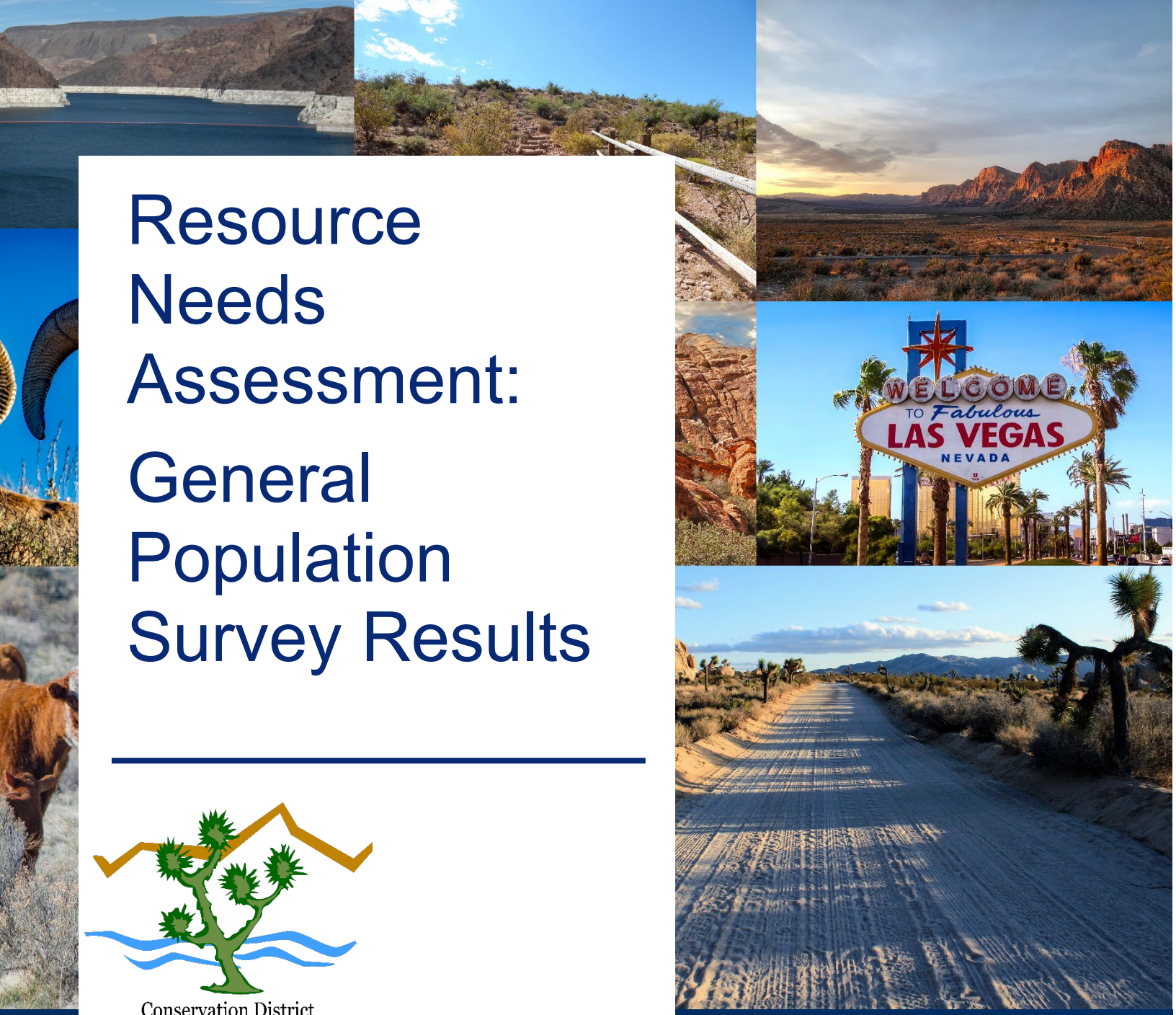

Resource Needs Assessment:

General Population Survey Results

Conservation District of Southern Nevada
Serving Clark County

University of Nevada Cooperative Extension

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To request an electronic copy of this report or if you have any questions about its contents, please contact Michael H. Taylor at taylor@unr.edu or (775) 784-1679.

Executive Summary

In 2018, the Conservation District of Southern Nevada (CDSN), whose boundaries coincide with those of Clark County, initiated a resource needs assessment (RNA) process to better understand the resource concerns of its constituents. The RNA had two parts. First, a technical assessment was performed to catalogue the resource concerns as expressed by natural resource professionals in Clark County (Evans, 2019). Second, a survey was conducted to solicit input from the general public in Clark County on their natural resource concerns. Both parts of the RNA process adopt the classification protocol of the USDA Natural Resource Conservation Services (NRCS) *Resource Concerns Checklist* planning tool. This planning tool groups resource concerns into five major categories: soil, water, air, plants, and animals and is generally referred to as SWAPA.

The survey instrument was sent via mail to a random sample of 6,000 Clark County residents in spring 2019. Our study sample consists of 212 respondents who returned completed surveys. These 212 respondents are representative of Clark County demographics based on observable characteristics reported in the U.S. Census and include residents from rural and urban areas in Clark County.

This document presents the results from the general population survey. The general population survey was designed so that the questions and modules correspond to the resource concerns on the *Resource Concerns Checklist* planning tool. This correspondence allows the survey results to be used in conjunction with the NRCS *Resource Concerns Checklist* planning tool in landscape level conservation programs in Clark County.

The results show that water quantity, water quality, and air quality are the areas of greatest concern for residents of Clark County.

- Water quantity is the top natural resource concern for respondents in Clark County, with 81% of respondents listing it as a top three concern. Respondents' water quantity concerns are driven by concerns about the security of future water supplies and drought.
- Water quality is the resource issue with the second greatest level of concern, with 73% of respondents listing it as a top three resource

concern. Respondents had concerns both about quality of drinking water and the water quality in natural bodies of water in Clark County.

- Air quality concerns are the third most pressing resource issue in Clark County and was ranked in the top three resource concerns by 65% of respondents. Respondents' air quality concerns are driven by concerns about dust pollution, industrial air pollution, and vehicle exhaust.

While water quantity, water quality, and air quality are the top resource issues of concern in Clark County, a majority of respondents indicate that they are also concerned about wildlife habitat, plants and invasive weeds, and soil erosion and degradation.

The findings in this report support the findings in the RNA technical assessment for CDSN, where water quantity was found to be the top resource concern in Clark County (Evans 2019). However, the technical assessment finds the conversion of agricultural land and invasive weeds to be the second most pressing resource issue, while we find a majority of respondents are concerned with invasive weeds, residents in both urban and rural area are more concerned with water quality and air quality. In addition to the RNA questions, the survey also contained questions on respondents' outdoor recreation activities in Clark County, as well as questions related to CDSN's current activities. Results indicate that the majority of residents in Clark County participated in some form of outdoor activity in the past year, with trail use (i.e., hiking, walking pets, and mountain biking) as the most popular activities. Among trail users, primary concerns included parking at trailheads and degradation due to users travelling off-trail. Results also indicate that while there is a significant public support for CDSN's urban conservation priorities in Clark County, there is little public awareness of CDSN or its mission among the general public in Clark County.

Conservation Action Plan Development

The NRCS defines locally-led conservation as a process where community stakeholders are involved in natural resource planning, implementation of solutions, and evaluation of results (NRCS, 2010). The planning phase of the NRCS process has two parts: 1. Performing an RNA to gather public input from a range of stakeholders; and 2. Using input from the RNA to develop a conservation action plan (CAP) that identifies priorities, sets goals, and identifies government and nongovernment programs to achieve these goals. This section summarizes the major implications of this document (the public-input portion of the RNA) for the development of a CAP for the CDSN.

- *Priority*: Water Availability
    - *Goal*: Ensure that water is available to meet demand in CDSN now and in the future.
    - *Programs*: Conservation programs to manage water demand in CDSN such as water smart landscaping practices and encouraging indoor water efficiency; development policies focused on increasing the growth in less water-intensive, multi-family housing.
- *Priority*: Water Quality
    - *Goals*: Improve water quality in natural bodies of water and improve the quality of drinking water in CDSN.
    - *Programs*: Results indicate that programs to address invasive aquatic weeds and growth of algae would have substantial public support, as would programs to improve drinking water quality through enhanced watershed health.
- *Priority*: Air Quality
    - *Goal*: Improve air quality in CDSN.
    - *Programs*: Dust pollution control programs focused on urban building sites and improving soil stability in open spaces through vegetation management; increase access to public transit and promote walkable neighborhoods to reduce vehicle emissions
- *Priority*: Wildlife Habitat
    - *Goal*: Support wildlife populations in CDSN.

    - *Programs:* Results indicate public support for programs that limit future fragmentation of habitat and to improve habitat quality through restoration.
- *Priority*: Recreation Access
    - *Goal*: Increase access to outdoor recreation trails in CDSN.
    - *Programs:* Results indicate that significant public support for the expansion of available parking at trail heads.
- *Priority*: Urban Conservation
    - *Goals*: Increase the number of public parks and walkability of communities in CDSN.
    - *Programs*: Develop public greenspaces and parks in undeveloped land; plant trees to increase shading of public walkways; support development of pedestrian bridges.

Table of Contents

1. Introduction

Overview

The Conservation District of Southern Nevada (CDSN) is a government organization granted power through Nevada Legislature with the mission "to promote resource conservation, preservation and sustainability through education, facilitation and public and private partnerships to benefit the citizens of Clark County, Nevada" (CDSN.org). Nevada Association of Conservation Districts (NVACD) and the Conservation District of Southern Nevada partnered with researchers at the University of Nevada, Reno to develop and conduct a general population survey to measure the natural resource concerns of Clark County residents. This document presents the results of this effort and will be used to help CDSN set conservation priorities that address the needs of Clark County residents.

Clark County Profile

CDSN covers the land area of Clark County, Nevada. Clark County is home to over two million people, mostly located in urban centers including Las Vegas, Henderson, Paradise, and Boulder City. Clark County also includes many smaller agriculture-based communities including those in the Moapa and Virgin Valleys. In recent years, Clark County has seen high levels of population growth, on average growing by over 2% annually from 2012 to 2018 (Center for Business and Economic Research, 2019).

