

WINTER WEATHER AND SOCIETY SURVEY INSTRUMENT

Date: April 20XX; Respondents = 1,500; Median Time = 20 min

You are invited to participate in the Winter Weather and Society study. This study seeks to assess how U.S. residents receive, understand, and respond to weather forecasts and warnings. You were selected as a possible participant because you volunteered to participate in online surveys through Qualtrics or one of its partners. If you agree to participate, you will complete this online survey.

There are no risks or benefits.

If you participate, you will be compensated according to your agreement with your online survey provider. Your participation is voluntary, and your responses will be de-identified before they are shared for research purposes or published.

Even if you choose to participate now, you may stop participating at any time and for any reason. Your data may be used in future research studies, unless you contact me to withdraw your data.

Data are collected via an online survey system that has its own privacy and security policies for keeping your information confidential. The University of Oklahoma cannot provide assurances as to how this online survey system is permitted to use the data you provide.

If you have questions about this research, please contact the Center for Risk and Crisis Management at the University of Oklahoma, at 405-325-1720 or at crcm@ou.edu.

You can also contact the University of Oklahoma – Norman Campus Institutional Review Board at 405-325-8110 or irb@ou.edu with questions, concerns or complaints about your rights as a research participant, or if you don't want to talk to the researcher.

By answering the survey questions, I agree to participate in this research. Please print this page for your records. This research has been approved by the University of Oklahoma, Norman Campus IRB.

IRB Number: 9418

Approval date: 06/13/2018

Paperwork Reduction Act

A Federal agency may not conduct or sponsor, and a person is not required to respond to, nor shall a person be subject to a penalty for failure to comply with an information collection subject to the requirements of the Paperwork Reduction Act of 1995 unless the information collection has a currently valid OMB Control Number. The approved OMB Control Number for this information collection is 0648-XXXX. Without this approval, we could not conduct this survey. Public reporting for this information collection is estimated to be approximately 20 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the information collection. All responses to this information collection are voluntary. Send comments regarding this burden estimate or any other aspect of this information collection, including suggestions for reducing this burden to the NWS Office of Science and Technology Integration, Attn: Nicole Kurkowski, Nicole.kurkowski@noaa.gov.

-----End Web pg-----

age: How old are you? [VERBATIM; REQUIRE NUMERIC < 110; IF < 18 SKIP TO END OF SURVEY]

gend: Are you male or female?

0 - Female

1 - Male

hisp: Do you consider yourself to be Hispanic, Latino, or Spanish or to have Hispanic, Latino, or Spanish origins?

0 - No

1 - Yes

race: Which of the following best describes your race?

- 1 - White
- 2 - Black or African American
- 3 - American Indian or Alaska Native
- 4 - Asian
- 5 - Native Hawaiian or Pacific Islander
- 6 - Two or more races
- 7 - Some other race (please specify)

race_spec: [VERBATIM]

-----End Web pg-----

state: Please select the state or district where your current residence is located.

zip: What is the five-digit zip code at your residence? [VERBATIM; REQUIRE 5-DIGIT NUMERIC]

-----End Web pg-----

Approximately how long have you lived at your current address or any other address within the same zip code area?

long_years: [VERBATIM; REQUIRE NUMERIC] years

long_months: [VERBATIM, REQUIRE NUMERIC <12] months

-----End Web pg-----

[SHOW IF **long_years** < 5]

last_state: Using the dropdown list, please select the state or district where your previous residence was located.

-----End Web pg-----

rural: Which of the following categories best describes the location of your current primary residence?

- 1 - Urban lot in a densely populated area
- 2 - Suburban lot in a neighborhood that is near a densely populated area
- 3 - Rural lot in a sparsely populated area

home: Which of the following categories best describes the nature of your current primary residence?

- 1 - Stand-alone (detached) permanent structure such as a house
- 2 - Condominium, townhouse, or duplex that is attached to another structure
- 3 - Apartment or dormitory room that is part of a larger residential complex
- 4 - Mobile home (whether placed on a permanent foundation or not)
- 5 - Boat, boathouse, ship, dock, or other floating structure
- 6 - Other type (please specify)

home_spec: [VERBATIM]

rent: Which of the following categories best describes your living arrangements at your current primary residence?

- 1 - Live with family or friends and do not pay rent
- 2 - Pay to rent or lease your primary residence (includes college or other dormitory rooms)
- 3 - Own your primary residence (includes making mortgage payments or outright ownership with no mortgage payments)

-----End Web pg-----

adults: *Including yourself*, how many *adults* age 18 and older live in your current primary residence?

[VERBATIM; REQUIRE NON-ZERO NUMERIC RESPONSE] adults

children: How many *children* age 17 and younger live in your current primary residence?
[VERBATIM; REQUIRE NUMERIC RESPONSE] children

-----End Web pg-----

Now we have some basic questions about the weather. How much do you agree or disagree with the following statements? [RANDOM ORDER]

follow: I follow the weather very closely.

- 1 - Strongly disagree
- 2 - Disagree
- 3 - Neither disagree nor agree
- 4 - Agree
- 5 - Strongly agree

plan_around: I plan my daily routine around the weather.

- 1 - Strongly disagree
- 2 - Disagree
- 3 - Neither disagree nor agree
- 4 - Agree
- 5 - Strongly agree

und_weather: I don't understand what causes extreme weather events like blizzards, tornadoes, and hurricanes.

