

*Nevada Infrastructure for Climate Change
Science, Education, and Outreach:
Policy, Decision Making and Outreach Component*

Societal knowledge, assumptions and preferences regarding climate change in Nevada

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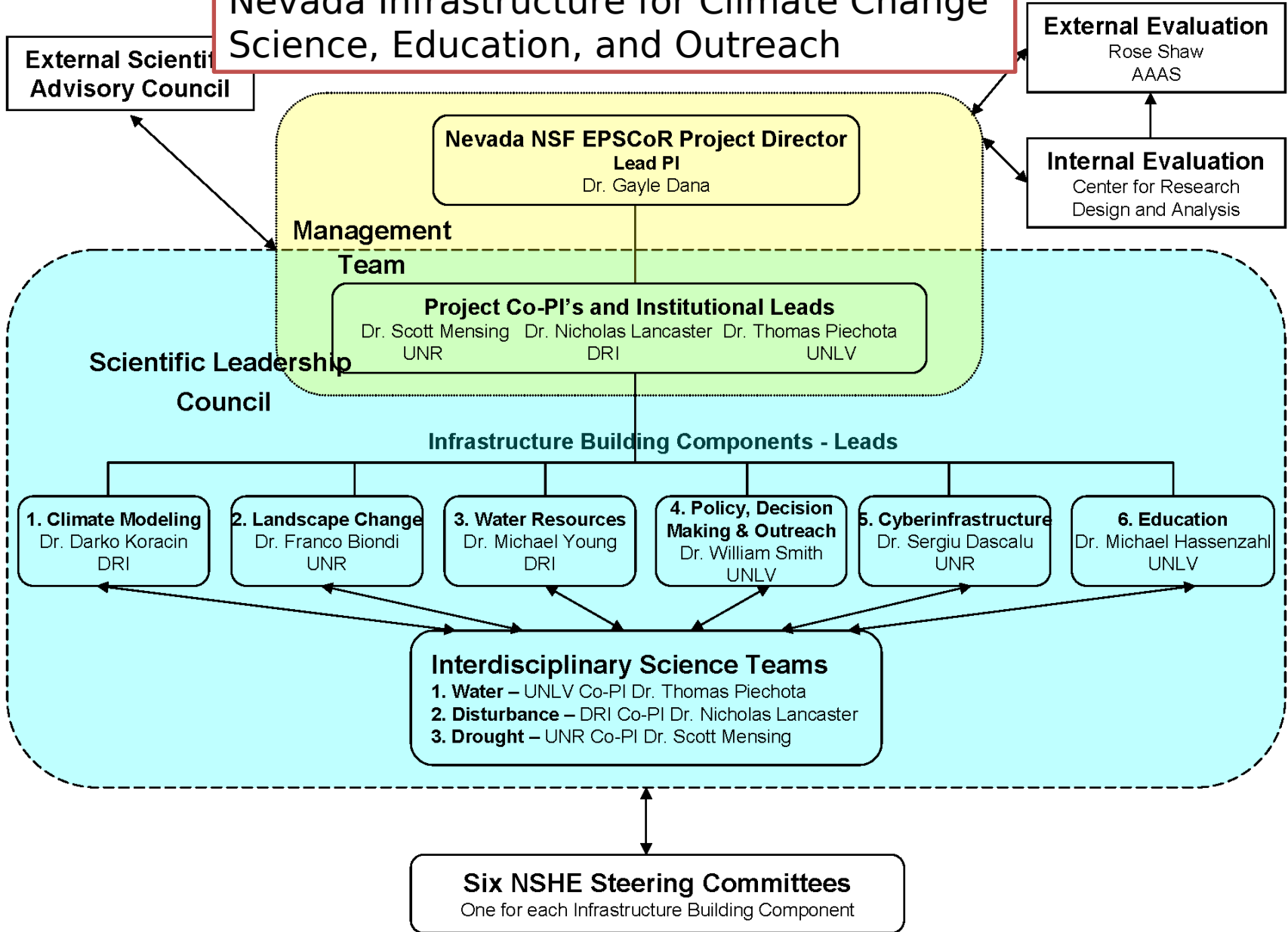
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"Meteorology in the Public Eye"

Scientific-professional conference of the Croatian Meteorological Society
Zagreb, Croatia, 6. - 7. March 2012.

Nevada Infrastructure for Climate Change Science, Education, and Outreach



Societal knowledge, assumptions and preferences regarding climate change in Nevada

Target audiences

1. Rural Nevada
 - a. Native Americans*
 - b. Ranchers/farmers*
 2. Urban Nevada
 - a. Business communities*
 - b. General population-
 3. Youth
 - a. Students*
 4. Resource managers
 - a. Energy purveyors-
 - b. Water purveyors-
- *completed - in progress

Survey Packages

4 pg back-to-back survey with 45 questions, holiday card with local picture, hand-signed personalized cover letter, and a self-addressed pre-paid return envelope, no \$

Climate Change Survey for Farmers and Ranchers in Nevada

From: Dr. William James Smith, Jr.
Assistant Professor, SEPA

Dear Mr. _____

Researchers and policy makers are concerned world, including in the State of Nevada. Inde universities in the State of Nevada (University the Desert Research Institute) and others are c Nevada funded climate change research projec are reaching out to rural Nevadans to ensure t involved in the project and those that will use t

In order to understand the point of view of rur our survey is important is that is allows us to and farmers in Nevada regarding climate chan *our brief survey*. This will aid researchers and and farmers on this topic. This is why this sur information that are needed by persons such as approximately 20 minutes to complete. Your i

Your personal and demographic data will be ki be shared will be in aggregate form, so that no

Please mail the survey attached to this cover and pre-stamped return envelop enclosed. Sh been conducted, please feel free to contac Environmental Studies at UNLV at bill.smith@unlv.edu Institutional Review Board at [OPRSHumansubj](mailto:OPRSHumansubj@unlv.edu)

We sincerely thank you very much for your

Happy holidays and best wishes for the New Y

Yours sincerely,

Dr. William James Smith, Jr.
Principle Investigator

Fallon, Nevada. Example of a Great Basin Curvilinear Petroglyph etched into a rock about 2-3000 yrs ago. The abstract form indicates that the artist had a sophisticated artistic sense. People who lived here fished and hunted in Lake Lahontan, which is now dry. (Source: <http://www.junpowers.com/ptg/ptg4.htm>)



The purpose of this survey is to gather information on the perspectives Nevada ranchers and farmers regarding climate change. The reason that we are conducting this survey is to help researchers in our National Science Foundation-funded research project at UNLV, UNR and DRI, as well as natural resource managers in Nevada, better understand Nevada's ranchers and farmers' perceptions of climate change. This will aid researchers and managers in understanding how to best connect with Nevada ranching and farming communities regarding climate change. This is why this survey asks about your concerns, perceptions, and knowledge. The survey will take approximately 20 minutes to complete. The responses you provide are **very much appreciated**, and will be kept **confidential**. Should you have any concerns about the way the survey has been conducted, please contact Dr. William James Smith, Jr. at the School of Environmental and Public Affairs at UNLV at bill.smith@unlv.edu and (702) contact the UNLV Institutional Review Board at OPRSHumansubjects@unlv.edu and **Thank you very much for your time and effort during this busy holiday season!**

Demographic Information

This section assesses the participant's basic demographic information.

