

Introduction

- Sedona is home to the red rocks, 500,000+ acres of recreational grandeur, and an annual 3 million visitors. During the COVID-19 pandemic, Sedona saw a 5% increase in tourism (Yavapai College).
- Tourism supports over 10,000 jobs in the area and generates around \$1 billion dollars for the city. As the city warms, the tourists increase.
- SB 1350 added 3,100 rooms to be added to the Greater Sedona area, impacting roughly 10,000 residents. 75% of Sedona's public services come from sales tax revenue.
- Water quality of Oak Creek Canyon is a major concern with high fluctuations of *Escherichia coliform* (E.coli), as reported by Arizona Department of Water Quality and Oak Creek Watershed Council.
- Businesses face threats of loss of revenue when safety standards are exceeded, tourists face closures of areas like Slide Rock State Park, and the creek itself is heavily impacted.

Methods

The research conducted consisted of two primary activities: interviews with stakeholders and different sectors related to tourism in Sedona and surveying people recreating in Oak Creek Canyon.

Interviewing Stakeholders

- Identify who had vested interest in water quality of Oak Creek Canyon.
- Separate stakeholders into three main groups: commercial interests, environmental interests, and government interests.
- Send out invitations asking identified groups to take part in interviews.
- Conduct nine interviews over Zoom with a consistent facilitator and rotating supporting team members to take notes.
- Synthesize interview notes into key points and analyze trends.

Surveying Recreators

- Review and update survey questions from previous survey used in Summer 2022.
- Collect in-person surveys over the course of four consecutive Saturdays.
 - Surveys were conducted in English and Spanish, on the Bell Rock and West Fork trailheads.
 - Results were captured anonymously using an iPad, with or without help from the surveyors.
 - Respondents could opt-in to enter a drawing for a \$25 Amazon gift card.
- Synthesize 113 survey responses with statistical analysis.

Interviews

We were able to interview three major different stakeholder groups; commercial interests, environmental interests, and governmental interests. When asked about the main issues and problems that they see in Oak Creek Canyon, they said:

Commercial

- "Increased visitation; uninformed visitor; lack of information"
- "We saw a huge increase in visitation during and after the pandemic... there was trash on trails"
- "Quality of the water has shown to increase in level of E.coli in busy seasons"

Environmental

- "Increased use of the area... and the litter problem"
- "Top three, I would say: 1. Litter; 2. Pet waste/E.coli problems; 3. Social trails and soil erosion"
- "We give people trash bags but they do not take them.. They think 'I do not want to walk up the 50 stairs.'"

Governmental

- "... the levels of visitation are too much for our infrastructure"
- "It's [education] nowhere near as effective as regulatory changes"

Research Question

How do the different stakeholders of Sedona understand the relationship between tourism and the water quality of Oak Creek?

Table 1. Stakeholder interviews solutions to the problem

	<i>Policy Solutions</i>	<i>Infrastructure Solutions</i>	<i>Educational Solutions</i>	<i>Social Solutions</i>
Commercial Interests	Enforce rules and regulations.	Increase access to resources.	Increase education and awareness of visitors.	Restrict further development.
Environmental Interests	Seek collaboration with other entities to help enforce applicable laws.	Increase existing infrastructure (ex. trash receptacles).	Share more information to educate visitors.	Encourage visitors to understand the impacts of their actions.
Governmental Interests	Increase funding for entities concerned with Oak Creek.	Promote collaboration among stakeholders to share information and access.	Educate more tourists visiting areas and the overall public.	Community collaboration and support to promote solutions.
Common Solutions	Partnerships for better enforcement and support.	Increasing access to necessary infrastructure.	Education of visitors and the overall public.	Community sharing and collaboration to support change.

