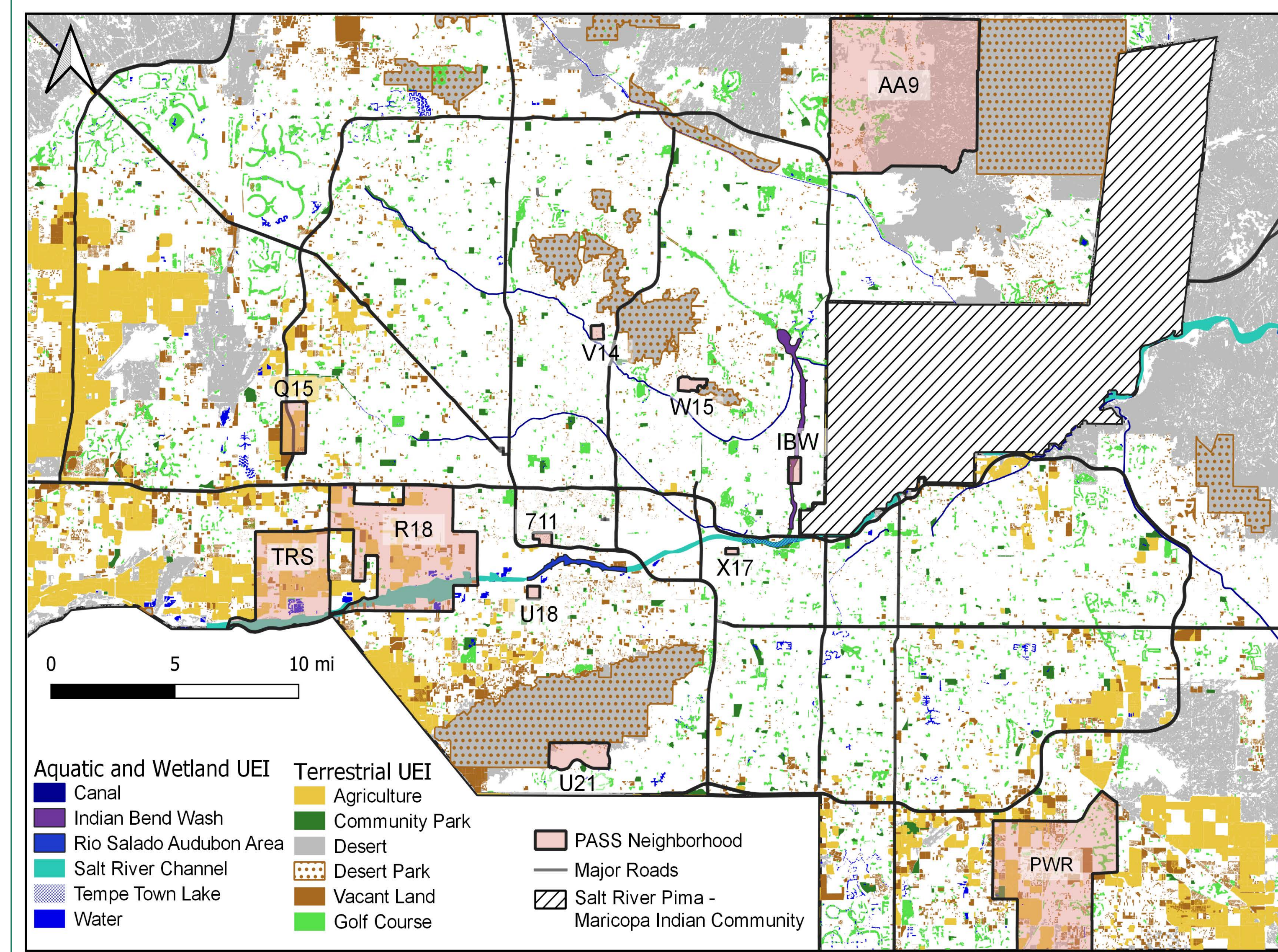


Introduction

The COVID-19 pandemic highlights the need to enhance human wellbeing, a core tenet of sustainability research and human development. Understanding how nature interactions impact human wellbeing in an urban setting is especially pertinent given the increased isolation and anxieties experienced by many people during this time. Outdoor recreation in urban greenspaces, including public parks and private yards, is one pathway to improve wellbeing for residents. The pandemic provides a unique opportunity to examine the different impacts of gardening, hiking, or visiting parks on distinct aspects of wellbeing, along with local environmental characteristics and perceived social capital in neighborhoods.

