

Calculated **RISK**: Comparing global perceptions of climate change impacts and responsibilities

Danielle Chipman¹, Contributors: Kelli Larson^{1,2}

¹School of Sustainability, Arizona State University, ²School of Geographical Sciences and Urban Planning, Arizona State University

RESEARCH QUESTIONS AND DATA COLLECTION

This project analyzes interview data from six global sites on individual perceptions of climate change risks and impacts to answer the following questions:

- 1) What types of climate change impacts are expected, and when?
- 2) Where and at what scales are impacts likely?
- 3) Who is responsible for taking actions to deal with climate change?

Data was collected through the **Global Ethnohydrology Study**, a multi-year and multi-site study lead by Drs. Amber Wutich and Alex Brewis. This study utilizes data from the 2012 study. Sites were designated as “Developed” or “Developing” based on classifications by the United Nations.

Country	Site	N	Classification
Australia	Brisbane	72	Developed (n=209)
New Zealand	Wellington	74	
United States	Phoenix	63	
China	Shanghai	55	Developing (n=191)
Fiji	Viti Levu	80	
Mexico	Teotihuacan	56	

1) WHAT TYPES OF IMPACTS ARE EXPECTED, AND WHEN?

Water shortages were identified as the most concerning potential impact in both developing and developed contexts. Developed sites were least concerned about the **risk of disease**, while developing sites were least concerned about the risk of a **decreased standard of living**.

