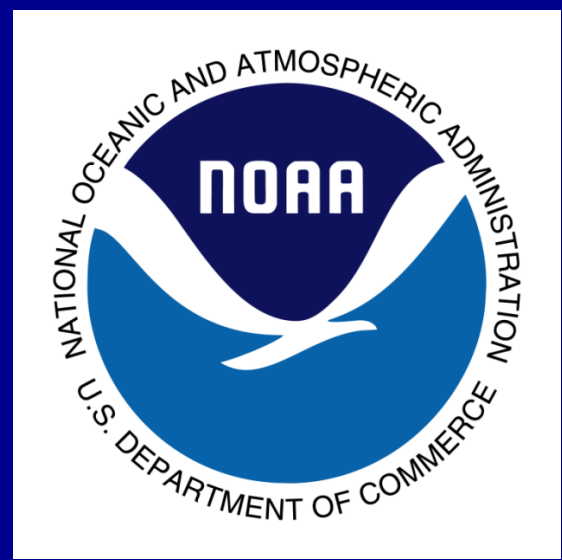


# Users' Assessment of the NWS Point-and-Click Webpage Forecast Information

Julie L. Demuth<sup>1</sup> | Douglas C. Hilderbrand<sup>2</sup> | Jeffrey K. Lazo<sup>1</sup> | Rebecca E. Morss<sup>1</sup> | Taylor V. Trogon<sup>1</sup>

<sup>1</sup> National Center for Atmospheric Research, Societal Impacts Program ([www.sip.ucar.edu](http://www.sip.ucar.edu))

<sup>2</sup> NOAA's National Weather Service, Office of Science and Technology ([www.nws.noaa.gov/ost](http://www.nws.noaa.gov/ost))



## Introduction & Survey Implementation

**Axiom: An important goal of weather forecasting is to serve society by communicating useful information that enhances people's decision-making and reduces their risk to life and property.**

- This project focuses on users of the National Weather Service (NWS) point-and-click (PnC) webpage. We are assessing their uses of, perceptions of, and preferences for weather forecast information. We will identify findings and make recommendations to the NWS Web Tactical Team to improve the communication of PnC forecast information in ways that better meet users' needs.

### Surveying NWS Point-and-Click (PnC) Web Users

- We are employing multiple methods to assess users' perspectives of the PnC forecast information – including focus groups and a usability lab study – but the key data collection efforts are Internet-based surveys of PnC users.
- The target population for this study is all users of all NWS PnC pages. No complete list of this population of PnC users exists, so we first collected people's contact information via the PnC page. The recruitment text (Figure 1) was posted on every PnC page in the country from July 28 to September 14. Over 88,000 people submitted unique contact information.