- Age _____
- Gender
 - Female
 - Male
- Marital status
 - Single
 - Married
 - Divorced
- Closest two roads that cross near your home (otherwise, please provide a 9 digit zip code) _____
- Closest two roads that cross near your ranch/farm (otherwise, please provide a 9 digit zip code) _____
- Education level
 - Middle school
 - Some college
 - 4-year college degree
 - Advanced professional degree such as MD or JD
 - High school diploma or GED
 - 2-year college degree
 - Master's degree
 - Doctoral degree
- If married, please indicate the education level of your spouse
 - Middle school
 - Some college
 - 4-year college degree
 - Advanced professional degree such as MD or JD
 - High school diploma or GED
 - 2-year college degree
 - Master's degree
 - Doctoral degree



Hallmark

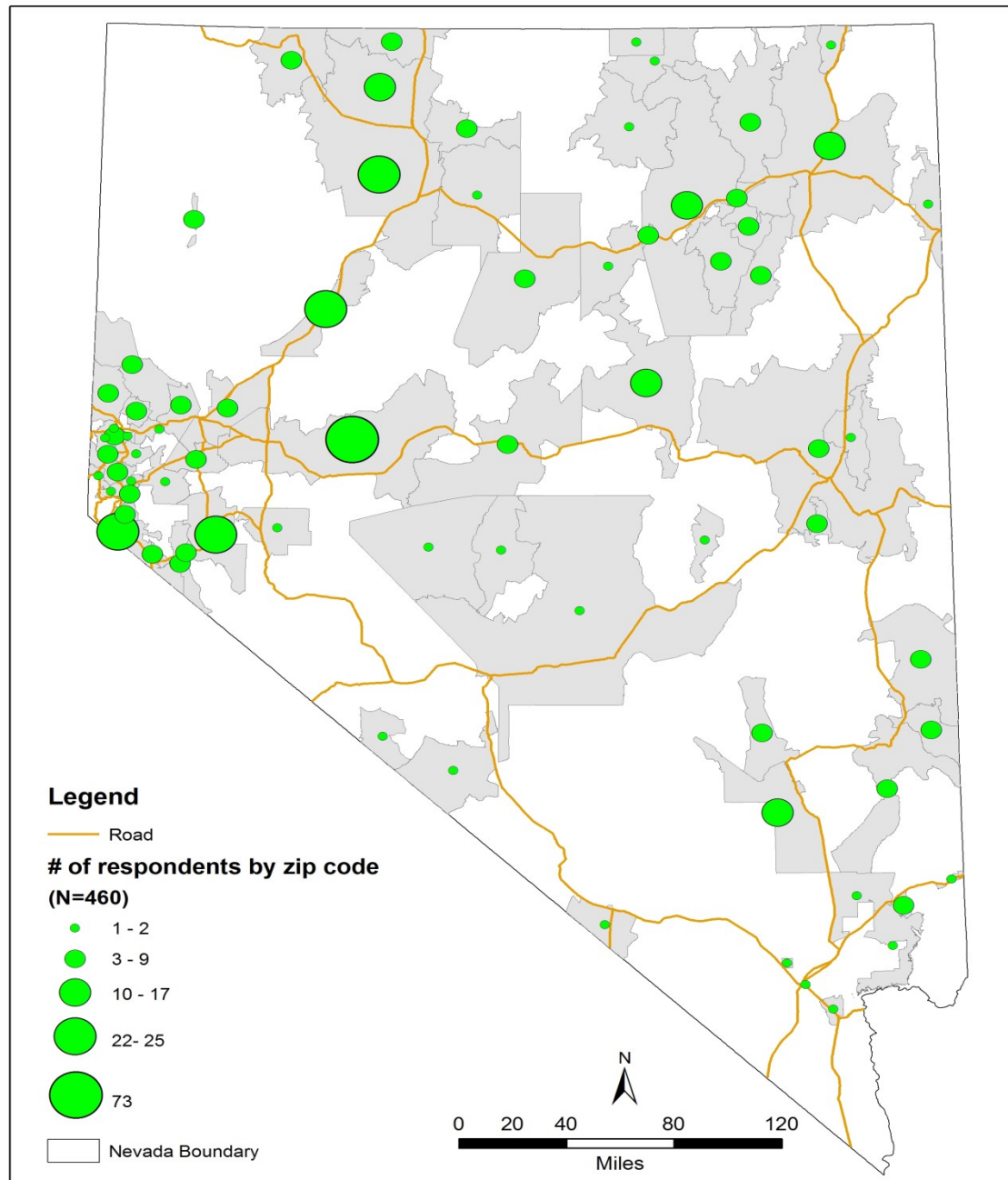
Christmas Tree Cottage © 1994 Thomas Kinkadee

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KANSAS CITY, MO
MADE IN U.S.A.



Number of respondents by zip code



N=460

Farmers/ranchers

Data processing

45 survey questions → 176 fields/columns in MS Access

3 undergraduate and 1 grad students hired

Extensive QA/QC

Two types of spatial info.

Closest cross roads: located in Google Earth, processed in SAS, and then imported into GIS (n=302)

Zip code: zip code centroids were used (n=158)

Field Name	Data Type
ID	Number
Q01_Age	Number
Q02_Gender	Number
Q03_Marital_status	Number
Q04_Road1_home	Text
Q04_Road2_home	Text
Q04_Home_zipcode	Text
Q05_Road1_ranch	Text
Q05_Road2_ranch	Text
Q05_Ranch_zipcode	Text
Q06_Education	Number
Q07_Education_spouse	Number
Q08_TypeAgri	Number
Q08o_TypeAgriO	Text
Q09a_TypeLive_Cattle	Yes/No
Q09a_TypeLive_CattleNum	Number
Q09b_TypeLive_Horse	Yes/No
Q09b_TypeLive_HorseNum	Number
Q09c_TypeLive_Ck	Yes/No
Q09c_TypeLive_CkNum	Number
Q09d_TypeLive_Pig	Yes/No
Q09d_TypeLive_PigNum	Number
Q09e_TypeLive_Shp	Yes/No
Q09e_TypeLive_ShpNum	Number
Q09f_TypeLive_Tk	Yes/No

Field Name	Field Size
Field Size	Integer
Format	
Decimal Places	Auto
Input Mask	
Caption	
Default Value	
Validation Rule	>=1 And <=8
Validation Text	
Required	No
Indexed	No
Smart Tags	
Text Align	General

Environmental Manager Survey

Purpose: Gather information on perspectives of NV tribal environmental managers regarding climate change

27 tribes in Nevada, but 23 env mgrs

Environmental managers engaged:

Visits, emails and mails

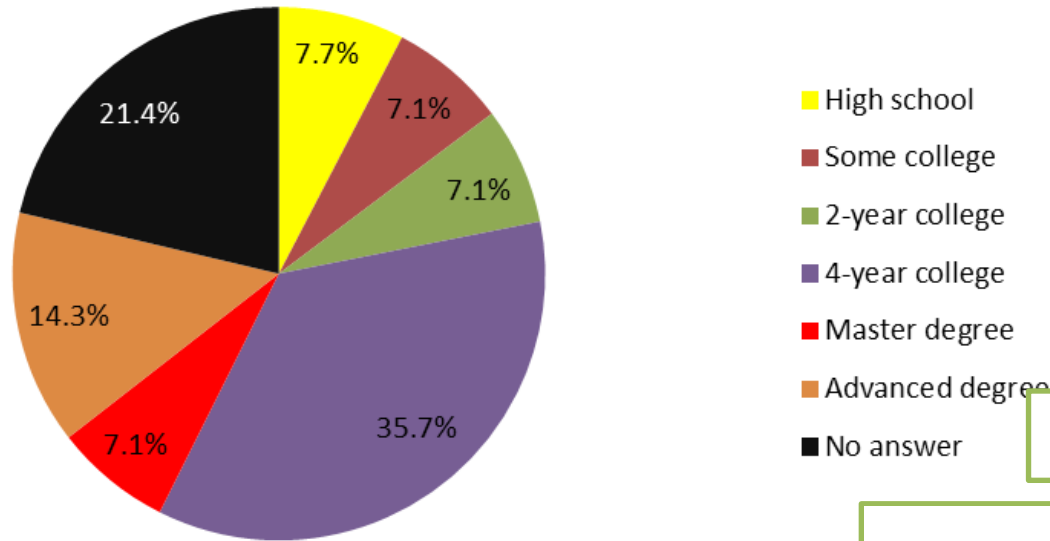
Env managers meetings

Response rate 56%

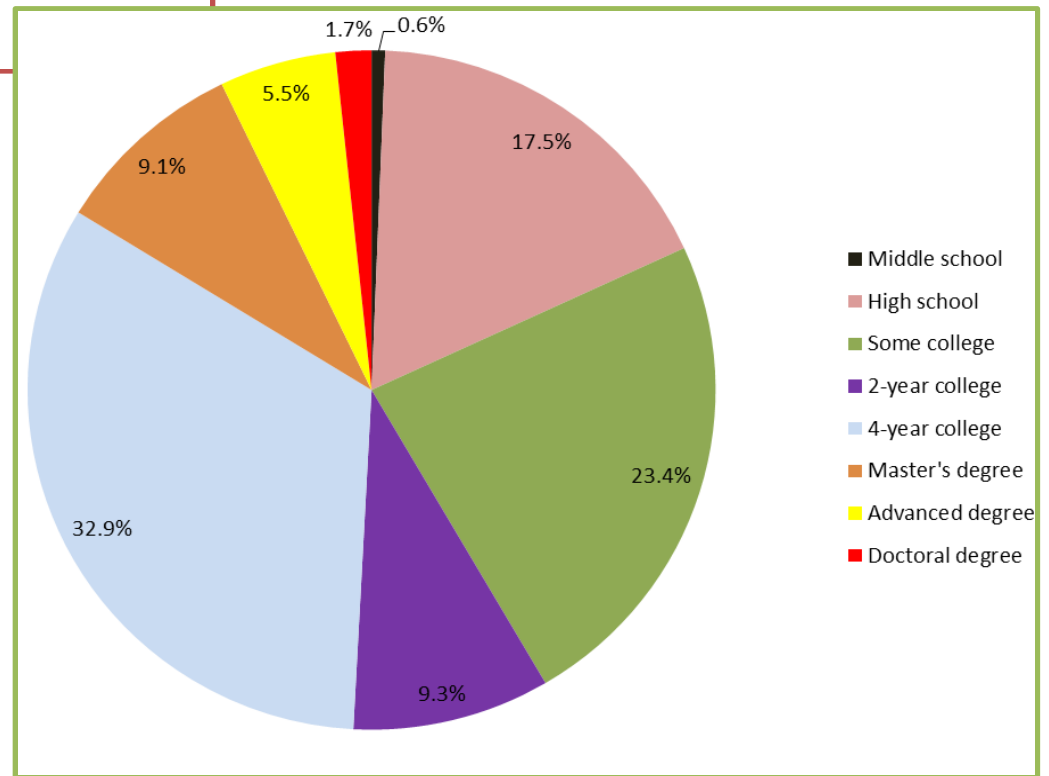
One survey by ITCN



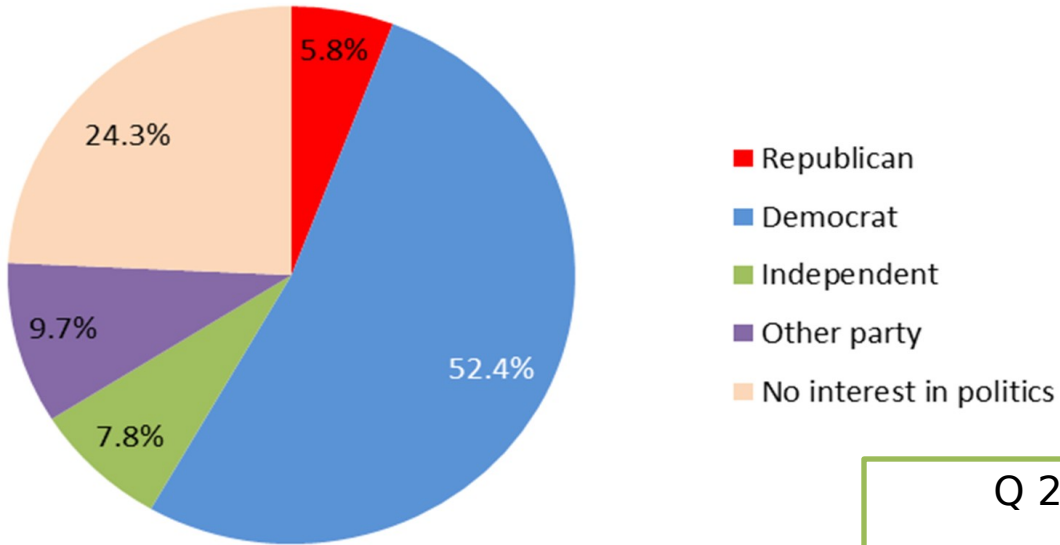
Q. 3: NA Mgr Education



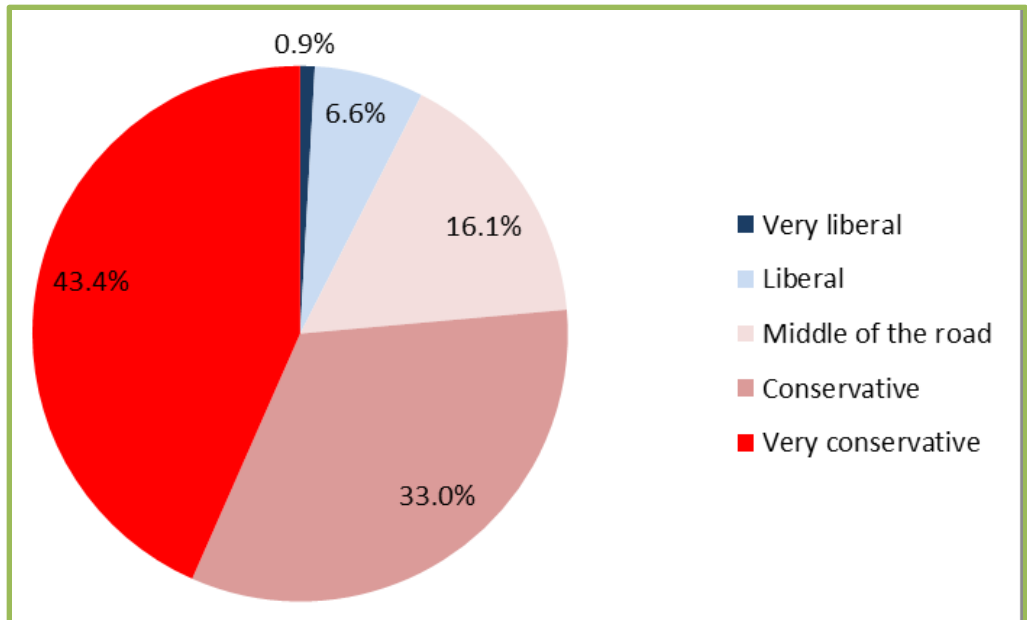
Q 9 Rancher / Farmer education



Q 17: NA Mgr Political affiliation