- 1 - Strongly disagree
- 2 - Disagree
- 3 - Neither disagree nor agree
- 4 - Agree
- 5 - Strongly agree

-----End Web pg-----

Thinking about all four seasons (winter, summer, spring, and fall), how do you rate the risk of the following hazardous weather events to you and the people in the area where you live? [RANDOM ORDER IN TABLE; REQUIRE ALL]

risk_hail: Hail

- 1 - No risk
- 2 - Low risk
- 3 - Moderate risk
- 4 - High risk
- 5 - Extreme risk

risk_wind: High winds

- 1 - No risk
- 2 - Low risk
- 3 - Moderate risk
- 4 - High risk
- 5 - Extreme risk

risk_light: Lightning

- 1 - No risk
- 2 - Low risk
- 3 - Moderate risk
- 4 - High risk
- 5 - Extreme risk

risk_heat: Heat waves

- 1 - No risk
- 2 - Low risk
- 3 - Moderate risk
- 4 - High risk
- 5 - Extreme risk

risk_drought: Drought

- 1 - No risk
- 2 - Low risk
- 3 - Moderate risk
- 4 - High risk
- 5 - Extreme risk

risk_cold: Cold temperatures

- 1 - No risk
- 2 - Low risk
- 3 - Moderate risk
- 4 - High risk
- 5 - Extreme risk

risk_snow: Snow

- 1 - No risk
- 2 - Low risk
- 3 - Moderate risk
- 4 - High risk
- 5 - Extreme risk

risk_ice: Ice or freezing rain

- 1 - No risk
- 2 - Low risk
- 3 - Moderate risk
- 4 - High risk
- 5 - Extreme risk

risk_tor: Tornadoes

- 1 - No risk
- 2 - Low risk
- 3 - Moderate risk
- 4 - High risk
- 5 - Extreme risk

risk_flood: Floods

- 1 - No risk
- 2 - Low risk
- 3 - Moderate risk
- 4 - High risk
- 5 - Extreme risk

risk_hur: Hurricanes

- 1 - No risk
- 2 - Low risk
- 3 - Moderate risk
- 4 - High risk
- 5 - Extreme risk

risk_fire: Wildfires

- 1 - No risk
- 2 - Low risk
- 3 - Moderate risk
- 4 - High risk
- 5 - Extreme risk

risk_bliz: Blizzards

- 1 - No risk
- 2 - Low risk
- 3 - Moderate risk
- 4 - High risk
- 5 - Extreme risk

-----End Web pg-----

[SHOW IF HIGHEST RESPONSE TO **risk_XXX** IS A TIE]

risk_tie: It looks like you gave these hazardous weather events the same rating. Please indicate which type of event poses the biggest risk to you and the people in the area where you live.

- 1 - Hail
- 2 - High winds
- 3 - Lightning
- 4 - Heat waves
- 5 - Drought
- 6 - Cold temperatures
- 7 - Snow
- 8 - Ice or freezing rain
- 9 - Tornadoes
- 10 - Floods
- 11 - Hurricanes
- 12 - Wildfires
- 13 - Blizzards

-----End Web pg-----

The remainder of the survey focuses on winter weather. Winter weather may be rare or even impossible where you live. However, people move and travel around the country, and people may have family or friends who live in areas where winter weather occurs. Therefore, it is important to study how everyone thinks about the risk of winter weather events.

ww_live: Do you live in an area that experiences winter weather?

- 0 - No
- 1 - Yes

ww_trav: Do you ever travel to areas that experience winter weather?

- 0 - No
- 1 - Yes

ww_fam: Do you have family or friends who live in areas that experience winter weather?

- 0 - No
- 1 - Yes

-----End Web pg-----

During an average winter, how likely do you think it is that the area where you live will be affected by the following

types of winter weather? [RANDOM ORDER IN TABLE; REQUIRE ALL]

cncn_ice: Freezing rain or ice

- 1 - Not at all likely
- 2 - Not very likely
- 3 - Somewhat likely
- 4 - Very likely
- 5 - Extremely likely

cncn_snow: Snow

- 1 - Not at all likely
- 2 - Not very likely
- 3 - Somewhat likely
- 4 - Very likely
- 5 - Extremely likely

cncn_cold: Very cold temperatures

- 1 - Not at all likely
- 2 - Not very likely
- 3 - Somewhat likely
- 4 - Very likely
- 5 - Extremely likely

cncn_bliz: Blizzards

- 1 - Not at all likely
- 2 - Not very likely
- 3 - Somewhat likely
- 4 - Very likely
- 5 - Extremely likely

-----End Web pg-----

[SHOW IF **cncn_ice** > 2]

ice_thrsh: What is the smallest amount of freezing rain or ice that can disrupt your daily activities?

- 1 - Any amount
- 2 - 1/10 of an inch
- 3 - 1/4 of an inch
- 4 - 1/2 of an inch
- 5 - 1 or more inches

-----End Web pg-----

[SHOW IF **cncn_ice** > 2]

ice_prob: How likely do you think it is that the area where you live will experience at least one storm that produces [ice_thrsh] of freezing rain or ice during an average winter?

- 1 - Not at all likely
- 2 - Not very likely
- 3 - Somewhat likely
- 4 - Very likely
- 5 - Extremely likely

-----End Web pg-----

[SHOW IF **cncn_snow** > 2]

snow_thrsh: What is the smallest amount of snow that can disrupt your daily activities?

- 1 - Any amount
- 2 - 1 inch
- 3 - 3 inches
- 4 - 6 inches
- 5 - 8 inches
- 6 - 12 or more inches

-----End Web pg-----

[SHOW IF **cncn_snow** > 2]

snow_prob: How likely do you think it is that the area where you live will experience at least one storm that produces [**snow_thrsh**] of snow during an average winter?

- 1 - Not at all likely
- 2 - Not very likely
- 3 - Somewhat likely
- 4 - Very likely
- 5 - Extremely likely

-----End Web pg-----

[SHOW IF **cncn_cold** > 2]

cold_thrsh: What wind chill temperatures can disrupt your daily activities?

- 1 - Below 32 degrees Fahrenheit (i.e., freezing)
- 2 - Below 20 degrees Fahrenheit
- 3 - Below 10 degrees Fahrenheit
- 4 - Below 0 degrees Fahrenheit
- 5 - Below -10 degrees Fahrenheit
- 6 - Below -20 degrees Fahrenheit
- 7 - Below -35 degrees Fahrenheit

-----End Web pg-----

[SHOW IF **cncn_cold** > 2]

cold_prob: How likely do you think it is that the area where you live will experience at least one day with wind chill temperatures [**cold_thrsh**] during an average winter?

