. I don't trust the advice I get about using these products
14. I don't trust the products and services
15. I don't trust information that is generated by multiple agencies
16. I don't want to use these products

If you marked 'I don't want to use these products', please explain why:

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Revising and Improving Predictive Services Products and Services

Although you have answered many questions that will be helpful in assessing and improving current Predictive Services products and services, we want know if there are improvements or additions that would be of specific interest to you.

- 6 a. Who should Predictive Services include as the primary audience for their products? (*check all that apply*)
1. national fire managers
 2. regional/state fire managers
 3. local/district fire managers
 4. non-fire land managers
 5. public
 6. Other (please specify) _____

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6 b. Please complete this sentence "The information and services provided by Predictive Services would be more useful to me if..."

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	not at all important 1	2	somewhat important 3	4	very important 5
6 c. How important is it to you that Predictive Services products and services have similar formats and quality across GACCs?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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6 d. Are there any products or services that should be added to what Predictive Services provides?

1. Yes
2. No

If you marked Yes, please briefly explain which ones and why:

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6 e. Considering the existing products and services from Predictive Services, how could they be modified to better meet your needs?

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6 f. What, if any, information would you like to see in summary or synthesis form?

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This set of questions asks about preferences for style and format of presenting information.

For each type, please rate how useful that format is to you.

	not at all useful 1	2	3	4	very useful 5
6 g. Data in table form	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6 h. Data in spreadsheet form	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6 i. Data in text form	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6 j. Information presented in regional or national maps	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6 k. Satellite maps	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6 l. Radar maps	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6 m. Bar charts or figures that summarize data	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6 n. Brief annotations that accompany data presentations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6 o. Brief executive summaries of data	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6 p. Web-based ArcIMS maps with user-defined layers and scales	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6 q. Non web-based Geo database files	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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6 r. Is there another style or format for presenting information that we did not list above that would be useful to you?

1. Yes
2. No

If you marked Yes, please describe the alternate style or format:

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Please provide any comments you have about Predictive Services that were not covered above, or any comments you have about this survey.

Thank you again for your assistance with this assessment of user needs.

Please check here if you would like a copy of the final report. One will be sent to you upon completion of the report.

Appendix E: Non-federal Survey Messages and Instrument

SUBJECT: Predictive Services needs your input! Please respond by May 9th.

Greetings Member of the Fire Management Community!

A survey seeking feedback on Predictive Services is being conducted on behalf of the National Predictive Services Group. Predictive Services (www.nifc.gov/nicc/index.htm) provides timely fire and weather related information to fire managers and others user groups. We want to know about your information needs and interests as a user or potential user of Predictive Services. Your answers are vital in helping to evaluate current products and services offered by Predictive Services. Even if you are somewhat unfamiliar with Predictive Services we hope that you will participate. Your insights and opinions will be greatly appreciated!

*****The National Weather Service (NWS) recently conducted a Customer Satisfaction Survey that was issued in early November 2005. It is important to note that the information we are gathering in this survey is unique to Predictive Services and was not covered in the recent NWS survey. Therefore we ask that you complete this survey even if you have already responded to the NWS Customer Satisfaction questionnaire.*****

Please participate by using the link below, which will take you to our web-based interactive survey. The survey takes approximately 12 to 18 minutes to complete and your answers will be anonymous. Please do not forward this survey invitation, it is linked to your unique respondent ID.

If you have questions about this survey, or you would prefer to complete the survey by mail or fax, you may contact Dr. Patricia Winter by sending an email to predictive_services@fs.fed.us or by calling her at 951-680-1557. If you have difficulty with the survey site please send Dr. Winter a message and an alternate form of participation will be arranged. If you have questions about Dr. Winter please see the research unit's website at www.fs.fed.us/psw/programs/recreation

In advance of your participation, we thank you for your time and assistance!

Please click on the link or go to the site below to take the survey:

<http://www.questionpro.com/akira/TakeSurvey?id=306795>

Dr. Patricia Winter
(951)680-1557

(This message was sent to the full sample on 3/28/06)

Reminder message....

SUBJECT: REMINDER: Predictive Services still needs your input! Responses must be submitted by May 9th.

Hello again!

We recently sent you an invitation to participate in a survey about Predictive Services. We have not yet heard from you. Please take a few minutes now and click on the link below so that we can include your answers in our assessment. We understand that your time is valuable and you have our thanks for assisting us in evaluating Predictive Services. If you have any questions please address them to Dr. Patricia Winter at predictive_services@fs.fed.us.

Thank you for your time!