My research deepens the understanding of how distinct nature interactions and diverse urban spaces impact residents' reported health and psychological wellbeing during the pandemic by focusing on Phoenix, Arizona. The results have implications for urban planners, health practitioners, and sustainability scientists on how the design and management of urban landscapes affect human wellbeing. Establishing the influence and effects of the COVID-19 pandemic on multiple aspects of wellbeing will enable later research to investigate trends and drivers to support the achievement of sustainability goals.

Figure 1: Surveyed neighborhoods in metro Phoenix, AZ, with land use/cover and environmental features (map by Jeff Brown)



Survey Methods

- Data from 2021 Phoenix Area Social Survey: n=509 (35.6% response rate).
- Stratified random sample of 12 neighborhoods in metro Phoenix (Fig. 1), varied by socioeconomic factors and geographical location.
- Respondents skewed older, white, and wealthy compared to census data.

Research Question

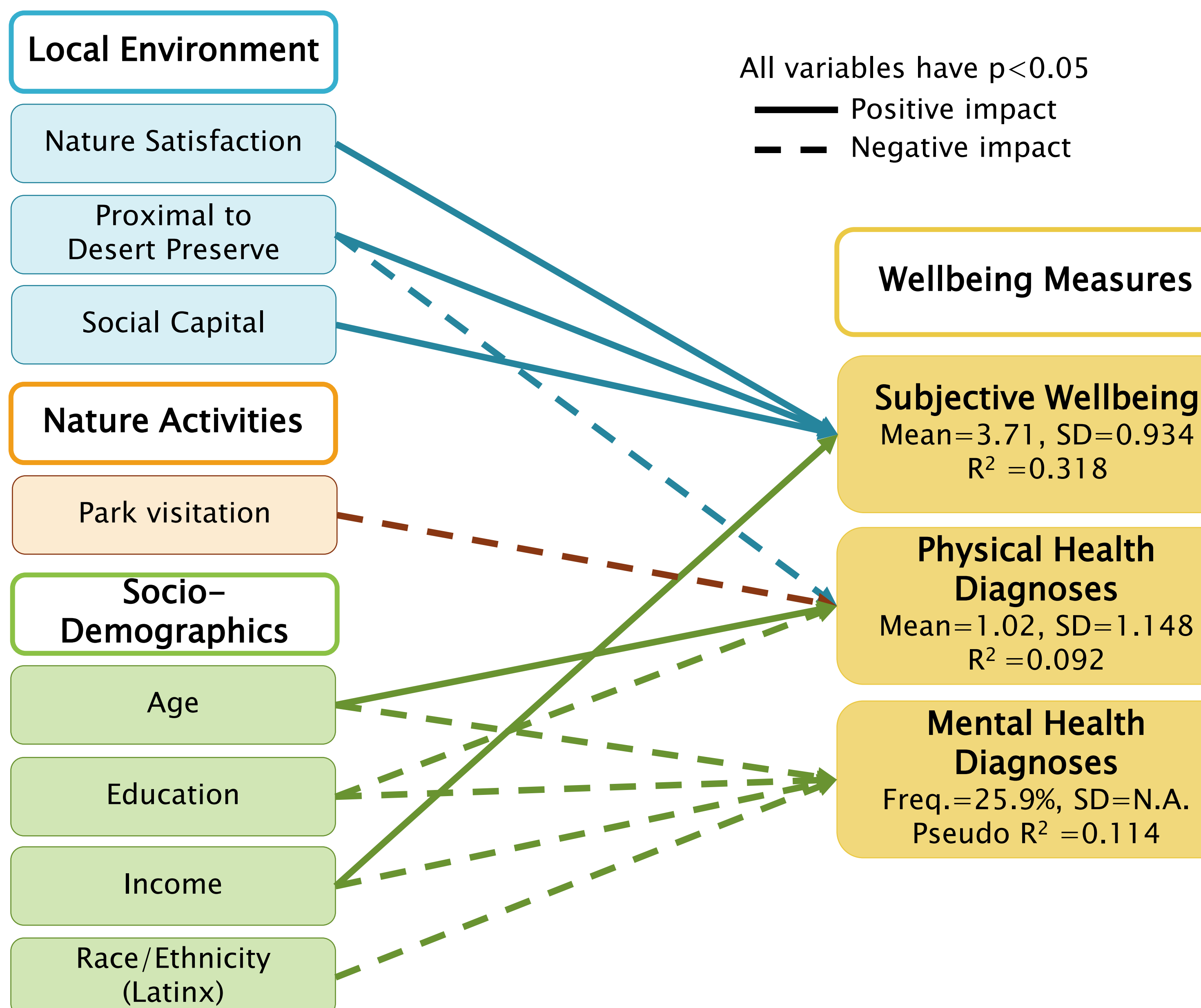
What types of nature engagement and local environmental and social factors best explain subjective wellbeing and physical and mental health diagnoses in Phoenix, Arizona during a pandemic?

