# Social-Ecological Drivers of Phoenix Residents' Comfort Living with Wildlife

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## Introduction

- Human-wildlife coexistence in cities depends on how residents perceive wildlife in their neighborhoods.
- An individual's environmental attitudes are primarily shaped by subjective cognitive judgments, including their values and perceptions or risks or safety.
- However, experiences with wildlife could also positively or negatively affect an individual's environmental attitudes, including their comfort living around wildlife.
- In this poster, we examine the degree to which residents' comfort living near different wildlife species relates to the environment in which they live, as well as their social and personal characteristics.
- Living in places where wildlife are more likely to be present is expected to be associated with either **(a)** increased familiarity with those species (increased comfort); or **(b)** increased perceived risk from wildlife due to proximity (reduced comfort).

## Survey Methods

**2021 Phoenix Area Social Survey (PASS)**
- Conducted across 12 Metropolitan Phoenix neighborhoods that vary in key social and environmental characteristics (Figure 1)
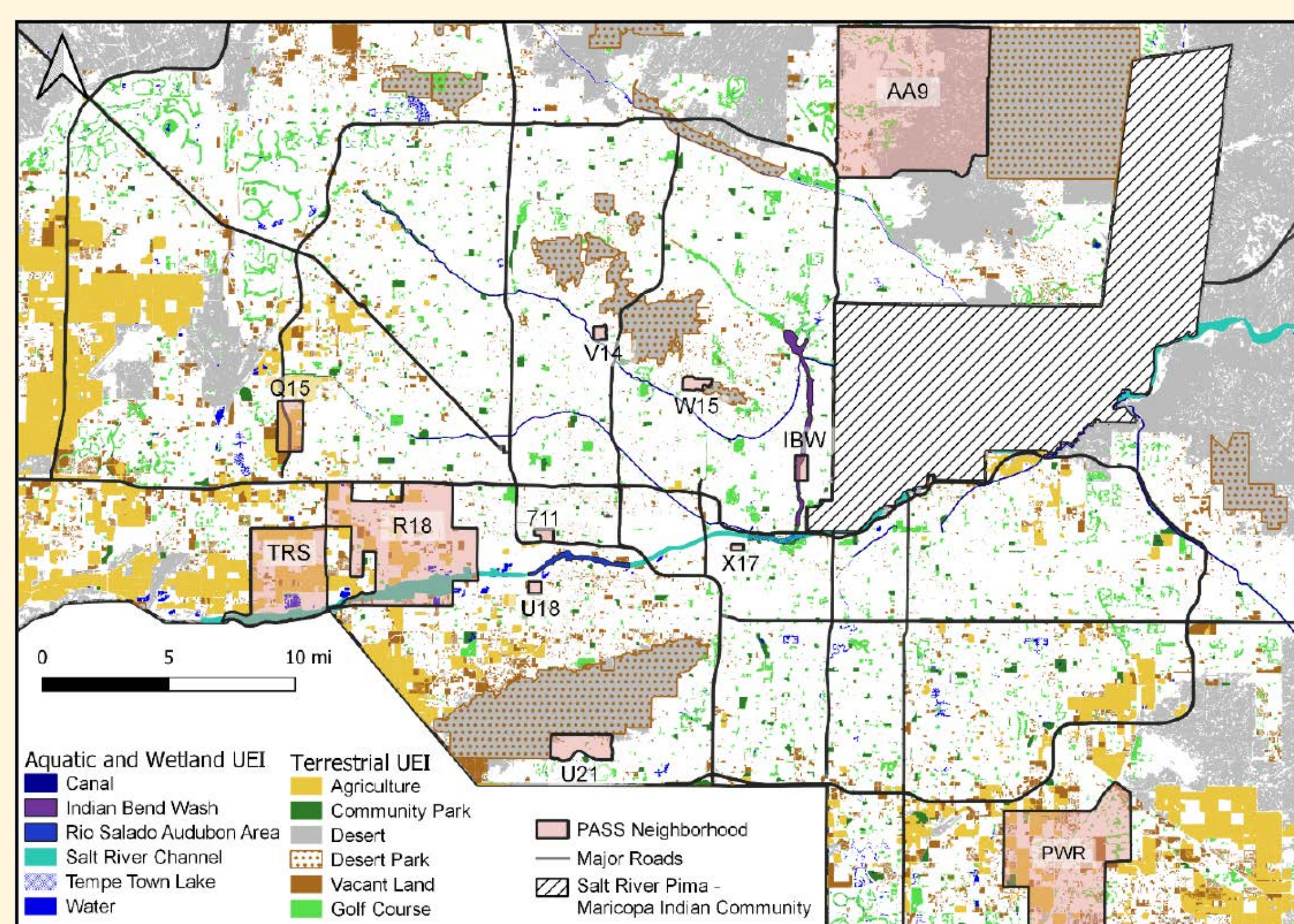- Overall response rate was 35.6% (n = 509 respondents).



