

MIDWESTERN ROW-CROP FARMERS' CLIMATE CHANGE ATTITUDES AND INFORMATION SOURCE USE

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Introduction

To meet the challenges climate change presents to Midwestern agriculture, adaptation and mitigation practices must be widely adopted by farmers. Yet current literature suggests farmers' disbelief in climate change and its anthropogenic nature, along with low concern about climate change's impact on agriculture, reduces the likelihood that these practices will be adopted.^{1,2}

Given this, how can we encourage farmers to reconsider their attitudes and beliefs about climate change in order to facilitate the adoption of key agricultural adaptation and mitigation practices? We explore this question by presenting:

- Farmers' attitudes and beliefs on climate change measured by levels of concern;
- The relationship between these social-psychological features and information source use;
- Suggestions for applying our findings towards informing farmer outreach efforts.

Methods and data

To investigate our research question, we used responses from the 2017 LTER Crop Management Survey. This survey was sent by mail to 10,582 corn growers in Illinois, Indiana, Michigan, and Ohio. Farmers were asked about their farm and field details, practices, values, and environmental attitudes in the context of the 2016 growing season. The response rate was 31%.

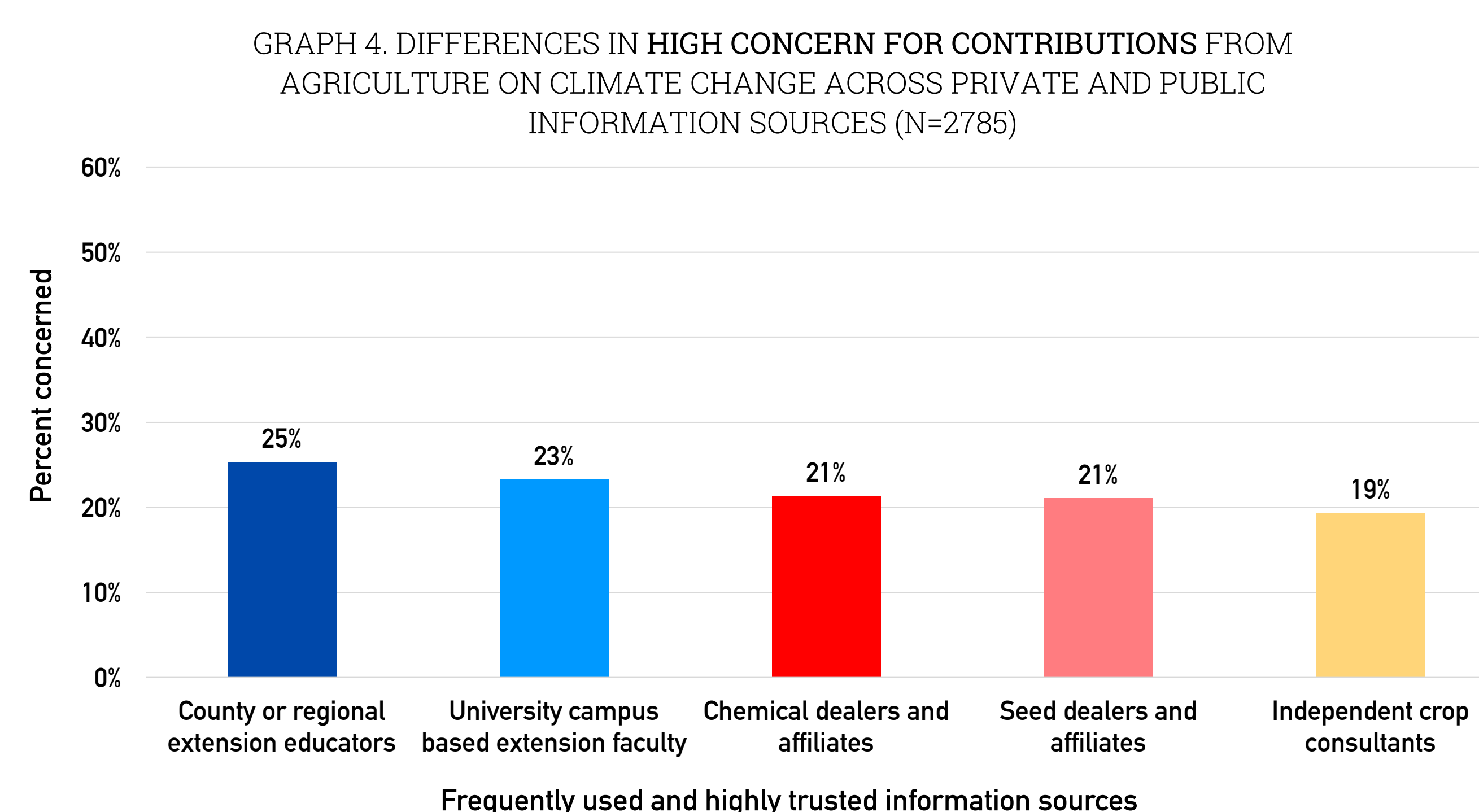
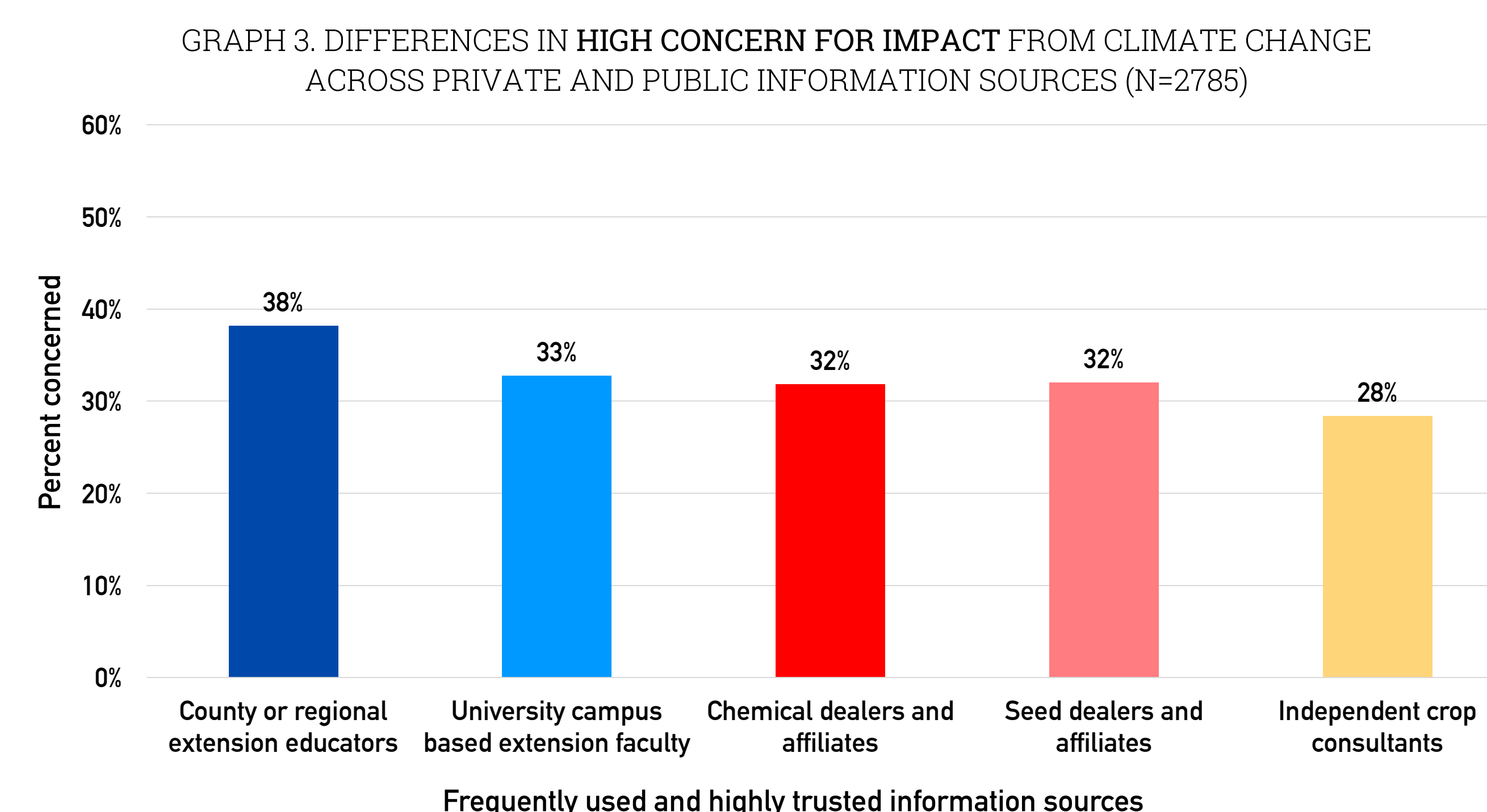
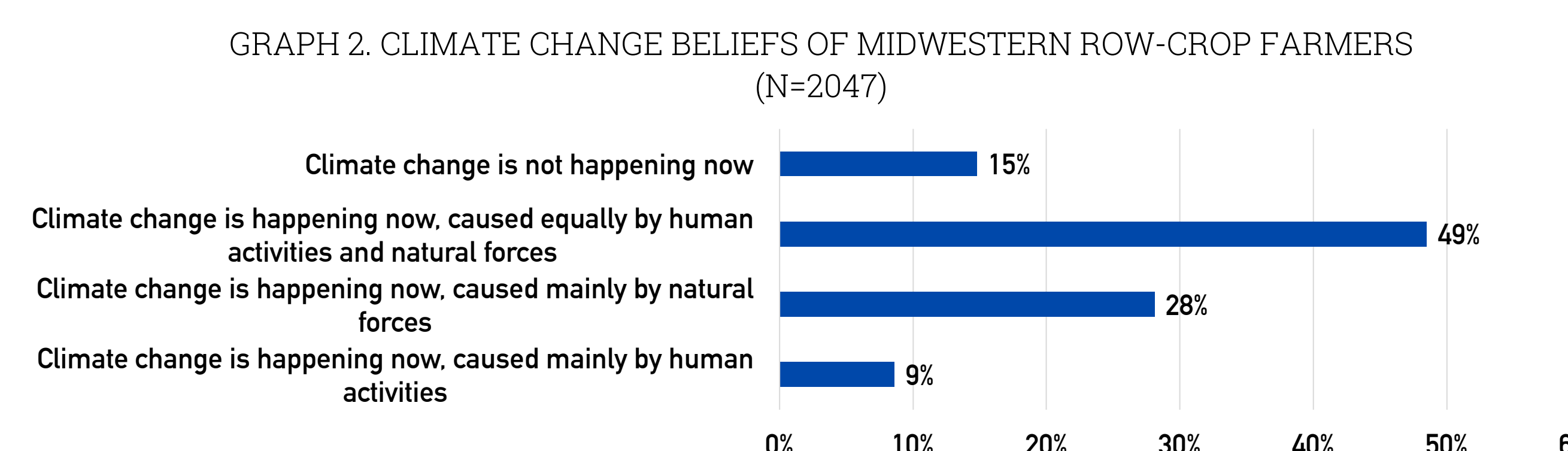
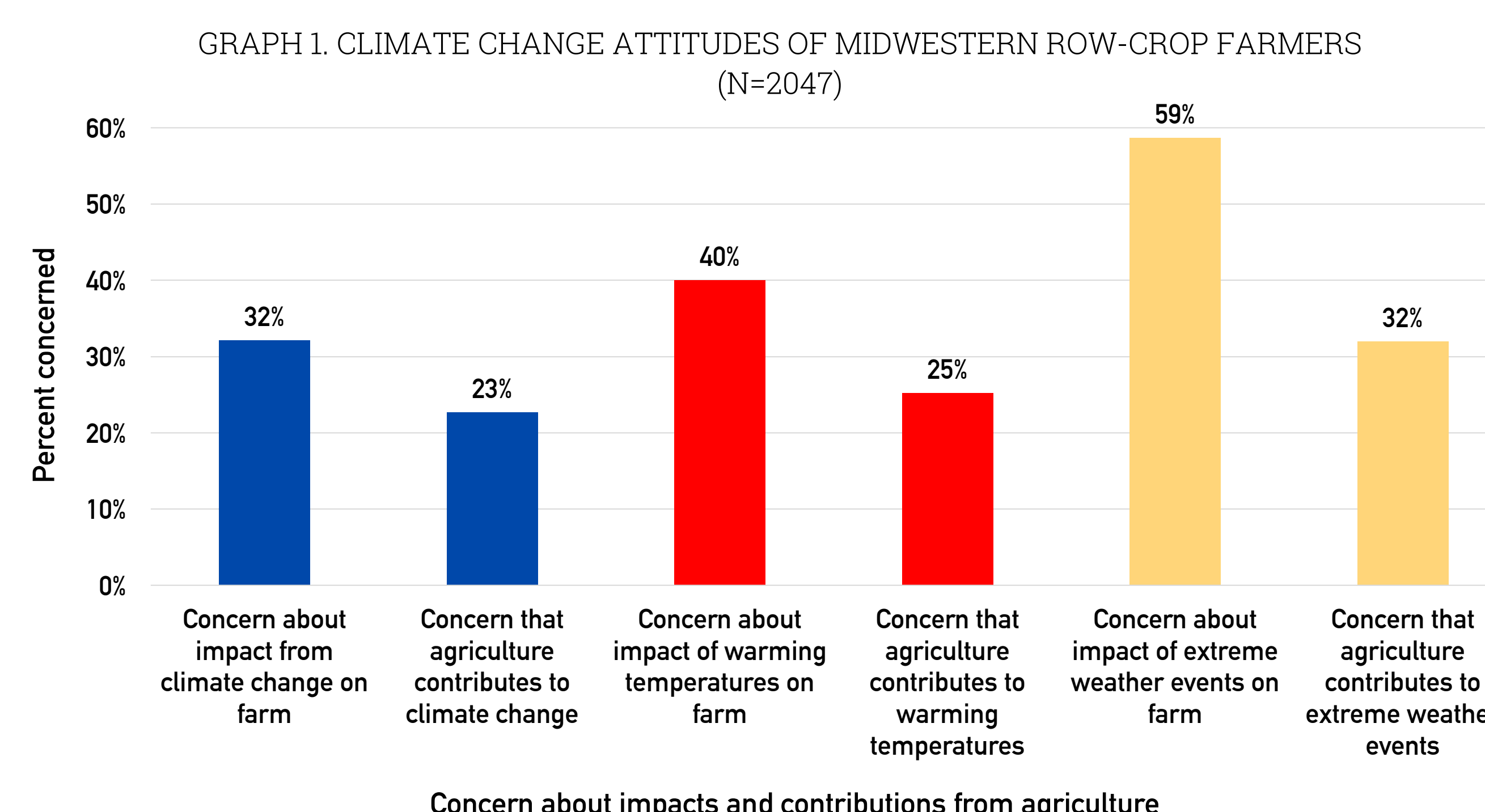
From the survey, we asked farmers to rank frequency of use and level of trust for private and public information sources, along with their level of concern for impacts and agricultural contributions pertaining to specific environmental issues. These questions supported the bulk of our analysis.