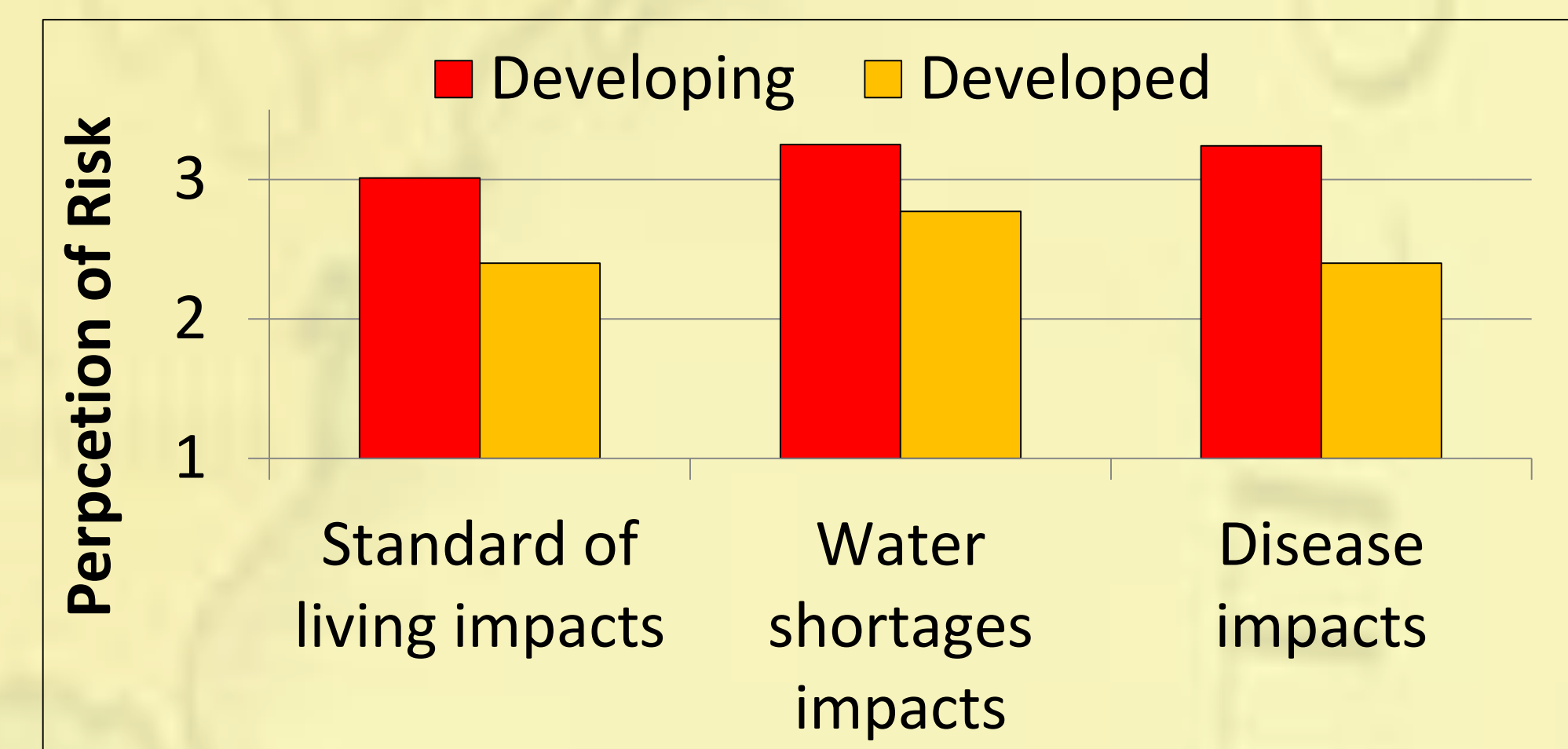


Figure 1. Mean perception ratings by development status: types of impact.¹

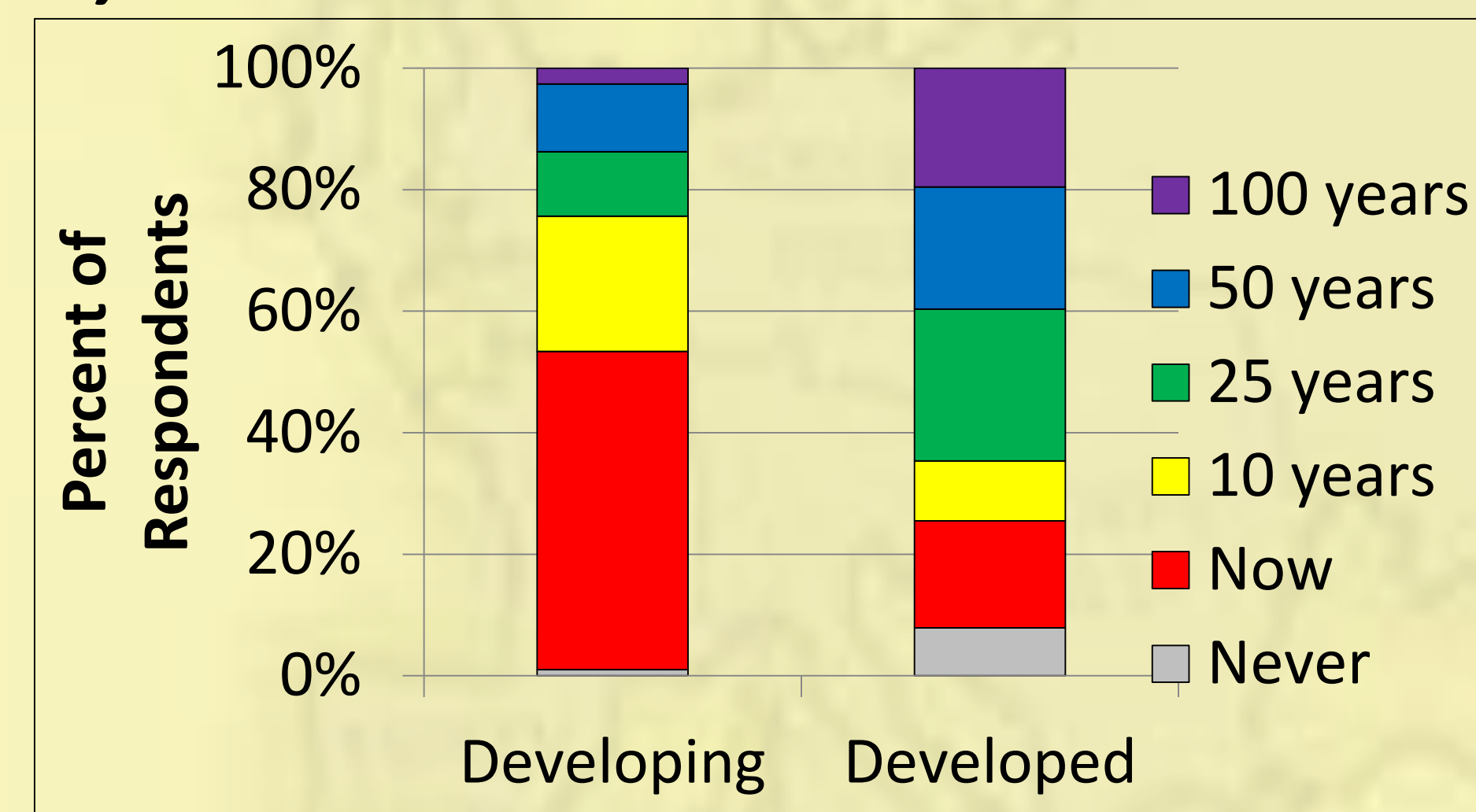


Figure 2. Mean perception ratings by development status: when will climate change start to impact your local area?²

In developing sites, 51.8% of respondents said “people are being harmed now”, compared to only 17.2% in developed sites. Overall, **developed sites were more likely to temporally distance themselves from the impacts of climate change.**

2) WHERE AND AT WHAT SCALES ARE IMPACTS LIKELY?

People tend to find **global** rather than **personal** risk more concerning. This suggests the existence of the **hyperopia effect**, wherein broad, global risks are seen as more concerning than more local risks. This effect was consistent for both developed and developing sites.