- 1 - Not at all likely
- 2 - Not very likely
- 3 - Somewhat likely
- 4 - Very likely
- 5 - Extremely likely

-----End Web pg-----

[SHOW IF **cncn_bliz** > 2]

bliz_prob: How likely do you think it is that the area where you live will experience at least one blizzard during an average winter?

- 1 - Not at all likely
- 2 - Not very likely
- 3 - Somewhat likely
- 4 - Very likely

5 - Extremely likely

-----End Web pg-----

During an average winter in the area where you live, how likely are winter storms to cause the following?
[RANDOM ORDER IN TABLE]

imp_sch: School closures or delays

- 1 - Not at all likely
- 2 - Not very likely
- 3 - Somewhat likely
- 4 - Very likely
- 5 - Extremely likely

imp_wrk: Work closures or delays

- 1 - Not at all likely
- 2 - Not very likely
- 3 - Somewhat likely
- 4 - Very likely
- 5 - Extremely likely

imp_road: Poor road conditions or road closures

- 1 - Not at all likely
- 2 - Not very likely
- 3 - Somewhat likely
- 4 - Very likely
- 5 - Extremely likely

imp_vis: Poor visibility

- 1 - Not at all likely
- 2 - Not very likely
- 3 - Somewhat likely
- 4 - Very likely
- 5 - Extremely likely

imp_pwr: Power outages

- 1 - Not at all likely
- 2 - Not very likely
- 3 - Somewhat likely
- 4 - Very likely
- 5 - Extremely likely

imp_wtr: Water issues/frozen pipes

- 1 - Not at all likely
- 2 - Not very likely
- 3 - Somewhat likely
- 4 - Very likely
- 5 - Extremely likely

imp_dmg: Damage to homes/property

- 1 - Not at all likely
- 2 - Not very likely
- 3 - Somewhat likely
- 4 - Very likely
- 5 - Extremely likely

imp_harm_you: Harm to you

- 1 - Not at all likely
- 2 - Not very likely
- 3 - Somewhat likely
- 4 - Very likely
- 5 - Extremely likely

imp_harm_othr: Harm to a friend, family, or other loved one

- 1 - Not at all likely
- 2 - Not very likely
- 3 - Somewhat likely
- 4 - Very likely
- 5 - Extremely likely

-----End Web pg-----

People take different actions in response to winter weather forecasts. For example, some people stock up on supplies, cancel plans, and avoid travel; others go about their daily activities with some caution, but usually don't take specific preparatory or protective actions. We want to know what you usually do when you learn that a winter storm may affect your area. If you have not been in this situation, please think about the actions you might take if you were traveling in an area that gets winter weather.

How much do you agree or disagree with the following statements? [RANDOM ORDER IN TABLE]

resp_usually: I usually take some type of preparatory or protective actions, but not always.

- 1 - Strongly disagree
- 2 - Disagree
- 3 - Neither disagree nor agree
- 4 - Agree
- 5 - Strongly agree

resp_ignore: Sometimes I ignore winter weather forecasts and take my chances.

- 1 - Strongly disagree
- 2 - Disagree
- 3 - Neither disagree nor agree
- 4 - Agree
- 5 - Strongly agree

resp_always: I almost always take the preparatory or protective actions that officials suggest, even if the actions are difficult.

- 1 - Strongly disagree
- 2 - Disagree
- 3 - Neither disagree nor agree
- 4 - Agree
- 5 - Strongly agree

resp_more: I usually take some type of preparatory or protective actions, but not the most difficult actions.

- 1 - Strongly disagree
- 2 - Disagree
- 3 - Neither disagree nor agree
- 4 - Agree
- 5 - Strongly agree

-----End Web pg-----

Now, we want you imagine that there is a forecast for [RANDOMIZE; **rand_evnt**: a blizzard | 1/10 inch of freezing rain or ice | 1/4 inch of freezing rain or ice | 1 inch of snow | 6 inches of snow | 12 inches of snow] in the area where you live, beginning in about 24 hours (1 day). If you do not live in an area that experiences this kind of weather, imagine that you have traveled to an area that does.

rand_evnt_cncrn: How *concerned* would you be about the possibility of [**rand_evnt**]?

- 1 - Not at all concerned
- 2 - Not very concerned
- 3 - Somewhat concerned
- 4 - Very concerned
- 5 - Extremely concerned

rand_evnt_exc: How *excited* would you be about the possibility of [**rand_evnt**]?

- 1 - Not at all excited
- 2 - Not very excited
- 3 - Somewhat excited
- 4 - Very excited
- 5 - Extremely excited

How likely would you be to take the following actions in response to a forecast for [**rand_evnt**]? [RANDOM ORDER IN TABLE]

rand_evnt_trav: Cancel or modify travel plans

- 1 - Not at all likely
- 2 - Not very likely
- 3 - Somewhat likely
- 4 - Very likely
- 5 - Extremely likely

rand_evnt_car: Make sure to have a winter weather kit in the car (with candles, blankets, ice scraper, flashlight, etc.)

- 1 - Not at all likely
- 2 - Not very likely
- 3 - Somewhat likely
- 4 - Very likely
- 5 - Extremely likely
- 6 - Not applicable (I don't have a car)

rand_evnt_food: Buy extra food or water

- 1 - Not at all likely
- 2 - Not very likely
- 3 - Somewhat likely
- 4 - Very likely
- 5 - Extremely likely

rand_evnt_supp: Buy extra emergency supplies (generator, gas, batteries, medicines, etc.)