Figure 1: Map of Clark County and major roadways. Source: Nevada Department of Transportation

Clark County is in the Mojave Desert and receives an average two to eight inches of precipitation annually (depending on location in the county) and has a mean annual temperature of 64.45 degrees Fahrenheit (Evans, 2019 and WRCC, 2020). In addition to the urban landscape of the Las Vegas metro area, Clark County touts a large reservoir (Lake Mead) and sprawling desert landscape.

Background

This section provides background on the role of the RNA process in locally-led conservation.

Natural Resources Conservation Service and SWAPA

After the dust bowl of the 1930s, it was apparent that farm-level soil conservation was key to preventing wind erosion. In response to the dust

bowl, the Soil Conservation Service, later renamed Natural Resource Conservation Service (NRCS), was established. The mission of the NRCS "is to provide resources to farmers and landowners to aid them with conservation. Ensuring productive lands in harmony with a healthy environment is our priority" (NRCS, 2020).

NRCS relies on the SWAPA natural resource planning tool for their conservation work. Farmers, in conjunction with NRCS agents, can use this planning tool to determine the resource concerns on their property and develop a conservation plan to address each concern. Ray Dotson, NRCS State Conservationist for Nevada, describes SWAPA as foundational to the mission and vision of NRCS. (Dotson, personal Communications, 2019).

Conservation Districts and Locally-Led Conservation

Locally-led conservation is defined as "a process used by local people to assess their natural resource conditions and needs, set goals, identify programs and other resources to solve those needs, develop proposals and recommendations, implement solutions, and measure their success" (NRCS, 2014). Among other functions, CDs are responsible for assisting NRCS to ensure that NRCS programs within the CD reflect locally-determined conservation objectives. The CD board works with NRCS to ensure the funding they provide is tailored to address the top resource concerns within the district (Dotson, personal Communications, 2019). To determine what the top resource concerns are the CD conducts a resource needs assessment (RNA).

Resource Needs Assessment

RNA typically have two parts. The first is a technical assessment, which is performed by conservation specialists who meet with natural resource professionals to discuss the most important resource concerns in the CD. This component is effective for understanding the state of natural resources from the point of view of those individuals who work with them daily. In Nevada, many CDs take the same boundaries as the county and, as a result, include urban, agricultural, and public lands. Because the technical assessment tends to focus on the natural resource professionals, they can miss the resource concerns of many of the constituents they are elected to represent.

The second component of the RNA, *public input*, attempts to capture the resource concerns of the general public in a CD. The public input portion of the CD-level RNA is the analog of the client objective in a farm-level RNA. For example, a farm-level client objective may include goals such as increase crop yield or limit loss of topsoil. The client objective allows NRCS to address the specific concerns of each land-manager. Since locally-led conservation is targeted at landscape-level rather than parcel-level conservation, it is challenging to assess the "client" objective because the client is the entire community. In order to incorporate the client objective for landscape-level conservation, the CD-level RNA must involve a process where all stakeholders in the CD have an opportunity to express their resource concerns.

Traditionally, NRCS has relied on CDs and the formal Stakeholder Technical Advisory Committee (STAC) process to ensure that local priorities are reflected in NRCS programming and spending. In regions where this process is not functioning as intended, or for organizations other than NRCS are interested in landscape-level conservation, a more direct method to obtain stakeholder input is through a general population survey. CDSN, along with a handful of other Nevada CDs, have elected to use the general-population survey describe in the document to measure the resource concerns held by the general public.

2. Survey Development & Implementation

This section describes the development and implementation of the survey instrument. This section also analyzes whether the survey sample is representative of the general population in Clark County.

Survey Development

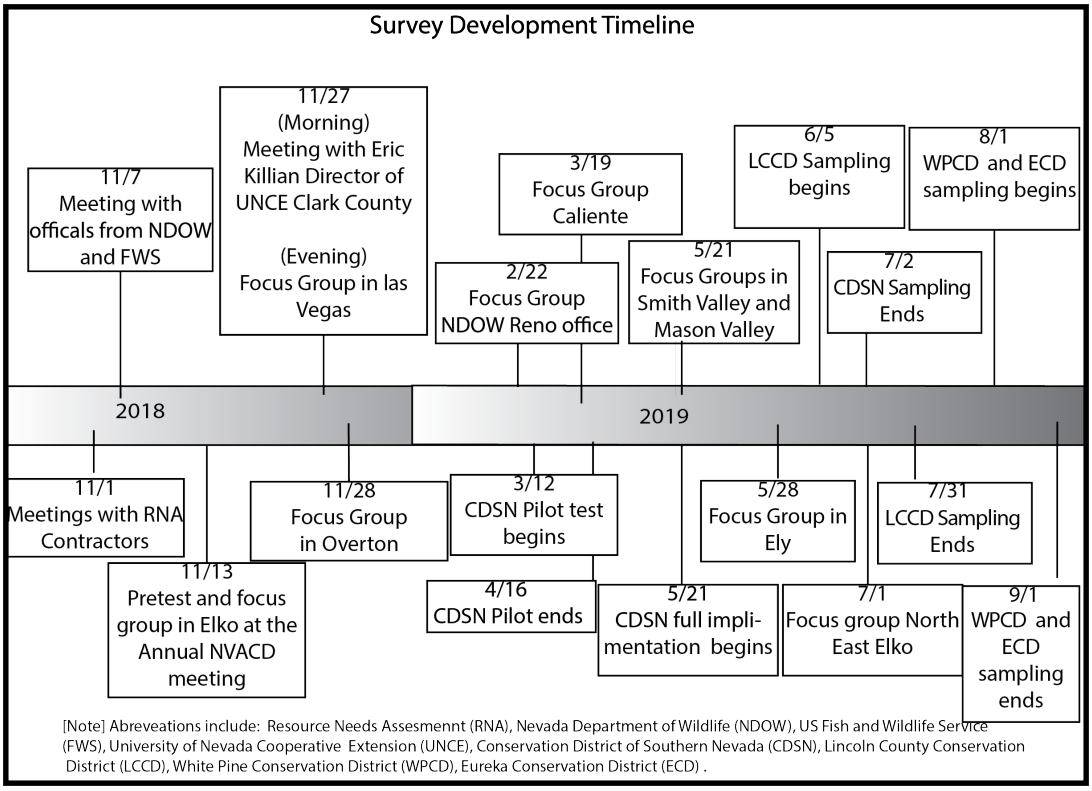
Collecting public opinion on resource concerns according to the SWAPA framework presents several challenges. The most significant challenge is removing the jargon from the technical descriptions of natural resource concerns so that the survey questions are clear and easy-to-understand for the general public. Additional challenges include low response rates and non-representative sampling, which are not unique to this project, but are problems that arise in survey work in general. This section discusses the survey development and how these challenges were overcome.

The SWAPA planning tool includes sentences such as, “Classic gully management is adequate to stop the progression of head cutting and widening and offsite impacts are minimized by vegetation and/or structures” (NRCS Resource Concerns Checklist). A general-population survey instrument that uses phrases directly from SWAPA would likely confuse respondents and result in a low completion rate. To ensure that the language of our survey was understandable to the general public, we subjected the survey instrument to intensive focus group testing. We conducted focus groups with natural resource professionals, CD board members, and the general public. The focus

group participants took the survey and provided feedback on the strengths and weaknesses of the instrument. Not only did we ensure the language could be understood by the public at large, we were also able to confirm the interpretation of the question did not vary among different groups.

We conducted four focus groups before implementation in Clark County. The first focus group was conducted at the Nevada Association of Conservation Districts annual meeting in November of 2018. The participants were a mix of natural resource professionals and CD board members from around Nevada. The second set of focus groups took place in Las Vegas (11/27/2018) and Overton (11/28/2018) and were attended by the general public. On February 22, 2019 a focus group was conducted at the Nevada Department of Wildlife (NDOW) offices in Reno and was attended by NDOW employees and was particularly focused on the recreation and wildlife questions. Figure 2 shows the timeline of the survey developmental and implementation efforts.

Figure 2: Survey Development Timeline



The focus group protocols were as follows:

1. Introduce the research and its importance.
2. Split the participants into smaller groups, no more than six. Each group will have a moderator taking notes. The moderator attempts to divide participants into groups composed of participants with similar propensity to speak. If groups are not formed in this way, discussion will often be dominated by one or two voices. The ideal groups will have equal input from all members.
3. Begin the survey. During the course of the survey the moderators encouraged the participants to vocalize their thoughts, ask clarifying questions, and state their objections to question appearance or content. Participants are even encouraged to have relevant conversation within the group. Observing how a question is explained by another participant gives the designer a better idea of how the question is being perceived. Moderators then record participant responses and ask if certain questions are confusing based on the visual cues (e.g. squinting or pausing).
4. Once all surveys are completed, the debrief session begins, which is the time for overall feedback including initial reactions. In addition, the moderators ask the participants the following questions:
    a. In your opinion, was anything missing?
    b. Was there anything that would have made you put the survey down and not complete it?
    c. Was the wording ever confusing?
    d. Would you complete the survey if you were at home?

The moderators remained silent during the focus groups. Remaining silent allows the survey designer to view the nature of survey takers without being influenced by explanations from the researchers.

The four focus groups helped us find and remedy numerous faults in the survey instrument. Our efforts proved successful at improving the survey instrument as evidenced by the fact that 94% of individuals who opened the

survey completed it in its entirety. A copy of final survey instrument can be found at https://unrbusiness.az1.qualtrics.com/jfe/form/SV_eWJGXqN9hPHVrOB.

Sampling

The survey was mailed to a random sample of 6,000 Clark County residents. Due to concerns over obtaining a sample that accurately represents the different demographic groups in Clark County, we sent proportionately more surveys to residents living in lower income and more racially diverse zip codes, as research shows these groups tend to have lower response rates (Tolonen et. al, 2006).

The surveys were mailed out in the two waves. First, we sampled 2,000 individuals as a pilot test in March 2019. After analyzing the first wave responses to check for problems with the survey instrument and implementation, as second wave of 4,000 surveys was mailed in May 2019. Two changes were made between the first and second wave. First, minor adjustments were made to the mailers to simplify their language and appearance. Second, a Spanish version of the survey and mailing materials was included in each mailer to increase responses from Spanish speakers.