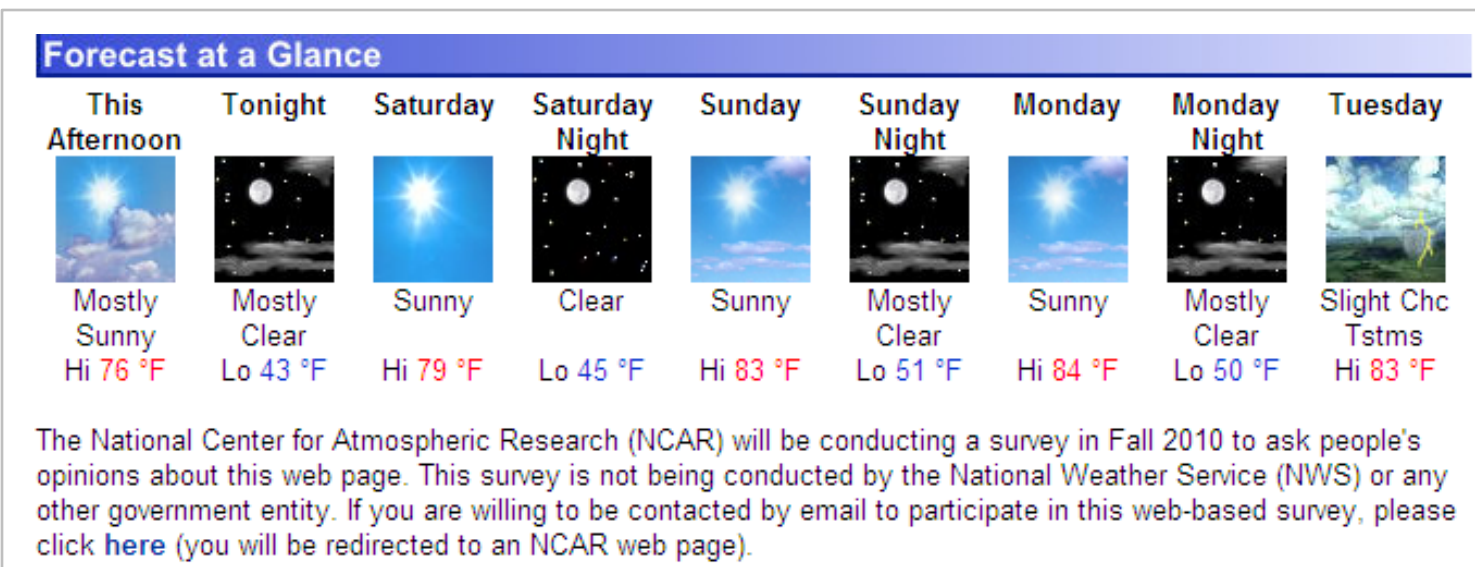


Figure 1. Example screen shot from the NWS point-and-click webpage showing the sample recruitment text.

## Survey – Sampling & Demographics

- We implemented the first Internet-based survey of NWS users in December 2010. From the list of 88,000+ users, we randomly selected and invited 9995 people by email; 212 of the emails bounced. Of the 9783 remaining invitations, we received 5153 completed surveys (52.7% response rate) from all over the United States (Figure 2).
- Two questions served as checks to ensure that respondents (a) have heard of the NWS and (b) have ever used the PnC webpage. Accounting for the 12 and 63 respondents who said “no” to these questions, respectively, the sample size for questions about the PnC forecast page is n=5078.
- Age (n=5153)
  - mean=51.4, stdev=13.1, median=53.0
- Gender (n=5077)
  - 71.8% male
  - 28.2% female
- Race (n=5153)
  - 94.0% Caucasian
  - 0.4% African American
- Ethnicity (n=4933)
  - 2.1% Hispanic, Latino, or Spanish origin
- Education (n=5139)
  - 34.6% have graduate degrees
  - 31.6% have less than a Bachelor's deg
- Employment (n=5153)
  - 60.0% full time
  - 12.9% part time
  - 23.4% retired
- Income (n=4550)
  - 26.5% < \$50K
  - 40.1% \$50-100K
  - 21.6% \$100-150K
  - 11.8% > \$150K