Please click on the link or go to the site below to take the survey:

<http://www.questionpro.com/akira/TakeSurvey?id=306795>

Dr. Patricia Winter
(951)680-1557

(Above message was sent 4/7 to all non-federal sample members who had not completed the survey.)

Reminder message....

SUBJECT: REMINDER: Predictive Services still needs your input! Responses must be submitted by May 9th.

Hello again!

We recently sent you an invitation to participate in a survey about Predictive Services. We have not yet heard from you. We will close the survey site on March 6th, so we need your participation before that date. Please take a few minutes now and click on the link below so that we can include your answers in our assessment. We understand that your time is valuable and you have our thanks for assisting us in evaluating Predictive Services. If you have any questions please address them to Dr. Patricia Winter at predictive_services@fs.fed.us.

Thank you for your time!

Please click on the link or go to the site below to take the survey:

<http://www.questionpro.com/akira/TakeSurvey?id=306795>

Dr. Patricia Winter
(951)680-1557

(This message was sent 4/21, and only to users who had not completed the full survey.)

Reminder message....

SUBJECT: Our Predictive Services survey site is about to close...We still want your input! RESPOND BY May 9th!

Dear Member of the Fire Management Community

We have sent two previous messages inviting you to participate in an online survey regarding Predictive Services. We still don't have your completed survey, and time is short! We are closing the survey on May 9th, so if you plan on participating please do so now by clicking on the link below. Remember, this survey only takes about 12 to 18 minutes to complete and the results will be used to evaluate the products and services from Predictive Services. We want to be sure the products and services meet your needs wherever possible...so please provide us with your answers today.

On behalf of the National Predictive Services Group and our evaluation team, thank you!
Questions about this survey or the survey invitation may be directed to Dr. Patricia Winter at predictive_services@fs.fed.us.

Please click on the link or go to the site below to take the survey:

<http://www.questionpro.com/akira/TakeSurvey?id=306795>

Dr. Patricia Winter
(951)680-1557

(This last mailing was sent 5/2, only to non-respondents)

PLEASE READ THE FOLLOWING BEFORE YOU BEGIN THE SURVEY!

Welcome to the Predictive Services User Needs Assessment Survey! This survey will take approximately 12 to 18 minutes to complete, including time for reviewing questions and entering your answers. Response times may vary depending on how much detail you enter for the open-ended items.

Your answers are anonymous and will only be reported in group form. Of course, your participation is voluntary so if there is any item that is uncomfortable for you to answer you may skip it. However, complete surveys are of much higher value in the overall evaluation we are conducting. Please keep your responses succinct for questions with narrative comments, limiting them to 850 characters, or approximately 130 words. If responses are longer than this the program may cut off part of your answer.

Please note: This is an interactive web-based survey. If you decide to leave the survey during the process of completion you may do so by clicking Save Page and Continue Later. Be sure to complete all items on the page, since the program will assume closing a page means that you are finished with that page. You will then see a prompt to enter, and confirm, your email address. Once this is done the program will display a message that an email has been sent to the address provided. When you want to return to the survey either locate this message in your email inbox, or your original invitation that first led you to this page, and click the link to return. Do not leave the survey by simply closing your web browser.

It is important to remember that when you view a page and move to the next one the program assumes you have completed that page of the survey, whether you have entered your responses or not. Therefore, do not move from one page to the next until you have entered your answers. You will not be able to go back and review your answers or make changes. If you leave and then re-enter the survey the program takes you to the point in the survey where you left off, not to the beginning.

A Federal agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a currently valid OMB control number. Public burden for the collection of this information is estimated at about 20 minutes per response. Comments regarding this collection of information should be directed to Dr. Patricia Winter at predictive_services@fs.fed.us or by calling (951) 680-1557. Comments or concerns about the approval may be directed to the Office of Planning and Performance Management, Department of the Interior, 1849 C Street, NW, Washington, DC 20241. OMB No. 1040-0001. Expiration Date: March 31, 2008.

Thank you for your time and valued participation. Please start the survey now by clicking on the CONTINUE button below.

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*****Important...**

Before you proceed with the survey please enter your email address in the space provided below. This will be used for tracking purposes only and will ensure that once you complete the survey you will be removed from our reminder and follow-up email lists. Your email will NOT be attached to the rest of your data when retrieved in order to maintain anonymity.

You must enter your email address to continue:

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General Housekeeping/Descriptive Items

Before we get started on the survey, here are a few general housekeeping/descriptive items we need you to complete.

