National Weather Service
Annual Study

2013 Final Presentation

FCG

U. S. Department of the Interior

Agenda

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- National Hydrologic Services Program – Optional Section
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- Key Segments and Additional Information
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Introduction

Program Overview

Key Contacts

- NWS: Doug Young, Sal Romano
- CFI Group: Dave Keen, Paul Klimecki

Project Background

- CFI Group has been working with the National Weather Service since 2002
- Multiple studies have been conducted, including event driven studies, various user groups, and partner studies

Program Objective

- Help NWS achieve its strategic and tactical goals by providing:
  - Feedback on NWS products, services and overall customer satisfaction
  - Recommendations for future focus

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Survey Methodology

Data Collection

- Survey link was made available on NWS web pages September 9th – 30th
- A total of 27,973 surveys were completed and used for analysis

Survey Design

- The survey measured satisfaction with general NWS products and services
- The survey further measured satisfaction with 4 (optional) specific service areas:
  - National Fire Weather Program
  - National Hurricane Center Program
  - National Hydrologic Services Program
  - National Climate Services Program

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Key Findings

At 82, NWS CSI is still strong and exceeds key benchmarks

- 14 points higher than the Federal Government ACSI and 5 points above the overall ACSI average
- Future behavior (loyalty and advocacy) scores perform extremely well, as respondents are very likely to use NWS again and recommend NWS to others

Almost 9 in 10 respondents use NWS information for personal reasons (including recreation) and a majority consider themselves Weather Enthusiasts

- Only 1 in 4 use NWS weather information for work related decisions
- The use of mobile devices to obtain information on the weather continues to grow dramatically (up from 37% in 2012 to 48%). While still an important source, commercial radio utilization is receding.
- Virtually all continue to use NWS Web Sources to get weather info, with local/cable TV, NOAA Weather Radio, and Non-NWS Web also important sources.

While already highly rated, the overall score for Hazardous Services improves further in 2013 (up 2 points compared with 2012). It is notable that scores for each specific warning measured have also improved slightly over the past year.

- Hazardous Services scores are up for the Central, Eastern, Southern and Pacific regions.

Dissemination Services – Automated is another CSI driver that exhibits improvement in 2013 (also up 2 points from 2012).

- 'Ease of locating data on servers' is driving this increase, improving by 5 points over the past year.

Dissemination Services – Website is not only a highly rated CSI driver, it is also the strongest influence on CSI.

- Information is found to be up-to-date and easy to understand. While performing well, ease of locating information could be improved.

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It is notable that satisfaction levels across respondents from different survey segments (survey source) are generally very comparable (and strong)

A survey link was posted to the NWS Website, Social Media, the Ready.gov FEMA website, and university websites. Satisfaction scores across all user groups hover around 80.

	NWS Website	Social Media	Ready.gov*	University*
Sample Size	**25,993**	**1,686**	**12**	**3**
Hazardous Services	**88**	**89**	**87**	**63**
User Support Services	**89**	**88**	**90**	**94**
Dissemination Services - Website	**85**	**84**	**83**	**84**
Dissemination Services - Automated	**79**	**77**	**77**	**--**
Customer Satisfaction Index	**82**	**83**	**78**	**81**
Overall Satisfaction	87	89	84	83
Meets expectations	76	78	69	78
Compared to ideal	80	81	78	83
Likelihood Take Action	**90**	**93**	**81**	**85**
Likelihood to Use in Future	**97**	**96**	**95**	**89**
Likelihood to Recommend	**92**	**93**	**92**	**63**

*Caution: Low base size

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Respondent Profile

General Profile of NWS Respondent

- Private citizen who resides in the US – a third in the Central region (33%) and the remainder evenly distributed across the Eastern (23%), Southern (21%), and Western Regions (22%)
- Overwhelmingly uses NWS information for personal use (recreational use to a lesser degree), with a majority describing themselves as Weather Enthusiasts.
- Is a white male, between the ages of 45 and 64, and has attended at least some college (56% have 4 year or post graduate degrees)
- Most commonly uses NWS Web Sources, followed by Local or cable TV, Mobile devices (trending up significantly in the past year), NOAA Weather Radio, Non-NWS Web Sources and Commercial radio to gather weather information. Product usage revolves around NOAA forecasts, watches, warnings, alerts, as well as Radar data and Observational data
- Future plans to obtain NWS information include the use of Desktop/Laptop Computers, Mobile devices, and NOAA Weather Radio All-Hazards
- Is familiar with a wide variety of Hazardous Services warnings, including Severe Thunderstorm Warnings, Severe Thunderstorm Watches, Winter Storm Warning, and Flash Flood warnings
- Is even more likely to have a hazardous weather safety plan than in 2012 (may or may not have a hazardous weather emergency preparedness kit)
- Typically not using NWS information to make job related decisions

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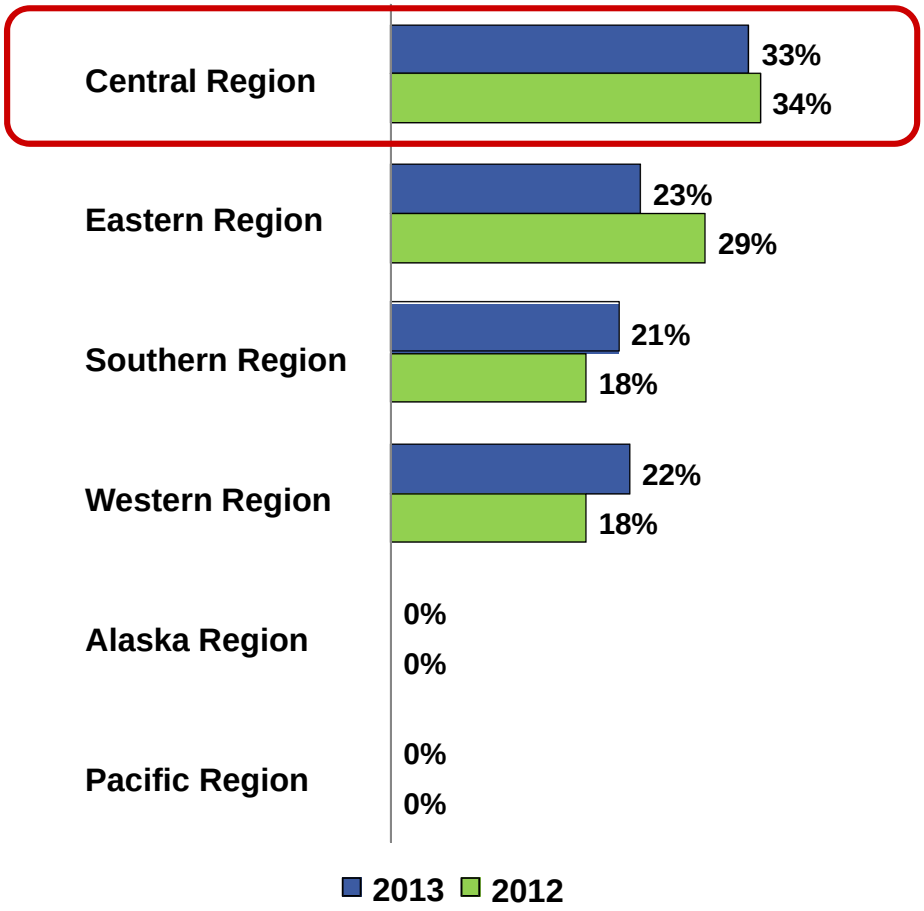
A plurality of respondents are in the Central Region

As in previous years, the Central Region remains the most strongly represented region (33%) in 2013. Both the Southern (21%) and Western (22%) Regions exhibit increases, while Eastern Region representation (23%) drops this year.



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NWS Information is overwhelmingly for personal use; Aviation mostly private

While a majority of respondents in past years have indicated they use NWS information for Personal reasons, almost 9 in 10 respond this way in 2013 (88%). A majority also use NWS information for Recreational purposes (58%) and consider themselves Weather Enthusiasts (54%). Close to 1 in 4 (23%) use NWS information for Work-related decisions.

Uses of NWS information*		
Personal	88%	24,513
Recreation	58%	16,342
Weather Enthusiast	54%	15,149
Work-related decisions	23%	6,478
Agriculture	17%	4,630
NWS Data Provider	9%	2,627
Land Management Decisions	8%	2,217
Education	7%	1,935
Amateur Radio	6%	1,671
Research	6%	1,572
Aviation	5%	1,410
Broadcast/Print Media	3%	780
Health Services	3%	707
Marine	3%	896
Commodities Markets	1%	295
Consulting	1%	397
Other	8%	2,302
Number of Respondents	**27,973**	

*Total percentage exceeds 100 due to multiple responses

For those respondents using NWS information for Aviation purposes, the majority are operating private aircrafts (73%).

Type of Aviation		
Private Aircraft	73%	1,036
Comm Aircraft	19%	271
Dispatcher	4%	54
Air Traffic Controller	3%	49
Number of Respondents	**1,410**	

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Respondents are primarily using NWS Web Sources, Local/Cable TV, Mobile devices, and/or NOAA Weather Radio to get their information (particularly the former)

NWS Web Sources easily remains the top weather information source in 2013, while Mobile devices continue to increase (up 11% percentage points this year). Local or cable TV, NOAA Weather Radio/All Hazards, and non-NWS Web Sources all rank in the top five as sources regularly used to obtain weather, water and climate information.

	2011	2012	2013
Information sources*			
NWS Web	95%	93%	93%
Local or cable TV	52%	52%	54%
Mobile devices	32%	37%	48%
NOAA Weather Radio/All Hazards	42%	41%	43%
Non-NWS Web	31%	33%	32%
Commercial Radio	30%	29%	24%
Cell Phone	--	--	19%
Newspaper	18%	19%	17%
Social Media	9%	11%	14%
Satellite TV	18%	16%	14%
Email	--	16%	11%
Landline Telephone	--	--	5%
NOAA Weather Wire	6%	5%	4%
Emerg Mgrs Weather Info Net	4%	4%	4%
Satellite radio	5%	4%	3%
Flight Services	--	5%	3%
NOAAPort	6%	5%	2%
DUATS	2%	2%	2%
U.S. Coast Guard Broadcasts	6%	6%	2%
Family of Services (FOS)	5%	4%	1%
World Area Forecast System	2%	2%	1%
NAVTEX receiver	1%	1%	0%
Immarsat-C SafetyNET	0%	0%	0%
Radiofacsimile	1%	1%	0%
Other	1%	2%	5%
Number of Respondents	**32,532**	**23,607**	**27,973**

*Total percentage exceeds 100 due to multiple responses

Mobile device usage has been on the rise since 2011.

Family of Services (FOS) has dropped 4% since 2011.

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Mobile applications requested by respondents

Respondents would like mobile applications to be available and easily accessible. Up-to-date radar and/or satellite images would also be helpful.

"Better access to Doppler Radar from mobile devices, more automated wind sensors, quicker updated forecasts when conditions do not follow earlier forecasts."

"Mobile solution other than the mobile website. Apps with push notifications and constant info are helpful. Mobile radar and satellite information would be a great addition."

"Your mobile site never works well. You really need to invest in improving the options there. FB is not nearly as useful as the information on your website."

"Develop weather applications for mobile devices, perhaps one app for each specific major category of weather (QPF, temp, human hazards, coastal/marine hazards, general weather forecast)."