Every Clark County resident in our sample received four mailers each sent a week apart. The mailers were addressed to one individual within the household and only they were asked to participate. The first mailer was a formal letter (Appendix A1) inviting the individual to respond to the survey. Included was information on how to access the web-based survey, privacy information, and information on a raffle for participants. (Respondents were given the opportunity to participate in a raffle for a $500 cash card.) If the individual had not responded after receiving the initial invitation letter, a reminder postcard (Appendix A2) was sent to them. The postcard urged them to take the survey and offered information for accessing the survey and contact information for questions. A week later, if they had not responded, they were sent another reminder postcard (Appendix A3) with similar content to the first. If the individual had still not responded, we mailed a final letter

(Appendix A4). This letter explained the importance of their participation and urged them to take the survey. The individual's password is once again provided in case they lost the initial invitation letter.

This implementation strategy produced 212 completed surveys (a 5.5% response rate).

Sample Representation

This section compares the demographics of the CDSN survey sample with the population of Clark County using data on race, age, and income level in Clark County from the 2017 American Community Survey (ACS).

Table 1 shows the proportions of respondents by racial groups from the ACS (column one) and survey responses (column two). White respondents represent 79% of our sample compared to 61% in the ACS, which are significantly different from one another at the 90% confidence level. Additionally, Asians from China and Japan are overrepresented in our sample by five percentage points and Native American (Including Alaskan Natives) are represented by equal proportions in the ACS and our sample. Other Asians or Pacific Islanders, African Americans, and other race (or do not wish to specify) are underrepresented. However, a simple difference of means test shows that for the major resource concerns categories, levels of concern are not significantly different between racial groups (Appendix A6). Figure 3 displays the relative proportion of respondent race.

Figure 3: Composition of Race for Respondents

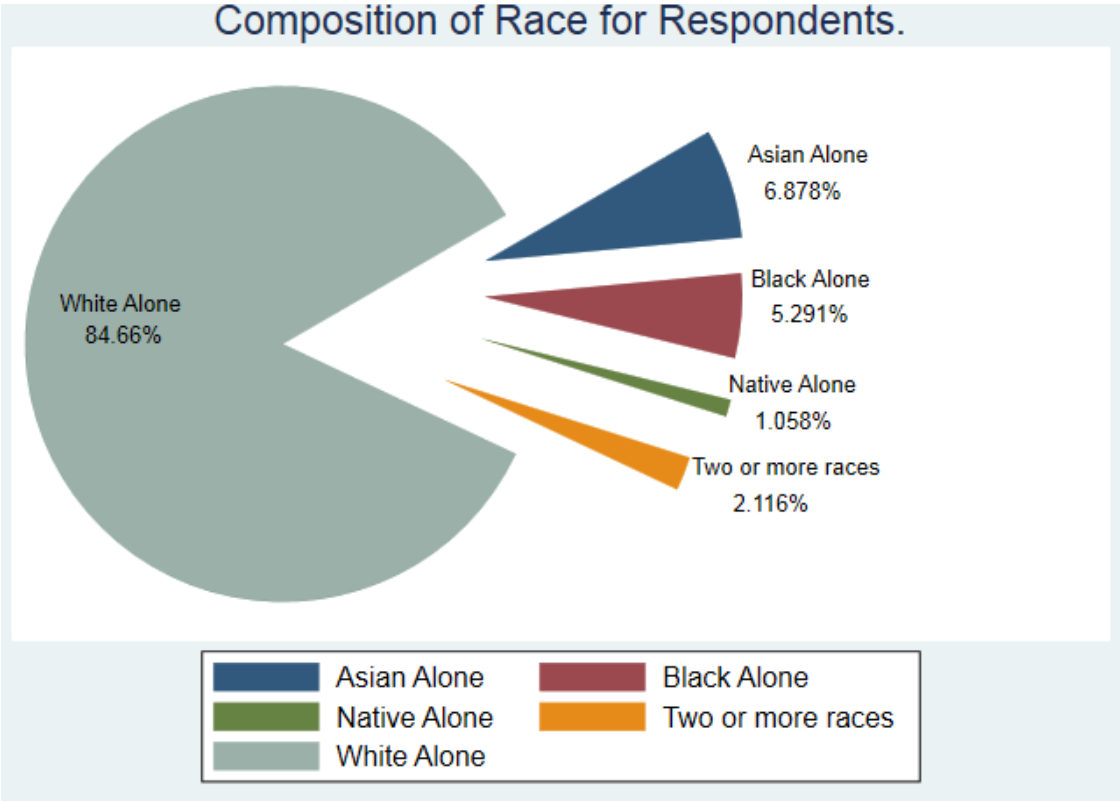


Table 1 also shows that the implementation strategy proved successful for obtaining a random sample in terms of respondent sex evidenced by the equality of proportions of male and female respondents between the ACS and our sample. Given that we randomly sampled an equal proportion of males and female and requested the addressee fill out the survey, this suggests that males and females are equally likely to take the survey conditional on having received a survey in the mail.

Table 1 shows survey respondents are, on average, slightly older than the population above eighteen years of age in the ACS. Overall, the implementation strategy was fairly successful in returning a sample that is representative of Clark County on observable characteristics and suggests

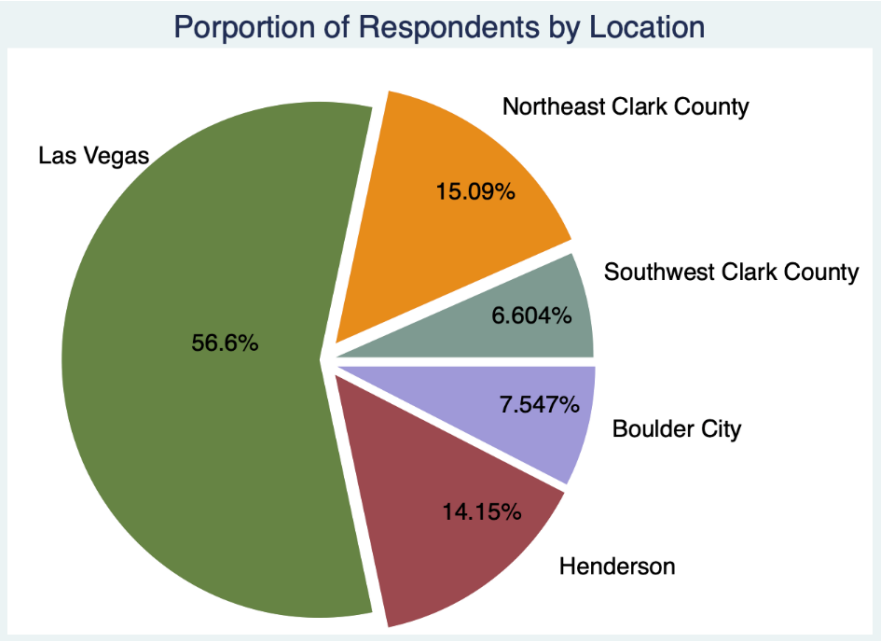
that the natural resource concerns report in the survey accurately reflect the natural resource concerns of the broader Clark County population

Table 1: Demographic Groups in Clark County

Proportions by racial group and sex in Clark County		
	ACS proportion (ci90)	Survey proportion (ci90)
White	0.61 (0.61,0.61)	0.79 (0.73,0.85)
Black and African American	0.11 (0.11,0.11)	0.05 (0.02,0.08)
Native American	0.01 (0.01,0.01)	0.01 (0.00,0.02)
Asian (Chinese or Japanese)	0.02 (0.02,0.02)	0.04 (0.02,0.06)
Other Asian or Pacific Islander	0.10 (0.10,0.10)	.03 (0.02,0.06)
Two or more races	0.04 (0.04,0.04)	0.02 (0.00,0.04)
Other or do not specify	0.12 (0.12,0.12)	0.07 (0.03,0.10)
Male	0.49 (0.49,0.50)	0.50 (0.43,0.57)
Female	0.51 (0.50,0.51)	0.50 (0.43,0.57)
Mean Age in Clark County		
	ACS mean (ci90)	Survey mean (ci90)
Age	46.66 (46.64,46.69)	54.48 (52.31,56.66)
Observations	1688755	212

Survey respondents represent Clark County residents from urban and rural regions entire County. Figure 4 shows the share of respondents based on region. The share of respondents from Las Vegas, Henderson, and Boulder City are shown in their respective slices in figure 4. The area of Northeast Clark County on figure 4 includes the communities of Mesquite, Logandale, Overton, Bunkerville, and Moapa and the surrounding areas. The area of Southwest Clark County on figure 4 includes Laughlin, Jean, Searchlight, Blue Diamond, Good Springs, Sandy Valley, and Nelson.

Figure 4: Proportion of Respondents by Location



3. Resource Needs Assessment Results

This section presents the survey results on major resource concerns in CDSN, as well on the level of concern for each SWAPA category.

Top Natural Resource Concerns

Figure 5 shows that water quantity, water quality, and air quality were the highest ranked resource concerns in CDSN. Concerns for the remaining categories—wildlife habitat, access to nature, wildfire, and invasive weeds—rank significantly lower. This does not suggest that these are unimportant concerns, but rather, when forced to choose their top concerns, respondents from CDSN prioritize water quantity, water quality, and air quality.

