

PUBLIC RESPONSE, ACTION AND MEANS OF RECEPTION OF NATIONAL WEATHER SERVICE SEVERE WEATHER WARNINGS IN NORTHEASTERN OHIO

Frank P. Martin
Weather Service Office
Akron, Ohio 44320

1. INTRODUCTION

The heart of inferential statistics is applying a sample populations result to that of the universal population. If a sample population is large enough, the data results may be applied to the entire population.

The public's response to the National Weather Services' (NWS) severe weather warnings should be of primary concern to the NWS.

This survey and the results of the responses, knowledge and actions of a sample population to a questionnaire dealing with our most important product, will shed some light on how our product is received by the public.

The study was conducted during the summer of 1976 on the campuses of the University of Akron, Ohio, and Kent State University, Ohio. These two sites were chosen because classmates and faculty members cooperated in handing out the questionnaire to their classes.

After these sources were exhausted, students at both universities were selected at random on campus and asked to fill out the questionnaire.

2. THE SAMPLE POPULATION

The sample population for this study was limited to college age students because the issuing of severe weather watches and warnings became a normal procedure during their lifetime.

Almost a hundred questionnaires had been handed out and returned by older persons and caused me to limit the age group since some of the responses to a question indicated they had experienced a tornado prior to 1950 when warnings and watches were not issued.

The total number of college age questionnaires returned exceeded 1200. However, as could be expected, some of the sample questionnaires obviously were returned with false information on them. For example, questions 1 and 2 were answered "yes" and "no" respectively.

The one thousand responses used in discussing the results represent 500 responses from each school. A replica of the questionnaire is shown in Exhibit 1.

Exhibit 1. Questionnaire Sample

If the National Weather Service (NWS) issues a severe weather warning do you:

Always take cover if advised?

Yes ___ No ___ Comment _____

Know where to take cover?

Yes ___ No ___ Comment _____

Have confidence in the validity of the warning?

Yes ___ No ___ Comment _____

Through what media do you usually receive the warning?

TV ___ Radio ___ Other (please specify) _____

Are you aware that there is a continuous weather broadcast available in Northeastern Ohio?

Yes _____ No _____

Have you ever experienced a TORNADO?

Yes _____ No _____

If you answered yes above, was a warning issued in time for you to take cover?

Yes _____ No _____ Comment _____

The questionnaire was structured in the above manner to simplify the recording of the results but still allow the interviewees to make comments which proved to be very useful.

3. RESULTS

The results of this survey are listed in Tables I through III and will be discussed in the following paragraphs.

The majority (72%) of the respondees indicated that they did not always take cover if advised. (See Table II).

Those who took time to write a comment indicated that when they heard a warning, they took a look at the sky to determine for themselves if they were in danger.

The remainder (28%) indicated they automatically took cover when warned.

A mildly surprising statistic is the one concerning the knowledge of the sample population of where to take cover; 87% of the students knew where to take cover.

This may reflect the dissemination of such information by the NWS or education by the school systems at the elementary or secondary level.

The most surprising response, I think, was to the question about their confidence in the validity of severe weather warnings.

No less than 89% of this sample population had confidence in the validity of the warning. This particular statistic was the highest of any of the responses, as may be seen in Table I.

This confidence level is something that we should be cognizant of and protect.

To have this confidence level is an indication that in this particular area of public service, the NWS has done what the public feels is an outstanding job.

In this survey, the most efficient means of dissemination of severe weather warnings was via television (69%), probably because most of the severe weather occurred at the time when most people would normally be at home watching TV.

Table I

List of Responses from All Interviewees

	YES		NO	
	Total	Percent	Total	Percent
*Take Cover?	278	28	722	72
Know Where?	869	87	131	13
Confidence in Warning	892	89	108	11
**Media				
TV	692	69		
Radio	498	50		
Other	15	2		
NOAA Weather Radio	584	58	416	42
Experienced Tornado?	204	20	796	80
Warning Issued?	146	72	58	28

*The phrase questions listed here and in Tables II and III correspond to the questions in Exhibit I.