- 1 - Not at all likely
- 2 - Not very likely
- 3 - Somewhat likely
- 4 - Very likely
- 5 - Extremely likely

rand_evnt_noth: Do nothing

- 1 - Not at all likely
- 2 - Not very likely
- 3 - Somewhat likely

- 4 - Very likely
- 5 - Extremely likely

rand_evnt_othr: Other (please specify)

- 1 - Not at all likely
- 2 - Not very likely
- 3 - Somewhat likely
- 4 - Very likely
- 5 - Extremely likely

-----End Web pg-----

If [**rand_evnt**] were to occur, how likely are the following negative impacts? [RANDOM ORDER IN TABLE]

rand_evnt_imp_sch: School closures or delays

- 1 - Not at all likely
- 2 - Not very likely
- 3 - Somewhat likely
- 4 - Very likely
- 5 - Extremely likely

rand_evnt_imp_wrk: Work closures or delays

- 1 - Not at all likely
- 2 - Not very likely
- 3 - Somewhat likely
- 4 - Very likely
- 5 - Extremely likely

rand_evnt_imp_road: Poor road conditions or road closures

- 1 - Not at all likely
- 2 - Not very likely
- 3 - Somewhat likely
- 4 - Very likely
- 5 - Extremely likely

rand_evnt_imp_vis: Poor visibility

- 1 - Not at all likely
- 2 - Not very likely
- 3 - Somewhat likely
- 4 - Very likely
- 5 - Extremely likely

rand_evnt_imp_pwr: Power outages

- 1 - Not at all likely
- 2 - Not very likely
- 3 - Somewhat likely
- 4 - Very likely
- 5 - Extremely likely

rand_evnt_imp_wtr: Water issues/frozen pipes

- 1 - Not at all likely
- 2 - Not very likely
- 3 - Somewhat likely
- 4 - Very likely
- 5 - Extremely likely

rand_evnt_imp_dmg: Damage to homes/property

- 1 - Not at all likely
- 2 - Not very likely
- 3 - Somewhat likely
- 4 - Very likely
- 5 - Extremely likely

rand_evnt_imp_harm_you: Harm to you

- 1 - Not at all likely
- 2 - Not very likely
- 3 - Somewhat likely
- 4 - Very likely
- 5 - Extremely likely

rand_evnt_imp_harm_othr: Harm to a friend, family, or other loved one

- 1 - Not at all likely
- 2 - Not very likely
- 3 - Somewhat likely
- 4 - Very likely
- 5 - Extremely likely

-----End Web pg-----

Some impacts from [**rand_evnt**] cause relatively slight inconveniences whereas cause significant damage or disruption. We want to know how you rank the significance of possible impacts from [**rand_evnt**]. Please drag the boxes below to rank each impact from most significant (top) to least significant (bottom). [RANDOM ORDER; ARRANGE TEXT]

- rank_evnt_imp_sch:** School closures or delays
- rank_evnt_imp_wrk:** Work closures or delays
- rank_evnt_imp_road:** Poor road conditions or road closures
- rank_evnt_imp_vis:** Poor visibility
- rank_evnt_imp_pwr:** Power outages
- rank_evnt_imp_wtr:** Water issues/frozen pipes
- rank_evnt_imp_dmg:** Damage to homes/property

-----End Web pg-----

The National Weather Service (NWS), an agency of the United States government, issues different kinds of public alerts when winter weather threatens, including winter weather advisories, watches, and warnings.

wwalerts: How would you rate your understanding of the differences among these alerts?

- 1 - Poor
- 2 - Fair
- 3 - Good
- 4 - Very good
- 5 - Excellent

-----End Web pg-----

warn_adv: To the best of your knowledge, which National Weather Service alert means that winter weather impacts are expected to be more severe? [RANDOM ORDER]

- 1 - A winter storm warning
- 2 - A winter weather advisory
- 3 - I don't know

warn_adv_conf: How confident are you in this response?

- 1 - Not at all confident
- 2 - Not very confident
- 3 - Somewhat confident
- 4 - Very confident
- 5 - Extremely confident

-----End Web pg-----

warn_watch_prob: To the best of your knowledge, which National Weather Service alert means that winter weather is more likely to occur? [RANDOM ORDER]

- 1 - A winter storm warning
- 2 - A winter storm watch
- 3 - I don't know

warn_watch_prob_conf: How confident are you in this response?

- 1 - Not at all confident
- 2 - Not very confident
- 3 - Somewhat confident
- 4 - Very confident
- 5 - Extremely confident

-----End Web pg-----

warn_watch_soon: To the best of your knowledge, which National Weather Service alert means that winter weather is likely to occur sooner? [RANDOM ORDER]

- 1 - A winter storm warning
- 2 - A winter storm watch
- 3 - I don't know

warn_watch_soon_conf: How confident are you in this response?

- 1 - Not at all confident
- 2 - Not very confident
- 3 - Somewhat confident
- 4 - Very confident
- 5 - Extremely confident

-----End Web pg-----

In addition to winter weather advisories, watches, and warnings, the National Weather Service issues alerts for a variety of other winter weather hazards.

ice_warn_und: How would you rate your understanding of *ice storm* warnings?

- 1 - Poor
- 2 - Fair
- 3 - Good
- 4 - Very good
- 5 - Excellent

bliz_warn_und: How would you rate your understanding of *blizzard* warnings?

- 1 - Poor
- 2 - Fair
- 3 - Good
- 4 - Very good
- 5 - Excellent

cold_warn_und: How would you rate your understanding of *wind chill* warnings?

- 1 - Poor
- 2 - Fair
- 3 - Good
- 4 - Very good
- 5 - Excellent

-----End Web pg-----

Now we want to know about the variety of forecast information that you usually receive when winter weather threatens your area. If you have not been in this situation, please think about the information you might receive if you were traveling in an area that does.

How much do you agree or disagree with the following statements? [RANDOM ORDER IN TABLE]

rec_most: I receive pretty much all of the information that is available for my location.

- 1 - Strongly disagree
- 2 - Disagree
- 3 - Neither disagree nor agree
- 4 - Agree
- 5 - Strongly agree

rec_miss: Sometimes I miss information that is available for my location.

- 1 - Strongly disagree
- 2 - Disagree
- 3 - Neither disagree nor agree
- 4 - Agree
- 5 - Strongly agree

rec_time: I receive new information about my location as soon as it is available.