Figure 5: Top Resource Concerns for CDSN

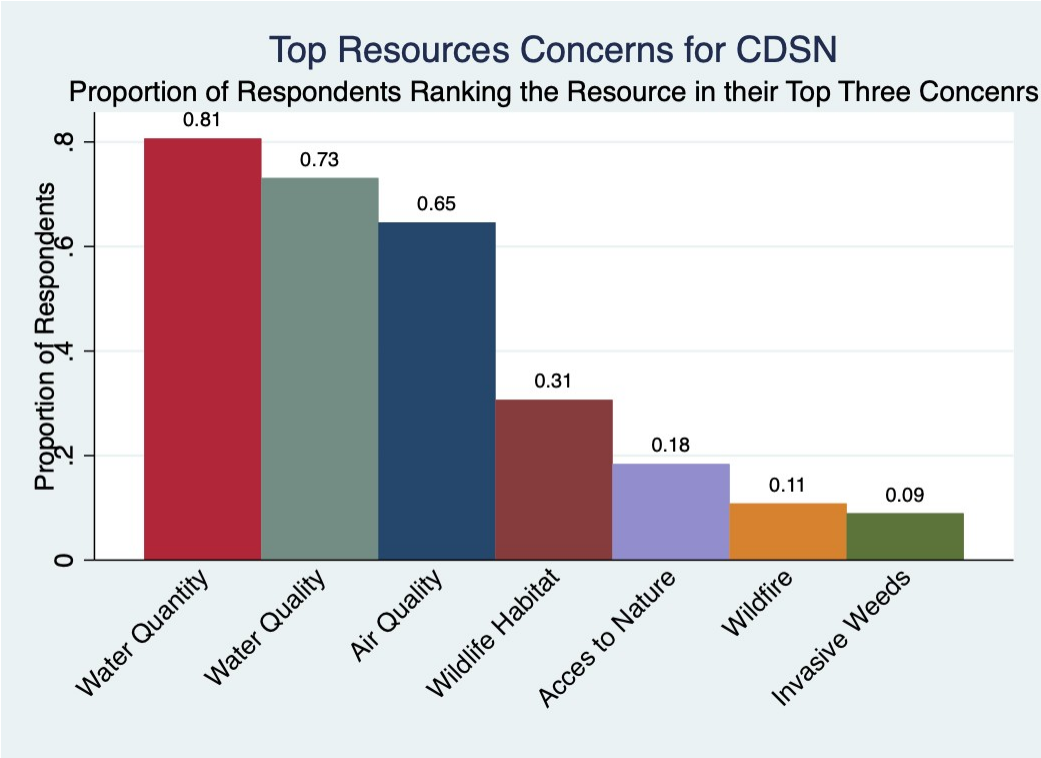
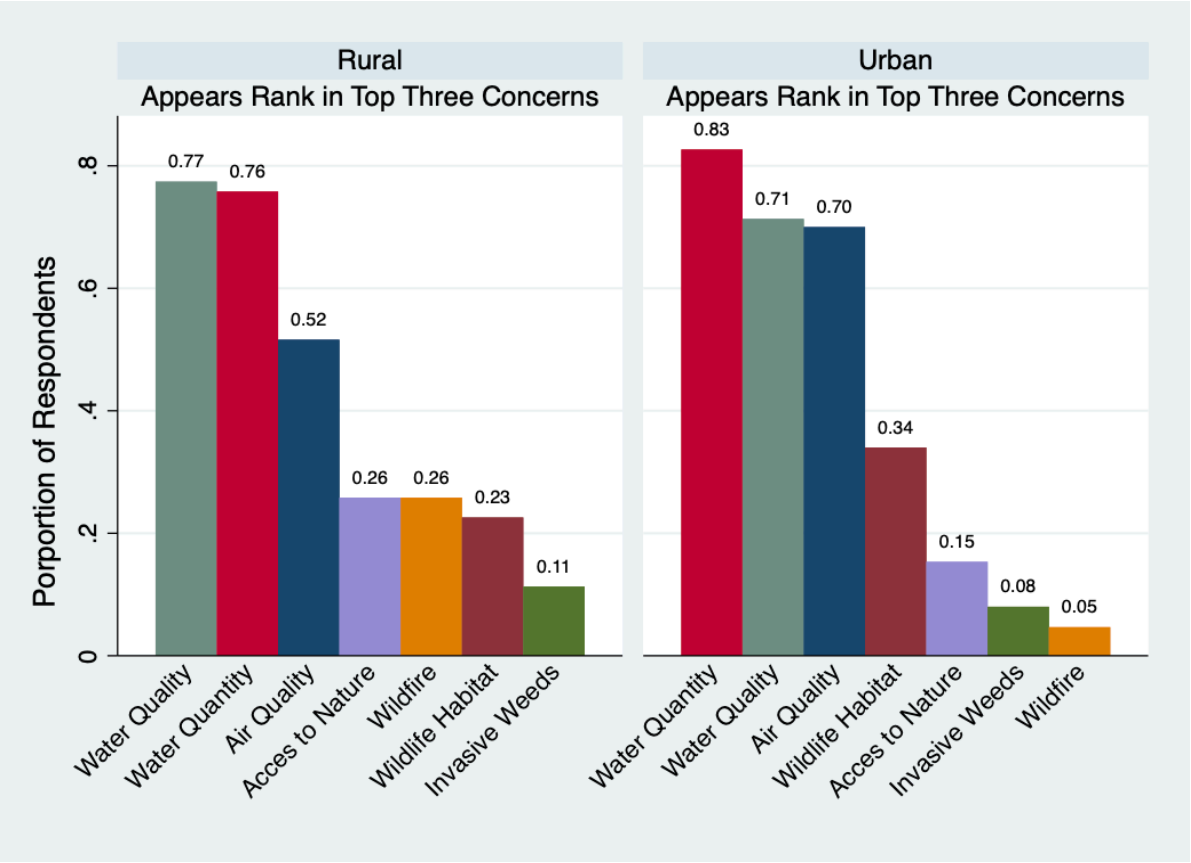


Figure 6 shows that the top resource concerns are similar across the rural and urban residents of CDSN. The ranking of the top three concerns remain unchanged across urban and rural residents, however, air quality is seen as a more important concern for urban residents than for rural residents.

Figure 6: Top Resource Concerns for Rural and Urban Respondents



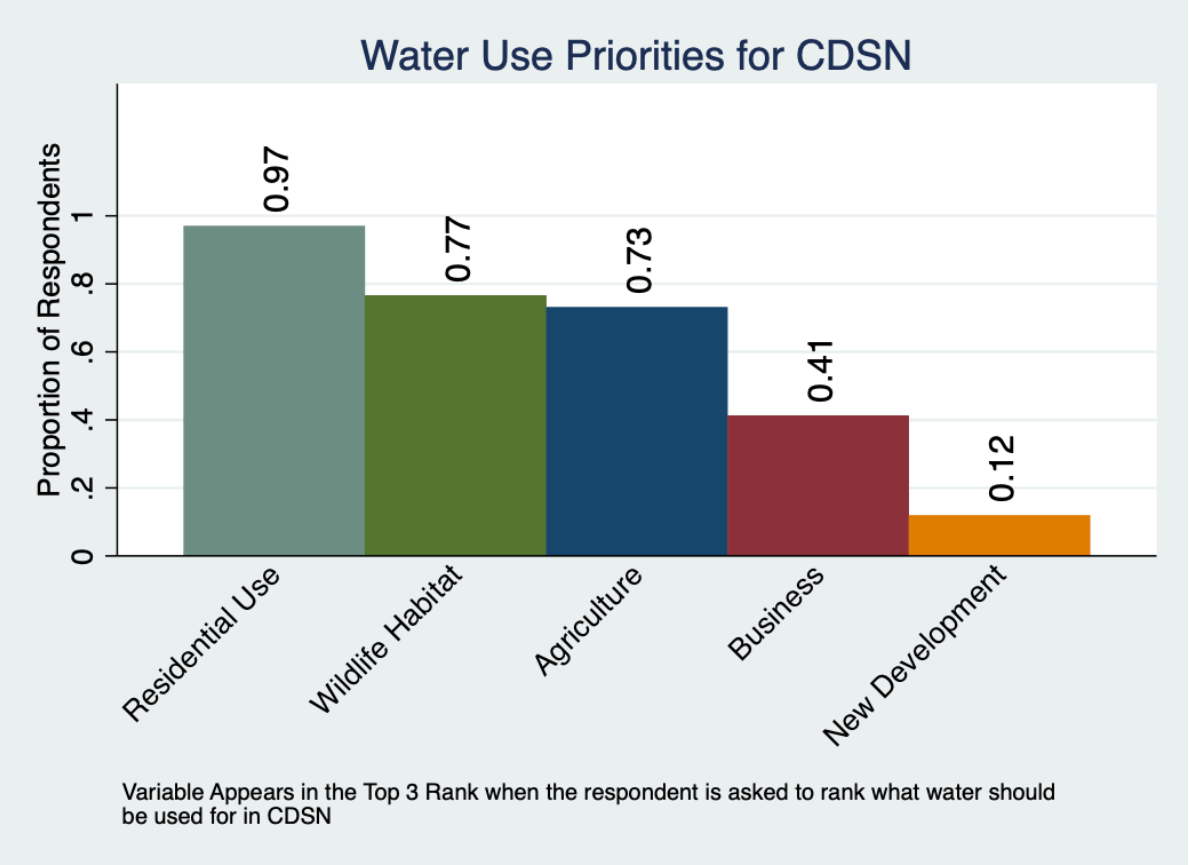
Water Quantity

Table 2 presents the results on the water quantity concerns of CDSN residents. Concern over water quantity is driven by concerns about availability, with 83% of respondents listing drought as a concern and 81% listing security of future water supplies as a concern, whereas far fewer respondents are concerned about flooding. Table 5 shows that the level of concern for water quantity does not vary substantially between urban and rural residents.

Respondents were asked which water use activities should be prioritized given the water scarcity in Clark County. The overwhelming majority (97%) of respondents ranked residential use as a top three water use priorities. Water for wildlife habitat and agriculture were ranked in the top three priorities by 77% and 73% of respondents, respectively, whereas water

for business (41%) and water for new development (12%) were ranked as lower water use priorities.

Figure 7: Water Use Priorities for CDSN



Water Quality

Table 3 shows that water quality concerns in both urban and rural areas in CDSN are driven by concern about both drinking water, with 85% of respondents expressing concern about the quality of drinking water, and the health of lakes, reservoirs, and streams, with 84% of respondents expressing concern about the of quality of bodies of water. These two categories are interconnected in CDSN as a majority of the population relies on Lake Mead for drinking water. Table 3 demonstrates how recreation-specific resource concerns are integrated into the SWAPA framework. For example, only respondents who indicated they fished in Clark County in the previous year were asked about reduced water quality, excessive algae growth, and aquatic

invasive weeds. Table 3 shows that invasive aquatic weeds are a concern of 82% of fishers, while reduced water clarity (59%) and the related issued of algae growth (50%) were also significant concerns for fishers.

Air Quality

Table 4 shows that air quality concerns in CDSN are driven by concerns about dust, industrial pollution, and vehicle exhaust, and that concern for air quality are more pronounced in urban than in rural areas, with 75% of urban residents identifying dust pollution as a concern compared to 55% of rural residents, 63% urban v. 52% rural for industrial air pollution, and 65% urban v. 50% rural for vehicle exhaust. Table 4 also shows that wildfire smoke is not a concern for the majority any subsample of respondents.