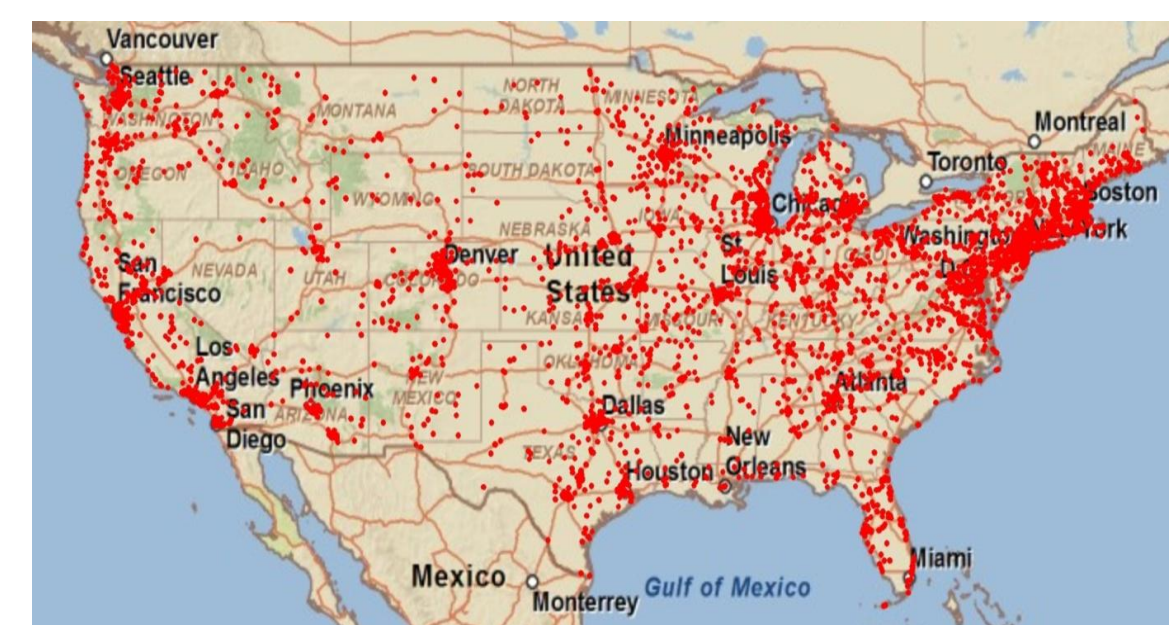


Figure 2. Geographic locations of survey respondents based on respondent-supplied zip codes. Not shown are two respondents from Alaska and four respondents from Hawaii.

## Survey Results – Uses of Point-and-Click

- We gathered information about several dimensions of respondents' uses of the PnC forecast webpage, including:
  - ways of accessing the PnC webpage (Figure 3),
  - frequency of using the different parts of the PnC webpage (Figure 4),
  - experience with the PnC webpage (Table 1),
  - time period for seeking forecast information from the PnC webpage (Figure 5), and
  - reasons for using PnC forecast information (Table 2).

