

# A weather survey of Western Washington residents: Part I

Jennifer Chang, MPA

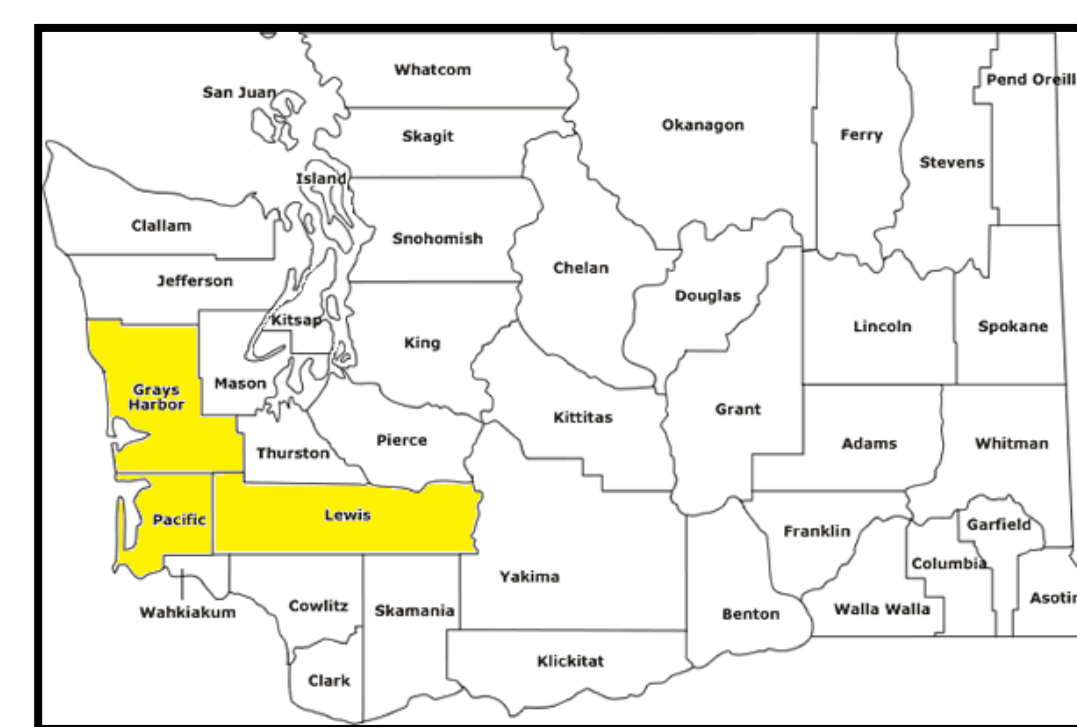
Daniel J. Evans School of Public Affairs, University of Washington & NWS WFO Seattle

## Introduction

Forecast products and timely warnings are ineffective if residents do not receive them or are unable to understand and respond appropriately. Western Washington is full of diversity from the people to the geography, and is susceptible to severe weather events. The National Weather Service (NWS) Weather Forecast Office Seattle is responsible for producing forecasts and issuing appropriate warnings and precautionary messages for Western Washington and most of the coastal waters. In early December 2007, a winter storm severely affected parts of Southwest Washington; NWS Seattle issued appropriate warnings and produced accurate storm forecasts. However, warnings and storm severity were not properly disseminated to or understood by residents. *This storm led to the development and implementation of a survey to determine where, why, and how often Western Washington residents seek weather information, and gauge residents' understanding of certain key terminology used by NWS.*



**Figure 1.** The storm occurred December 2-4, 2007, and event severely affected Grays Harbor, Lewis, and Pacific Counties. Besides rain, the storm packed high winds in excess of 80mph, gusting to 145mph.



**Figure 2.** The highly localized event severely affected Grays Harbor, Lewis, and Pacific Counties. Besides rain, the storm packed high winds in excess of 80mph, gusting to 145mph.

## Methodology

The survey consisted of open-ended, closed-ended, and simple demographic questions that spanned three topics: weather information, terminology, and NWS resources. The survey underwent review by a project advisor, NWS colleagues, and from various outside organizations for structure, content, and clarity before public release. The review process provided reasonable confidence that respondents would read and interpret the survey questions and educational material as intended, and the survey would provide information desired. Collection of data occurred throughout March and April 2010 using an internet-based system, SurveyMonkey, which allowed for programming, creation of survey links, and data collection through a single source.