	HOW OFTEN USED (YEARLY TO DAILY)					HOW MUCH TRUST (NO TRUST TO A LOT)				
PUBLIC SOURCES										
Extension educators	1	2	3	4	5	1	2	3	4	5
PRIVATE SOURCES										
Chemical dealers	1	2	3	4	5	1	2	3	4	5
Seed dealers	1	2	3	4	5	1	2	3	4	5
Independent crop consultants	1	2	3	4	5	1	2	3	4	5

	CONCERN ABOUT IMPACT ON FARM (LOW TO HIGH)					CONCERN THAT AG CONTRIBUTES (LOW TO HIGH)				
ENVIRONMENTAL ATTITUDES										
Climate change	1	2	3	4	5	1	2	3	4	5
Droughts, floods, extreme weather	1	2	3	4	5	1	2	3	4	5
Warmer temperatures	1	2	3	4	5	1	2	3	4	5

FIGURE 1. QUESTIONS ASKING FARMERS ABOUT INFORMATION SOURCES AND LEVELS OF CONCERN FROM 2017 LTER CROP MANAGEMENT SURVEY

Results



Discussion

Unsurprisingly...

- A low percentage of farmers in our sample believe climate change is primarily caused by humans.⁴
- A higher, but still low percentage of farmers are concerned that "climate change" impacts their farms and that agriculture contributes to "climate change."

Interestingly...

- Farmers' "climate change" attitudes may be related to the information sources they use and trust; this suggests the potential for Extension educators to encourage farmers' concern for and reactions to climate change.
- "Climate change" may be too politicized a term – both for survey research and within outreach efforts.
- Farmers are much more concerned about the impacts and agricultural contributions to climate change when not discussed as "climate change."

Applications

For outreach efforts

- Strategies that communicate the risks climate change poses to farmers without mentioning "climate change" may be more successful at encouraging the adoption of adaptation and mitigation practices.
- Efforts that emphasize weather extremes may be particularly influential.
- Extension educators are a key source of this information, but given that they are among the least used, they must undertake strategies to increase the use and efficacy of their information.⁵ Working with the private sector – "training the trainers" – is likely necessary.³

For future research

- What social and biophysical processes influence farmers' concern for the biophysical expressions of climate change? Furthermore, do actual experiences with regional changes in climate impact farmers' concerns?
- In the literature, "climate change" beliefs are seen as motivators of farmers' behavior. Extending this, what is the effect of farmers' concern for the biophysical expressions of climate change on their adoption of adaptation and mitigation practices?
- How do some farmers become concerned that agriculture contributes to biophysical climatic changes, yet believe nature is the primary driver of climate change?

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