Survey Demographics

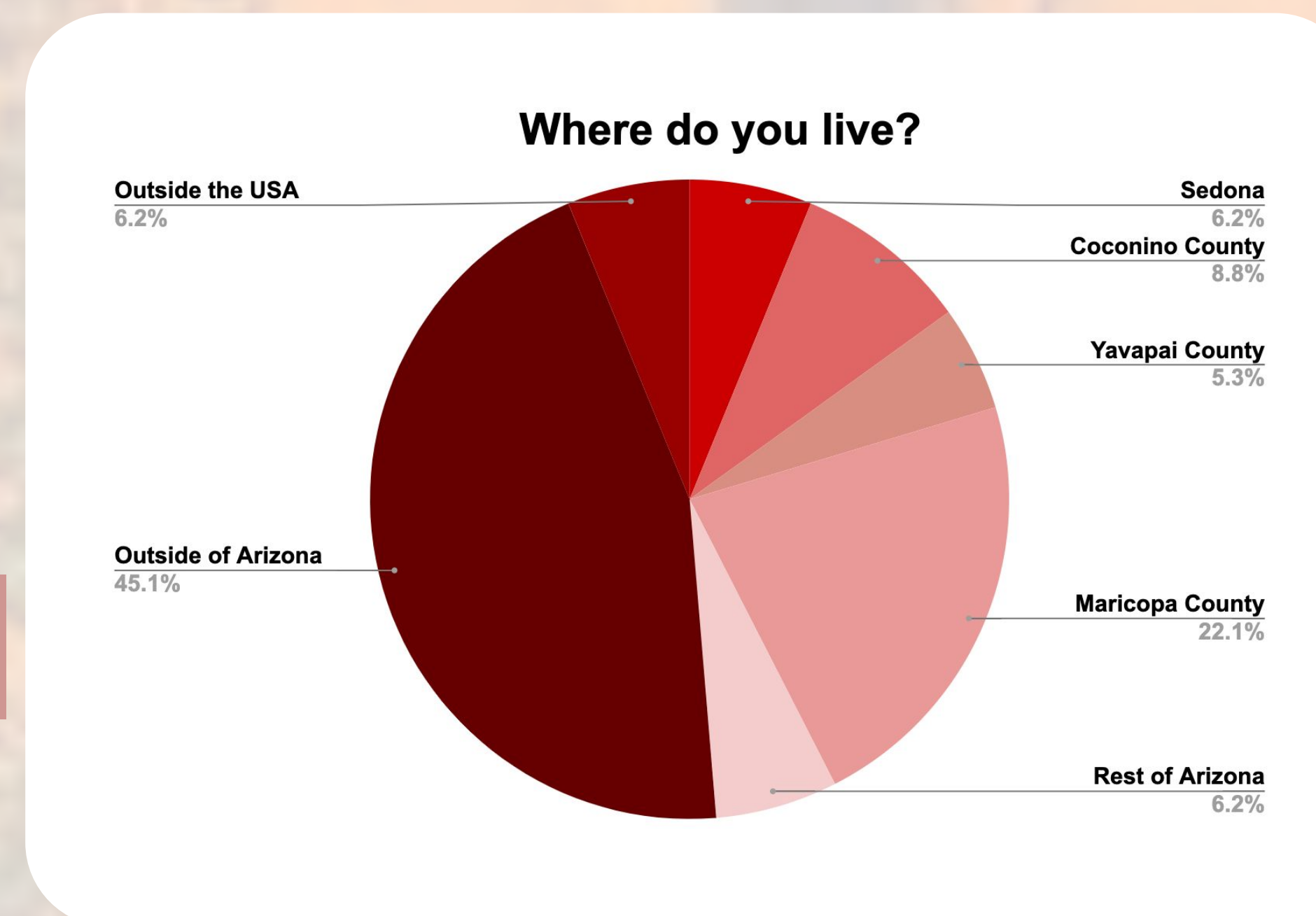


Chart 1. From the survey results, about half of the individuals visiting Oak Creek Canyon were from outside of Arizona. Among these individuals, 55% of respondents were visiting Oak Creek Canyon for the first time. The second largest population of people recreating come to the Oak Creek Canyon area between two and five times per year.

Survey Responses

What are examples in which it is difficult for you or other tourists to keep Oak Creek Canyon clean?