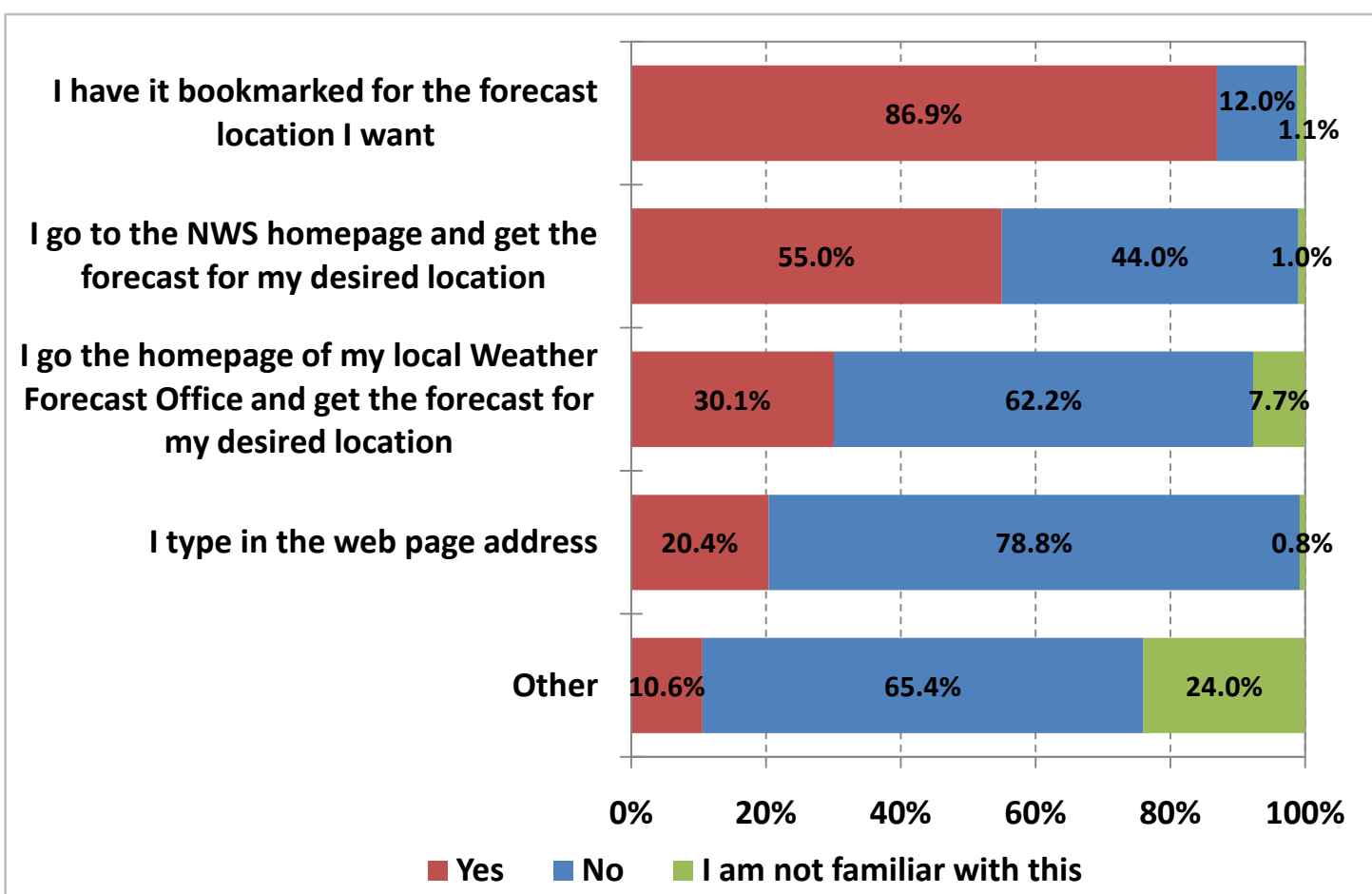


Figure 3. Ways respondents access the NWS PnC webpage. Respondents could indicate “yes” to more than one item. (n=5078)

Table 1. Measures of respondents' experience with the NWS PnC webpage. (n=5078)

Variable	Category	Percentage
Length of time using the NWS PnC webpage	Less than 1 year	2.8%
	1-3 years	15.0%
	More than 3 years	82.2%
	Never or rarely	0.7%
Typical frequency of visiting NWS PnC webpage	Once a month to twice a week	16.3%
	Once a day	26.2%
	Two or more times a day	56.8%
	Less than 1 minute	26.0%
Time spent on the NWS PnC webpage during a typical visit	1-3 minutes	37.7%
	3-5 minutes	22.3%
	Greater than 5 minutes	14.0%
	Less than 1 minute	26.0%