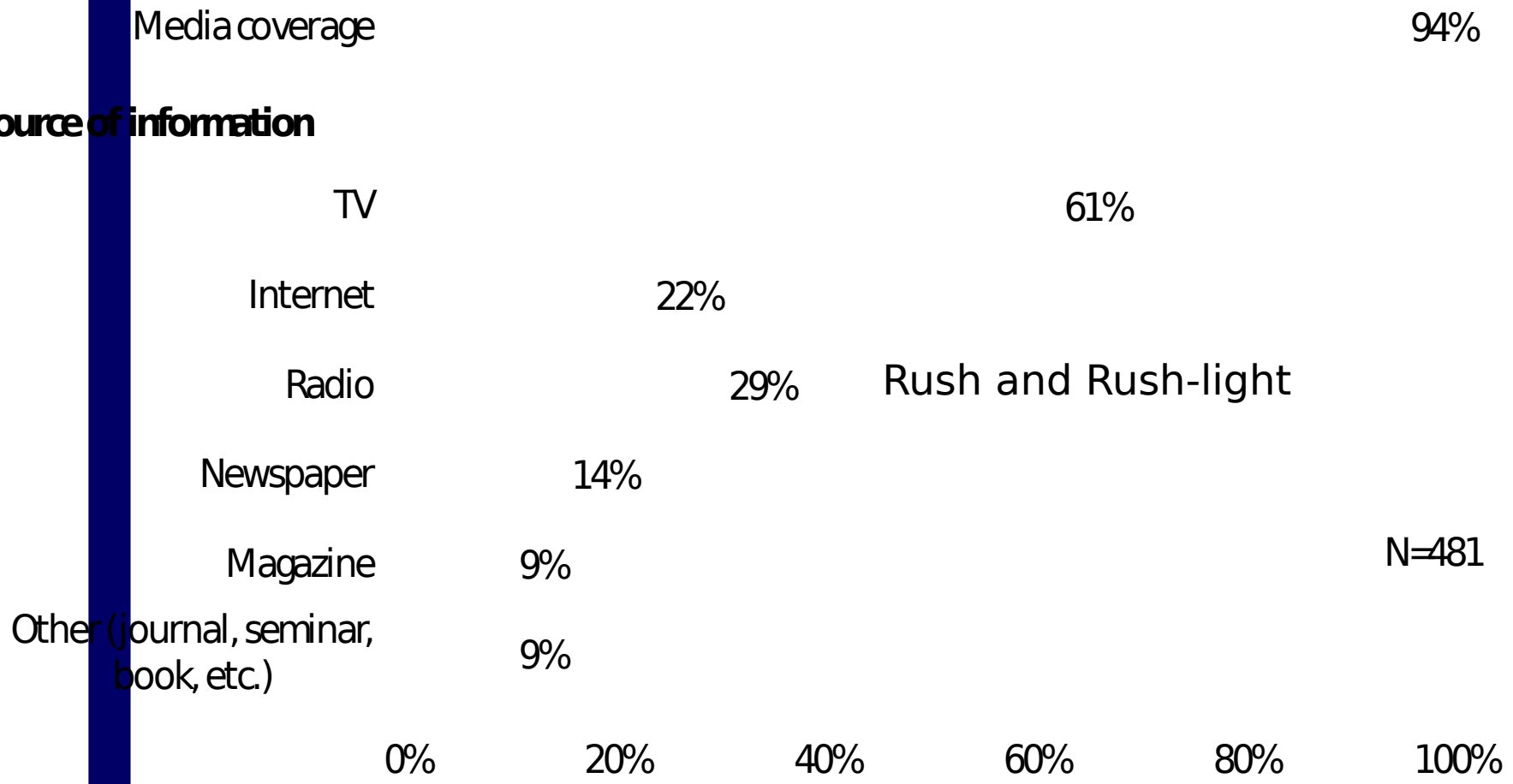


Q 23: Rancher/farmer political affiliation

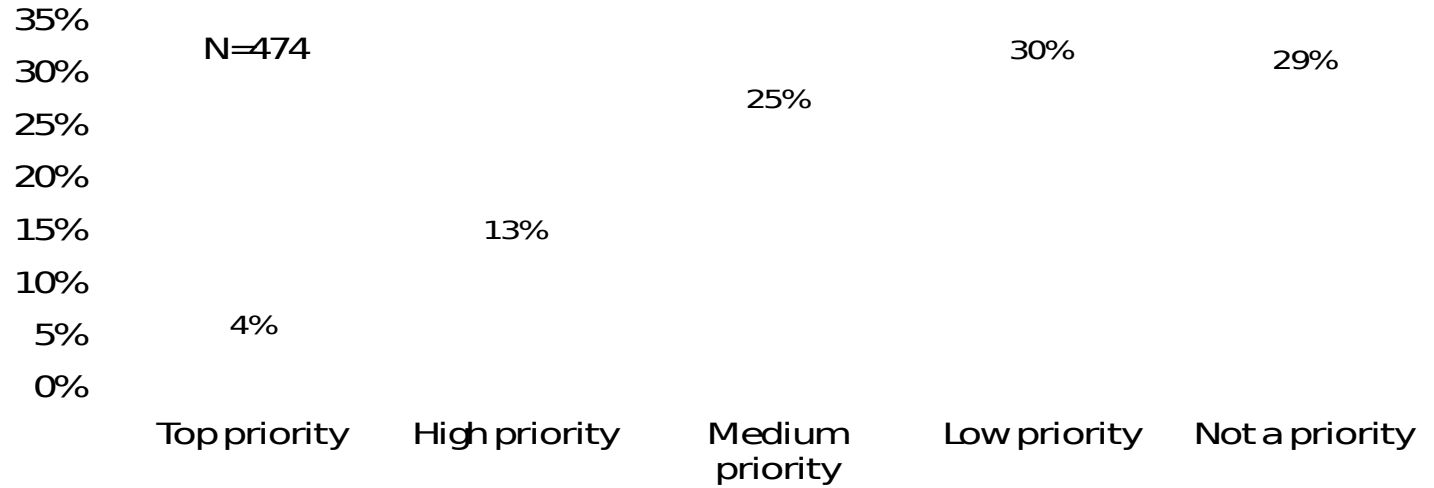


Rancher / farmer Source of climate change information

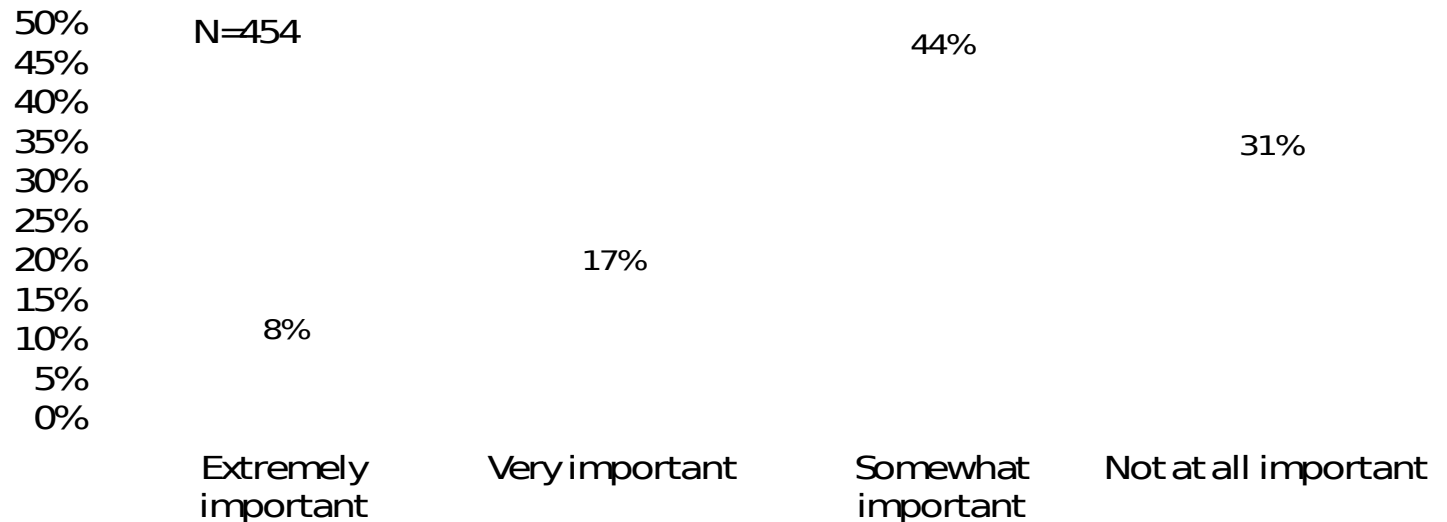
Source of information



Rancher/farmer Importance of CC



How important is the issue of climate change to you personally?