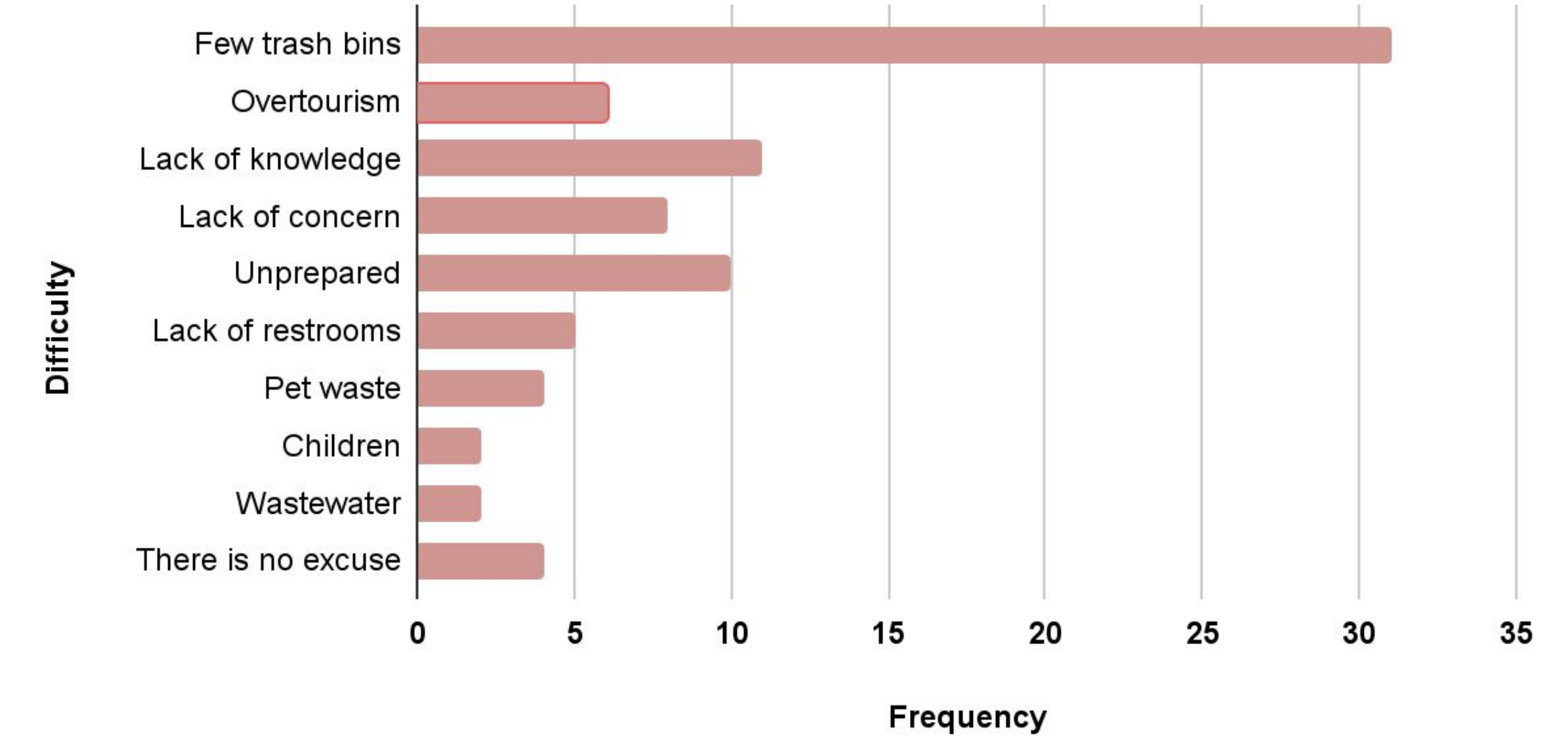


Chart 2. These results are a compilation of common themes from the responses of respondents.

Do you agree that the following solutions are effective in improving Oak Creek water quality?