Analysis

- Linear regressions were used for subjective wellbeing and physical health.
- Subjective wellbeing was measured using Diener et al., 1985 Life Satisfaction Scale (5-pt Likert scale).
- Physical health was a summative scale of 4 diagnoses (Fig. 3).
- Logistic regression was used for mental health.
- Mental health was measured with a single question about an anxiety or depression diagnosis.

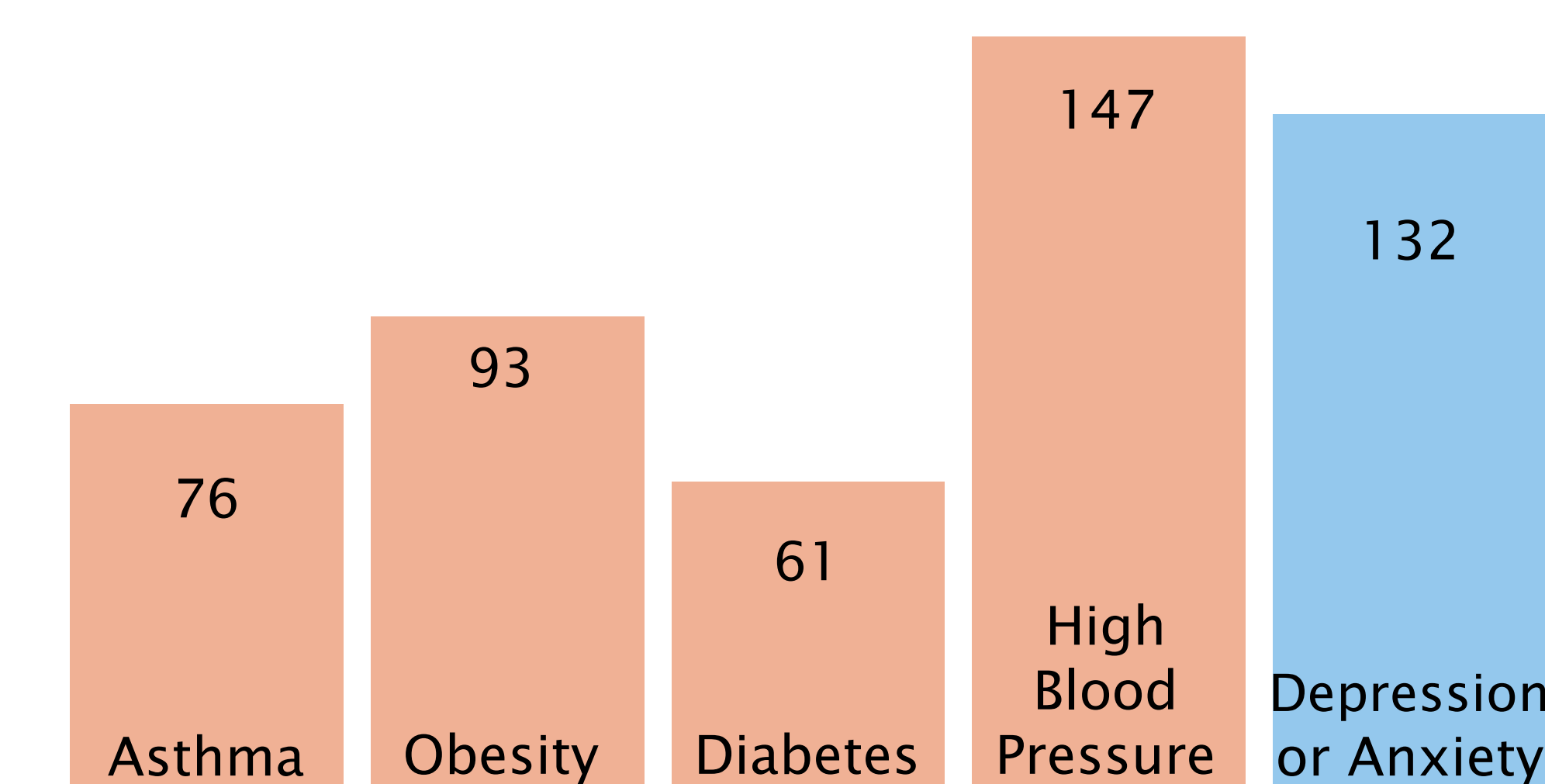
Results: Explanations for Wellbeing

Figure 2: Analytical framework with regression results.