1 a. Which agency best describes your current employer? (mark only one)

1. Consulting firm
2. County agency
3. State agency
4. Tribal government
5. University or academic institution
6. Other (please specify) _____

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1b. For the purposes of this survey, you will be categorized into a group of respondents. Please select from one of the categories below, and then as you proceed, please answer the questions given that primary role or responsibility. (You might think of this as choosing your 'hat' for the balance of this survey.) (mark only one)

1. Crew supervisor/Other suppression personnel in Incident Support
2. Dispatcher in the Interagency Coordination System
3. Fire behavior/Long-term analyst for Incident Support
4. Fire research
5. Fire use team member in Incident Support
6. Fire weather meteorologist in the Interagency Coordination System
7. Fuels specialist
8. Intelligence within the Interagency Coordination System
9. Incident Management Team member
10. Public affairs/information officer
11. Other (please specify) _____

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1c. Which Geographic Area Coordination Center does your home office fall within? (select one from the drop down list)

1. Alaska GACC
2. Eastern GACC
3. Eastern Great Basin GACC
4. Northern California GACC
5. Northern Rockies GACC
6. Northwest GACC
7. Rocky Mountain GACC
8. Southern California GACC
9. Southern GACC
10. Southwest GACC
11. Western Great Basin GACC
12. I'm not really sure, my home office is in (please specify state)

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1 d. How many years in your current position of employment?

1 e. What is your educational background? (*mark highest level*)

1. High school or equivalent
2. Associate's degree or equivalent
3. Bachelor's degree or equivalent
4. Master's degree or equivalent
5. Doctorate or equivalent

Degree or equivalent in

1 f. Your gender:

1. male
2. female

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General Familiarity with Predictive Services Products and Services

This next set of questions will help us know how familiar you are with Predictive Services products and services, including which ones you might have used. Even if you feel that the products and services are unfamiliar to you, please respond to each item. If you are unsure, mark 'don't know'.

How familiar are you with:

	don't know	not at all familiar 1	not very familiar 2	more or less familiar 3	familiar 4	very familiar 5
2 a. The Predictive Services products on the web?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2 b. The briefings (i.e., national, geographic, situational, or meteorological) offered by Predictive Services?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2 c. The emails with current projections/information from Predictive Services?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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2 d. Are there any specific situations during which you access/obtain information from Predictive Services? (*check all that apply*)

1. during a fire incident
2. during fire season
3. when a prescribed burn is taking place
4. none of the above
5. Other (please specify situations) _____

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2 e. Which of the following, if any, of the Predictive Services websites or GACC services (such as briefings) have you used? *(please check all that apply)*

1. NICC (National Interagency Coordination Center)
2. Alaska GACC
3. Eastern GACC
4. Eastern Great Basin GACC
5. Northern California GACC
6. Northern Rockies GACC
7. Northwest GACC
8. Rocky Mountain GACC
9. Southern California GACC
10. Southern GACC
11. Southwest GACC
12. Western Great Basin GACC
13. I'm not really sure
14. None of the above

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Please indicate how true or untrue each of the following statements is by marking the option that best describes your feelings.

	not at all true 1	not very true 2	more or less true 3	true 4	very true 5
2 f. I think there is overlap in the type of information that I can obtain from Predictive Services and other sources.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If you selected a 4 or 5, please specify the other sources:

	not at all true 1	not very true 2	more or less true 3	true 4	very true 5
2 g. I rely on other sources more heavily than the products and services provided by Predictive Services.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If you selected a 4 or 5, please specify the other sources:

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General Assessment of Predictive Services Products and Services

The following questions will help us gather your general assessment of Predictive Services products and services.

Please read the following statements, and indicate your degree of agreement with each by marking the number that best describes your feelings.

The information provided by Predictive Services is...

	don't know	strongly disagree 1	somewhat disagree 2	neither agree nor disagree 3	agree somewhat 4	strongly agree 5
3 a. accessible	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3 b. timely	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3 c. relevant	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3 d. accurate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3 e. complete	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3 f. easy to understand	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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	none at all 1	a little 2	some 3	much 4	a great deal 5
3 g. How much trust and confidence do you have in the information provided by Predictive Services?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	not at all 1	a little 2	some 3	much 4	a great deal 5
3 h. How much do you rely on the information provided by Predictive Services to assist in decision-making?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	highly unlikely 1	unlikely 2	possible 3	likely 4	very likely 5
3 i. How likely are you to take action based on Predictive Services information that you receive, or gather from a website?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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	very dissatisfied 1	somewhat dissatisfied 2	neither satisfied nor dissatisfied 3	somewhat satisfied 4	very satisfied 5
3n. Considering everything, how satisfied are you with the products and services provided by Predictive Services?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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Please provide any comments you have about Predictive Services that were not covered above, or any comments you have about this survey.

Thank you again for your assistance with this assessment of user needs.

Please check here if you would like a copy of the final report. One will be sent to you upon completion of the report.