Table 2: Water Quantity Concerns in the Conservation District of Southern Nevada

Water Quantity Concerns in the Conservation District of Southern Nevada												
Resource Concerns		Statistic	Category of respondent									
			All Respondents	Urban	Rural	Trail Users	Sightseers	Water sports	OHV	Target shooting	Fishing	Rock Climber	Hunting
Water Quantity		Top Ranked Concern	30%	31%	27%	30%	30%	23%	20%	31%	20%	45%	56%
		Top Three Ranked Concern	81%	83%	76%	79%	79%	79%	78%	77%	83%	80%	78%
		Identified as a concern	93%	94%	92%	92%	96%	88%	85%	85%	87%	95%	67%
SWAPA Category*	**Survey Question**												
Excessive Runoff, Flooding, or Ponding	Property damage from flash flood	Percent of respondents identifying category as a concern	41%	43%	35%	38%	42%	42%	28%	37%	30%	30%	0%
n/a	Security of water supplies		81%	81%	79%	82%	83%	79%	73%	71%	70%	90%	44%
	Drought		83%	84%	79%	81%	85%	84%	70%	73%	79%	80%	56%
		Observations	212	150	62	151	128	43	41	39	30	20	9
*SWAPA Category refers to the category in the NRCS Resource Concerns Checklist that most closely corresponds to the question in the RNA survey.													

Table 3: Water Quality Concerns in the Conservation District of Southern Nevada

Water Quality Concerns in the Conservation District of Southern Nevada												
Resource Concerns		Statistic	Category of respondent									
			All Respondents	Urban	Rural	Trail Users	Sightseers	Water sports	OHV	Target shooting	Fishing	Rock Climber	Hunting
Water Qualtity		Top Ranked Concern	24%	21%	32%	25%	23%	30%	29%	21%	27%	5%	0%
		Top Three Ranked Concern	73%	71%	77%	73%	74%	81%	76%	85%	83%	75%	89%
		Identified as a concern	96%	96%	95%	95%	96%	95%	95%	97%	100%	100%	100%
SWAPA Category*	**Survey Question**												
n/a	Quality of drinking water	Percent of respondents identifying the category as a concern	85%	86%	79%	83%	83%	79%	70%	76%	83%	85%	56%
	Quality of natural water bodies		84%	85%	74%	82%	83%	77%	75%	79%	83%	90%	56%
Excessive Suspended Sediment and Turbidity in Surface Water	Reduced water clarity										59%		
Excessive Nutrients and Organics in Surface Water	Growth of algae										50%		
	Invasive aquadic weeds										82%		
		Observations	212	150	62	151	128	43	41	39	30	20	9
*SWAPA Category refers to the category in the NRCS Resource Concerns Checklist that most closely corresponds to the question in the RNA survey.													

Table 4: Air Quality Concerns in the Conservation District of Southern Nevada

Air Quality Concerns in the Conservation District of Southern Nevada												
Resource Concerns		Statistic	Category of respondent									
			All Respondents	Urban	Rural	Trail Users	Sightseers	Water sports	OHV	Target shooting	Fishing	Rock Climber	Hunting
Air Quality		Top Ranked Concern	21%	24%	13%	21%	22%	16%	10%	15%	13%	35%	0%
		Top Three Ranked Concern	65%	70%	52%	64%	63%	53%	44%	49%	47%	65%	11%
		Identified as a concern	86%	90%	77%	85%	85%	84%	73%	74%	80%	90%	67%
SWAPA Category*	**Survey Question**												
Particulate matter less than 10 micrometers in diameter (PM 10)	Dust on windy days	Percent of respondents identifying category as a concern	69%	75%	55%	66%	63%	58%	49%	51%	50%	70%	44%
	Dust from OHV								27%				
Excessive Greenhouse gas, PM 2.5.	Industrial air pollution		60%	63%	52%	59%	59%	60%	49%	59%	70%	65%	33%
	Vehicle exhaust		61%	65%	50%	62%	63%	67%	49%	56%	57%	65%	33%
< PM 2.5, Reduced visibility	Wildfire smoke		44%	44%	44%	41%	44%	42%	27%	33%	27%	25%	22%
		Observations	212	150	62	151	128	43	41	39	30	20	9
*SWAPA Category refers to the category in the NRCS Resource Concerns Checklist that most closely corresponds to the question in the RNA survey.													

Other Natural Resource Concerns

Fish, Wildlife, and Habitat

Table 5 shows that while concern for wildlife habitat was ranked as a top three concern by only 31% of respondents, 91% of respondents expressed concern about with at least one fish and wildlife related resource issue. A majority of respondents expressed threats to endangered species, threats to wildlife habitat, and rodents and other pests. These results indicated that fish and wildlife concerns are important to respondents but when forced to make a trade off respondents prioritize water resource and air quality issues.

Table 5 shows that the levels of concern reported by sightseers that seek out wildlife and hunters are different concerns related to wildlife. While a majority of both sightseers and hunters indicated concern over poor habitat quality and inadequate quantity of water for wildlife, sightseers expressed higher levels of concern about threats to wildlife from habitat fragmentation, wildfire, livestock, and increased human presence on the landscape, while hunters were more likely to express concerns about threats to wildlife from competition with feral horses.

Plants and Invasive Weeds

Table 6 shows that while only 9% of respondents ranked invasive weeds as a top three concern, the majority of respondents (77%) in all indicate invasive weeds as a concern. Concern about invasive weeds is shared by rural (82%) and urban (75%) residents. Invasive weeds were identified a top resource concern in the technical assessment focused on natural resource professionals (Evans 2019). The results in Table 6 indicate that while invasive weeds are an important concern for residents of Clark County, they are not a top concern in either urban or rural areas.

Table 6 shows that ecological degradation leading to poor restoration response after wildfires is a concern for almost half of respondents in CDSN (and a small majority of rural residents) despite the technical nature of this concern. Table 3.5 also shows that adequate weeds are a concern for the majority of respondents who participate in water sports (73%) and fishing (82%). While only water sport and fishing enthusiast were asked about aquatic weeds, the high level of concern suggests that these concerns might also be shared by non-recreationalists.

Soil Stability and Erosion

Table 7 presents the concerns over soil stability and erosion in CDSN. The majority of respondents in both urban (75%) and rural (55%) indicate concern for wind erosion, which is a major cause dust pollution and reduced air quality in Clark County. This result indicates that erosion control efforts in rural Clark County (e.g., revegetation) could have substantial support from urban residents. Trail users identified soil compaction due to users traveling off the trail as a significant concern (62%), while ruts on trails is a less significant concern (36%).

Table 5: Fish and Wildlife Concerns in the Conservation District of Southern Nevada

Fish and Wildlife Concerns in the Conservation District of Southern Nevada												
Resource Concerns		Statistic	Category of respondent									
			All Respondents	Urban	Rural	Trail Users	Sightseers	Water sports	OHV	Target shooting	Fishing	Rock Climber	Hunting
Fish and Wildlife		Top Ranked Concern	8%	9%	5%	9%	10%	14%	10%	8%	17%	5%	0%
		Top Three Ranked Concern	31%	34%	23%	34%	31%	40%	29%	26%	40%	45%	33%
		Identified as a concern	91%	90%	92%	89%	90%	88%	88%	85%	90%	90%	89%
SWAPA Category*	**Survey Question**												
Threatened and Endangered Fish and Wildlife Species	Threats to at risk or endangered species	Percent of respondents identifying category as a concern	73%	77%	60%	73%	74%	67%	63%	61%	67%	70%	44%
Inadequate Cover/Shelter	Threats to wildlife habitat		77%	80%	65%	77%	75%	67%	60%	61%	67%	70%	44%
	Poor habitat quality						84%						75%
Inadequate Water	Inadequate quantity of water for wildlife						82%						78%
Imbalance Among and Within Populations	Abundance of rodents or pests		65%	62%	69%	61%	63%	58%	60%	63%	60%	35%	44%
	Competition from feral horses						19%						44%
	High numbers of undesirable fish										59%		
Habitat Fragmentation	Wildlife habitat broken by roads and buildings						79%						25%
	Habitat loss from wildfire						58%						38%
na	Increased human presence affecting animals						71%						25%
	Competition from livestock						40%						13%
	Poaching						79%						63%
		Observations	212	150	62	151	128	43	41	39	30	20	9

*SWAPA Category refers to the category in the NRCS Resource Concerns Checklist that most closely corresponds to the question in the RNA survey.

Table 6: Plant Concerns in the Conservation District of Southern Nevada

Plant Concerns in the Conservation District of Southern Nevada												
Resource Concerns		Statistic	Category of respondent									
			All Respondents	Urban	Rural	Trail Users	Sightseers	Water sports	OHV	Target shooting	Fishing	Rock Climber	Hunting
Plants/Invasive weeds		Top Ranked Concern	3%	3%	3%	3%	5%	0%	5%	5%	0%	0%	0%
		Top Three Ranked Concern	9%	8%	11%	10%	13%	12%	7%	15%	7%	0%	0%
		Identified as a concern	77%	75%	82%	81%	88%	84%	83%	82%	90%	85%	67%
SWAPA Category*	**Survey Question**												
Noxious and Invasive Plants	Invasive Weeds	Percent of respondents identifying category as a concern				66%	72%	57%	60%	61%	68%	60%	44%
	Invasive aquatic weeds							73%			82%		
Wildfire Hazard	Poor restoration response after wildfire		46%	44%	52%	44%	49%	39%	44%	48%	43%	60%	33%
		Observations	212	150	62	151	128	43	41	39	30	20	9
*SWAPA Category refers to the category in the NRCS Resource Concerns Checklist that most closely corresponds to the question in the RNA survey.													