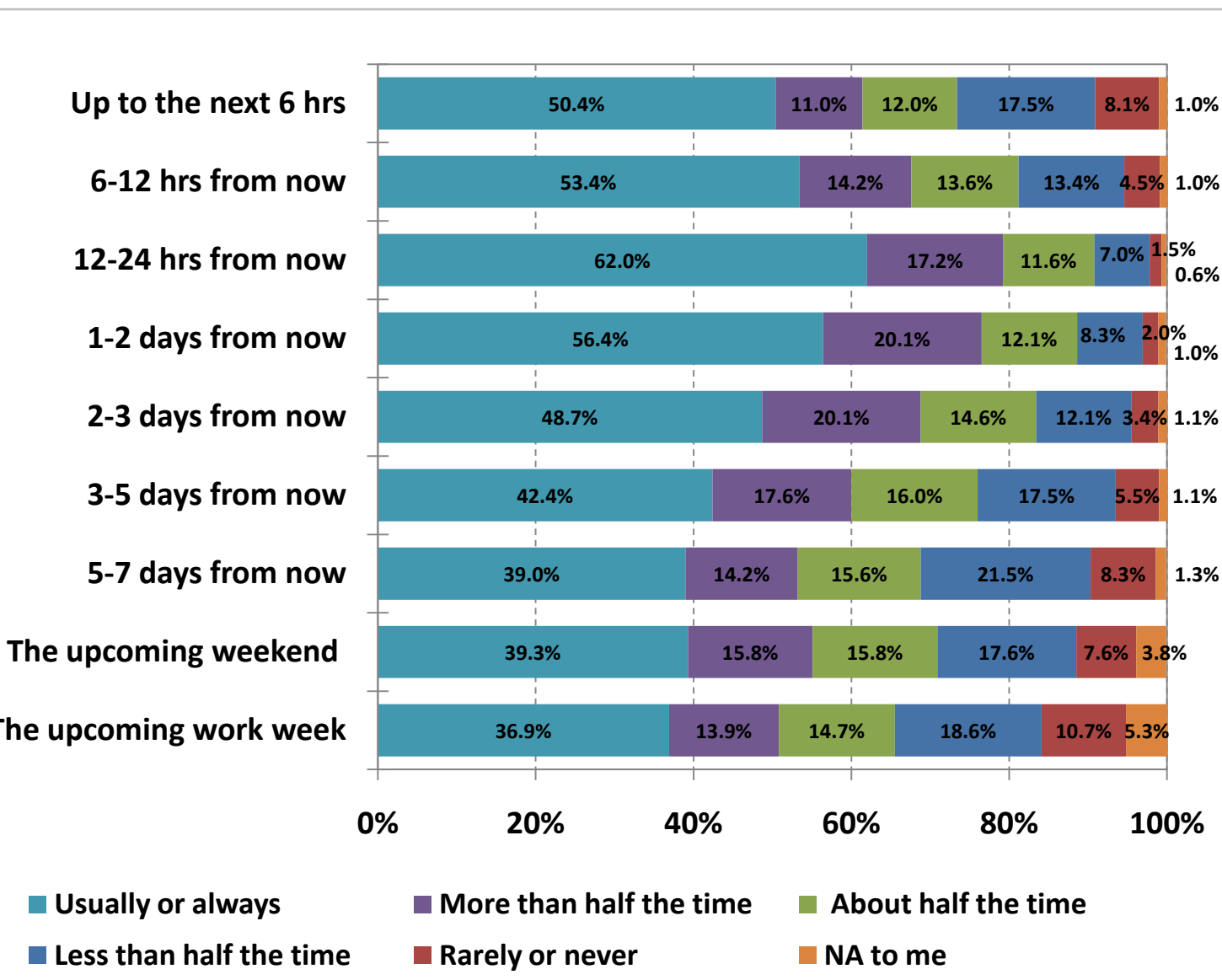


Figure 5. Frequency with which respondents seek forecast information from the NWS PnC webpage for the time periods listed. (n=5078)