Q 31: NA Mgr CC as a National Priority

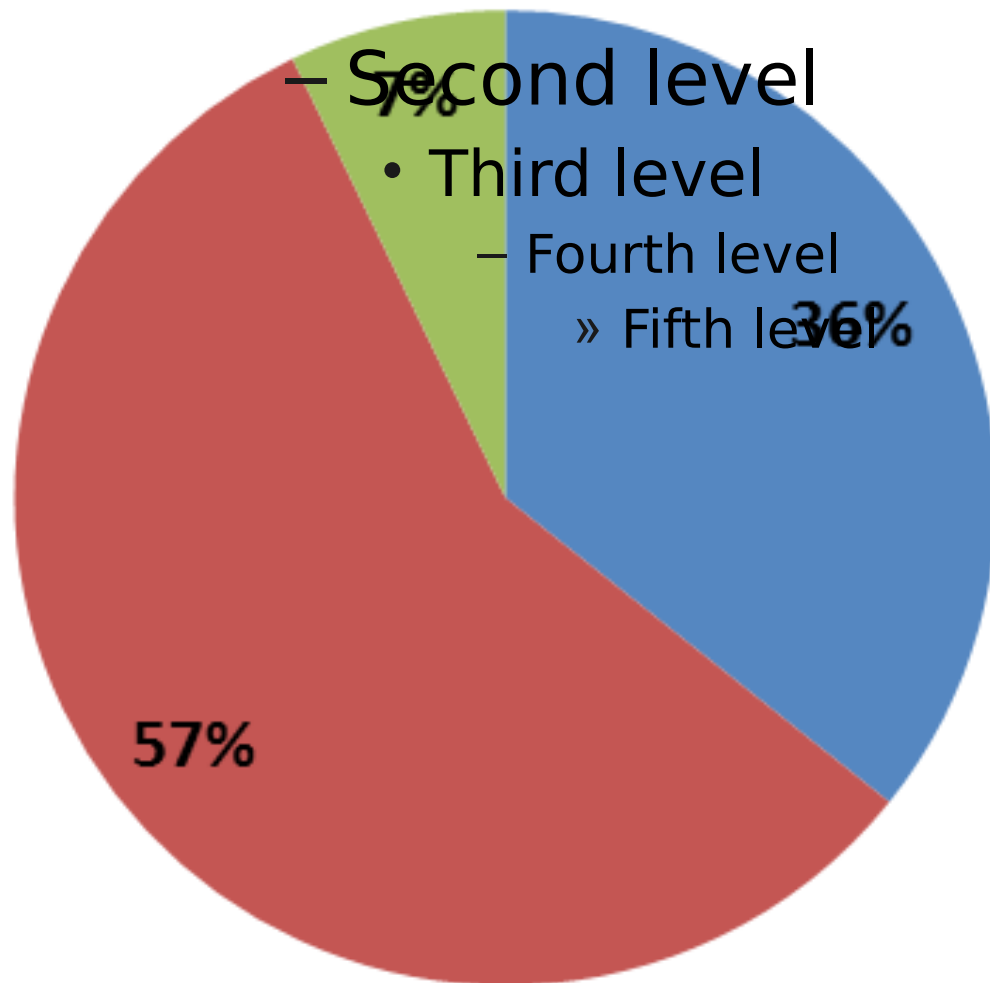
- Click to edit Master text styles

– Second level

- Third level

– Fourth level

» Fifth level



■ Top priority

■ High priority

■ Medium priority

■ Low priority

Q 18: NA Mgr Important Natural Resources (Deep historical connection: people-nature)

- Water
- Fish (specially trout as threatened species)
- Willows for basketry
- Medicinal plants (e.g. sagebrush)
- Small game (deer, antelope, sheep, rabbit, ground hogs, squirrels, ducks, etc)
- Pine trees
- Air, soil and biota (biodiversity)