- 1 - Strongly disagree
- 2 - Disagree
- 3 - Neither disagree nor agree
- 4 - Agree
- 5 - Strongly agree

rec_screen: Sometimes there is too much information, I get some but not all of it.

- 1 - Strongly disagree
- 2 - Disagree
- 3 - Neither disagree nor agree
- 4 - Agree
- 5 - Strongly agree

-----End Web pg-----

When winter weather threatens your area, how much do you rely on the following *sources* of information? If you have not been in this situation, how much would you *plan* to rely on the following sources of information if you were traveling in an area that is threatened by winter weather? [RANDOM ORDER IN TABLE]

rely_nws: National Weather Service

- 1 - Not at all
- 2 - Not very much
- 3 - Somewhat
- 4 - Very much
- 5 - Extensively

rely_loctv: Local TV stations

- 1 - Not at all
- 2 - Not very much
- 3 - Somewhat
- 4 - Very much
- 5 - Extensively

rely_fam: Family, friends, neighbors, employers, co-workers, etc.

- 1 - Not at all
- 2 - Not very much
- 3 - Somewhat
- 4 - Very much
- 5 - Extensively

rely_wx_chan: National TV stations like The Weather Channel or WeatherNation

- 1 - Not at all
- 2 - Not very much
- 3 - Somewhat
- 4 - Very much
- 5 - Extensively

rely_em: State or local emergency managers

- 1 - Not at all
- 2 - Not very much
- 3 - Somewhat
- 4 - Very much
- 5 - Extensively

-----End Web pg-----

[SHOW IF **rely_nws** > 2]

You indicated that you rely on the National Weather Service for information about winter weather. How do you usually get information from the National Weather Service? Please select all that apply. [RANDOM ORDER CHECK BOXES; 1 = SELECTED]

nws_twit: Twitter

nws_face: Facebook

nws_web: Internet website

nws_tv: Television

nws_rad: Weather radio (NOAA/NWS radio)

nws_phone: Automated text or phone notifications

nws_othr: Other (please specify) [VERBATIM]

-----End Web pg-----

[SHOW IF **rely_nws** = 1 OR 2]

rely_nws_why: You indicated that you do not rely on the National Weather Service for information about winter weather. Can you tell us why? [RANDOM ORDER]

- 1 - I don't know where to find the information
- 2 - The information is usually too complicated for me to understand
- 3 - They don't provide the information I want or need
- 4 - I don't trust the National Weather Service
- 5 - Other (please specify)

rely_nws_why_spec: [VERBATIM]

-----End Web pg-----

When winter weather threatens your area, how much do you rely on the following *channels* of information? If you have not been in this situation, how much would you *plan* to rely on the following channels of information if you were traveling in an area that is threatened by winter weather? [RANDOM ORDER IN TABLE]

rely_bdrad: Broadcast radio

- 1 - Not at all
- 2 - Not very much
- 3 - Somewhat
- 4 - Very much
- 5 - Extensively

rely_wxrad: Weather radio (NOAA/NWS radio)

- 1 - Not at all
- 2 - Not very much
- 3 - Somewhat
- 4 - Very much
- 5 - Extensively

rely_tv: Television

- 1 - Not at all
- 2 - Not very much
- 3 - Somewhat
- 4 - Very much
- 5 - Extensively

rely_int: Internet websites focused on weather forecasts, such as those provided by the National Weather Service

- 1 - Not at all
- 2 - Not very much
- 3 - Somewhat
- 4 - Very much
- 5 - Extensively

rely_soc: Social media, such as Twitter or Facebook

- 1 - Not at all
- 2 - Not very much
- 3 - Somewhat
- 4 - Very much
- 5 - Extensively

rely_wom: Word-of-mouth (including telephone calls or texts) from family, friends, neighbors, employers, co-workers, etc.

- 1 - Not at all
- 2 - Not very much
- 3 - Somewhat
- 4 - Very much
- 5 - Extensively

rely_phone: Automated text or phone notifications

- 1 - Not at all
- 2 - Not very much
- 3 - Somewhat
- 4 - Very much
- 5 - Extensively

-----End Web pg-----

[SHOW IF **rely_soc** < 2]

You indicated that you rely on social media. Can you tell us why? Please select all that apply. [RANDOM ORDER CHECK BOXES; 1 = SELECTED]

soc_time: I can get more up-to-date forecast information.

soc_type: I can get different types of forecast information.

soc_diff: I can get forecast information from different people.

soc_think: I like to see what people think about the forecast through their replies or comments.

soc_conv: I use social media for other reasons, so it's convenient for me to use it for weather.

-----End Web pg-----

Winter storm forecasts often include multiple pieces of information. We want to know how important each of the following pieces of information is to you. Please drag the boxes below to rank each piece of information from most important (top) to least important (bottom). [RANDOM ORDER; ARRANGE TEXT]

forecast_loc: Location: what area is the storm going to affect?

forecast_time: Timing: when is the storm going to happen?

forecast_prob: Chance: how likely is the storm to occur?

forecast_sev: Severity: how much snow or ice is the storm going to produce?

forecast_impact: Impacts: how might the storm impact you and surrounding areas? (for example: poor visibility, traffic delays, power outages, school or work closures, property damage)

forecast_safe: Protective actions: how can you stay safe during the storm? (for example: slow down when driving, stay inside)

-----End Web pg-----

forecast_acc: How accurate are winter weather forecasts for the area where you live? If you do not live in an area that experiences winter weather, what are your general impressions about the accuracy of winter weather forecasts?