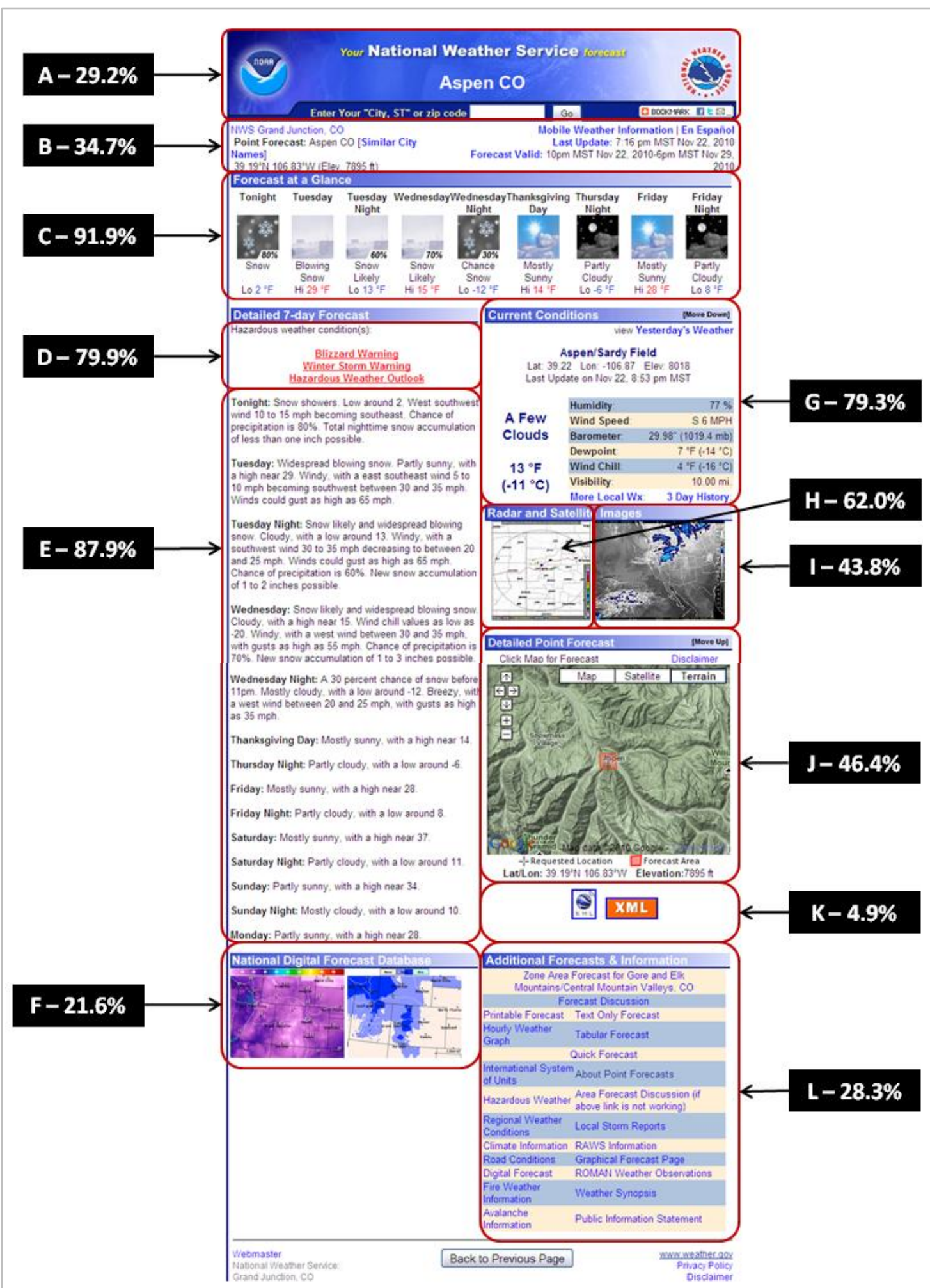


Figure 4. Percentage of respondents who use the different parts of the NWS PnC webpage more than half the time on average. This labeled image was included as part of the survey question. (n=5078)

Table 2. Reasons for getting forecast information from the NWS PnC webpage for which a majority of respondents agree or strongly agree. (n=5078)

Reason for Getting Forecast Info	PnC	Percentage Who Agree or Strongly Agree	Mean*
To be aware of potential changes in the weather		97.0%	4.5
To find out about important weather information		96.4%	4.5
To go directly to important weather information		93.7%	4.4
To seek weather information for a specific decision		91.3%	4.4
To seek weather information for a specific task		88.7%	4.3
To keep up with what is going on with the weather		89.1%	4.2
To learn about the major weather events of the day		75.6%	3.9
To avoid advertisements		56.8%	3.5
To find out about interesting weather		54.6%	3.4

\* Based on a 5-point scale where 1 = “strongly disagree” and 5 = “strongly agree”.

## Survey Results – Perceptions of & Preferences for Point-and-Click

- We gathered information about several dimensions of respondents' perceptions of and preferences for the PnC forecast webpage, including:
  - importance and ease of understanding the different parts of the PnC page (Table 3),
  - perceptions of the PnC layout and provision of general and hazardous weather forecast information (Table 4), and
  - level of forecast detail desired for various forecast periods (Figure 6).

Table 3. Summary of respondents' perceptions of the importance and ease of understanding the different parts of the NWS PnC webpage. (n=5078)

Part (labeled in Figure 4) of PnC Webpage	Importance*		Ease of Understanding**	
	Mean	StDev	Mean	StDev
Part A	3.1	1.3	4.5	0.7
Part B	3.2	1.2	4.4	0.8
Part C	4.5	0.8	4.7	0.5
Part D	4.6	0.8	4.5	0.7
Part E	4.5	0.7	4.7	0.6
Part F	2.8	1.3	3.7	1.2
Part G	4.3	0.9	4.7	0.6
Part H	4.1	1.2	4.2	1.0
Part I	3.6	1.2	4.1	1.1
Part J	3.4	1.3	4.1	1.1
Part K	1.7	1.0	3.0	1.4
Part L	2.9	1.4	3.6	1.2

\* Based on a 5-point scale where 1 = “not at all important” and 5 = “extremely important”.

\*\* Based on a 5-point scale where 1 = “not at all easy to understand” and 5 = “extremely easy to understand”

Table 4. Respondents' perceptions of the PnC layout and provision of forecast information. (n=5078)

Perception of PnC Forecast Information	Percentage Who Agree or Strongly Agree	Percentage Who Disagree or Strongly Disagree
I think the information provided in the forecast pictures and text is consistent	89.2%	2.5%
I think the forecast pictures communicate the weather effectively	85.8%	3.2%
I would like to have a map on the point-and-click page showing me the area that is under a hazardous weather threat	76.6%	3.6%
I would like more information about the uncertainty associated with a forecast	58.6%	11.3%
I would like to have the ability to select the size of the area that a forecast represents	53.2%	10.8%
I would like to be able to personalize the web page with the types of forecast information that I want	50.4%	16.5%
When there are multiple hazards being forecast, it's easy to tell which ones are most important	47.2%	22.3%
I think that, when it occurs, hazardous weather should be presented more prominently than it is now	39.9%	20.4%
I think the web page is too cluttered	13.2%	62.1%
I think the forecast pictures make the forecast seem worse than the weather will be	9.0%	67.8%