"We don't watch TV, so offering mobile apps for weather notification is very helpful."

"Mobile apps are a definite necessity, going to the website and entering your zip code is a bit of a drag. I'd really love to see that soon. Thanks."

"Ultimately, make relevant info easier to access on mobile devices. E.g. make satellite and radar images (history and predicted) easier to see on mobile devices. Seeing the images helps one to better guess if the 60% chance of rain will fall where they are or where they will be (particularly relevant walking in a city)."

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Virtually all respondents use NOAA Forecasts, outlooks, watches, warnings and/or alerts

As expected based on past findings, NOAA NWS products used most often are "Forecasts, outlooks, watches, warnings, alerts." Radar data and Weather observations round out the top three, while Weather outreach/educational materials are the least used (9%).

NOAA-NWS products used most often*		
Forecasts, outlooks, watches, warnings, alerts	97%	26,996
Radar data	80%	22,371
Weather observations	74%	20,604
Satellite data	48%	13,449
Computer weather model output	37%	10,324
Climate observations	33%	9,130
Weather outreach/educational materials	9%	2,387
Other products	5%	1,272
Number of Respondents	**27,973**	

*Total percentage exceeds 100 due to multiple responses

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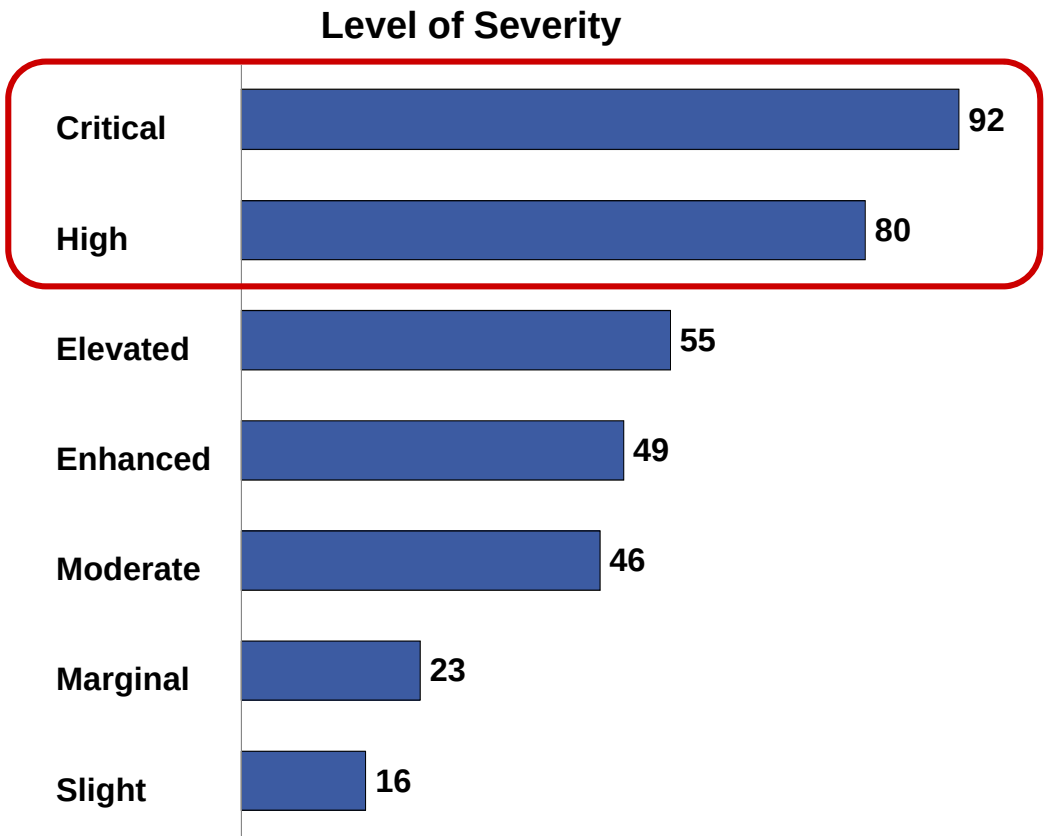
“Critical” best describes the highest level of severity during a severe weather threat

Respondents overwhelming feel the term “critical” best communicates the highest level of severity during the threat of severe weather, followed by “high”. Not surprisingly, “elevated”, “enhanced”, and “moderate” are associated with less severe threats.



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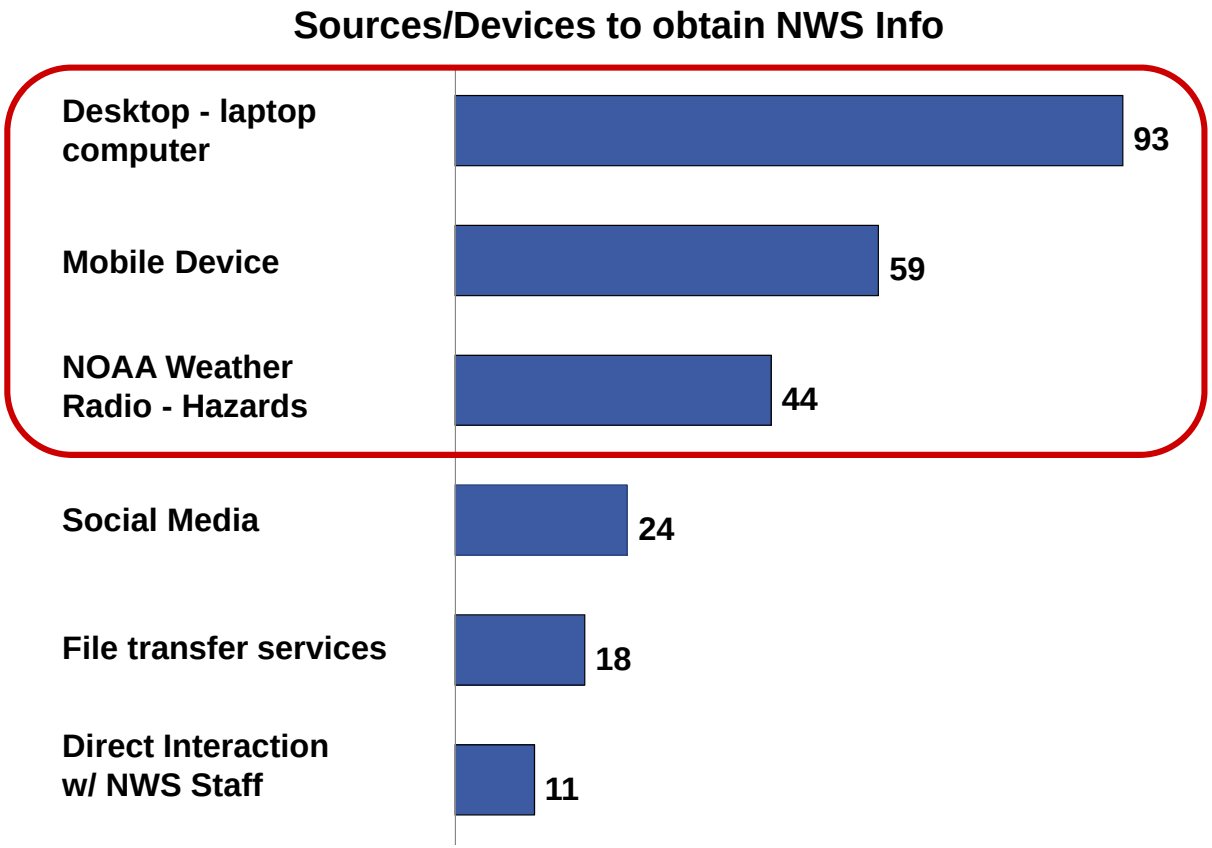
Computers are the favored device for obtaining NWS information in the next year, followed most closely by mobile devices

Desktops and laptops, followed by mobile devices and NOAA Weather Radio are the clear favorites for obtaining NWS information in the next year.



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Summary Results

2013 Customer Satisfaction Model

From left to right are the components, Customer Satisfaction Index, and outcome measures (sometimes referred to as desired behaviors). Components are a weighted average of specific questions (attributes) asked on the survey. Components are general areas of customer experience that drive customer satisfaction. Impacts, in the dark blue boxes, indicate the degree to which each component drives overall customer satisfaction. Impacts on the right side of the customer satisfaction model represent the degree to which customer satisfaction drives each one of the desired behaviors.

*Dissemination Services – Automated is asked among 7% of respondents who require these products

75 **Scores** The performance of each component on a 0 to 100 scale. Component scores are made up of the weighted average of the corresponding survey questions.

0.6 **Impacts** The change in CSI or customer behaviors that results from a five point change in the variable to the left.

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NWS Customer Satisfaction Index

There are three standard questions on every CFI Survey that inquire about overall satisfaction, whether the program meets expectations, and how it compares to customer concepts of an ideal program – these three questions together create the Customer Satisfaction Index (CSI).

	2012	2013
Customer Satisfaction Index (CSI)	84	82
ATTRIBUTES: Overall Satisfaction with the National Weather Service	88	87
ATTRIBUTES: How well the National Weather Service meets expectations	79	76
ATTRIBUTES: How the National Weather Service compares to your concept of an "ideal" organization providing weather information	82	80

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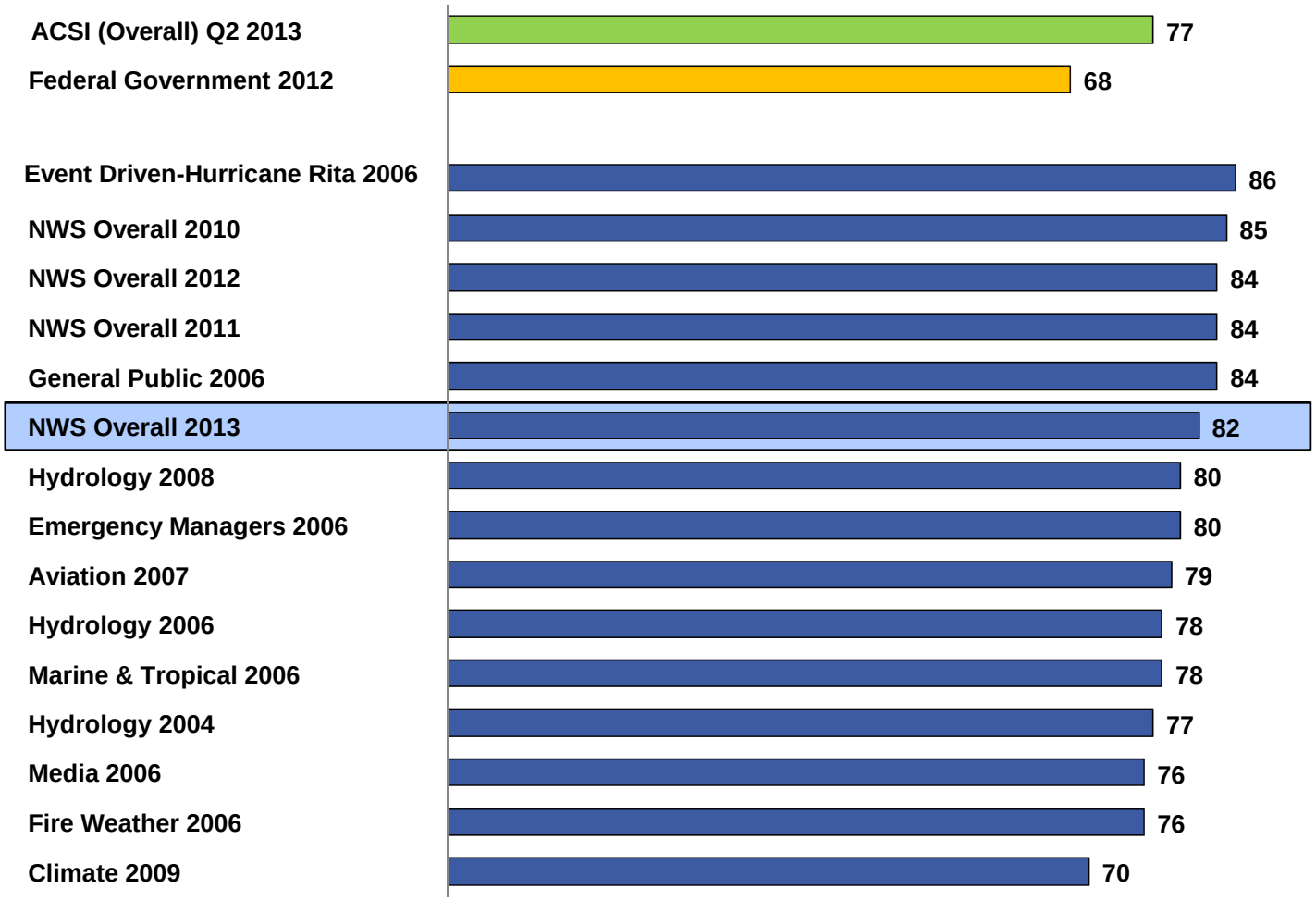
At 82, the NWS Overall CSI Score continues to easily outperform the Federal Government average, also exceeding the ACSI average