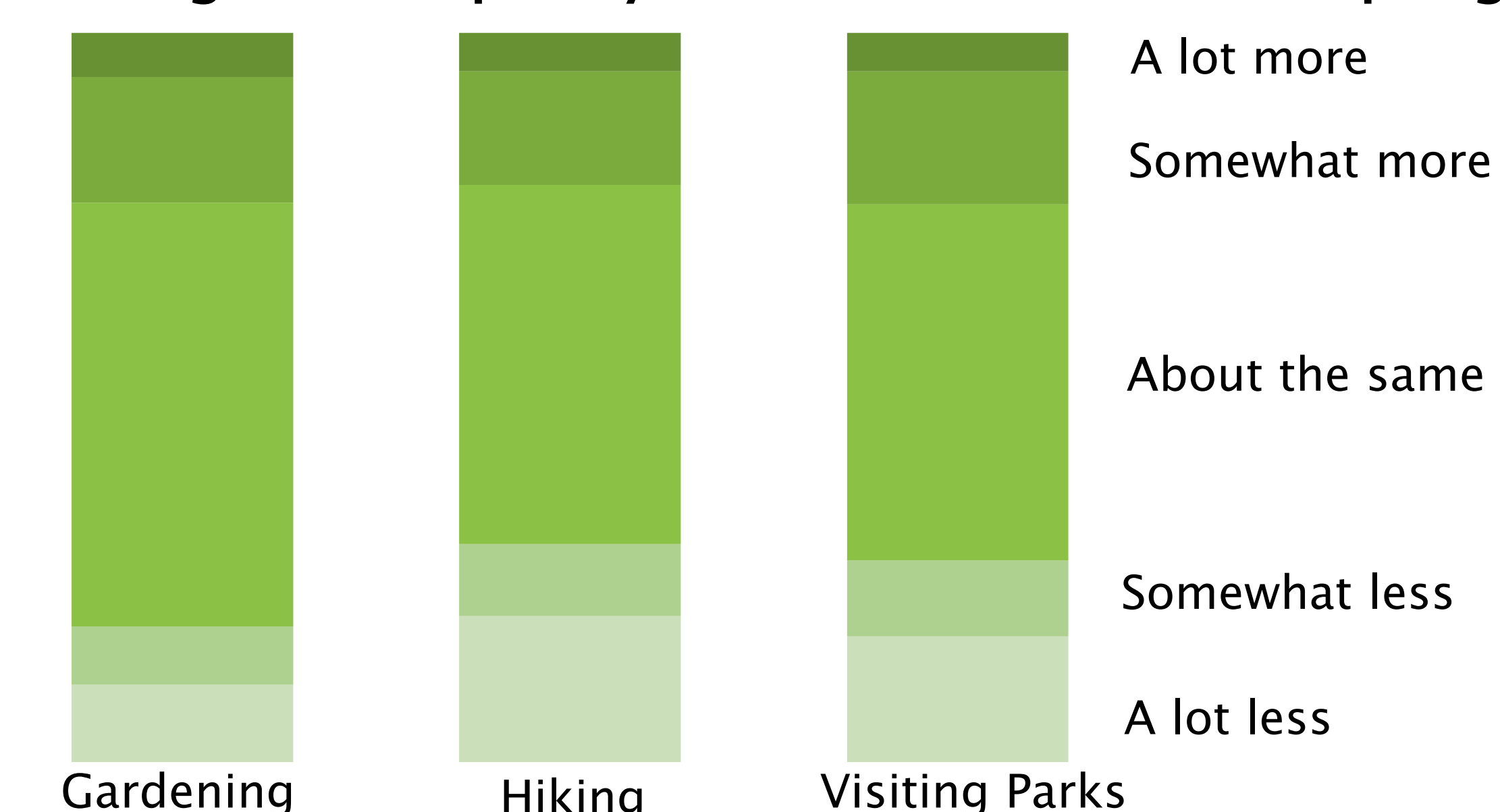
- Positive perceptions of the local natural and social environment yielded a higher subjective wellbeing.
- Proximity to and use of parks was linked to fewer physical health problems.
- Higher socioeconomic status increased the likelihood of anxiety or depression.
- Variables included in models with $p > 0.05$ for all wellbeing measures: vegetation density, proximal to local park, increased gardening in 2021, increased hiking in 2021, increased park visitation in 2021, gardening activities, housing type, and gender.

Figure 3: Number of survey respondents diagnosed with specific physical and mental health conditions.



- High response rates for hypertension, depression, and anxiety could indicate higher stress during this time.
- Increasing parks access and utilization could be one pathway to reducing the number of physical health diagnoses.

Figure 4: Changes in frequency of 3 nature activities in spring 2021.



- Most residents did not report a change in these nature activities during the spring of 2021.
- Increases in nature activities had no significant impact on any wellbeing measures during this time.
- Phoenix had few COVID restrictions so residents may not have looked for alternative activities.

Conclusions

- Higher nature satisfaction and stronger social capital were associated with a higher life satisfaction, showing that perceptions of local nature and social capital are potentially powerful pathways to wellbeing.
- Amplifying natural features in neighborhoods could be a more impactful way to design happier communities.
- Desert preserves, typically in wealthier areas, are the parks most connected to subjective wellbeing and physical health, which means affluent residents have easier access to these benefits.
- More research should be done to understand park features and usage patterns in Phoenix.
- While not generalizable to a larger population, this study reveals that different aspects of wellbeing have distinct drivers.

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