**Figure 3.** Links to the survey were available on Tacoma News Tribune's (TNT) weather page, The Chronicle, Puget Sound Energy's (PSE) internal website, Andy Wappler's blog, and Cliff Mass Weather Blog.

Each survey host had their own link and survey that allowed the following:

- The same survey to open and close for response at different times.
- Responses for each survey host to remain separate.
- Identification of biases linked to varying weather knowledge and overall interest of respondents.

The survey process relied on respondent honesty to complete the survey only once and only respond if a Western Washington resident. Relying on respondent honesty is a risk of using an open-access website to host the survey; a controlled-access website could eliminate the risk of non-targeted respondents and multiple responses, but was unfortunately not an option (Demuth, Lazo, & Morss, 2008).

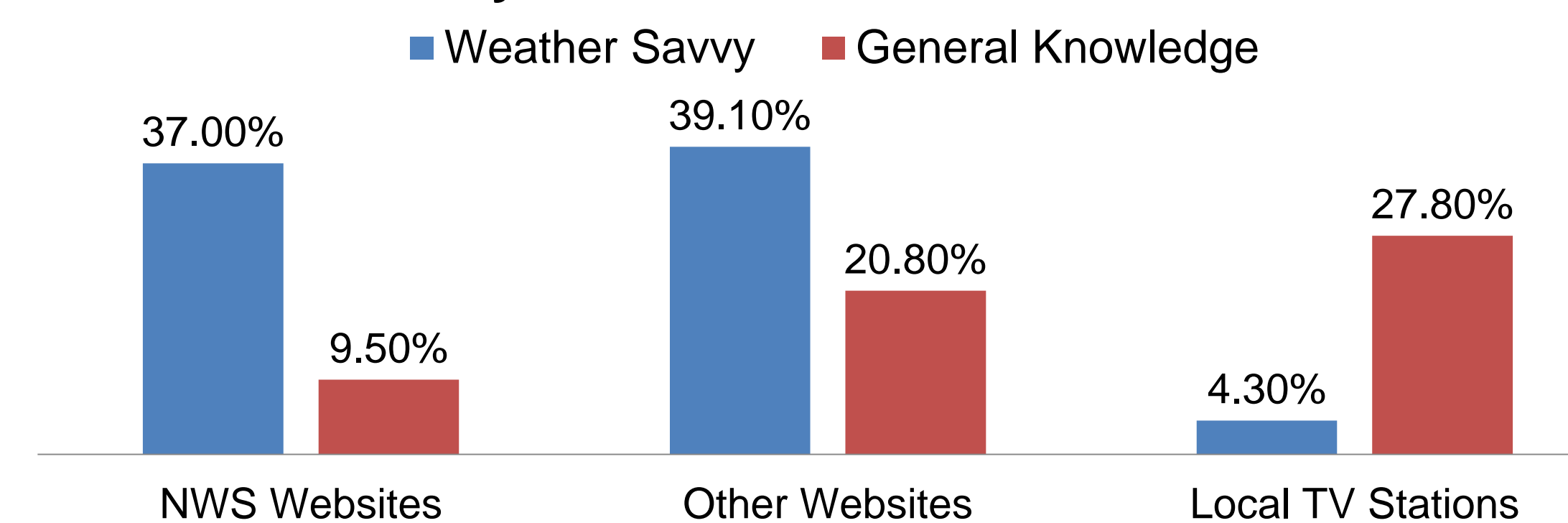
## Results

1670 total respondents began the survey with 1422 respondents completing the survey. Even though differences and biases exist between the groups examined, the data collected and analyzed answered the two main research questions. The differences and biases actually provided interesting perspectives, which offered insight into how the different groups approach weather information and understand key terminology.