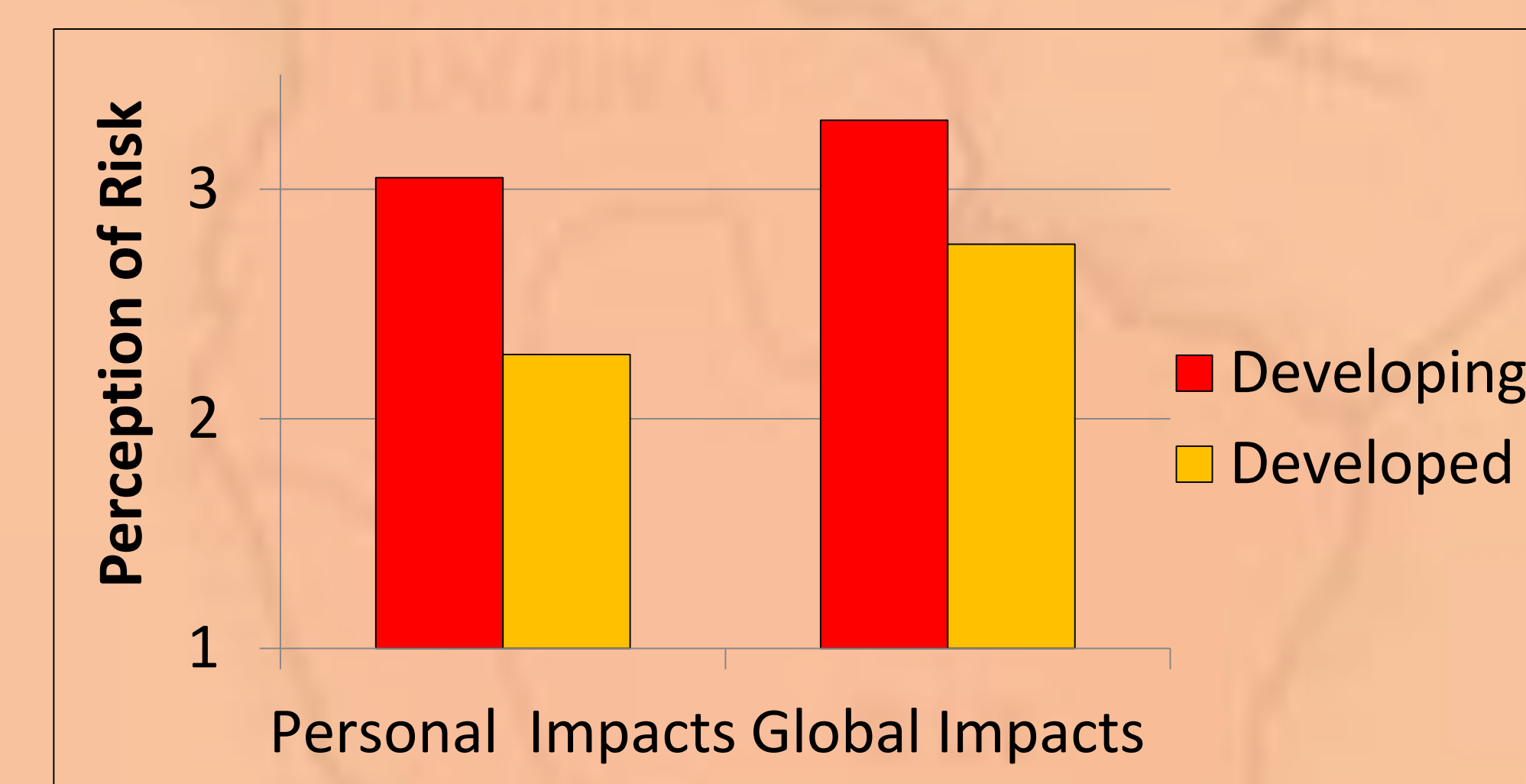


Figure 3. Mean perception ratings by development status: personal vs. global impacts.³