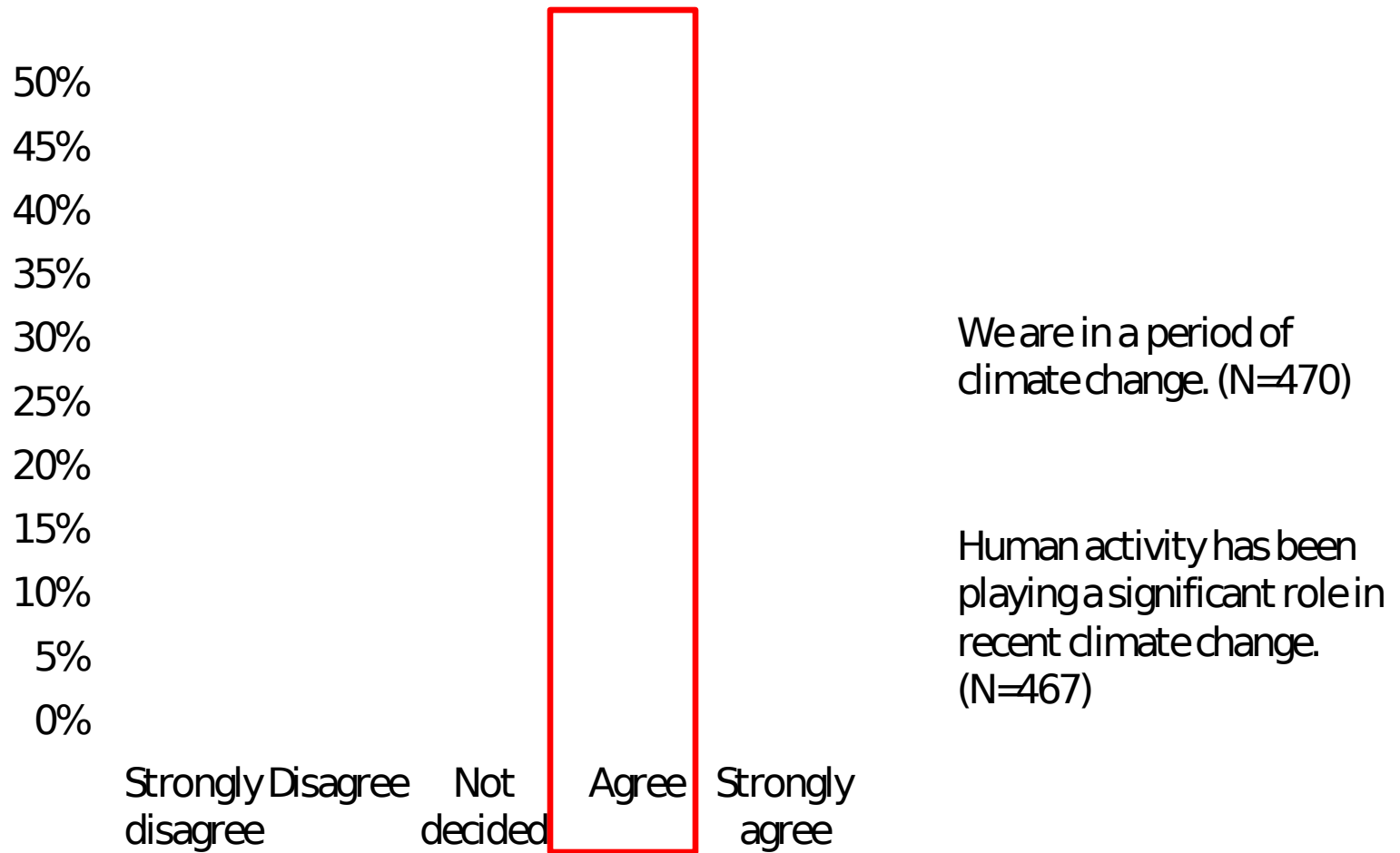
Photo Credit: U.S. FWS

Class: Actinopterygii
Order: Salmoniformes
Family: Salmonidae
Genus: Oncorhynchus
Species: clarki
Subspecies: henshawi

Length: up to 50 inches
Weight: up to 40 pounds
Lifespan: 5-14 years
Feed: aquatic insects and smaller fish

- Lahontan cutthroat trout are the only trout native to Nevada
- the lake-dwelling form are the biggest cutthroat in the world
- these fish inhabited ancient Lake Lahontan and its tributaries

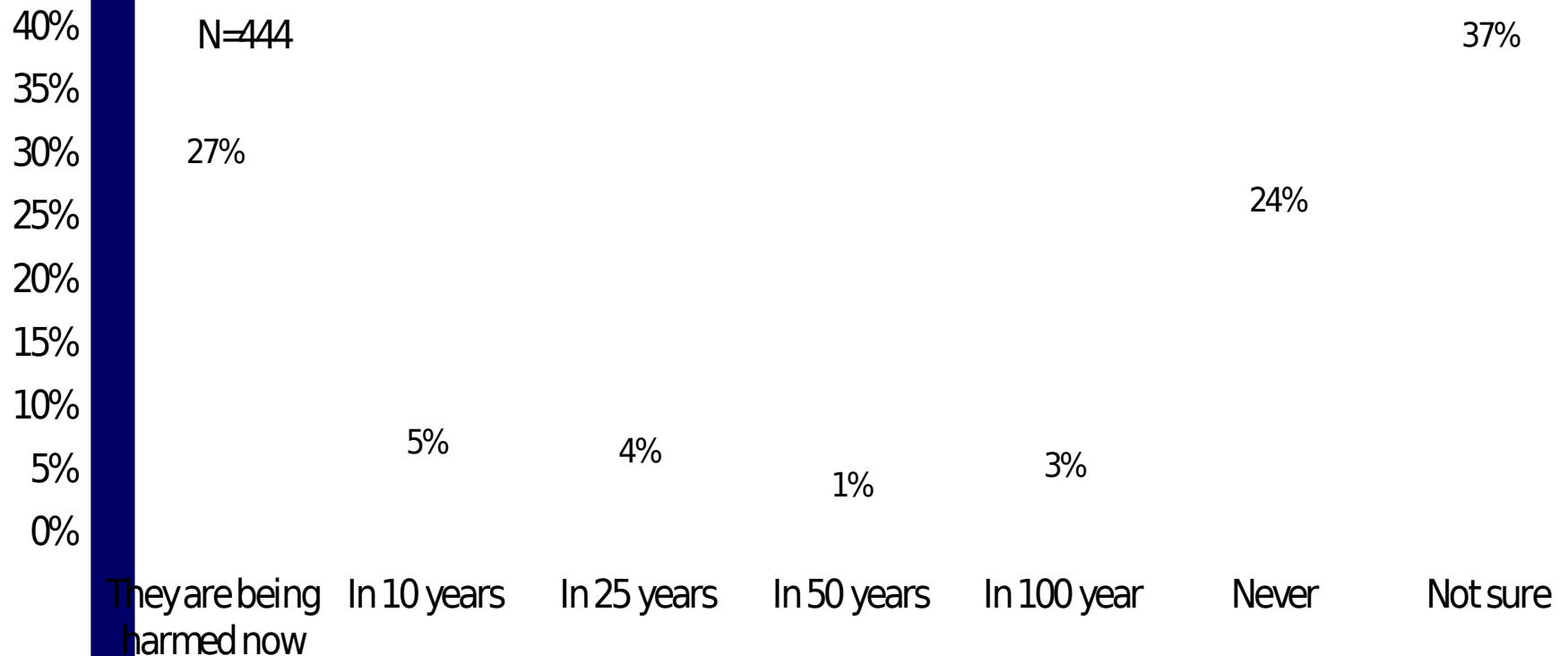
Rancher/Farmer CC knowledge



➤ In contrast -> 100% (N=14) of NA Mgrs. believe climate change is happening and humans are playing a role

Rancher/farmer Timing of impacts

When do you think climate change will begin harming people in your ranching/farming community?



Q 26: NA Mgr Environmental Changes Noticed

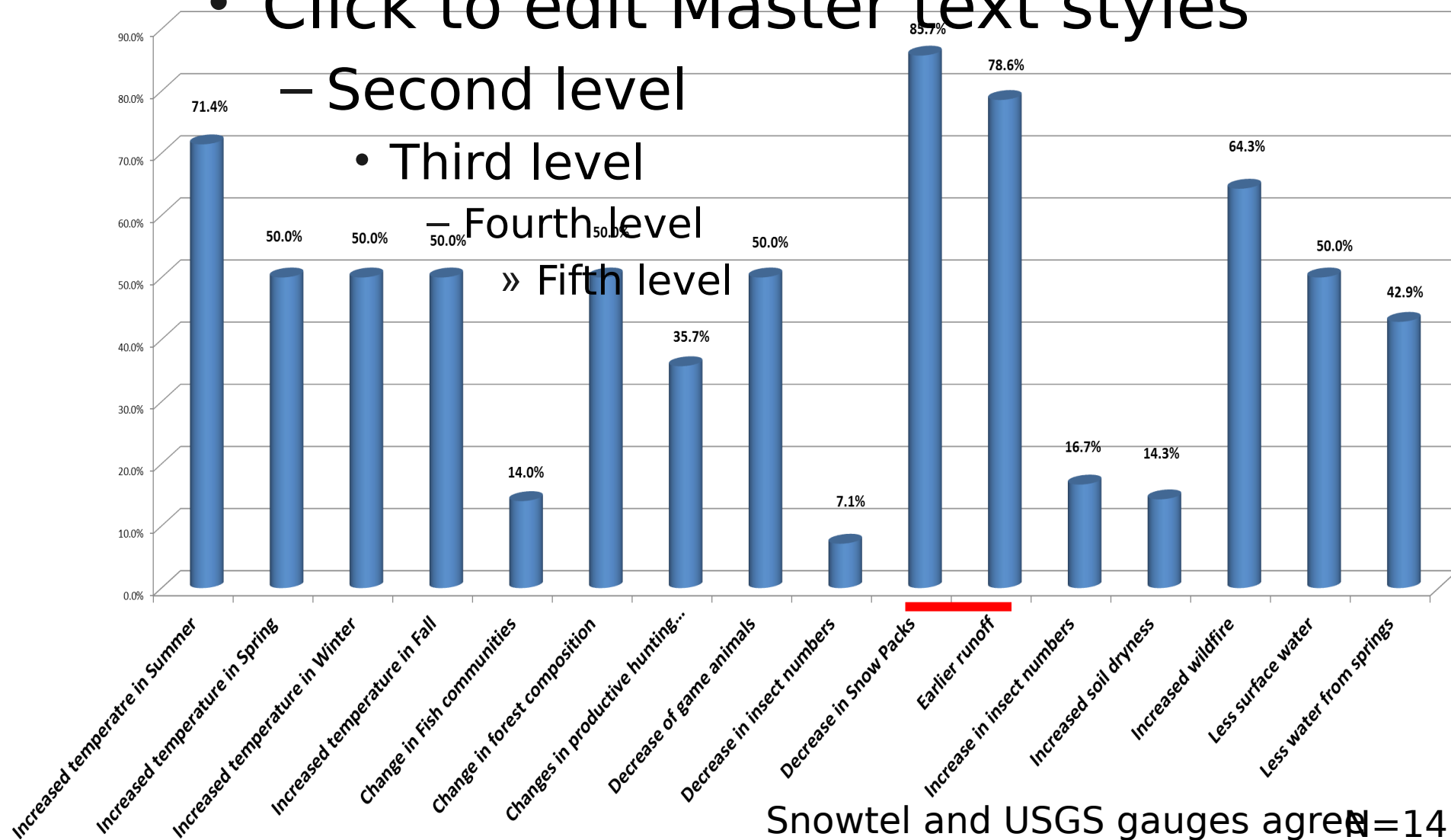
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– Second level