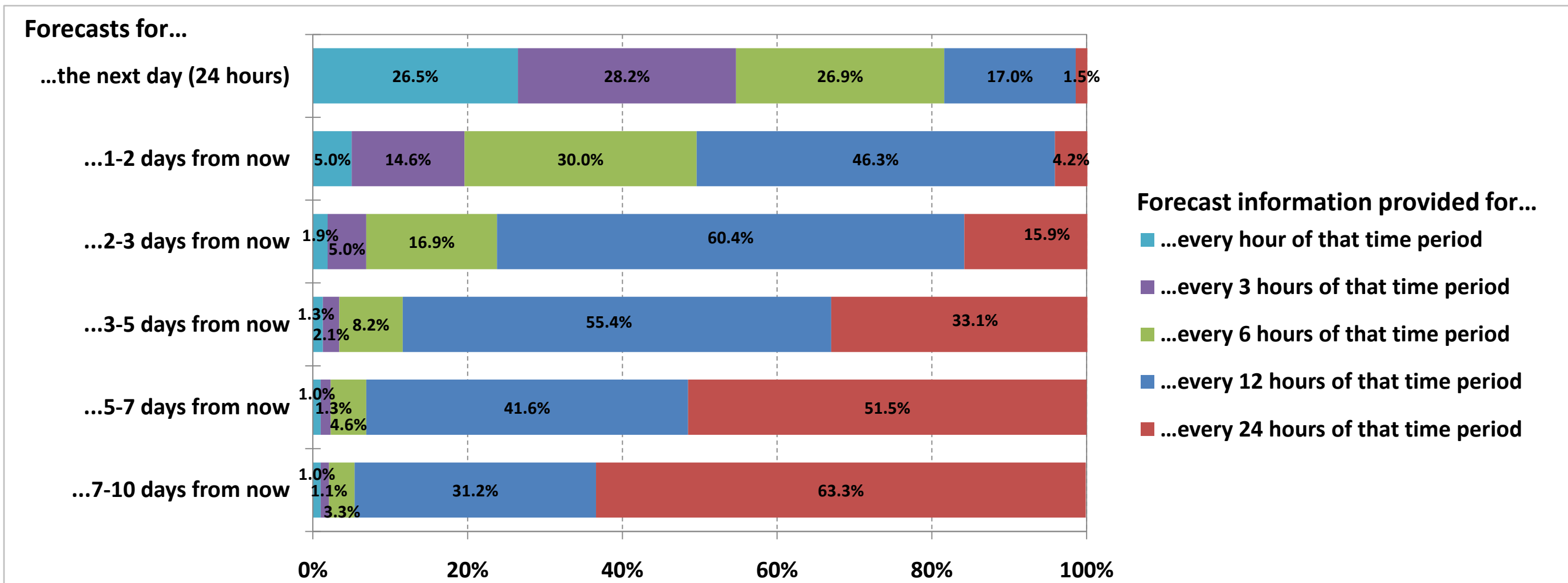


Figure 6. Respondents' preferences for the temporal resolution of forecast information for various forecast periods. (n=5078)

## Acknowledgements & Contact Information

Thank you to the following NWS personnel for their assistance and feedback on the survey design and implementation: Andy Bailey, Robert Bunge, Curtis Carey, Carl Gorski, Andy Horvitz, Paul Iniguez, Elliott Jacks, Ron Jones, Mark Mitchell, Krissy Scotten, and Jennifer Sprague.

This work is jointly funded by the NWS Meteorological Development Laboratory (MDL) and Office of Climate, Water, and Weather Services (OCWWS). The NCAR's Collaborative Program on the Societal Impacts and Economic Benefits of Weather Information (SIP) is funded by the National Science Foundation and the National Oceanic and Atmospheric Administration through the U.S. Weather Research Program. NCAR is sponsored by the National Science Foundation. Views and opinions in this paper are those of the authors.

Please contact us if you have questions or comments!

Julie Demuth – [jdemuth@ucar.edu](mailto:jdemuth@ucar.edu)

Douglas Hilderbrand – [douglas.hilderbrand@noaa.gov](mailto:douglas.hilderbrand@noaa.gov)

Jeff Lazo – [lazo@ucar.edu](mailto:lazo@ucar.edu)