Figure 1. PASS neighborhood locations within the CAP LTER study area and relative to key urban ecological infrastructure (UEI)

## Response Variables

**Comfort Around Wildlife**
- Respondents asked to rate their comfort level living near different wildlife species on a 5-point scale from *Very uncomfortable* (1) to *Very comfortable* (5)(Figure 2)
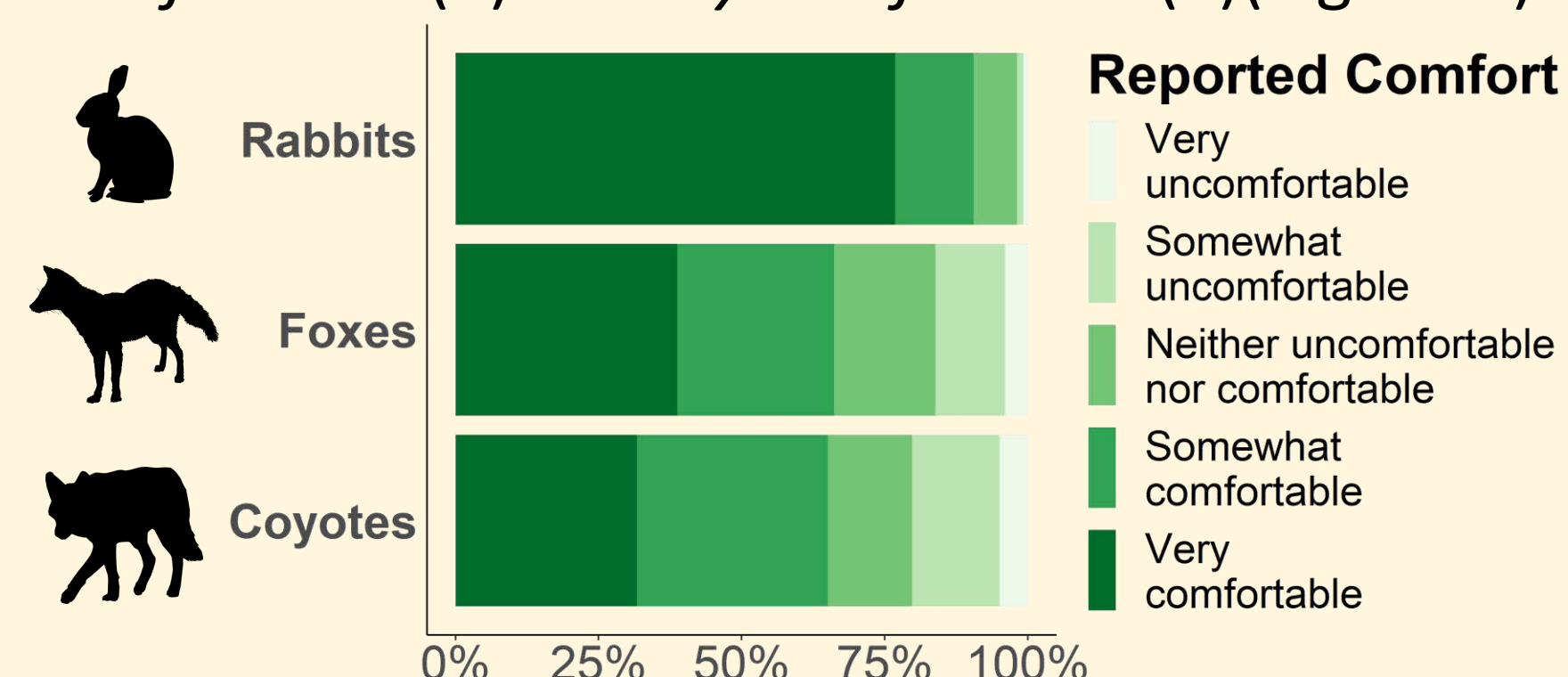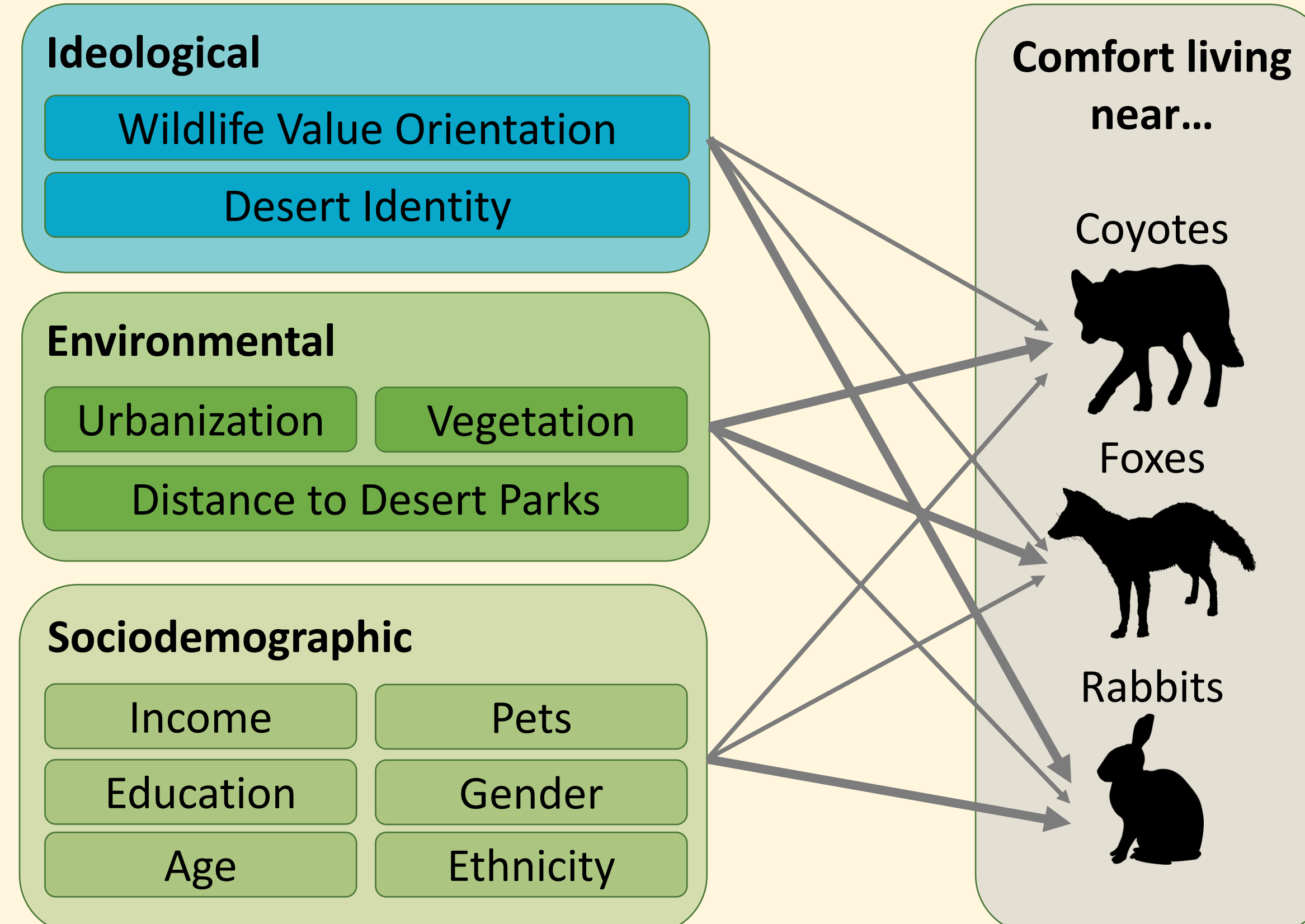