- Third level

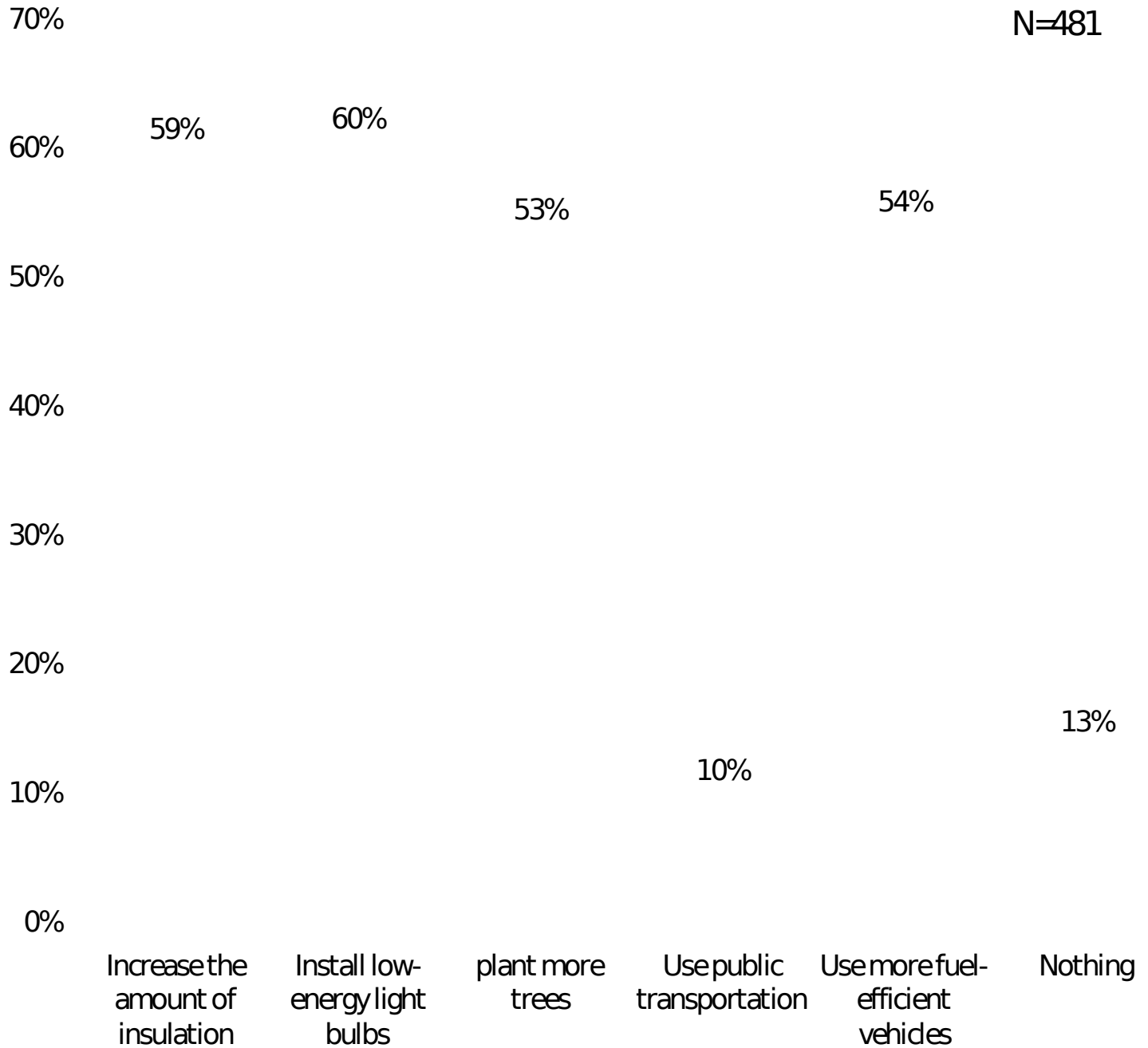
– Fourth level

» Fifth level

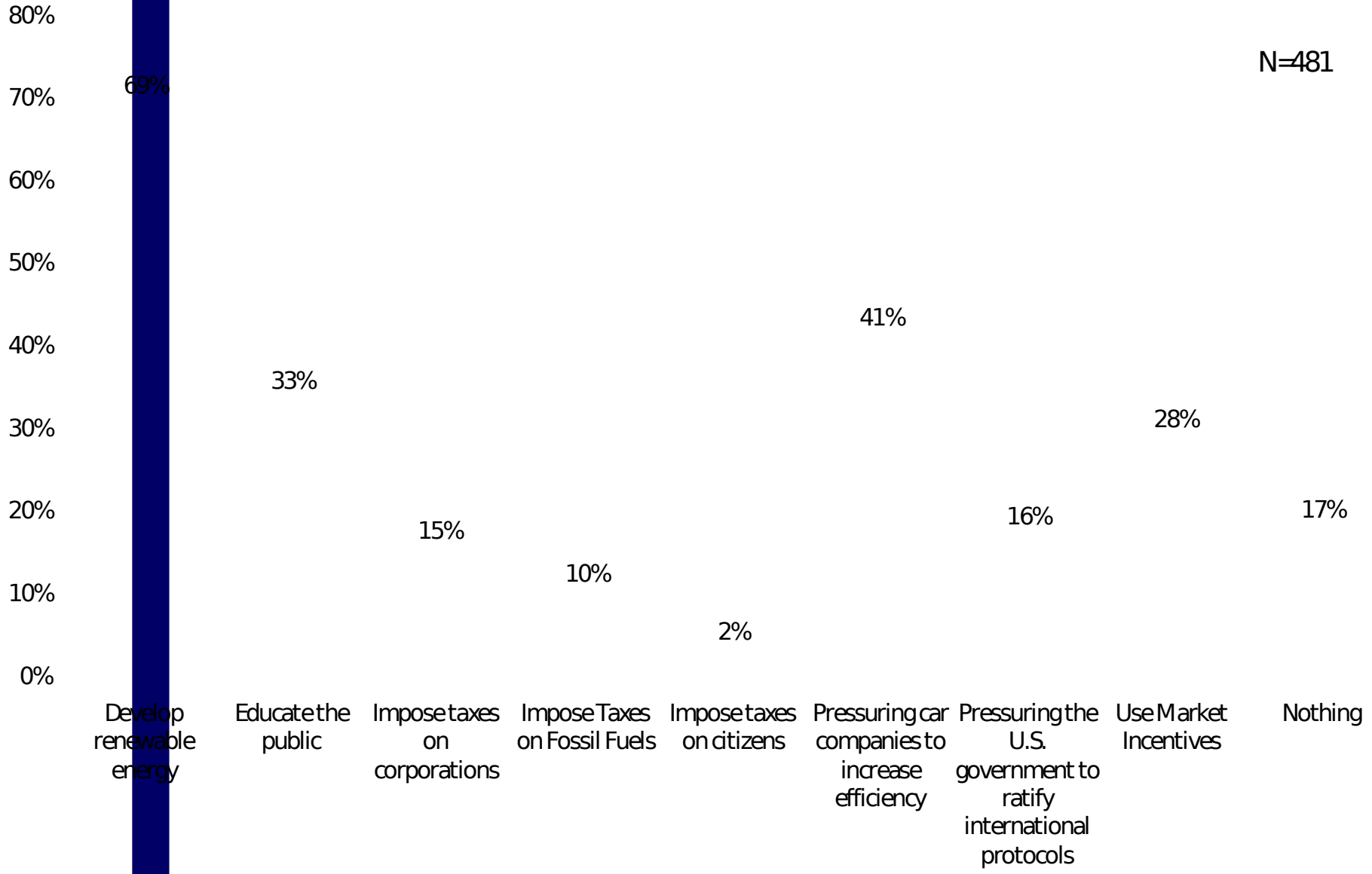


Snowtel and USGS gauges agree N=14

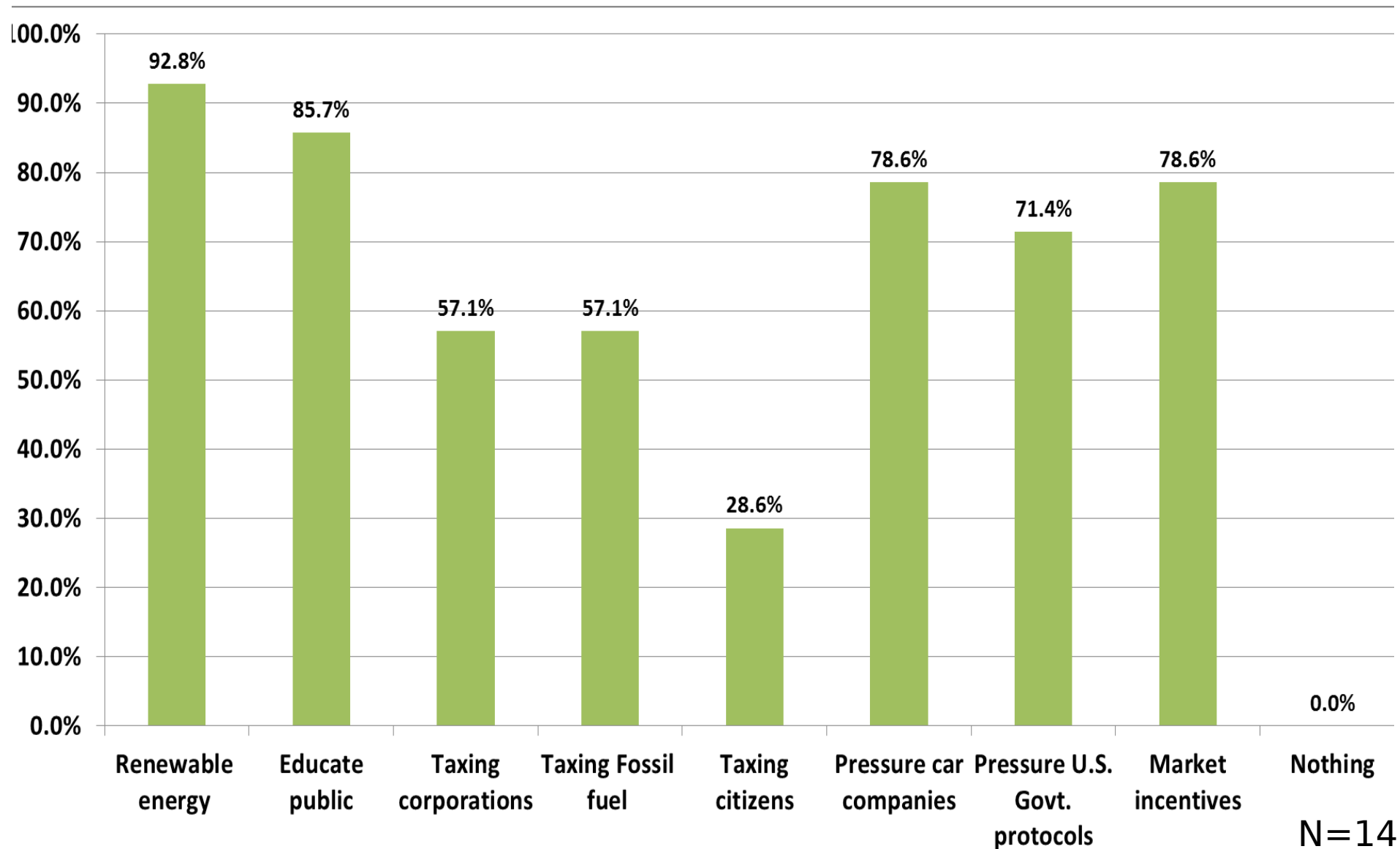
Rancher/farmer Willingness to do



Rancher/farmer Public policy support



Q 33: NA Mgr Climate Policy Preferences



Hot spring in the desert with a "threatened" rare type of dace (a small fish)



Drying Summit Lake



Traditional indian fishing methods for the Lahontan Cutthroat Trout which are being practiced by the Summit Lake Paiute Tribe

27

hot spring turned into a commercial hot tub by a rancher; hot spring was used for medicinal and cultural purposes by NA



same rancher further developed the pond by widening it and put in invasive species of sunfish, which then want to eat the threatened dace fish upstream



A gas pipeline forced through lands important to native americans against their wishes...again, energy for development in the western style. It could have put it through the salt lake, but didn't. It went to their area in the mountains.

Small investments for capacity building and tribes are ready to act

W. Smith and the tribal trout manager taking underwater photos and movies of the trout in the device used to count trout and make sure they are running upstream in sufficient numbers.



Selective findings (I)

NV farmers/ranchers consider CC less important for the nation and for themselves than tribes.

A majority of them ranchers/farmers (>80%) don't think human activity is a significant factor for recent CC

Only \$ savings may make the difference with ranchers/farmers, while tribes want capacity built irrespective to the cost.

NA have perception of the nature as it should be kept intact and they want to preserve it irrespective of NA people status, income, education. The native americans feel that nature has its value as it is, and you find your place WITHIN nature, instead of changing nature to fit your needs and make profits. Native americans want harmony with nature, and it is personal and sacred. On the other hand, ranchers/farmers have right by the law to use the land to obtain profit irrespective if destroys the environment.

Selective findings (II)

Native Americans are poor, but they want to manage resources safely. They received and accept the message regarding climate change and are ready to act if given money to help them do so. In fact, they have made their own observations that agree with those of scientists! They just need small investments of funds, because they will work hard with them to stretch them. ...but ranchers and farmers (except females) have not even accepted the message regarding climate change yet!

Perception of climate change of the environment in combination with lawful use of the land for profit can lead in the future to a socio-economic polarization and possible conflicts in rural areas.