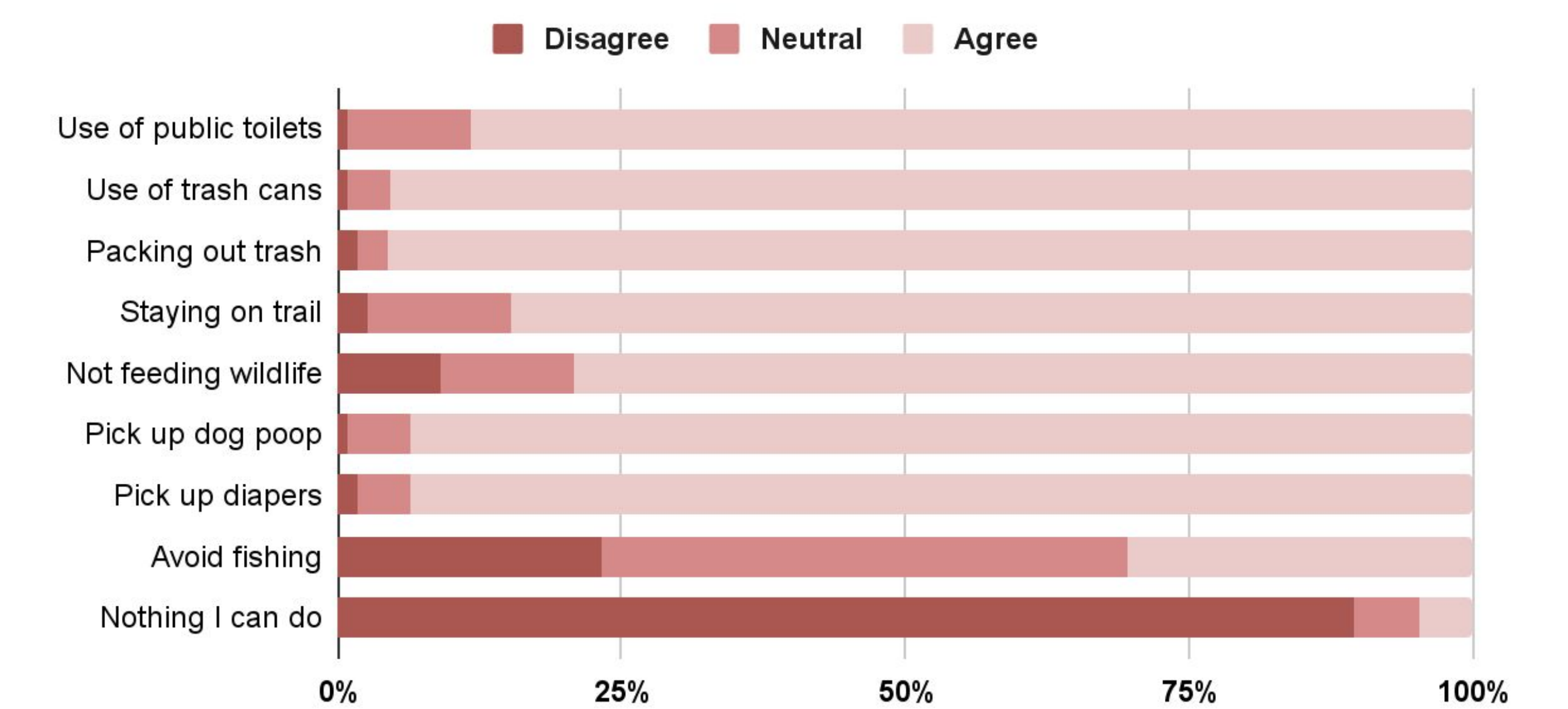


Chart 3. The total responses to this part of the survey equalled a maximum of 111 entries.

Solutions and Recommendations

More robust infrastructure is needed to meet the demands of residents and accommodate visitors. This can be achieved through:

Based on the survey:

- Increasing the frequency of waste collection and strategic placement of additional receptacles.
- Improving pet waste stations to provide bags, waste receptacles, and relevant information from the Leave No Trace campaign.
- Increasing awareness and reach of the information campaign by placing Leave No Trace signage next to trail maps.

Based on the stakeholders:

- Increase collaboration between relevant stakeholder groups within Sedona.
- Refresh and increase number of resources that are available to visitors.
- Place emphasis and importance of education campaigns for those visiting. Allocate funding if possible.

Risk Perception of Respondents

Table 2. Recreator's perception of risks at Oak Creek Canyon

Potential Risks	1st Perceived Risk	2nd Perceived Risk	3rd Perceived Risk
Tripping/falling	66.98%	22.55%	3.41%
Dehydration	27.36%	52.94%	9.09%
Getting E.coli	0.94%	0.00%	6.82%
Wildlife attack	0.94%	2.94%	21.59%
Hit by falling rocks	0.94%	12.75%	37.50%
Forest fire	0.00%	4.90%	7.95%
Getting sick from dirty water	2.83%	3.92%	13.64%

Sedona is host to the marvelous red rocks, over 550,000 acres of recreational grandeur, and as a tourist hotspot, they boast an average of 3 million annual visitors. A study done by Yavapai College shows the economic impact of tourism supports over 10,000 jobs and generates around \$1 billion dollars for the city. Sedona saw a 5% increase in tourism during the pandemic. As temperatures increase, so does outdoor recreation in and around Oak Creek Canyon. SB 1350 allowed over 3,100 rooms to be added to the Greater Sedona area, impacting the roughly 10,000 residents, as 75% of Sedona's public services are funded through sales tax revenues. A main concern for the city is water quality within Oak Creek Canyon, which can show fluctuating levels of *Escherichia coliform* (E. coli) according to the Arizona Department of Water Quality and Oak Creek Watershed Council. Businesses risk a loss of revenue when safety standards are exceeded. To propose potential solutions, it is important to understand how this issue is perceived by all stakeholders. Finding common ground and removing obstacles preventing compliance allows stakeholders to come together to find a robust, holistic solution that improves the water quality of Oak Creek Canyon.

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- Tourism supports over 10,000 jobs in the area and generates around \$1 billion dollars for the city.
- With increases in temperature, tourism follows the same pattern.
- SB 1350 added 3,100 rooms to be added to the Greater Sedona area, impacting roughly 10,000 residents. 75% of Sedona's public services come from sales tax revenue.
- Water quality of Oak Creek Canyon is a major concern with high fluctuations of *Escherichia coliform* (E.coli), as reported by Arizona Department of Water Quality and Oak Creek Watershed Council.
- Businesses face threats of loss of revenue when safety standards are exceeded, tourists face closures of areas like Slide Rock State Park, and the creek itself is heavily impacted.