The chart below provides CSI scores for previous NWS projects to compare against the 2013 NWS Overall CSI metric. The 2013 Overall NWS CSI is 14 points above the Federal Government average (68), and is comparable to many of the NWS surveys conducted within the past several years (down 2 percentage points from 2012).



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Core Survey

Detailed Findings

Hazardous Services
Detailed Results

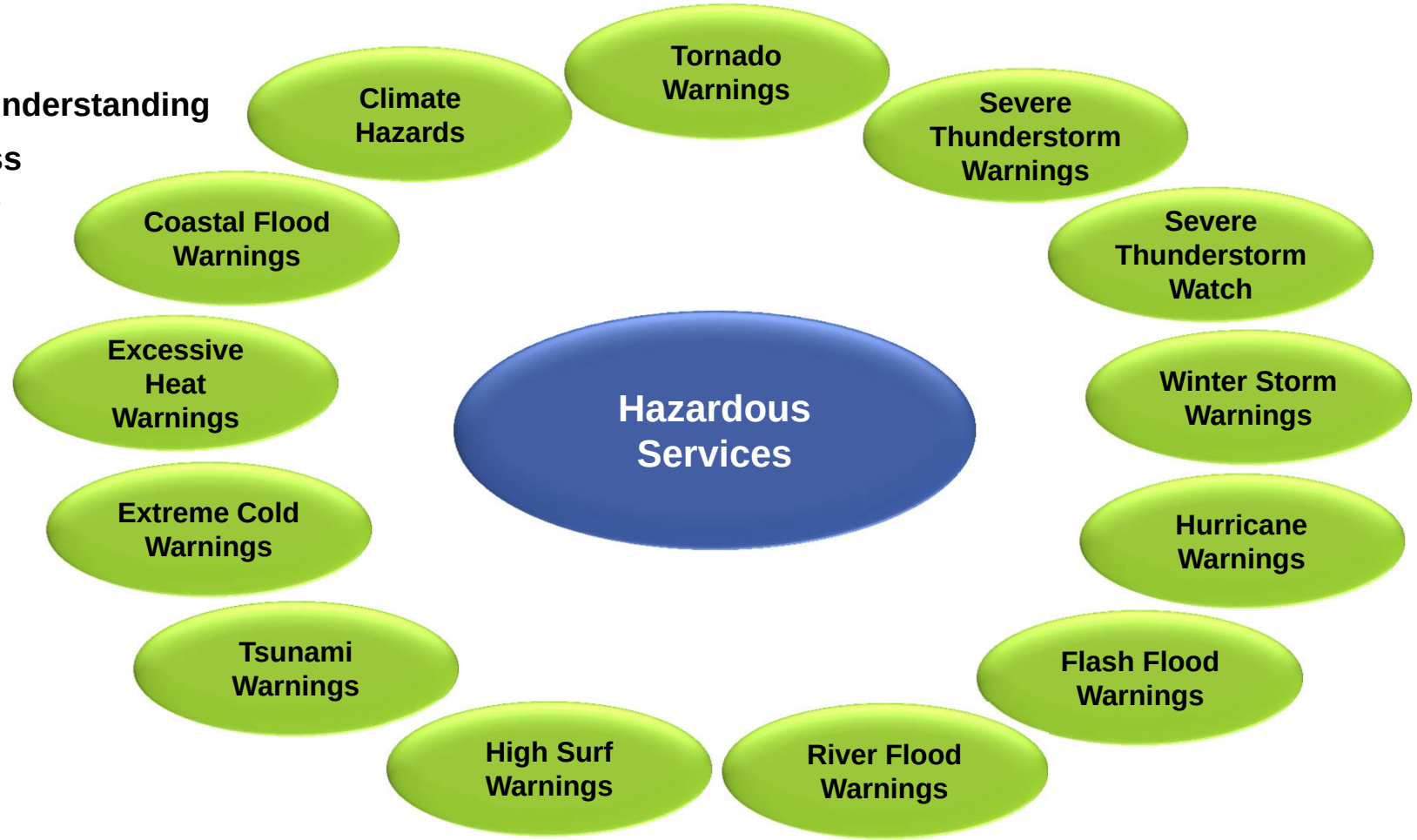
Hazardous Services

The Hazardous Services component is comprised of 13 types of warnings: Tornado Warnings, Severe Thunderstorm Warnings, Severe Thunderstorm Watch, Winter Storm Warnings, Hurricane Warnings, Flash Flood Warnings, River Flood Warnings, High Surf Warnings, Tsunami Warnings, Extreme Cold Warnings, Excessive Heat Warnings, Coastal Flood Warnings, and Climate Hazards. Each warning/service is measured with three specific questions: ease of understanding, timeliness and accuracy.

Ease of Understanding

Timeliness

Accuracy



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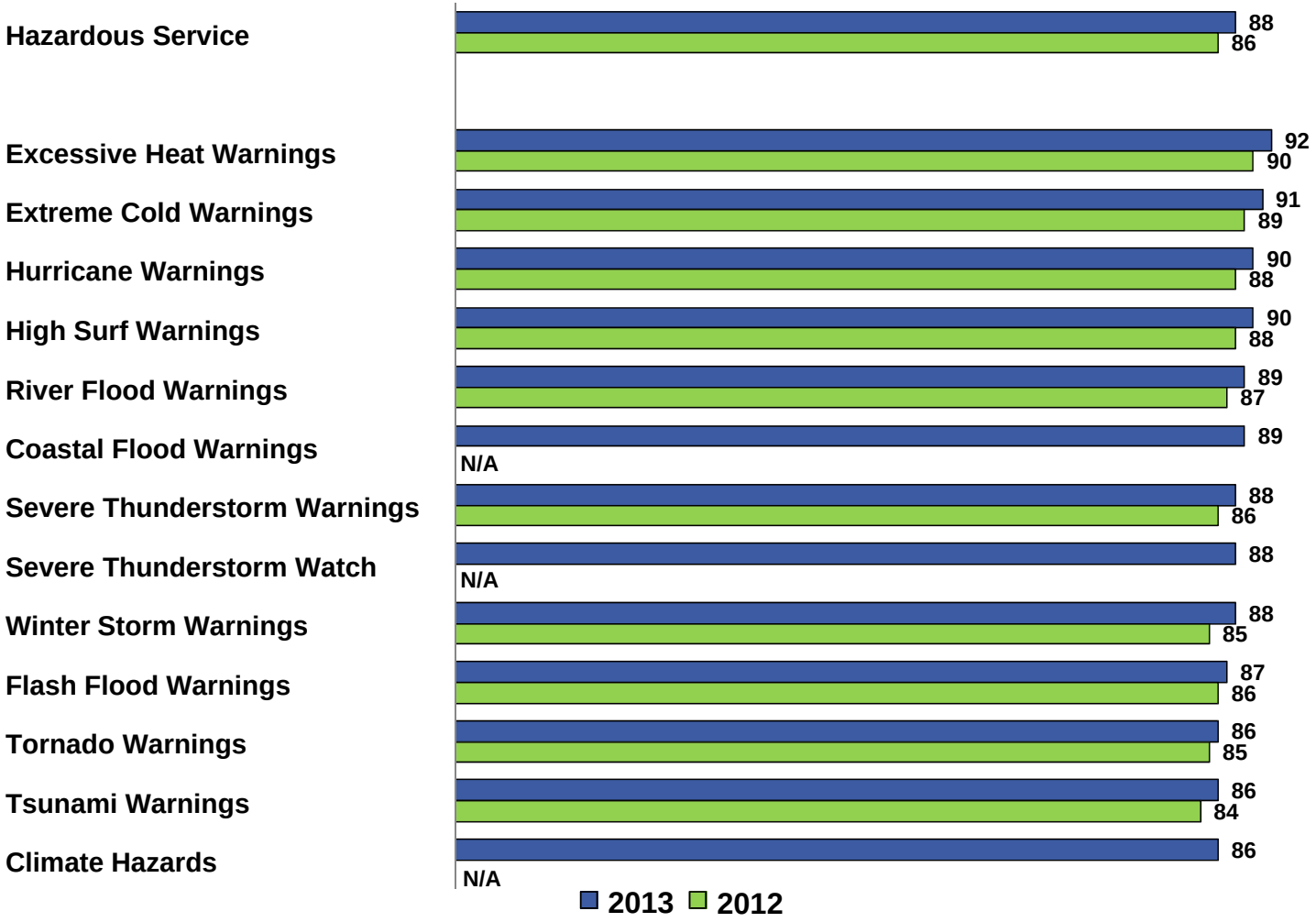
Hazardous Services continues to perform very well and remains a very influential satisfaction driver

Impact: 1.9

The overall Hazardous Services score increases 2 points from last year, with 1 to 2 point increases registered in each specific area measured. Severe Thunderstorm Watch, Coastal Flood Warnings, and Climate Hazards, added this year, score highly in their debut.



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NWS warnings/services score well across all regions, generally improving from 2012 levels

Scores are up across the board for the Central, Eastern, Southern, and Pacific regions, residing in the mid to upper 80's and 90's range. Although scores remain strong, the Alaska region experienced slight decreases in most areas. Scores in the Western region are generally stable in comparison with 2012.