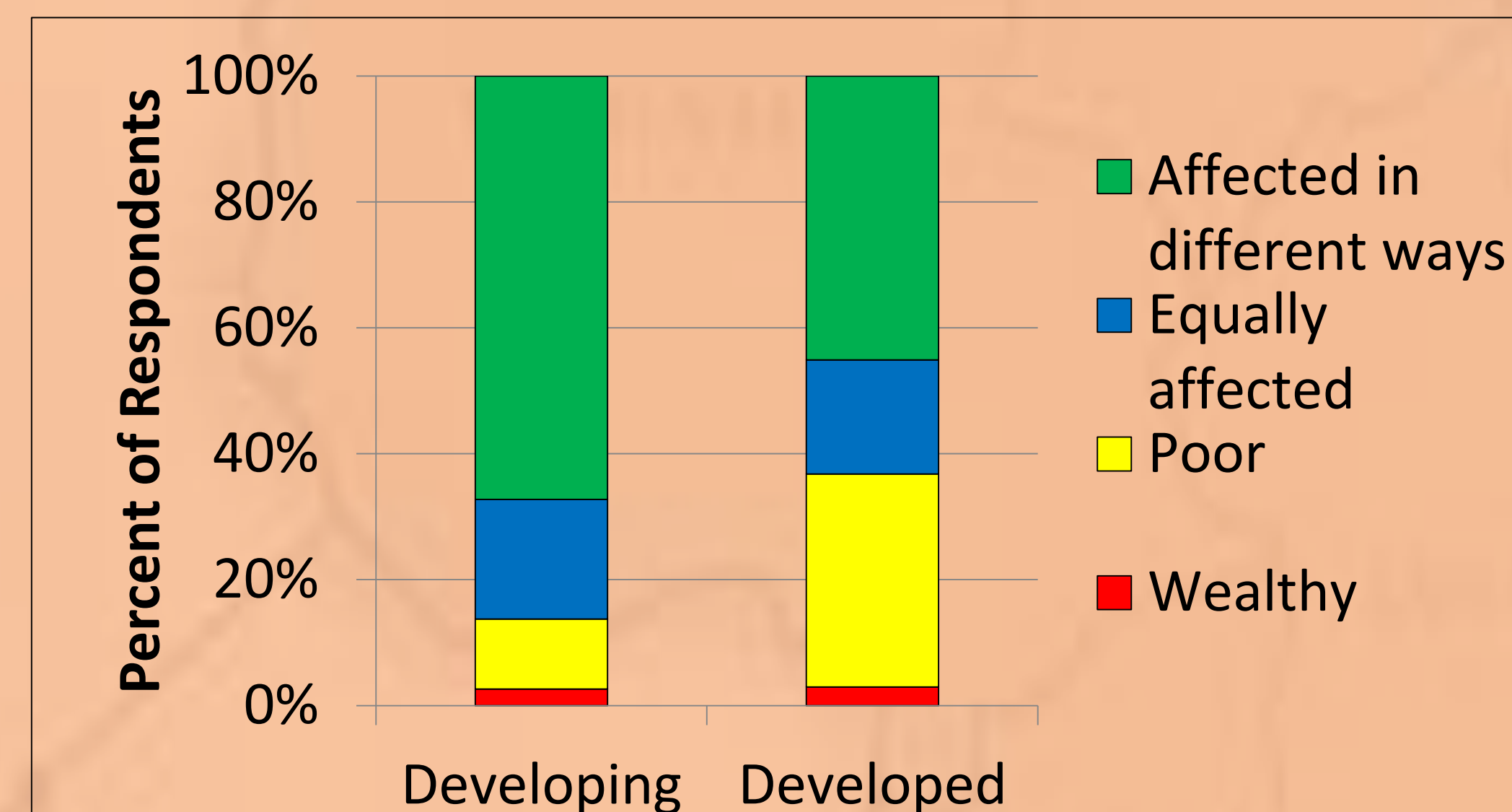


Figure 4. Mean perception ratings by development status: will poor or wealthy countries be more affected by climate change?⁴

Most respondents agreed that both wealthy and poor countries will be affected by climate change, but in different ways. However, respondents in **developed sites were three times more likely than those in developing sites to say that poor countries would be more impacted by climate change.**

3) WHO IS RESPONSIBLE FOR TAKING ACTION TO DEAL WITH CLIMATE CHANGE?

The majority of respondents from all sites had a **high perception of personal efficacy** regarding their individual ability to decrease the effects of climate change, although respondents from developing sites were slightly more likely to have high perceptions of personal efficacy.⁵

Respondents from all sites overwhelmingly indicate that their **government has a responsibility** to deal with climate change.⁶ The majority of respondents in both developing (80.1%) and developed (64.1%) sites thought that their **government was not doing enough** to mitigate the effects of climate change. In developing sites, 30.1% of respondents thought their government was doing about the right amount, compared to 11.5% in developing sites.⁷