**Table 1.** During the analysis process, respondents from Cliff Mass Weather Blog were categorized as "weather savvy", since followers of this blog have an interest in weather and have exposure to more technical weather information on a regular basis. The remaining respondents were categorized as "general knowledge" respondents. n = number of respondents

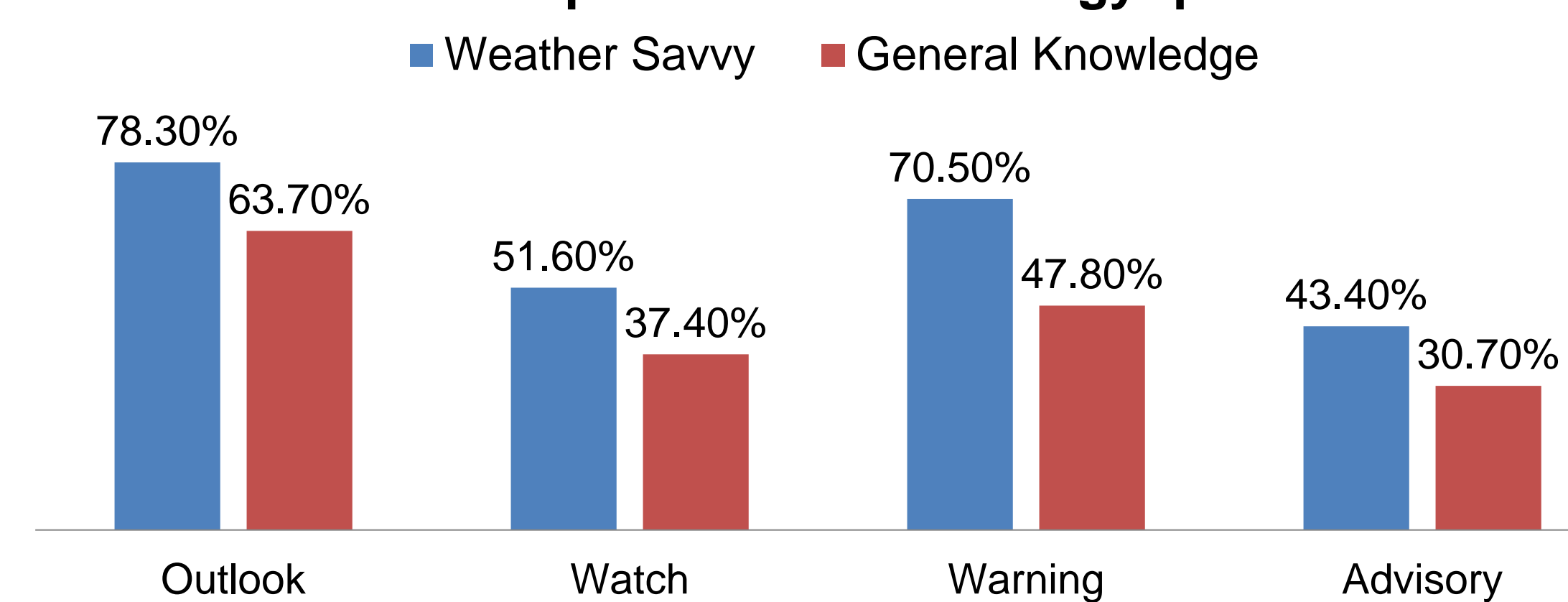
Survey Host	Percent of Total Respondents
Puget Sound Energy n = 854	51.1
Cliff Mass Weather Blog n = 760	45.5
Tacoma News Tribune n = 22	1.3
The Chronicle n = 16	1.0
Global Youth Service Day n = 12	0.7
NWS n = 6	0.4
Total n = 1670	100.0