	Central		Eastern		Southern		Western		Alaska*		Pacific*	
Sample Size	**2012**	**2013**	**2012**	**2013**	**2012**	**2013**	**2012**	**2013**	**2012**	**2013**	**2012**	**2013**
Hazardous Services	**86**	**89**	**86**	**88**	**87**	**89**	**86**	**86**	**87**	**86**	**80**	**90**
Tornado Warnings	85	87	84	85	86	88	85	85	88	87	76	88
Severe Thunderstorm Warnings	87	89	86	88	87	90	85	86	89	85	79	88
Severe Thunderstorm Watch	--	89	--	88	--	90	--	86	--	87	--	89
Winter Storm Warnings	85	89	85	88	86	89	85	87	87	88	83	89
Hurricane Warnings	88	90	88	90	89	92	88	90	91	87	81	90
Flash Flood Warnings	86	88	85	87	86	89	86	86	89	86	81	91
River Flood Warnings	88	89	87	89	88	90	87	87	87	87	81	89
High Surf Warnings	88	90	88	90	89	91	89	89	89	87	82	94
Tsunami Warnings	84	88	86	87	84	86	86	86	88	84	79	88
Extreme Cold Warnings	90	92	89	91	89	92	88	89	91	90	81	93
Excessive Heat Warnings	90	93	90	92	91	93	89	90	96	88	83	93
Coastal Flood Warnings	--	89	--	88	--	89	--	87	--	86	--	93
Climate Hazards	--	86	--	86	--	87	--	84	--	86	--	85
Sample Size	**5,595**	**9,236**	**4,747**	**6,415**	**2,899**	**5,796**	**2,890**	**6,234**	**71**	**99**	**69**	**85**

*Caution: base sizes are low

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Severe Thunderstorm Warnings (94%) and Watches (92%) are most familiar to respondents, followed closely by Winter Storm Warnings (90%)

Additionally, a majority of respondents are also familiar with Flash Flood Warnings, Tornado Warnings, Excessive Heat Warnings, Extreme Cold Warnings, River Flood Warnings and Hurricane Warnings. Coastal Flood, High Surf, and Tsunami Warnings are less familiar (regional issues).

Products familiar with*		
Severe Thunderstorm Warnings	94%	26,265
Severe Thunderstorm Watches	92%	25,726
Winter Storm Warnings	90%	25,056
Flash Flood Warnings	81%	22,585
Tornado Warnings	76%	21,308
Excessive Heat Warnings	76%	21,345
Extreme Cold Warnings	67%	18,615
River Flood Warnings	59%	16,632
Hurricane Warnings	50%	13,905
Climate Hazards	45%	12,615
Coastal Flood Warnings	32%	8,915
High Surf Warnings	25%	6,953
Tsunami Warnings	21%	5,771
Don´t know	1%	239
Number of Respondents	**27,973**	

*Total percentage exceeds 100 due to multiple responses

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NWS warnings/services familiarity varies from region to region

Familiarity with NWS warnings/services vary in each geographical region. Awareness is high for Thunderstorm Warnings/Watches in Central, Eastern, Southern, and Western regions. Most respondents in the Alaska region are familiar with Winter Storm and River Flood Warnings and a high percentage in the Pacific region recognize Tsunami/Hurricane Warnings.

	Central Region		Eastern Region		Southern Region		Western Region		Alaska Region		Pacific Region	
	Percent	Frequency	Percent	Frequency	Percent	Frequency	Percent	Frequency	Percent	Frequency	Percent	Frequency
Products familiar with*												
Tornado Warnings	93%	8,575	80%	5,128	90%	5,239	36%	2,241	30%	30	25%	21
Severe Thunderstorm Warnings	98%	9,010	97%	6,206	97%	5,639	84%	5,215	51%	50	68%	58
Severe Thunderstorm Watches	96%	8,903	96%	6,129	96%	5,563	79%	4,937	47%	47	69%	59
Flash Flood Warnings	83%	7,635	84%	5,410	86%	4,977	70%	4,349	60%	59	91%	77
Tsunami Warnings	14%	1,297	19%	1,189	18%	1,062	33%	2,034	75%	74	98%	83
Hurricane Warnings	31%	2,890	78%	5,011	69%	4,021	29%	1,804	37%	37	96%	82
Winter Storm Warnings	97%	8,953	95%	6,080	75%	4,354	88%	5,462	94%	93	39%	33
River Flood Warnings	64%	5,867	60%	3,831	57%	3,284	56%	3,501	79%	78	25%	21
Excessive Heat Warnings	82%	7,536	77%	4,927	77%	4,440	69%	4,317	31%	31	31%	26
Extreme Cold Warnings	78%	7,176	68%	4,368	54%	3,118	61%	3,802	77%	76	14%	12
High Surf Warnings	14%	1,322	29%	1,861	26%	1,534	34%	2,094	35%	35	89%	76
Coastal Flood Warnings	15%	1,413	47%	2,995	38%	2,180	35%	2,185	52%	51	65%	55
Climate Hazards	49%	4,515	40%	2,541	50%	2,914	41%	2,540	42%	42	32%	27
Don´t know	0%	37	1%	51	0%	24	2%	118	1%	1	0%	0
Number of Respondents	**9,236**		**6,415**		**5,796**		**6,234**		**99**		**85**	

*Total percentage exceeds 100 due to multiple responses

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The number of warnings issued is 'Just about right' for most respondents (70%)

40% of those surveyed indicate a proximity of 5 miles or less to be accurate for a tornado warning, with an additional 37% considering a proximity of 10 miles or less to be accurate. Additionally, most would take the same actions as they did previously if a tornado did not occur (when a warning was issued).

Number of tornado warnings issued		
Just about right	70%	19,444
Too many tornado warnings	6%	1,720
Too few tornado warnings	3%	874
Don´t know	21%	5,935
Number of Respondents	**27,973**	

Proximity of tornado before considering warning accurate		
1 mile or less	5%	1,448
5 miles or less	35%	9,749
10 miles or less	37%	10,291
25 miles or less	20%	5,605
Other	3%	880
Number of Respondents	**27,973**	

Impact of tornado not occurring when warning issued		
Same actions as did previously	81%	22,707
Less likely to take same action	10%	2,791
Don´t know	9%	2,475
Number of Respondents	**27,973**	

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Almost all respondents are very (80%) or somewhat likely (14%) to take action when a tornado warning is issued

Among those who were somewhat or very unlikely to take cover, half list the main reason as they have never seen tornado damage in their area or they do not believe they would be directly impacted by a tornado.

Likelihood of taking protective action if tornado warning issued		
Very Likely	80%	22,313
Somewhat Likely	14%	3,865
Somewhat Unlikely	3%	767
Very Unlikely	2%	636
Don´t Know	1%	392
Number of Respondents	**27,973**	

Reason for not taking action		
Have never seen tornado damage in my area	29%	406
Do not believe I would be directly impacted by the tornado	21%	288
Need to first see or hear tornado	14%	191
Do not take tornado warnings seriously	5%	66
Other	32%	452
Number of Respondents	**1,403**	

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Almost three-fourths of respondents (74%) have a hazardous weather safety plan (up 14 percentage points from 2012)

Most of those who created a plan did so due to their overall desire to be prepared (followed by advice from friends and family and past experiences with extreme weather events). Those who do not have a plan are either not sure what to include or don't think its necessary as their main reasons.

	2012		2013	
Have a hazardous weather safety plan				
Have a plan	60%	14,455	74%	20,662
Do not have a plan	40%	9,817	23%	6,473
Don´t know	--	--	3%	838
Number of Respondents	**24,272**		**27,973**	
Main reason you do not have a plan				
Not sure what to include	36%	3,565	40%	2,572
Don´t think it´s necessary	45%	4,442	34%	2,172
Takes too much time	2%	230	3%	222
Too expensive	1%	66	3%	199
Other	15%	1,514	20%	1,308
Number of Respondents	**9,817**		**6,473**	
Reason plan created*				
General desire to be prepared	83%	11,933	92%	18,939
Friends and family	42%	6,006	52%	10,814
An extreme weather event	43%	6,197	52%	10,807
Weather-Ready Nation initiative	5%	722	4%	779
Be a Force of Nature campaign	1%	164	1%	281
Other	11%	1,611	14%	2,887
Number of Respondents	**14,381**		**20,662**	

*Total percentage exceeds 100 due to multiple responses

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Almost half of respondents include a kit in their emergency preparedness plan (a consistent level over the past two years)

In 2013, 47% of respondents say their plan includes a emergency preparedness kit. Most say they created a kit due to either their overall desire to be prepared or because they experienced an extreme weather event. Those who did not include a kit in their plan generally indicate they weren't sure what to include, or they didn't think it was necessary to create one.

	2012		2013	
Plan includes hazardous weather emergency preparedness kit				
Includes kit	48%	11,639	47%	13,129
Does no include kit	52%	12,633	50%	13,958
Don´t know	--	--	3%	886
Number of Respondents	**24,272**		**27,973**	
Main reason you do not have a kit				
Not sure what to include	34%	4,277	38%	5,257
Don´t think it´s necessary	36%	4,525	31%	4,355
Too expensive	6%	775	6%	888
Takes too much time	3%	407	3%	468
Other	21%	2,649	21%	2,990
Number of Respondents	**12,633**		**13,958**	
Reason kit created*				
General desire to be prepared	85%	9,821	92%	12,136
An extreme weather event	40%	4,651	54%	7,073
Friends and family	33%	3,807	51%	6,631
Weather-Ready Nation initiative	7%	765	4%	509
Be a Force of Nature campaign	1%	152	1%	190
Other	15%	1,756	14%	1,875
Number of Respondents	**11,562**		**13,129**	