PHOENIX AREA RISK PERCEPTIONS

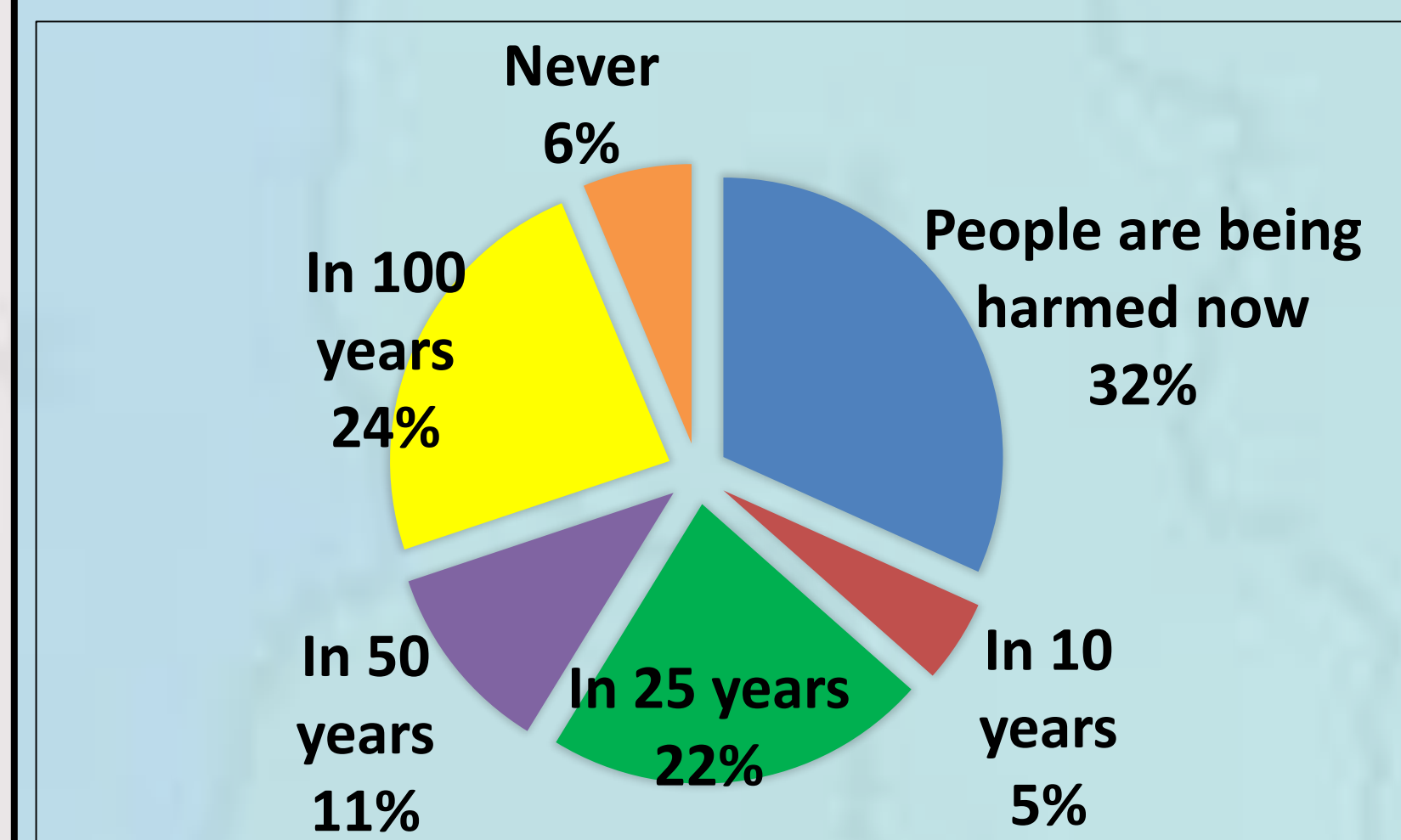


Figure 5. Phoenix, AZ response percentages: when will people in your local area start feeling the effects of climate change?

Type of impacts – Phoenix residents believe water shortages to be a greater risk than increased disease or decreased standard of living, but their perception of risk is lower than many other sites.

Urgency of risk - 58.7% thought effects of climate change would be felt within the next 25 years.