1 - Forecasters usually predict much *more* snow/ice than actually occurs

2 - Forecasters usually predict a little *more* snow/ice than actually occurs

3 - Forecasters are pretty accurate

4 - Forecasters usually predict a little *less* snow/ice than actually occurs

5 - Forecasters usually predict much less snow/ice than actually occurs

-----End Web pg-----

What factors affect your perceptions about the trustworthiness of a winter weather forecast? Please select all that apply. [RANDOM ORDER CHECK BOXES; 1 = SELECTED]

trust_who: the person who made the forecast

trust_acc: the accuracy of recent forecasts

trust_info: the amount of information the forecast provides

trust_reas: my view about how reasonable the forecast seems

trust_dec: the decision I am trying to make using the forecast

trust_othr: Something else (please specify)

-----End Web pg-----

Forecasters often provide information in different ways. We want to know what you think of different formats. For each of the questions below, select the forecast format that *best* matches your preference: [RANDOM ORDER]

time_format: Which of these snow timing formats do you prefer? [RANDOM ORDER]

1 - There is still uncertainty, but the forecast suggests that the snow will most likely begin at 3 pm.

2 - There is still uncertainty, but the forecast suggests that the snow will begin between 1 and 5 pm.

amount_format: Which of these snow amount formats do you prefer? [RANDOM ORDER]

1 - There is still uncertainty, but the forecast suggests that the storm will most likely produce [amount_format_rand1: 4 | 12] inches of snow.

2 - There is still uncertainty, but the forecast suggests that the storm will produce between [amount_format_rand2: IF amount_format_rand1 = 4 → 2 and 6 | IF amount_format_rand1 = 12 → 10 and 14] inches of snow.

-----End Web pg-----

Now we are going to show you an example forecast. Please imagine that you are in the Cincinnati area when you receive this forecast.

Our latest forecast suggests that a strong winter storm will move into the Cincinnati, Ohio, area in the next 24 hours. We expect that snow will begin falling between 7:00 and 9:00 PM. It will primarily affect areas north of the city, including Butler, Warren, and Clinton counties. It is difficult to say how much snow these areas will get, but the most likely amount is 3 to 6 inches. It is possible that some areas will get as much as 6 to 10 inches of snow. Regardless of amounts, the storm will make it difficult and dangerous to drive, and it may cause power outages in some areas. Stay off the roads, and make sure to have some blankets, flashlights, and water available in case you lose electricity.

When you think about how you might prepare for a storm like this, which of these sentences are most and least important? Please drag the boxes below to rank each sentence from most important (top) to least important (bottom). [RANDOM ORDER; ARRANGE TEXT]

scen_time: We expect that snow will begin falling between 7:00 and 9:00 PM.

scen_loc: It will primarily affect areas north of the city, including Butler, Warren, and Clinton counties.

scen_most: It is difficult to say how much snow these areas will get, but the most likely amount is 3 to 6 inches.

scen_top: It is possible that some areas will get as much as 6 to 10 inches of snow.

scen_impact: Regardless of amounts, the storm will make it difficult and dangerous to drive and it may cause power outages in some areas.

scen_safe: Stay off the roads and make sure to have some blankets, flashlights, and water available in case you lose electricity.

-----End Web pg-----

exp1_cond_rand: [RANDOMIZE]

1 - **exp1_cond_tue:** 1-4 inches → **exp1_cond_wed:** 1-4 inches

2 - **exp1_cond_tue:** 1-4 inches → **exp1_cond_wed:** 2-3 inches

3 - **exp1_cond_tue:** 2-8 inches → **exp1_cond_wed:** 2-8 inches

4 - **exp1_cond_tue:** 2-8 inches → **exp1_cond_wed:** 4-6 inches

5 - **exp1_cond_tue:** 2-12 inches → **exp1_cond_wed:** 2-12 inches

6 - **exp1_cond_tue:** 2-12 inches → **exp1_cond_wed:** 4-10 inches

Imagine that it's *Tuesday*, and a winter storm is forecast to hit the area where you live on *Thursday* (in 2 days). You tune into your local TV meteorologist, and you hear that the forecast amount of snow for Thursday is [exp1_cond_tue].

exp1_1_est: How much snow do you think will fall? [VERBATIM; REQUIRE NUMERIC] inches

exp1_1_min: What is the minimum amount of snow that you think will fall? [VERBATIM; REQUIRE NUMERIC] inches

exp1_1_max: What is the maximum amount of snow that you think will fall? [VERBATIM; REQUIRE NUMERIC] inches

How much do you agree or disagree with each of the following statements about the forecast? [RANDOM ORDER TABLE]

exp1_1_chal: This seems to be a challenging storm to forecast for.

- 1 - Strongly disagree
- 2 - Disagree
- 3 - Neither disagree nor agree
- 4 - Agree
- 5 - Strongly agree

exp1_1_conf: The weather forecasters seem confident in the amount of snow that will fall.

- 1 - Strongly disagree
- 2 - Disagree
- 3 - Neither disagree nor agree
- 4 - Agree
- 5 - Strongly agree

exp1_1_use: The forecast information is useful to me.

- 1 - Strongly disagree
- 2 - Disagree
- 3 - Neither disagree nor agree
- 4 - Agree
- 5 - Strongly agree

exp1_1_confme: I feel confident about the amount of snow I'll get.

- 1 - Strongly disagree
- 2 - Disagree
- 3 - Neither disagree nor agree
- 4 - Agree
- 5 - Strongly agree

exp1_1_resp: How likely is it that you would change your plans for *Thursday* if you were to get this forecast?

- 1 - Not at all likely
- 2 - Not very likely
- 3 - Somewhat likely
- 4 - Very likely
- 5 - Extremely likely

-----End Web pg-----

The next day, *Wednesday* evening, you tune into the same local TV meteorologist, and you hear that the forecast amount of snow for *Thursday* is [**exp1_cond_wed**].

exp1_2_est: How much snow do you think will fall? [VERBATIM; REQUIRE NUMERIC] inches

exp1_2_min: What is the minimum amount of snow that you think will fall? [VERBATIM; REQUIRE NUMERIC] inches

exp1_2_max: What is the maximum amount of snow that you think will fall? [VERBATIM; REQUIRE NUMERIC] inches

How much do you agree or disagree with each of the following statements about the forecast? [RANDOM ORDER TABLE]

exp1_2_chal: This seems to be a challenging storm to forecast for.

- 1 - Strongly disagree
- 2 - Disagree

- 3 - Neither disagree nor agree
- 4 - Agree
- 5 - Strongly agree

exp1_2_conf: The weather forecasters seem confident in the amount of snow that will fall.