**Reported Comfort**
- Very uncomfortable
- Somewhat uncomfortable
- Neither uncomfortable nor comfortable
- Somewhat comfortable
- Very comfortable

Figure 2. Summary of survey respondents' reported level of comfort living near three wildlife species

## Research Question

**How does residents' comfort living near coyotes, foxes, and rabbits vary according to ideological, environmental, and sociodemographic drivers?**



Coyote
(*Canis latrans*)

Gray fox
(*Urocyon cinereoargenteus*)

Desert cottontail rabbit
(*Sylvilagus audubonii*)

**Ideological**
- Wildlife Value Orientation
- Desert Identity

**Environmental**
- Urbanization
- Vegetation
- Distance to Desert Parks

**Sociodemographic**
- Income
- Pets
- Education
- Gender
- Age
- Ethnicity

**Comfort living near…**
- Coyotes
- Foxes
- Rabbits

## Explanatory Variables

**Ideological**
- Data on value-based judgements collected in the 2021 PASS
- Includes: wildlife value orientation (a compositive variable based on methods from Manfredo et al. 2009) and *desert identity* (a composite variable measuring desert-based place attachment)

**Environmental**
- Environmental metrics associated with nature-based experiences
- Includes: *urbanization* (percent impervious surface cover), *vegetation* (Normalized Difference in Vegetation Index; NDVI), and *distance to desert parks* (natural habitat areas)

**Sociodemographic**
- Social and personal data collected in the 2021 PASS
- Includes respondents' levels of *income* and *education*, *age*, outdoor *pet ownership*, *gender*, and *ethnicity*

## Analyses

- Multivariate generalized linear mixed models for each species, with neighborhood as a fixed effect

## Results

Table 1. Multivariate generalized linear mixed model results for three wildlife species, showing standardized effect sizes with significance levels indicated as ***: p < 0.001, **: p < 0.01, *: p < 0.05, ^: p < 0.1

| Variable Type | Variable | Coyote | Foxes | Rabbits |
|---|---|---|---|---|
| Ideological | Wildlife Value Orientation | 0.41*** | 0.44*** | 0.23*** |
| | Desert Identity | 0.00 | -0.03 | 0.00 |
| Environmental | Urbanization | -0.10 | -0.09 | -0.07 |
| | Vegetation | -0.05 | -0.01 | 0.02 |
| | Distance to Desert Parks | -0.20* | -0.25*** | 0.02 |
| Social | Income | 0.24** | 0.12 | 0.11^ |
| | Education | -0.06 | 0.12^ | -0.04 |
| | Age | 0.00 | -0.16* | -0.17** |
| | Pet Ownership | 0.10 | 0.27* | 0.24* |
| | Gender (Female) | -0.39** | -0.45*** | -0.12 |
| | Ethnicity (Latinx) | -0.01 | -0.40* | -0.40** |

- Comfort around all three species is most positively associated with pro-wildlife value orientations (Table 1)
- Female respondents and those living further from desert parks reported lower comfort around coyotes and foxes
- Attitudes toward foxes and rabbits were more positive among pet owners and more negative among older and Latinx respondents
- Higher-income respondents were more comfortable living around coyotes

## Conclusion

- Comfort living near wildlife is primarily driven by an individual's value-based judgements, but also varies according to environmental and sociodemographic characteristics
- Living in environments where wildlife are more likely to be present was associated with more positive attitudes, particularly toward the two larger and more dangerous species (coyotes and foxes)
- Understanding what drives attitudes toward urban wildlife can help managers to predict and mitigate human-wildlife conflicts
- Next steps:
  - Investigating causality - How are pro-wildlife attitudes affected by wildlife encounters?
  - Further integration with ecological data – How do attitudes toward wildlife align with actual wildlife encounters?

## Acknowledgements