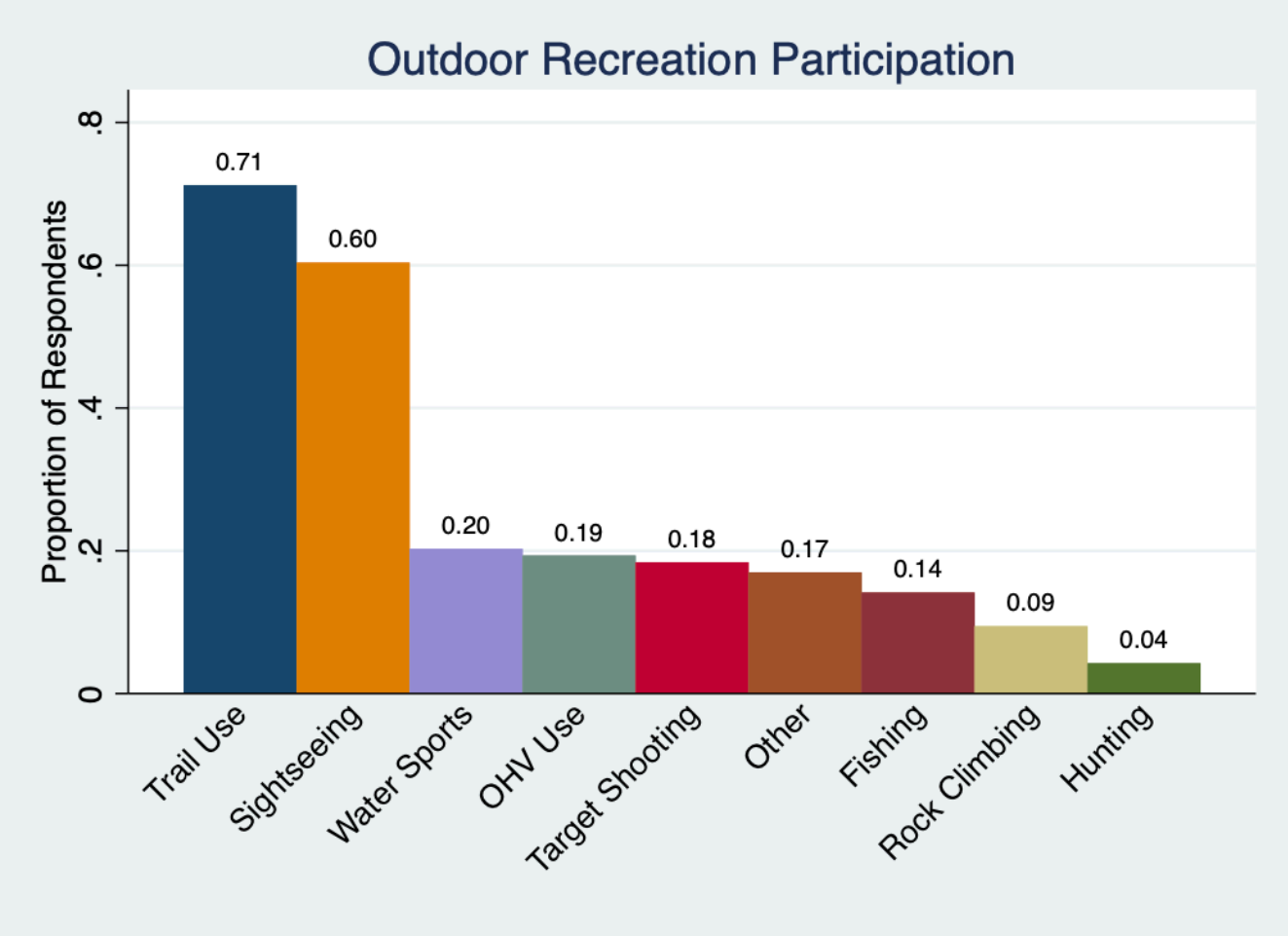
Table 7: Soil Concerns in the Conservation District of Southern Nevada

Soil Concerns in the Conservation District of Southern Nevada												
SWAPA Category*	**Survey Question**	Statistic	Category of respondent									
			All Respondents	Urban	Rural	Trail Users	Sightseers	Water sports	OHV	Target shooting	Fishing	Rock Climber	Hunting
Wind erosions	Excessive Dust	Percent of respondents identifying category as a concern	70%	75%	55%	67%	64%	58%	49%	51%	50%	70%	44%
Sheet & rill erosion	Soild Damage from flooding		47%	50%	37%	47%	48%	51%	30%	41%	34%	45%	22%
Soil Compaction	Users going off trail					62%			46%				
Ephemeral Gully	Ruts in trails					36%							
		Observations	212	150	62	151	128	43	41	39	30	20	9
*SWAPA Category refers to the category in the NRCS Resource Concerns Checklist that most closely corresponds to the question in the RNA survey.													

4. Recreation

In addition to the natural resource related questions, the survey included questions regarding respondents' outdoor recreation activities. This section presents the results of these questions. 84% of respondents report participating in at least one of the recreation activities presented in the survey and listed in figure 8. Figure 8 below shows the proportion of respondents that participate in each outdoor recreation activity in Clark County in the past year. Figure 8 reveals that non-motorized trail use and sightseeing are the most popular recreational activities in Clark County, with participation rates below 20% for all other recreational activities.

Figure 8: Outdoor Recreation Participation

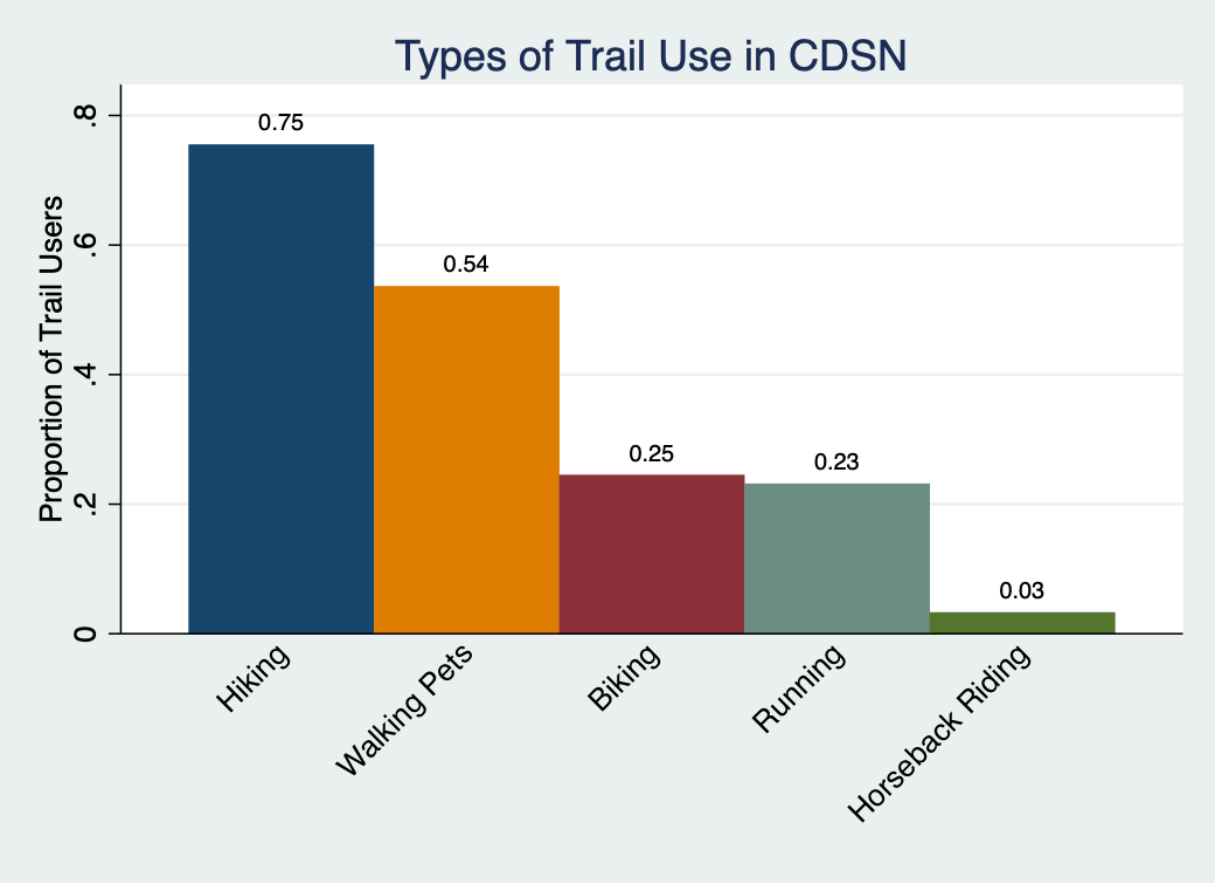


Trail Use

Figure 9 shows that hiking is the most popular trail use activity in Clark County, followed by walking pets, mountain biking, running, and horseback riding.

Trail users report the highest levels of concerns around users traveling off trail (57%) and limited parking at trail heads (51%), with concerns about too few trails in Clark County (38%) and poor trail maintenance (34%) not shared by a majority of trail users. These results suggest that expanding parking at trailheads and including signage urging users to stay on marked trails may be most cost-effective strategies of increasing trail users enjoyment from their trail use activities in Clark County.