- 1 - Strongly disagree
- 2 - Disagree
- 3 - Neither disagree nor agree
- 4 - Agree
- 5 - Strongly agree

exp1_2_use: The forecast information is useful to me.

- 1 - Strongly disagree
- 2 - Disagree
- 3 - Neither disagree nor agree
- 4 - Agree
- 5 - Strongly agree

exp1_2_confme: I feel confident about the amount of snow I'll get.

- 1 - Strongly disagree
- 2 - Disagree
- 3 - Neither disagree nor agree
- 4 - Agree
- 5 - Strongly agree

exp1_2_resp: How likely is it that you would change your plans for *Thursday* if you were to get this forecast?

- 1 - Not at all likely
- 2 - Not very likely
- 3 - Somewhat likely
- 4 - Very likely
- 5 - Extremely likely

-----End Web pg-----

exp2_cond_rand: [RANDOMIZE]

- 1 - **exp2_cond_tue:** 3 inches → **exp2_cond_wed:** 10 inches
- 2 - **exp2_cond_tue:** 3 inches, but there is a 15% chance of 5 inches → **exp2_cond_wed:** 10 inches, but there is a 15% chance of 12 inches
- 3 - **exp2_cond_tue:** 1-5 inches → **exp2_cond_wed:** 8-12 inches
- 4 - **exp2_cond_tue:** 10 inches → **exp2_cond_wed:** 3 inches
- 5 - **exp2_cond_tue:** 10 inches, but there is a 15% chance of 12 inches → **exp2_cond_wed:** 3 inches, but there is a 15% chance of 5 inches
- 6 - **exp2_cond_tue:** 8-12 inches → **exp2_cond_wed:** 1-5 inches

Now we want to think about a NEW forecast situation.

Imagine that it's *Tuesday*, and a winter storm is forecast to hit the area where you live on *Thursday* (in 2 days). You tune into your local TV meteorologist, and you hear that the forecast amount of snow for Thursday is [**exp2_cond_tue**].

exp2_1_est: How much snow do you think will fall? [VERBATIM; REQUIRE NUMERIC] inches

exp2_1_min: What is the minimum amount of snow that you think will fall? [VERBATIM; REQUIRE NUMERIC] inches

exp2_1_max: What is the maximum amount of snow that you think will fall? [VERBATIM; REQUIRE NUMERIC] inches

How much do you agree or disagree with each of the following statements about the forecast? [RANDOM ORDER TABLE]

exp2_chal: This seems to be a challenging storm to forecast for.

- 1 - Strongly disagree
- 2 - Disagree
- 3 - Neither disagree nor agree
- 4 - Agree
- 5 - Strongly agree

exp2_conf: The weather forecasters seem confident in the amount of snow that will fall.

- 1 - Strongly disagree
- 2 - Disagree
- 3 - Neither disagree nor agree
- 4 - Agree
- 5 - Strongly agree

exp2_use: The forecast information is useful to me.

- 1 - Strongly disagree
- 2 - Disagree
- 3 - Neither disagree nor agree
- 4 - Agree
- 5 - Strongly agree

exp2_confme: I feel confident about the amount of snow I'll get.

- 1 - Strongly disagree
- 2 - Disagree
- 3 - Neither disagree nor agree
- 4 - Agree
- 5 - Strongly agree

exp2_1_resp: How likely is it that you would change your plans for *Thursday* if you were to get this forecast?

- 1 - Not at all likely
- 2 - Not very likely
- 3 - Somewhat likely
- 4 - Very likely
- 5 - Extremely likely

-----End Web pg-----

The next day, *Wednesday* evening, you tune into the same local TV meteorologist, and you hear that the forecast amount of snow for *Thursday* is [**exp2_cond_wed**].

exp2_2_est: How much snow do you think will fall? [VERBATIM; REQUIRE NUMERIC] inches

exp2_2_min: What is the minimum amount of snow that you think will fall? [VERBATIM; REQUIRE NUMERIC] inches

exp2_2_max: What is the maximum amount of snow that you think will fall? [VERBATIM; REQUIRE NUMERIC] inches

How much do you agree or disagree with each of the following statements about the forecast? [RANDOM ORDER TABLE]

exp2_2_chal: This seems to be a challenging storm to forecast for.

- 1 - Strongly disagree
- 2 - Disagree
- 3 - Neither disagree nor agree
- 4 - Agree
- 5 - Strongly agree

exp2_2_conf: The weather forecasters seem confident in the amount of snow that will fall.

- 1 - Strongly disagree
- 2 - Disagree
- 3 - Neither disagree nor agree
- 4 - Agree
- 5 - Strongly agree

exp2_2_use: The forecast information is useful to me.

- 1 - Strongly disagree
- 2 - Disagree
- 3 - Neither disagree nor agree
- 4 - Agree
- 5 - Strongly agree

exp2_2_confme: I feel confident about the amount of snow I'll get.

- 1 - Strongly disagree
- 2 - Disagree
- 3 - Neither disagree nor agree
- 4 - Agree
- 5 - Strongly agree

exp2_2_resp: How likely is it that you would change your plans for *Thursday* if you were to get this forecast?

- 1 - Not at all likely
- 2 - Not very likely
- 3 - Somewhat likely
- 4 - Very likely
- 5 - Extremely likely

-----End Web pg-----

People can have many different types of experiences with winter weather. Please indicate whether or not you have had each of the experiences listed below. [RANDOM ORDER TABLE; YES = 1]

exper_strand: I have been stranded somewhere due to winter weather.

exper_car_slid: I have been in a car (either as the driver or a rider) that slid on icy roads.

exper_car_acc: I have been in a car accident (either as the driver or a rider) due to winter weather.

exper_power: I have lost power due to winter weather.

exper_injur: I have been injured due to winter weather (fallen, hurt shoveling, etc.).

exper_dam: I have had damage to my home or property due to winter weather (pipes burst, roof damage, etc.)

exper_snowday: I have enjoyed a snow day, when work or school got canceled due to winter weather.

exper_rec: I have enjoyed outdoor recreation due to winter weather (skiing, ice skating, making a snow angel, building a snowman or snow fort, etc.)