**Primary sources of weather information**



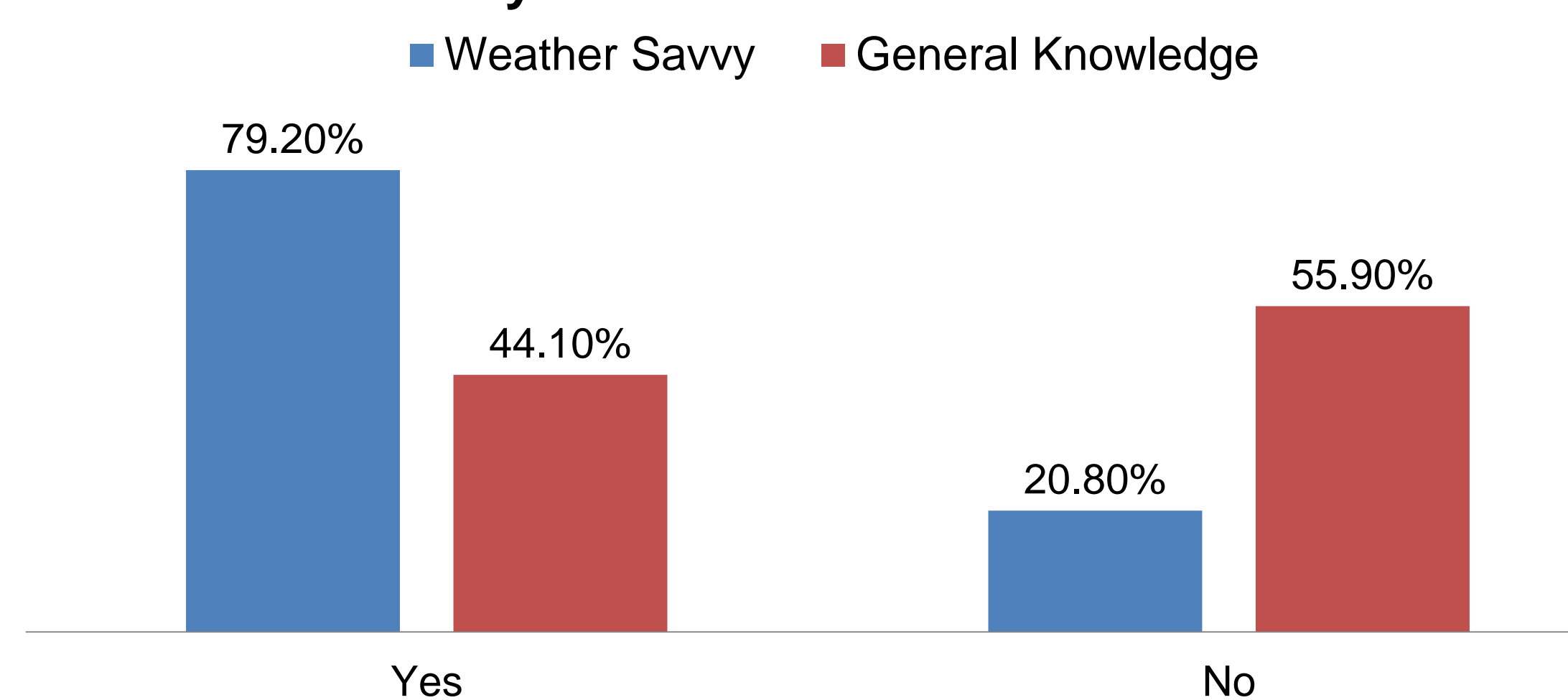
**Figure 4.** "Weather savvy" and "general knowledge" respondents favor internet based weather information sources.