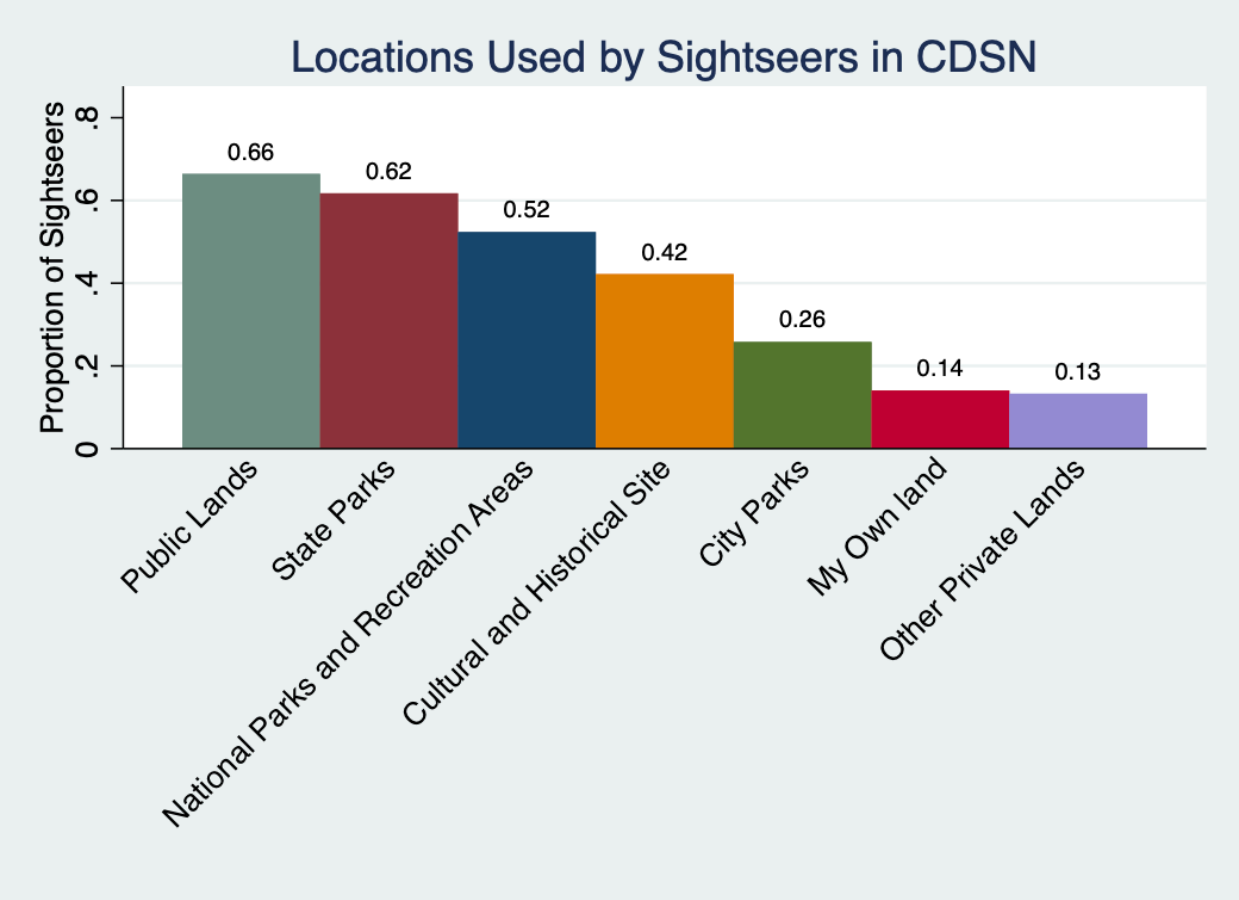
Figure 9: Types of Trail Use in CDSN



Sightseeing

Figure 10 shows that public lands are the most popular locations for the sightseers, followed closely by state parks. Sightseers do not have a single overriding resource concern related to sightseeing, with roughly half of sightseers expressing concerns for crowding at sightseeing areas (52%), degraded conditions are sightseeing areas (55%), and too few sightseeing areas (45%).

Figure 10: Locations Used by Sightseers in CDSN

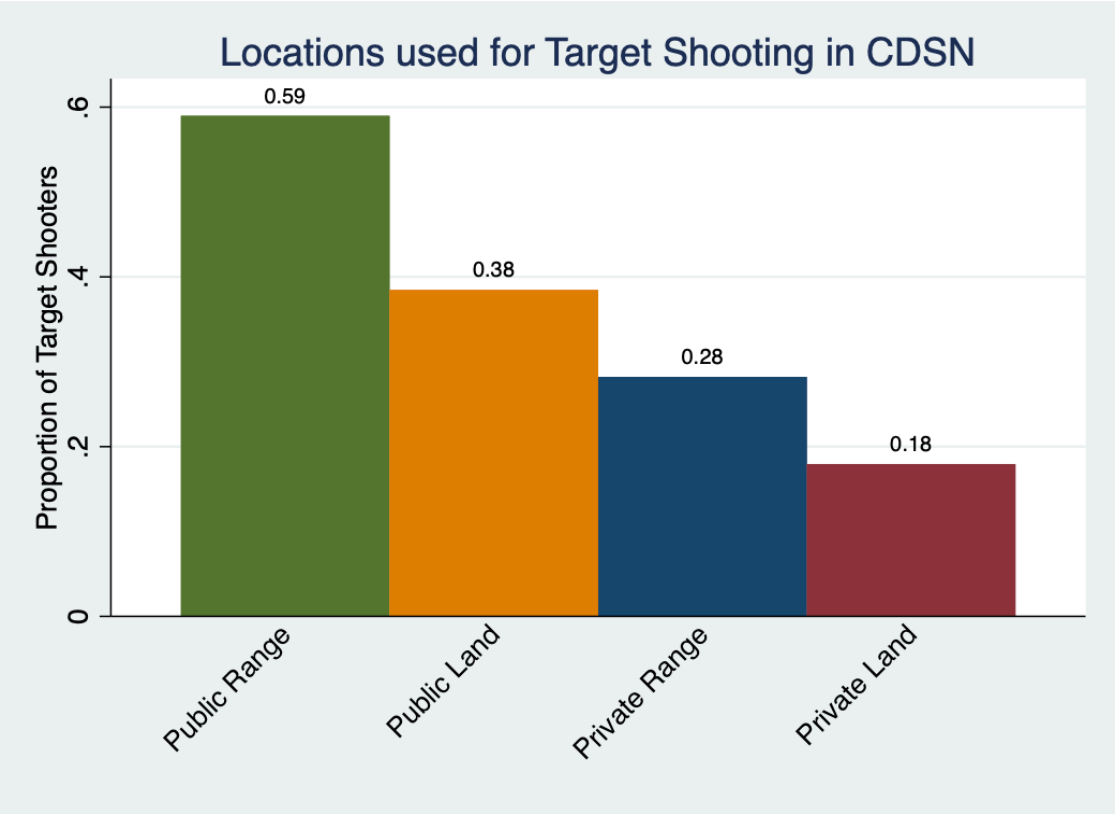


Other Outdoor Recreation Activities

Off-highway vehicle (OHV) use is a popular outdoor recreation activity in Clark County, with almost 20% of respondents having participated in the past year. OHV use is most popular in rural areas, with 37% of rural respondents participating versus 12% of urban. No one resource concern was shared by the majority of OHV users, and there was relatively little concern about degradation of OHV areas, with only 20% of respondents identifying it as a concern, or there being too few OHV areas in Clark County, with only 39% identifying it as a concern. These results suggest that the OHV population would remain happy if current levels of access and trail/site condition is maintained.

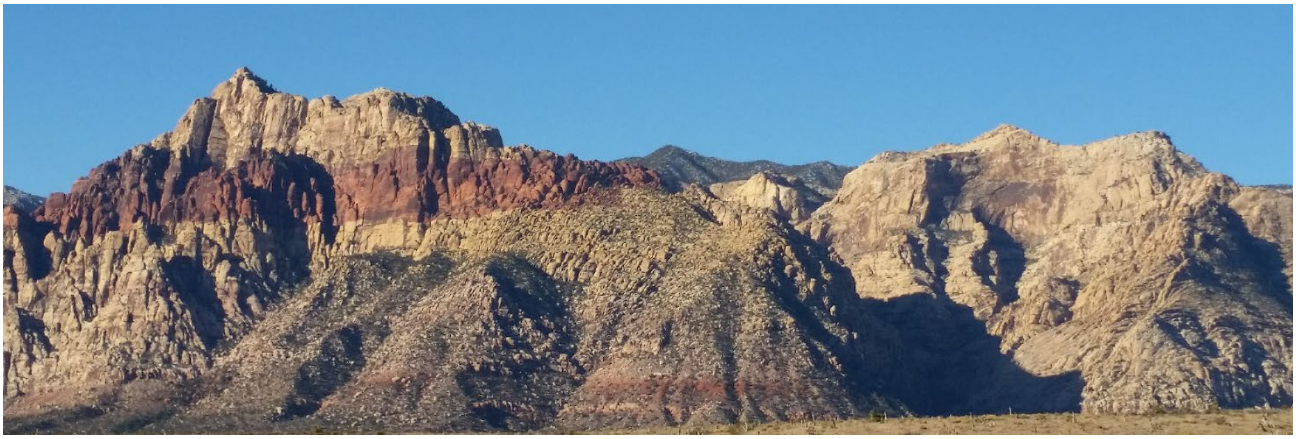
Target shooting is also a popular outdoor recreation activity in Clark County, with most shooters in the sample shoot at public ranges and public lands. The issues of most concern for target shooters in Clark County is litter in shooting areas, with 67% of target shooters expressing concern. This suggests that stricter enforcement of litter on public ranges and land could substantially improve the quality of shooters experience in Clark County. Other issues of concern to target shooters include shooters using unsafe areas (51%), too few target shooting areas (46%), and congestion at target shooting areas (33%).

Figure 11: Locations used for Target Shooting in CDSN



The overwhelming majority of fishers in our sample fish in lakes and reservoirs and not in streams or creeks. Besides concerns about aquatic invasive weed, reduced water clarity, and growth of algae that were reported in the water quality section, fishers report concern about the presence of undesirable fish. Fishers do no report concern about trouble accessing areas to fish.

Hunters compose the smallest portion of the sample at only 4%. Hunters report virtually no concerns over their ability to access public lands due to private property. Additionally there is no reported concern over the presence of fences or too few gates on public lands.



5. Conservation District of Southern Nevada

This section describes the results from questions regarding CDSN and some of its current activities. These questions include focus on public awareness of CDSN's activities, urban conservation priorities given CDSNs current focus on urban projects, and public sentiment on public lands management priorities of residents, which is important given the extent of public lands in Clark County.