-----End Web pg-----

Information about winter weather often includes probabilities, such as the probability that a location will get a certain amount of snow. We want to know how you interpret and use probability information when making decisions.

The next section of the survey includes a variety of questions that ask you to calculate and think about probabilities in different ways. Some questions may seem like a test, but they are not. We are using them to get insight into how you think about probabilities so that we can help the National Weather Service and others improve the information they provide during future events.

Thank you for taking the time to carefully answer these questions.

-----End Web pg-----

To begin, we have some questions about probabilities and risks. Please do not use a calculator but feel free to make notes or use paper if needed.

cointoss: Imagine that we flip a fair coin 1,000 times. What is your best guess about how many times the coin would come up heads in 1,000 flips? [VERBATIM; REQUIRE NUMERIC] [answer = 500]

bigbucks: In the BIG BUCKS LOTTERY, the chance of winning a \$10 prize is 1%. What is your best guess about how many people would win a \$10 prize if 1,000 people each buy a single ticket to BIG BUCKS? [VERBATIM; REQUIRE NUMERIC] [answer = 10]

acme_pub: In ACME PUBLISHING SWEEPSTAKES, the chance of winning a car is 1 in 1,000. What percent of tickets to ACME PUBLISHING SWEEPSTAKES win a car? [VERBATIM; REQUIRE NUMERIC] [answer = 0.1]

-----End Web pg-----

[show only if two or more of **cointoss**, **bigbucks**, or **acme_pub** are correct]

choir: Out of 1,000 people in a small town 500 are members of a choir. Out of these 500 members in a choir 100 are men. Out of the 500 inhabitants that are not in a choir 300 are men. What is the probability that a randomly drawn man is a member of the choir? Please indicate the probability as a percent. [VERBATIM; REQUIRE NUMERIC] [answer = 25]

-----End Web pg-----

[show only if **choir** is incorrect]

fiveside: Imagine we are throwing a five-sided die 50 times. On average, out of these 50 throws how many times would this five-sided die show an odd number (1, 3 or 5)? [VERBATIM; REQUIRE NUMERIC] [answer = 30]

-----End Web pg-----

[show only if **choir** is correct]

sixside: Imagine we are throwing a loaded die (6 sides). The probability that the die shows a 6 is twice as high as the probability of each of the other numbers. On average, out of 70 throws how many times would the die show the number 6? [VERBATIM; REQUIRE NUMERIC] [answer = 20]

-----End Web pg-----

[show only if **sixside** is incorrect]

mushroom: In a forest, 20% of the mushrooms are red, 50% are brown, and 30% are white. A red mushroom is poisonous with a probability of 20%. A mushroom that is not red is poisonous with a probability of 5%. What is the probability that a poisonous mushroom in the forest is red? Please indicate the probability as a percent. [VERBATIM; REQUIRE NUMERIC] [answer = 50]

-----End Web pg-----

Probabilities can be difficult to calculate and interpret when you are trying to sort through a lot of information at once.

your_ability: How would you rate *your* ability to calculate and interpret probabilities when making decisions?

- 1 - Poor
- 2 - Fair
- 3 - Good
- 4 - Very good
- 5 - Excellent

-----End Web pg-----

income: Was the estimated annual income for your household in 2020:

- 1 - Less than \$50,000 [go to **inc50**]
- 2 - At least \$50,000 but less than \$100,000 [go to **inc100**]
- 3 - At least \$100,000 but less than \$150,000 [go to **inc150**]
- 4 - \$150,000 or more [go to **inc200**]

-----End Web pg-----

inc_50: Was the estimated annual income for your household in 2020:

- 1 - Less than \$10,000
- 2 - \$10,000 to less than \$20,000
- 3 - \$20,000 to less than \$30,000
- 4 - \$30,000 to less than \$40,000
- 5 - \$40,000 to less than \$50,000

-----End Web pg-----

inc_100: Was the estimated annual income for your household in 2020:

- 6 - \$50,000 to less than \$60,000
- 7 - \$60,000 to less than \$70,000
- 8 - \$70,000 to less than \$80,000
- 9 - \$80,000 to less than \$90,000
- 10 - \$90,000 to less than \$100,000

-----End Web pg-----

inc_150: Was the estimated annual income for your household in 2020:

- 11 - \$100,000 to less than \$110,000
- 12 - \$110,000 to less than \$120,000
- 13 - \$120,000 to less than \$130,000
- 14 - \$130,000 to less than \$140,000
- 15 - \$140,000 to less than \$150,000

-----End Web pg-----

inc_200: Was the estimated annual income for your household in 2020:

- 16 - \$150,000 to less than \$160,000
- 17 - \$160,000 to less than \$170,000
- 18 - \$170,000 to less than \$180,000
- 19 - \$180,000 to less than \$190,000
- 20 - \$190,000 to less than \$200,000
- 21 - \$200,000 or more

-----End Web pg -----

edu: What is the highest level of education you have COMPLETED?

- 1 - Less than high school
- 2 - High school / GED
- 3 - Vocational or Technical Training
- 4 - Some College; NO degree
- 5 - 2-year College / Associate's degree
- 6 - Bachelor's Degree
- 7 - Master's Degree
- 8 - PhD / JD (Law) / MD

-----End Web pg -----

Research shows that information can influence the way that people answer survey questions. We would like to know if you generally read the information that comes before survey questions. To demonstrate that you have read this text, please ignore the question below and click on the blue dot.

ign_instruct: Which of the following devices do you typically use to answer surveys on the Internet?

- 1 - A computer
- 2 - A tablet (such as an iPad)
- 3 - A smart phone (such as an Android or iPhone)

-----End Web pg -----

comments: Is there anything else that you would like us to know about how you receive, understand, or respond to information from the National Weather Service?