*Total percentage exceeds 100 due to multiple responses

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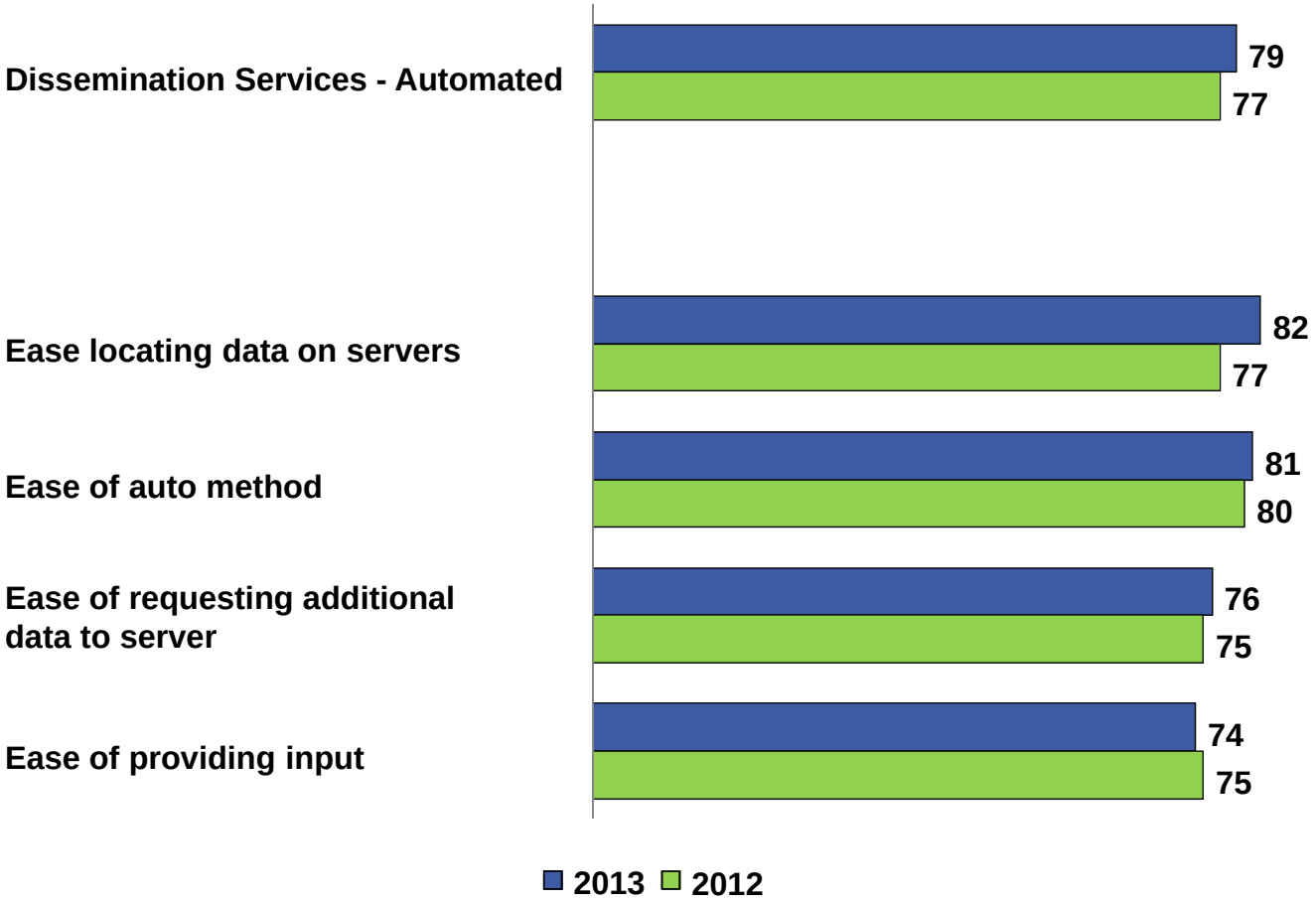
Dissemination Services - Automated

Detailed Results

The overall Dissemination Services - Automated score improves by 2 points in 2013 (now at 79)

Impact: 0.8

With this overall improvement, scores for three of four specific attributes also increase, with only 'ease of providing input' showing a slight decline. In particular, respondents seem to be able to 'locate data on servers' more easily as noted by the five point increase in score.



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Suggestions for Automated Dissemination

Respondents would like more reliable and up-to-date data along with precise radar images.

"Get your equipment much more up to date please! Since the data that I can access via the Noaa.gov web site isn't too reliable at all, and also not as good for Radar Images or for severe weather Data, for Example in the recent 9/12/2013 through 9/15 Flooding in Colorado I got flooded out but my Weather Radio was saying "nothing" as was my online looking at my location via NOAA.gov"

"I think it is an exceptional service, I look at the web site 2 or 3 times a week as a habit, and whenever weather seems to be changing. I can think of no suggestions to improve it."

"We use software that ingests information from NWS. All of that is setup in the software, and we are able to go through and pick and choose what products we want. I cannot offer suggestions, as any would likely come through our third party software provider. I am happy with what NWS provides through this software."

"Keep the same formats you have developed. Especially aviation. STOP changing the products. The ones you have a great. "

"More timely radar updates"

"Just make it waaaay simpler for the average Joe to find the data, and then use the data... without having to download and program outside programs just to view the data. Have a guy off the street try and find and use the data... and you'll quickly see how hard it is."

"Make the information easier to locate and provide APIs for both data and GIS data sets."

"Much higher bandwidth. All critical information (i.e., entire TDWR product suite) should be disseminated. "

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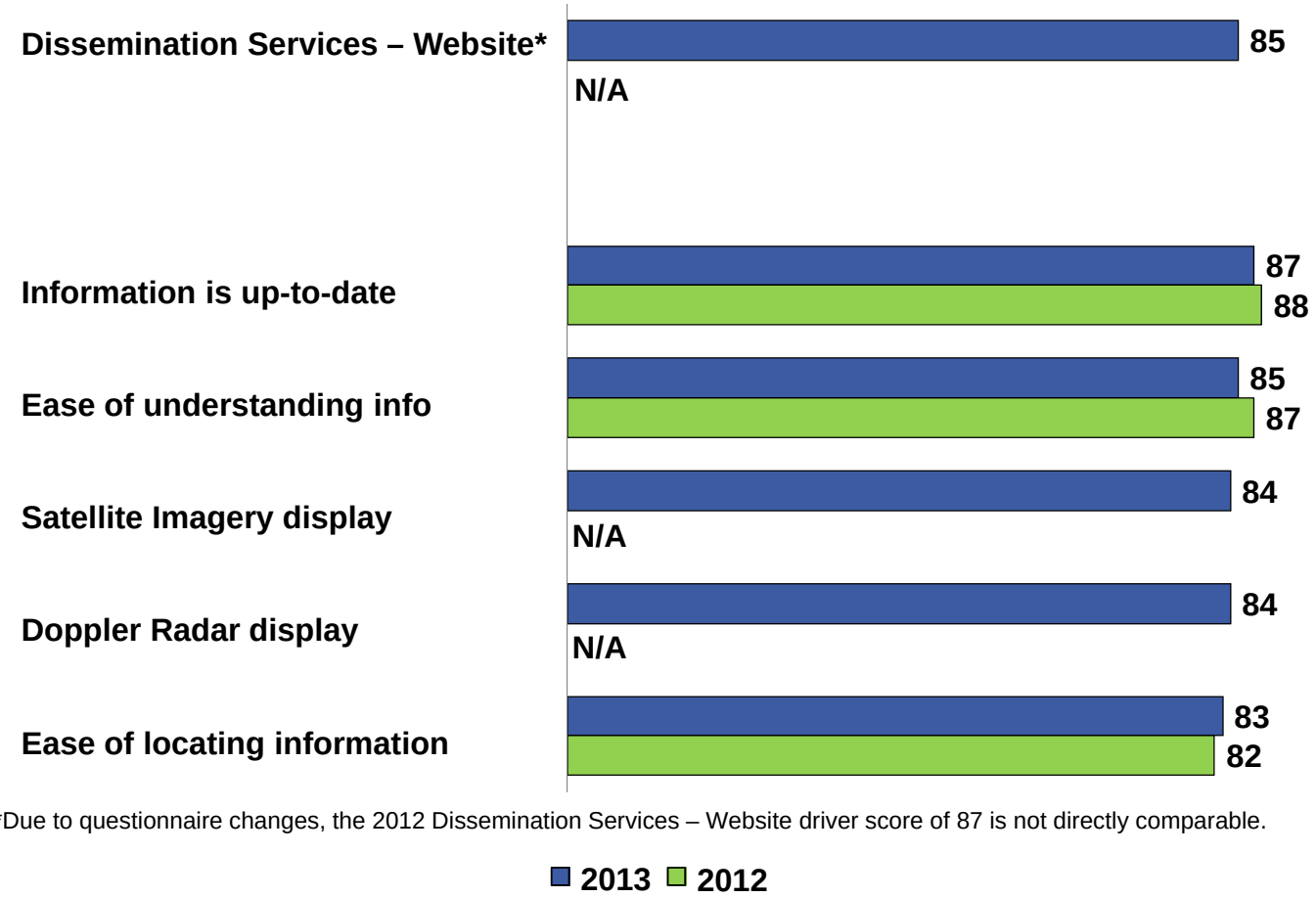
Dissemination Services - Website

Detailed Results

The Dissemination Services – Website driver is both a very strong performer (85) and exerts considerable influence on NWS satisfaction

Impact: 2.6

While all aspects of Dissemination Services – Website are highly rated, respondents provide particularly high ratings when it comes to 'up-to-date information' and 'ease of understanding'. Both Satellite Imagery and Doppler Radar displays debut with strong scores (84 in each case).



*Due to questionnaire changes, the 2012 Dissemination Services – Website driver score of 87 is not directly comparable.

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Wireless Emergency Alerts (WEA) are received by one quarter (25%) of respondents

Most respondents have not received a WEA message (71%). However, among those who have received one, most (63%) say they are first notified about a weather related event through this medium (and only 15% have trouble deciphering the message).

Received WEA message on cell phone		
Received message	25%	6,992
Did not receive message	71%	19,734
Don´t know	4%	1,247
Number of Respondents	**27,973**	

WEA message was first notification received		
First notification	63%	4,413
Not first notification	28%	1,977
Don't know	9%	602
Number of Respondents	**6,992**	

Understood WEA message		
Fully understood	85%	5,949
Somewhat understood	14%	983
Did not understand	1%	60
Number of Respondents	**6,992**	

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Most respondents (70%) do not utilize Facebook and Twitter during weather events

However, some do read or comment on what others are positing or tweeting and/or write their own posts or tweets. Moreover, among those who do use Facebook and Twitter during weather events, 46% feel that there is the right amount of social media available from the NWS.

Facebook and Twitter during weather events*		
Do not use Facebook and Twitter for weather events	70%	19,604
Read what others are posting or tweeting	24%	6,807
Write own posts or tweets	18%	4,898
Comment on what others are posting or tweeting	17%	4,696
Number of Respondents	**27,973**	

Amount of social media content available		
Just about right	46%	3,872
Too little	22%	1,802
Too much	1%	107
Don´t know	31%	2,588
Number of Respondents	**8,369**	

*Total percentage exceeds 100 due to multiple responses

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Graphical images within a WEA are viewed as the most beneficial enhancements

Graphics showing the warning area (60%) and current location with respect to the warning area (58%) are deemed most beneficial by respondents. Sound and color representing the type of warning are seen as less beneficial.

Beneficial enhancements to WEA message*		
Accompanying graphic showing warning area	60%	4,229
Accompanying graphic showing current location	58%	4,056
Sound representing urgency of warning	43%	2,972
More text containing details of warning	40%	2,796
Color representing urgency of warning	38%	2,653
Sound representing type of warning	27%	1,882
Color representing type of warning	25%	1,763
Number of Respondents	**6,992**	

*Total percentage exceeds 100 due to multiple responses

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Potential confusion with WEA Message

Overall accuracy, technical issues, and unnecessary alerts are an issue for respondents.

"It did not fully identify the area affected. there was no zip code, no city, nothing to identify the affected area, and when I went to the NWS to figure out where it was, it was over 100 miles away. This happens a lot. The only information I get is time with time zone, and since I live on the edge of eastern and central, that is not helpful."

"I received two tornado warnings within minutes of each other and there were no storms in the area."

"The WEA message was accidentally broadcast and the weather event didn't make sense based on the time of year it was sent."

"Non specific as to threat and location with respect to my location."

"I had no idea that my phone accepted such messages. I didn't know where it came from and I couldn't get back to it. That is, it wasn't saved in my list of text messages. I have since learned how to turn messaging of this type on and off."

"It was a winter storm warning in the middle of summer...it was on the news as an error later."

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Outreach and Weather Education

Detailed Results

Respondents are most likely to have promoted a Severe Weather Safety campaign in their community

Of those using weather data for their jobs (e.g., emergency managers, educators, land management decision makers concerning forest fires), Severe Weather (44%), Winter Weather (36%), and Lightening Safety (32%) are the most commonly promoted. Virtually all respondents have visited the National Weather Service website (97%) when looking for weather safety information, with commercial weather vendors a distant second (58%).