**Some heard warnings from more than one source.

69% of the sample population indicated they received warnings via television while 50% indicated radio was their major means of receiving. Only 2% indicated "other," which ordinarily meant they heard it from another person.

Perhaps due to the time of occurrence of severe weather, television was shown to be the best means of dissemination. The statistics presented in the preceding paragraphs and in Tables I, II and III include multiple answers to the question, "Through what media do you usually receive the warning?"

Too few people who responded were aware of

the existence of NOAA Weather Radio. Only 58% knew that the service existed, while 42% indicated that they did not know it existed.

Perhaps a publicity campaign would help the public become more informed about NOAA Weather Radio.

A little over 20% of the total surveyed indicated they had experienced a tornado. Of this group 72% indicated that warning had been issued in time for them to take cover.

Those who had experienced a tornado but indicated that they did not get warning from the NWS in time to take cover totaled 28%.

Of this 28% who indicated that they did not get a warning in time to take cover, three had been in Xenia, Ohio, the day that town was devastated by a tornado.

The three Xenia students did indicate that a warning was issued, however, they stated the warning was issued too late for them to take cover, or, they did not hear the warning until it was too late to take the recommended action.

As may be seen in Table II, those who had experienced a tornado and had sufficient warning did not necessarily heed the warning. Only 40% of them took cover when advised, the remainder did not (60%).

A very high percentage indicated they knew where to take cover and only 10% indicated they did not know where to take cover.

Table II

Responses from Interviewees Who Experienced a Tornado and Had Received a NWS Warning

	YES		NO	
	Total	Percent	Total	Percent
Take Cover?	53	40	81	60
Know Where?	121	90	13	10
Confidence in Warning	126	94	8	6
*Media (TV)	87	65	74	55
NOAA Radio	77	58	57	42

Significantly, a higher percentage of those who had experienced a tornado but had suf-

ficient warning, had a higher rate of confidence in the validity of the warning.

The figures reveal 94% for those who experienced a tornado and had sufficient warning versus 89% for the entire sample population.

*Some heard warnings from more than one source.

Television and radio, with this group, were the only means of their becoming aware of an actual or potential severe weather situation with 65% indicating TV as their major source of watch/warning and 58% indicating radio.

The percentage of those who knew of NOAA Weather Radio's existence was essentially the same as that of the general sample population, 58%.

Table III presents the statistics for that part of the sample population which had experienced a tornado but had insufficient or no warning. This group had similar responses to those of the overall sample population and sub-population discussed previously.

It is interesting to note that 84% of this group (although it was smaller in absolute numbers than any other group) still had a great deal of confidence in the validity of the warnings.

Table III

Responses from 44 Interviewees Who Had Experienced a Tornado and Who Had Not Received a NWS Warning

	YES		NO	
	Total	Percent	Total	Percent
Take Cover?	15	34	29	66
Know Where?	39	89	5	11
Confidence?	37	84	7	16
*Media?	35	80	18	41
NOAA Radio?	28	64	16	36

*Some had warnings from more than one source.

4. SUMMARY

It is obvious from this survey that the public whom we serve does not automatically take cover when warnings are issued. A good percent look at the sky and make their own decision on whether to take cover or not.

The facts state that the vast majority of those interviewed had been well educated for the occurrence of severe weather since they indicated they knew where to take cover in the event of severe weather.

During the severe weather episodes covered by this survey, television was the best warning dissemination medium (because it reached the greatest number of people). This, perhaps, is due to the time of occurrence of most severe weather (prime viewing time).

This survey also brings out the fact that the public's knowledge of the existence of

NOAA Weather Radio is too low and perhaps a publicity campaign is needed to inform the public of this service.

The most gratifying result of this survey was the overwhelming confidence this segment of the population had in our accuracy of warnings.

It would seem that the NWS's best image building can take place during a severe weather situation. This is perhaps due to the public exposure that is necessary from using Emergency Broadcast Systems (EBS) and direct contacts with the public via radio and television.

Regardless of how we have gained the public confidence, it is something to be carefully nurtured.