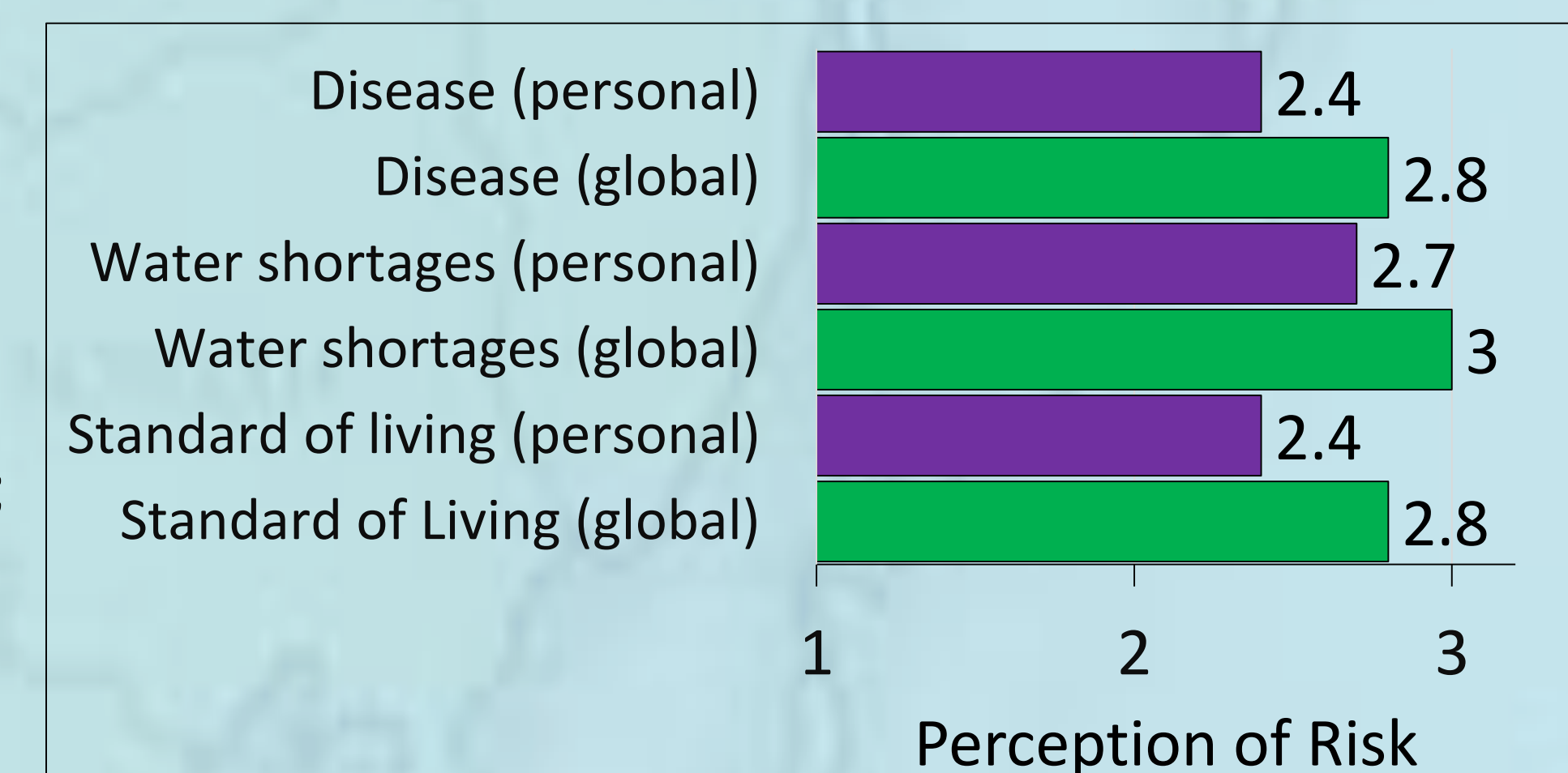


Figure 6. Phoenix, AZ mean perception ratings: types of risk.

Government responsibility - 90.5% of respondents think government has a responsibility to address climate change; 79.4% think the government isn't doing enough.

Personal efficacy - 60.3% of respondents “agree” or “strongly agree” that they can reduce the effects of climate change by changing their behavior.

CONCLUDING THOUGHTS

Conclusions by research question:

1. Developing sites tend to be more concerned about every type of climate change risk, and to believe that these risks are more imminent.
2. Overall, respondents tended to find global risks more concerning than personal risks. Respondents from developed sites were far more likely than developing sites to say that climate change would be more harmful to poor countries.
3. Respondents from all sites are generally open to government solutions and feel that their governments are currently not doing enough to mitigate the effects of climate change. They also have a high perception of their personal ability to affect climate change.

Implications for Phoenix:

- There appears to be strong support for government action on climate change, so the **government should feel more empowered to take action.**
- Phoenix residents have a strong sense of personal efficacy, so perhaps the public would be receptive to **suggestions for individual behavior change** to help reduce climate change.
- Many people think they will see the effects of climate change in their lifetime, and identify water shortages as the most concerning risk, so **water shortages might be an impactful focal point for climate change discussions in Phoenix.**

NOTES AND ACKNOWLEDGEMENTS

¹ Mann-Whitney U: standard of living (11552), water shortages (12676) and disease (8276). Differences between responses from developed/developing sites was significant for all impacts (p<0.001). Reliability of composite scales were determined using Spearman's Rho: standard of living (0.607), water shortages (0.462), disease (0.595).
² Mann-Whitney U = 8276. Significant differences between responses from developed/developing sites (p<0.001).
³ Mann-Whitney U: personal impacts (9375), global impacts (11231.5). Differences between responses from developed/developing sites significant for both scales of impact (p<0.001). Reliability of composite scales were determined using Cronbach's alpha: personal impacts (0.813) and global impacts (0.806).
⁴ Chi-Square = 30.771 (df=3). Significant differences between responses from developed/developing sites (p<0.001).
⁵ Mann-Whitney U for personal efficacy questions: ability to reduce effects (17464), ability to make a difference (14284). Differences between responses from developed/developing sites significant for both (p=0.034, p<0.001, respectively).
⁶ No significant difference in responses between developed and developing sites.
⁷ Chi-Square = 21.345 (df=2). Significant differences between responses from developed/developing sites (p<0.001).