Promoted awareness campaigns*		
Severe Weather Safety	44%	4,080
Winter Weather Safety	36%	3,402
Lightning Safety	32%	2,954
Heat Safety	27%	2,540
Flood Safety	26%	2,430
Wildfire Safety	24%	2,246
Hurricane Safety	12%	1,102
Rip Currents Safety	5%	501
Tsunami Safety	3%	311
None of the above	38%	3,539
Number of Respondents	**9,345**	

Websites visited for weather safety*		
National Weather Service	97%	27,011
Commercial weather vendor	58%	16,328
FEMA	15%	4,162
American Red Cross	9%	2,414
Centers for Disease Control and Prevention	5%	1,441
Other	11%	3,077
Number of Respondents	**27,973**	

*Total percentage exceeds 100 due to multiple responses

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Suggestions to the NWS Website

Improvements to both website layout and navigation are suggested by respondents.

"Better website. Make it easier to use (navigation wise) and give hourly forecasts if possible. You guys are the best when it comes to accuracy. It would be cool if you had a texting service and it delivered the forecast via text or email. Or you sent the probabilities of it raining. Make something along those lines. It would be cool if you could get a rain touchdown clock and see how many times you got that correct, but from reading nate silver's book I started to appreciate at what a great job you guys do."

"Better website layout, make it easier to find information, update old website to the new."

"Better website interface for radar and sat images with clear indexes for loops and forecasts."

"I find the website confusing, not nearly as friendly as some of the commercial sites. What I want to see first and foremost is the satellite map, and darned if I can figure out how to set up the site so it pops up right away. Much, much easier to set up Accuweather, Weather.com, Weather Underground and others."

"Develop the website to be more user friendly. 2) Make the radar animated . 3) Develop a windows app for mobile phone users (you have one for androids and iPhones)."

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Primary safety campaigns are generating some positive results

Over half of respondents (53%) seek shelter from lightning when thunder is heard in the distance and 35% say they wait until they see lightning (distant or nearby). For the most part, drivers have a strong understanding of the dangers of water covered roads.

When to seek shelter from lightning		
Distant thunder	53%	14,784
Distant lightning	19%	5,258
Nearby lightning	16%	4,576
Loud thunder	10%	2,914
Starts to rain	2%	441
Number of Respondents	**27,973**	

If you encounter water covering a roadway when driving…	True	False
Safe to drive through water when no Road Closed sign or police barricade	2%	98%
Not safe to drive when water is too deep to see road surface	96%	4%
Safe to drive through water slowly	4%	96%
Safe to drive through water in a large and heavy vehicle	3%	97%
Not safe to drive through swiftly moving water	97%	3%
Number of Respondents	**27,973**	

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Future Behaviors
Detailed Results

Based on an exceptional score of 96, users remain very likely to use NWS as a source of weather information in the future

Likelihood to recommend NWS also remains strong (although down 1 point), as does the likelihood to take action on information (also down 1 point).

	2011	2012	2013	
	32,572	24,272	27,973	
	Score	Score	Score	Impacts
Likelihood take action on info	91	90	91	2.7
Likelihood use NWS in future	96	96	96	1.7
Likelihood to recommend	94	93	92	3.1

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National Fire Weather Program – Optional Section Detailed Results

The Ease of accessing Fire Weather Information receives a relatively high rating (77)

The National Weather Service is most accessed for wildland fire weather information (81%). Graphical representation on the web is the most used fire weather forecast format (77%), followed by text (54%).

Sample Size		1,885
Ease of Accessing Fire Weather Info		**77**
Wildland fire weather information source*		
National Weather Service	81%	1,520
National Interagency Fire Center	35%	660
Federal Land Management Agency	26%	493
State Land Management Agency	21%	398
Local Land Management Authority	13%	253
Commercial/private provider	13%	253
Don´t know	5%	90
Other	17%	318
Number of Respondents	**1,885**	
Fire weather forecast info format*		
Graphical	77%	1,446
Text	54%	1,010
Audio	38%	717
Video	36%	685
Tabular	8%	144
Raw graphical	8%	146
Raw text	2%	39
Number of Respondents	**1,885**	

*Total percentage exceeds 100 due to multiple responses

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A website (e.g., NWS webpages, Facebook, Twitter) is clearly the most commonly used method to receive information on fires (70%)

After website, the most commonly used methods to receive information on fires are NOAA Weather Radio (38%) and Cell Phone or Smart Phone (35%).

Methods used to receive or disseminate fire weather info*		
Web Site	70%	1,311
NOAA Weather Radio	38%	713
Cell Phone or Smart Phone	35%	656
AM FM Radio	34%	649
Broadcast TV	24%	445
Internet Subscriber Service	21%	401
Cable TV	19%	356
Satellite TV	19%	364
Home or Work Phone	15%	288
Satellite	14%	259
Dedicated Short Range Radio	6%	118
Satellite Radio	6%	110
Pager	4%	83
Voice over Internet Protocol	2%	46
IP Addressing	2%	41
Dedicated Phone Line	2%	38
Number of Respondents	**1,885**	

*Total percentage exceeds 100 due to multiple responses

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Red Flag Warnings are understood by the vast majority of respondents

85% of respondents believe they know what a Red Flag Warning means, while just over half (52%) of this group believes that the warning means that fire weather conditions are impending or occurring. 62% believe they know the meaning of a NWS Fire Watch, with 68% of this group indicating it means red flag conditions are possible in 24 to 72 hours.

Know meaning of NWS Red Flag Warning		
Know Red Flag Warning	85%	1,593
Unsure	9%	164
Don´t know Red Flag Warning	7%	128
Number of Respondents	**1,885**	

Understanding of Red Flag Warning		
Fire weather conditions are impending or occurring	52%	921
Fire weather conditions expected next 24 hours	33%	574
Wildfires possible in warning area next 24 hours	11%	191
Wildfires occurring in warning area	4%	71
Number of Respondents	**1,757**	

Know meaning of NWS Fire Weather Watch		
Know Fire Weather Watch	62%	1,171
Unsure	23%	432
Don´t know Fire Weather Watch	15%	282
Number of Respondents	**1,885**	

Understanding Fire Weather Watch		
Red flag conditions possible in 24 to 72 hours	68%	1,094
Red flag conditions imminent or occurring	15%	248
Wildfires expected in 24 to 72 hours	11%	179
RFW issued in 24 to 72 hours	5%	82
Number of Respondents	**1,603**	

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It is notable that one quarter of respondents (25%) consulted NWS Fire Weather hazard products 10 or more times

Conversely, one third of this group (32%) have consulted NWS Fire Weather hazard products less than 5 times in the past 12 months. About a quarter of respondents (26%) have never used these products. Almost half of these respondents (48%) say they use Fire Weather hazard products to raise awareness, but will wait to take action.

Consulted NWS Fire Weather hazard products in past 12 months		
Less than 5 times	32%	596
6 to 10 times	18%	339
10 or more times	25%	463
Never	26%	487
Number of Respondents	**1,885**	

How NWS fire weather hazard products used		
Raise awareness, but will wait to take action	48%	670
Take actions to protect property	23%	322
Take land management or community protection actions	18%	245
Other	12%	161
Number of Respondents	**1,398**	

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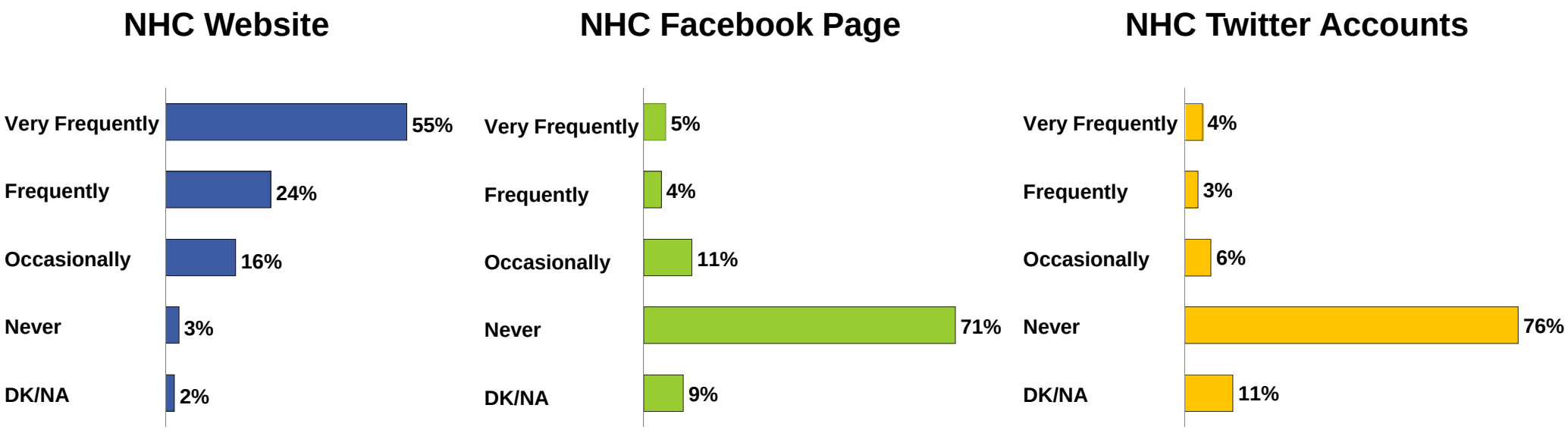
National Hurricane Center Program – Optional Section Detailed Results

While the NHC website is frequently used; related social media use is low

Over half of these respondents use the NHC website 'very frequently' (55%), while another quarter do so 'frequently' (24%). Most indicate they never view the Facebook (71%) or Twitter (76%) pages.



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Non-NHC services and tools are used infrequently to not at all

Free commercial services and other government services are used either very frequently or frequently a third (32%) and a quarter (24%) of the time, respectively. A large percentage of respondents say they never use the Hurrevac tool (72%) and or paid commercial services (74%).