**Correct responses to terminology question**



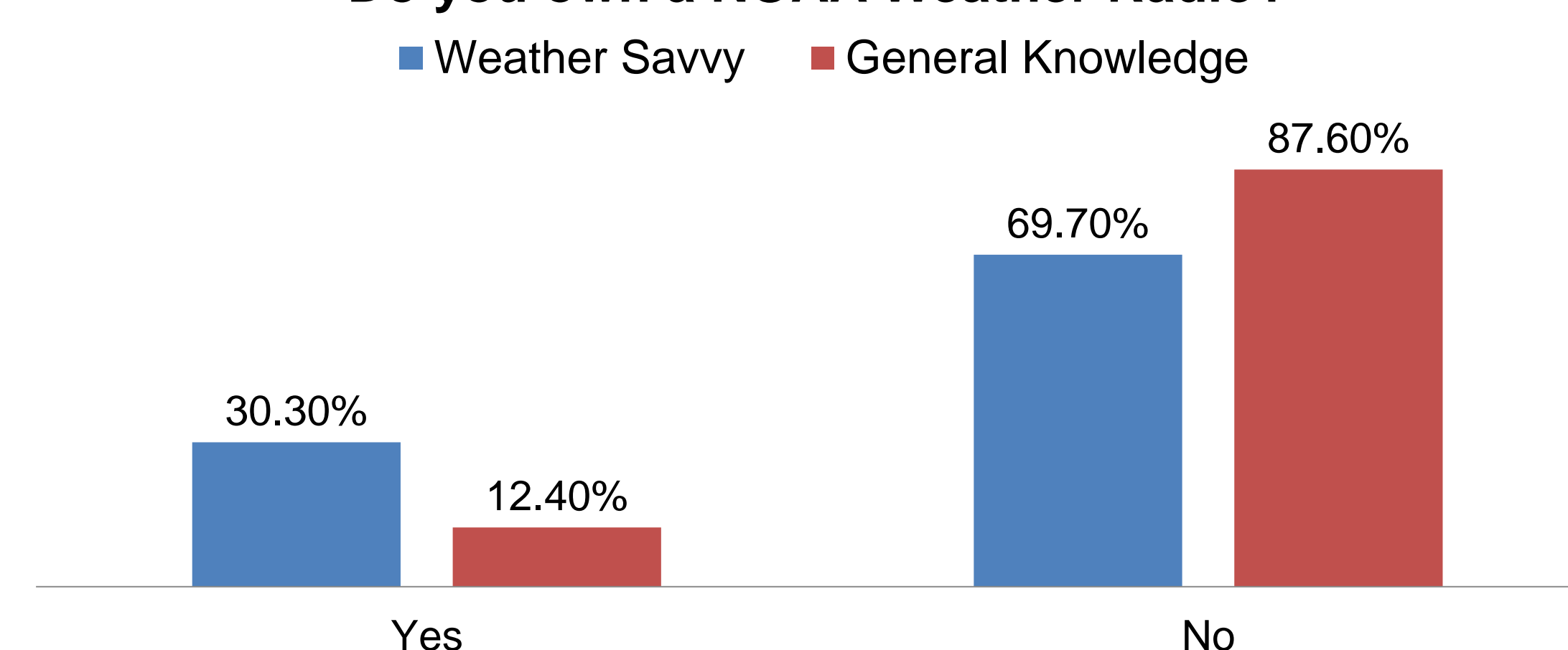
**Figure 5.** Although "weather savvy" respondents performed better than the "general knowledge" respondents, neither group performed extraordinarily well.

**Have you ever used a NWS website?**



**Figure 6.** A majority of "weather savvy" respondents have used a NWS website. While a majority of "general knowledge" respondents have not, and some revealed in the comments section not knowing NWS websites existed.

**Do you own a NOAA Weather Radio?**



**Figure 7.** Few respondents own a NOAA Weather Radio, and this question provides no insight into whether respondents have the radio programmed correctly, loaded with batteries, or out in an accessible location.

## Conclusions

NWS Seattle strives to issue accurate and timely notices when severe weather threatens, and increase residents' overall preparedness to help protect life and property. This project aimed to help NWS Seattle by providing data on where, why, and how often Western Washington residents seek weather information, while also providing data on residents' level of understanding of key terminology. The results revealed, regardless of weather knowledge or level of interest, respondents do not completely understand or effectively differentiate the terminology presented.

NWS Seattle is currently using the results of this project to guide the development and implementation of marketing tools and outreach programs. More specifically, updated outreach and education efforts place particular emphasis on increasing customer understanding of terminology key to NWS products and services. If Western Washington residents do not understand the weather information they receive and know how to respond appropriately, risk remains high for loss of life and property during severe weather events.

Ultimately, weather and societal impacts are interrelated, and the continued integration of social science into meteorological research and practice will benefit all. Research should continue to examine how people use and understand weather information.

## Literature Cited

Demuth, J., Lazo, J., & Morss, R. (2008). Communicating Uncertainty in Weather Forecasts: A Survey of the U.S. Public. *AMS Weather and Forecasting*, 23, 974-991.

## Acknowledgments

I thank Crystal Hall, Ph.D. for being the project advisor, Brad Colman, Ph.D. and Ted Buehner for providing me the opportunity to work on this project, and Cliff Mass, Andy Wappler, Puget Sound Energy, The Tacoma News Tribune, and The Chronicle for hosting survey links. Funding provided by the University of Washington and NWS Seattle.

## For further information

Please contact [jennichang4@gmail.com](mailto:jennichang4@gmail.com).