	Hurrevac	Free commercial service	Paid commercial service	Other government services
Very Frequently	2%	16%	4%	12%
Frequently	2%	16%	3%	12%
Occasionally	5%	21%	6%	28%
Never	72%	37%	74%	36%
DK/NA	19%	10%	14%	11%

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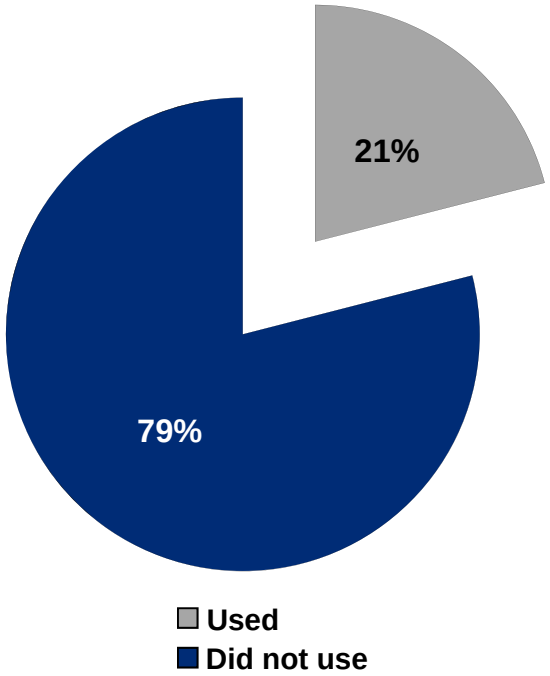
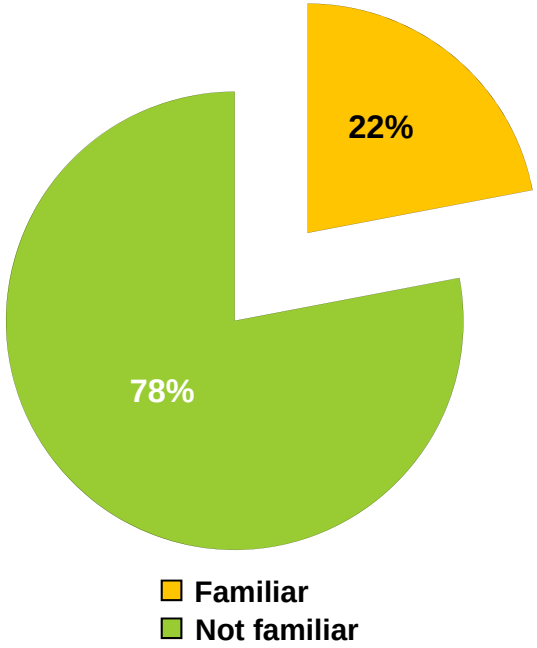
Only a minority of respondents use Graphical Gridded Forecasts (22%) or are familiar with the Marine Weather Discussion Product (21%)

Marine Weather Discussion Product



Experimental Graphical Gridded Forecasts for Atlantic and Pacific



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National Hydrologic Services Program – Optional Section Detailed Results

Overall satisfaction with the Hydrologic Services Program is moderately strong (75)

In terms of the individual attributes that comprise overall satisfaction with the Hydrological Services Program, the comparison to expectations (70) is the lowest performing area.

Satisfaction	75
Satisfaction with Hydrologic Services Program	79
Hydrologic Services Program compared to expectations	70
Hydrologic Services Program compared to ideal	74

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The number of flood warnings are 'just about right' according to a majority of respondents (57%) – that said, 16% are not aware of warnings

Almost half of these respondents (48%) of people feel only 0 to 1 occurrences are needed to be considered accurate for flash flood warnings. One quarter of this group (25%) also indicates that it only takes 0-1 flash flood warning misses to not view them as accurate.

Number of flood warnings issued		
Too many	8%	107
Too few	3%	43
Just about right	57%	730
Not concerned with warnings	15%	193
Not aware of warnings	16%	207
Number of Respondents	**1,280**	

	0	1	2	3	4	5	6	7	8	9	10	No Action
Flash Flood occurrences to consider accurate	23%	25%	7%	6%	3%	11%	5%	7%	3%	1%	2%	7%
Flash Flood misses to no longer consider accurate	21%	4%	3%	8%	5%	13%	4%	5%	6%	6%	16%	8%

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Current product names and headlines are preferred in this area

Most respondents (63%) prefer the current product names and headlines. Two-thirds of respondents (68%) say they are not aware of the Advanced Hydrologic Prediction Service.

Preferred product names and headlines		
Current	63%	808
Proposed	31%	403
Neither	5%	69
Number of Respondents	**1,280**	

Aware of Advanced Hydrologic Prediction Service AHPS		
Aware of service	32%	410
Not aware of service	68%	870
Number of Respondents	**1,280**	

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National Climate Services Program – Optional Section Detailed Results

A week into the future is generally enough time for heat related decision making

73% of these respondents think three to seven days into the future is appropriate for the usefulness of an Excessive Heat Watch-Warning. Additionally, over half of this group (57%) do not use climate products for information beyond one week, and only one third (33%) use data tools to access past weather information.

Excessive Heat Watch-Warning outlook useful in decision-making		
Days 3-7 into future	73%	1,660
Days 8-14 into future	39%	893
Not useful	12%	263
Number of Respondents	**2,285**	

Use climate products for info beyond one week		
Use products	43%	982
Do not use products	57%	1,303
Number of Respondents	**2,285**	

Use data tools for info on past weather		
Use tools	33%	754
Do not use tools	67%	1,531
Number of Respondents	**2,285**	

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Over 90% of these respondents have not contacted NWS offices or Climate Prediction Centers

Most respondents feel a three month precipitation outlook is useful (79%). Less than a quarter of respondents are aware of the new 8-14 day extended range outlooks. 88% would like to see other products using interactive displays.

Requested info from local NWS office		
Contacted	7%	152
Not contacted	93%	2,133
Number of Respondents	**2,285**	

Contacted Climate Prediction Center		
Contacted	3%	74
Not contacted	97%	2,211
Number of Respondents	**2,285**	

Usefulness of 3 Month Precipitation Outlook		
Useful	79%	1,815
Not useful	21%	470
Number of Respondents	**2,285**	

Aware of new 8-14 Day Extended Range Outlooks		
Aware	23%	529
Not aware	77%	1,747
Number of Respondents	**2,276**	

Would like to see other products using interactive displays		
Other products	88%	464
Not necessary	12%	65
Number of Respondents	**529**	

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Weather (days 1-7) is the most used timeframe for utilizing NWS products and services for health forecasting (38%)

Next most frequently preferred timeframes are Monthly (days 8-31) at 15% and Seasonal at 17%.

Time frames utilizing NWS products and services for health forecasting*		
Weather (days 1-7)	38%	864
Monthly (days 8-31)	15%	345
Seasonal	17%	397
Annual	6%	128
Inter-annual	1%	19
Not applicable	59%	1,337
Number of Respondents	**2,285**	

*Total percentage exceeds 100 due to multiple responses

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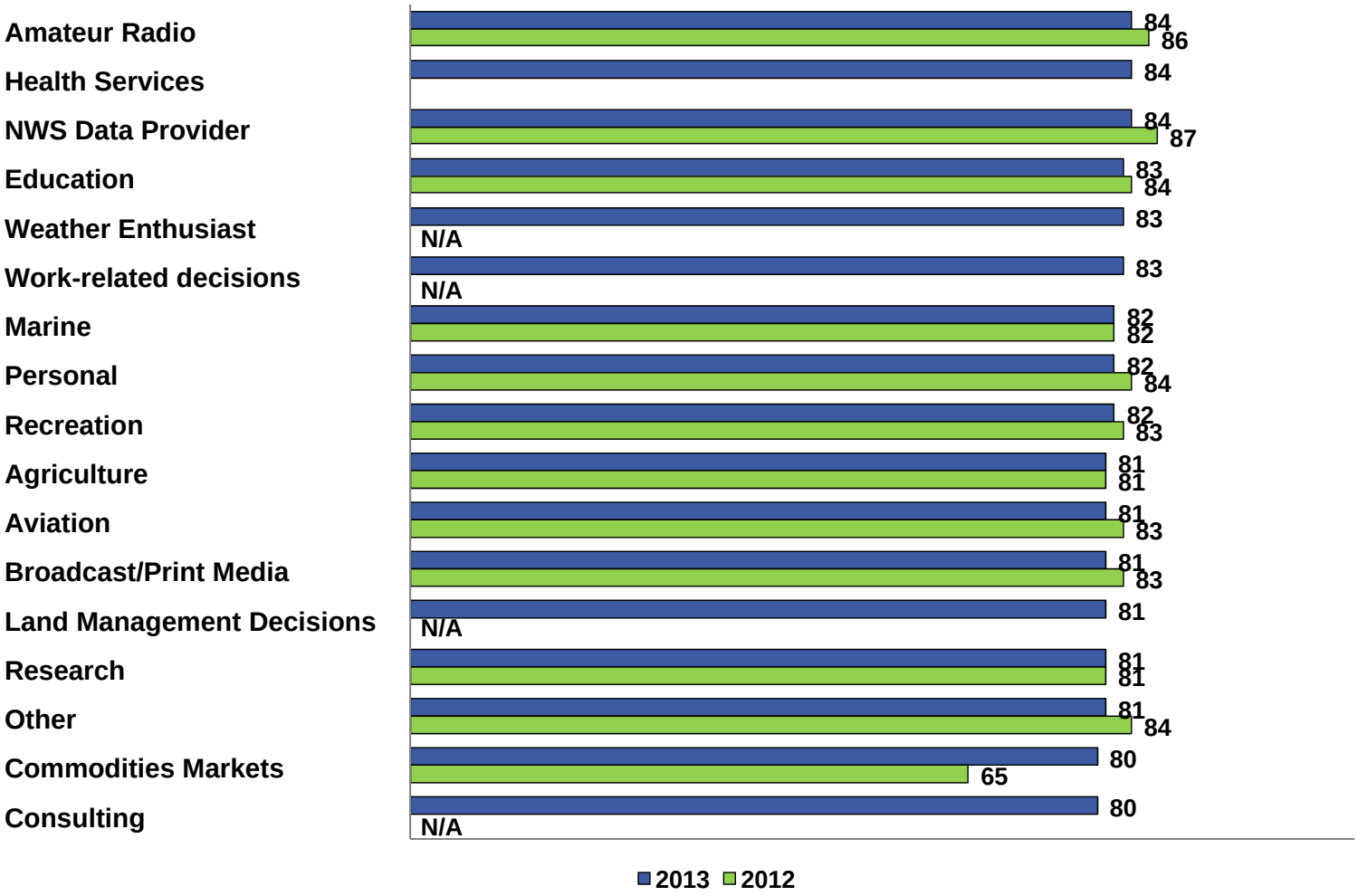
Key Segments and Additional Information

In 2013, CSI is strong across all primary uses of NWS information

Among the primary uses of NWS information, CSI ranges in the low eighties. NWS Data Providers, Health Services, and Amateur Radio remain the highest scoring, while Commodities Markets and Consulting are at the bottom of this narrow range.



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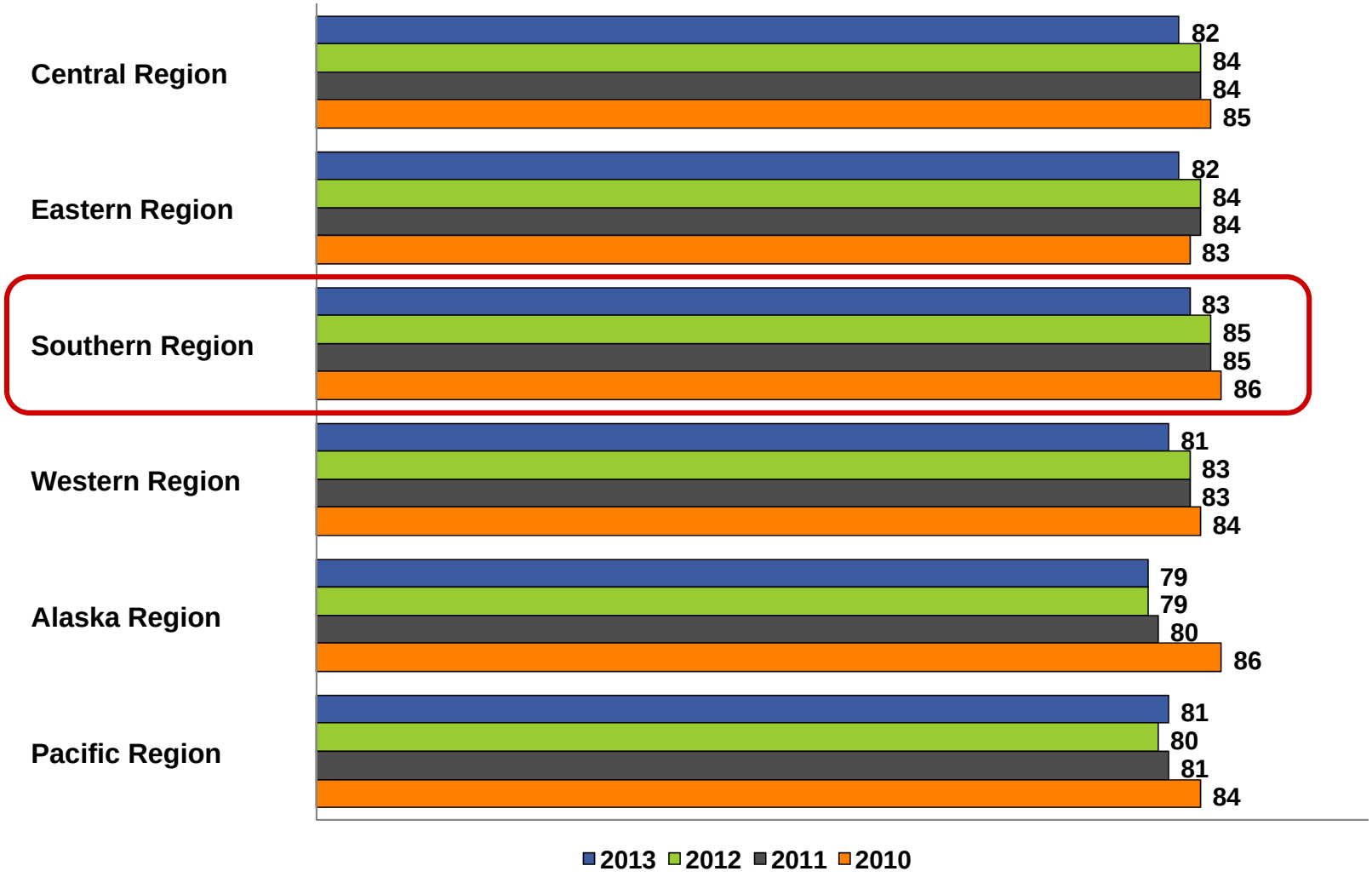
As in past years, the southern region is top scoring (by a narrow margin)

The Southern region (83) remains the highest rated despite a two-point decrease. Central and Eastern regions also drop two points down to 82. Alaska holds at 79 and Pacific rises one point to 81.



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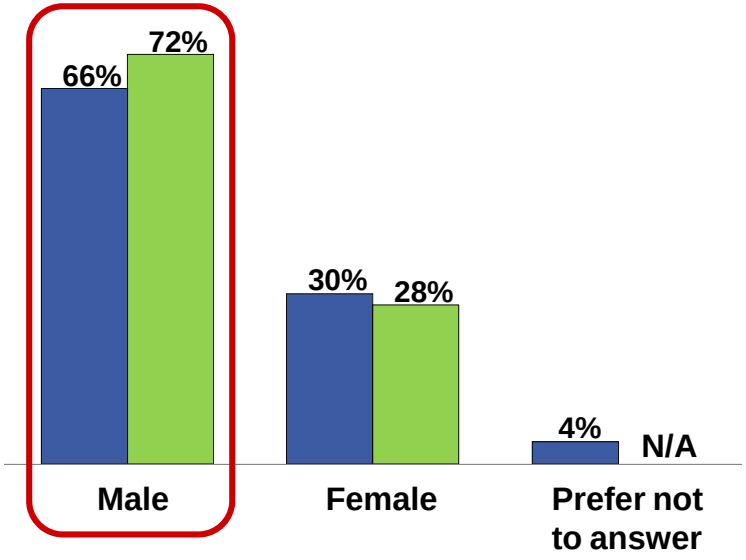
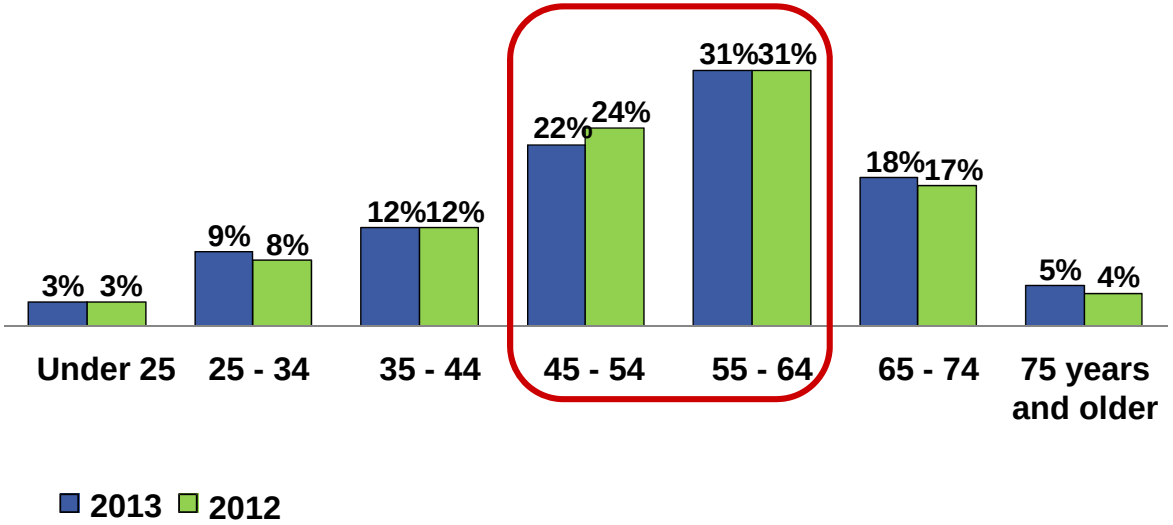
Respondents continue to be predominantly male and between the ages of 45 and 65

Gender and age distributions are comparable between 2012 and 2013, with males once again representing a large portion of the responses.





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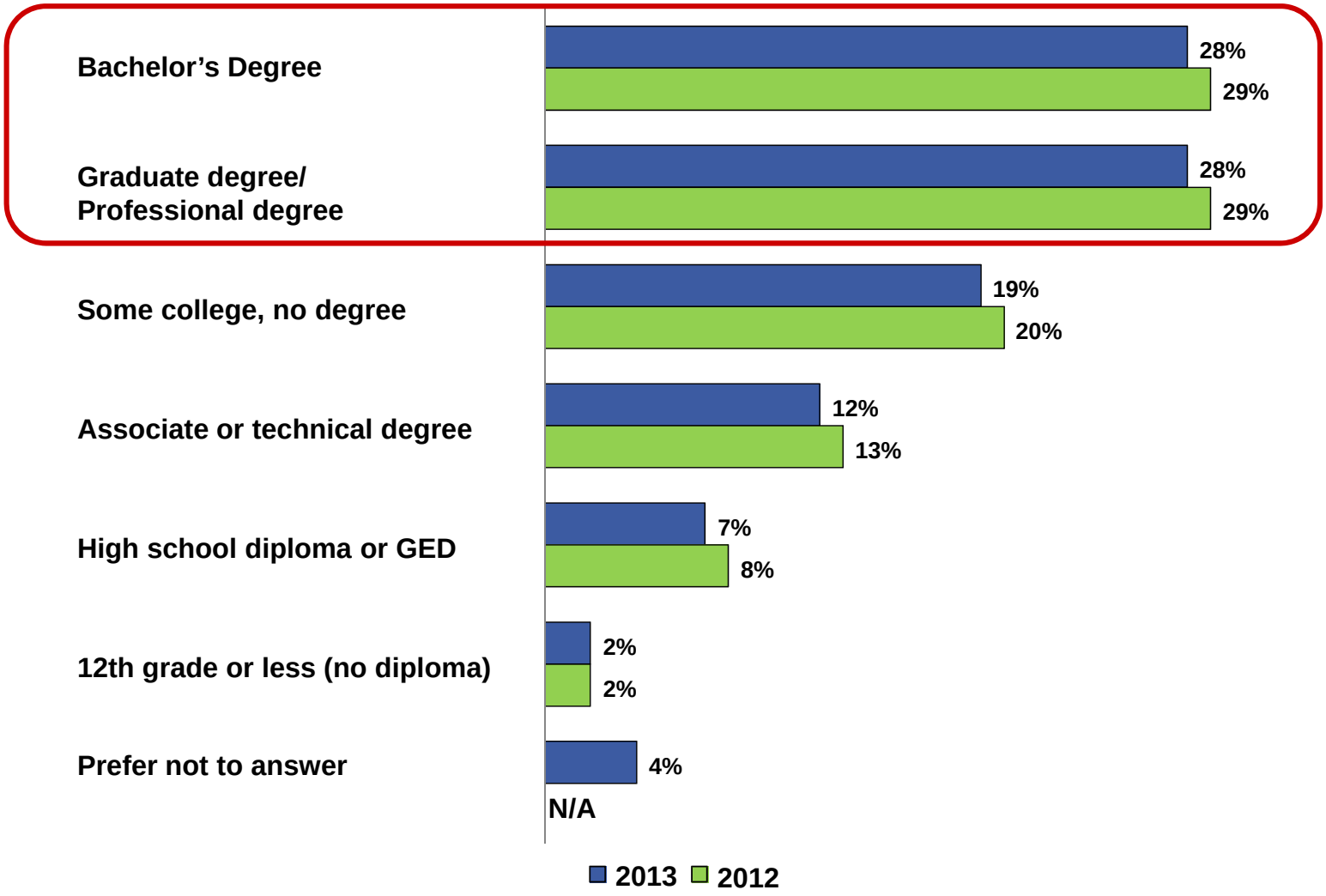
Most respondents have attended college or have obtained a degree

Over half of respondents have a bachelor's or graduate degree (56%). Education levels are consistent year over year.



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Recommendations

Recommendations

Priority Area 1

Key Finding: Dissemination Services – Website continues as the most influential driver of NWS Customer Satisfaction. While specific areas related to the website are highly rated, there is still relatively more opportunity to improve 'ease of finding information'.

Recommended Action: *While the score for 'ease of finding information has improved by 1 point over the past year, take further action to facilitate the of ability of website users to locate the content they are looking for.*

Priority Area 2

Key Finding: The usage of mobile devices to access weather information continues to rise dramatically in 2013 (up to almost 50% of those surveyed). In addition, virtually all respondents still make use of NWS Web Sources for weather related information.

Recommended Action: *The NWS should focus on providing content that supports public safety interests for use in/for mobile apps developed by our partners.*

Priority Area 3

Key Finding: The proportion of respondents who have a hazardous weather safety plan has increased by 23 percent in the past year (now at 74%). However, the proportion who include an emergency preparedness kit in their plan is generally unchanged (now at 47%).

Recommended Action: *Given most of those who do not have a kit aren't sure what to include - or don't think its necessary - promote the benefits of incorporating a kit into any hazardous emergency weather plan, including clear suggestions for appropriate content.*

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Thank you

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