Public Awareness

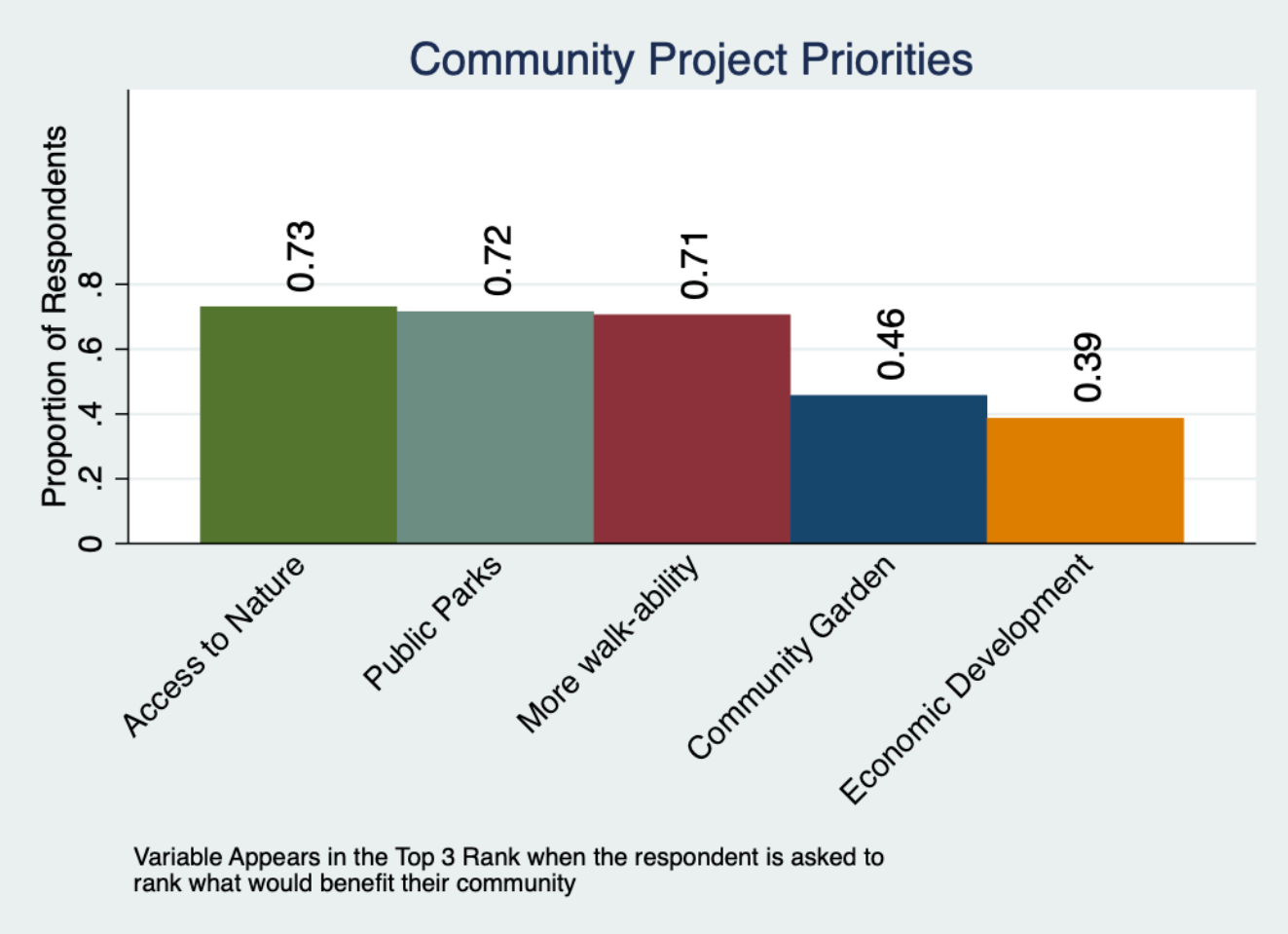
The survey included questions about the respondents' awareness of CDSN and its activities. Only 25% of respondents reported knowing what CDSN does, only 21% reporting knowing how to contact CDSN, and only 6% reported knowing who works for CDSN. These results suggest that CDSN would benefit from a public relations campaign focused on raising awareness of the organizations mission and on-going activities.

Community Projects

CDSN is a majority urban conservation district in terms of population and many of its on-going programs are focused on urban conservation. Table 12 reports results on respondents' urban conservation priorities. Respondents top priorities are improving access to nature for urban residents (73% list this as a top-three priority), increasing the number of public parks (72%), and improving walkability of urban neighborhoods (71%). Increasing access to community gardens, a major CDSN priority, was a top three priority of 46% of respondents, indicating significant public support for these initiatives. Respondents ranked these urban conservation objectives higher than

adopting the objective of focusing resources on improving community economic development.

Figure 12: Community Project Priorities

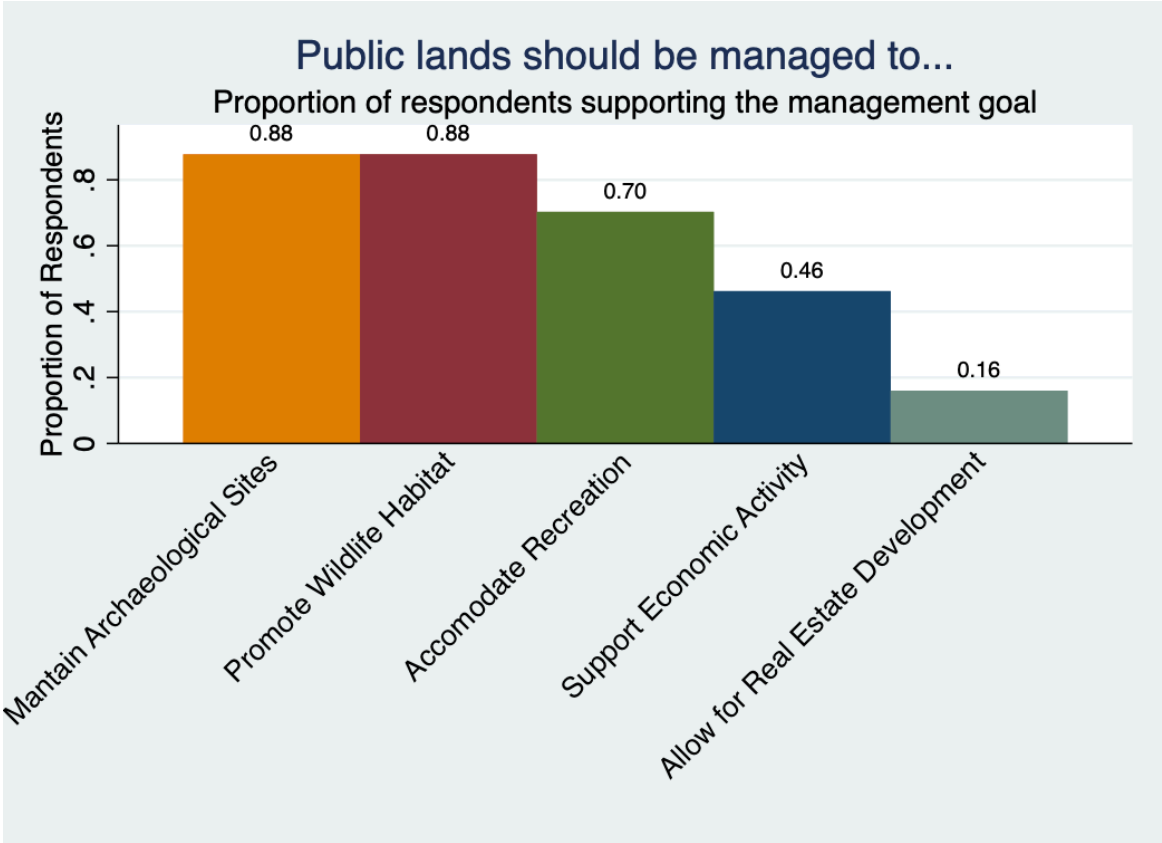


Public Lands

The majority of land in CDSN's jurisdiction is public land managed by the federal government. Figure 13 reports results on how respondents believe public lands in Clark County should be managed. Figure 13 shows that while a majority of respondents support managing public lands to maintain areas of archaeological importance, promote wildlife habitat (88%), and to accommodate recreation (70%). There is substantially less support for managing public lands to support economic activity (46%) or to use public lands for new residential or commercial real estate development (16%). These results are similar between rural and urban areas, and indicate that general public in Clark County favors managing public lands for multiple uses, including

promoting wildlife and recreation, over a more narrow focus on economic development.

Figure 13: Public Lands Management Sentiment



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7. Appendix

A1. Initial Invitation Letter

May 21, 2019

[name]
[street address]
[city, state zip]

Dear [name],

Are you concerned about our water supply? How about wildlife habitat, or the use of public lands and natural resources in Clark County? This is your chance to speak directly to resource managers and policy makers. Your voice will affect how resources in Clark County are managed in the future.

Use the link and password below to access the online questionnaire. Alternatively, you can scan the QR code on this letter with your smartphone:

tinyurl.com/Clark20 **Password: [ID]**

To express our sincerest thanks for your participation, we are offering the chance to win a **$500 cash card**.

This research is **completely confidential**. For questions about the study, visit the FAQ sheet on the first page of the survey. To have your name removed from the follow-up mailing list, please contact Alec Bowman at alecbowman@unr.edu or 775-682-9852. Thank you!

Sincerely,

Michael Taylor, Ph.D.
Assistant Professor,
University of Nevada Reno.

Conservation District of Southern Nevada
Serving Clark County

Mayo 21, 2019

[name]
[street address]
[city, state zip]

Querido/a [name],

¿Se preocupa nuestro suministro de agua? ¿Qué tal el hábitat de la vida Silvestre, o el uso de tierras públicas, y recursos naturales en el Condado de Clark? Esta es su oportunidad de hablar directamente con los administradores de recursos y los responsables políticos. Su voz afectará la forma en que se gestionarán los recursos en el Condado de Clark en el futuro.

Utilice el enlace y la contraseña para acceder al cuestionario en línea.
Alternativamente, puede escanear el código QR en esta carta con su teléfono:

tinyurl.com/Clark20 **Contraseña: [ID]**

Para expresar nuestro más sincero agradecimiento por su participación, le ofrecemos la oportunidad de ganar una **tarjeta de efectivo de $500**.

Esta investigación es **completamente confidencial**. Para preguntas sobre el estudio, visite la hoja de preguntas frecuentes en la primera página del cuestionario. Para eliminar su nombre de la lista de correo, comuníquese con Alec Bowman en alecbowman@unr.edu o llame al 775-682-9852. ¡Gracias!
Sinceramente,

Michael Taylor, Ph.D.
Profesor Asistente,
Universidad de Nevada, Reno.

A2. Reminder Postcard (First)

University of Nevada, Reno

Department of Economics/Mail Stop 0204
1664 North Virginia Street
Reno, Nevada 89557

Dear [Name]

Do you care about wildlife?
What about our water supplies?
How does use of public lands by others affect you?
Do you value access to public lands and resources?

The link and password in the letter we sent you last week gives you the unique opportunity to tell resource managers how their decisions impact you. Enter to win $500 at the completion of the survey.

[Address]

Thank you,

Michael Taylor, Ph.D.
University of Nevada, Reno

Questions?
View the FAQ sheet in the questionnaire or contact us at 775-682-9852 or email alecbowman@unr.edu

A3. Reminder Postcard (Second)

University of Nevada, Reno

Department of Economics/Mail Stop 0204
1664 North Virginia Street
Reno, Nevada 89557

Dear [Name]

Do you care about wildlife?
What about our water supplies?
How does use of public lands by others affect you?
Do you value access to public lands and resources?

The link and password on the letter we sent you two weeks ago gives you the unique opportunity to tell resource managers directly, how their decisions impact you. Enter to win $500 at the completion of the survey.

[Address]

Thank you,

Michael Taylor, Ph.D.
University of Nevada, Reno

Questions?
View the FAQ sheet in the questionnaire or contact us at 775-682-9852 or email alecbowman@unr.edu

A4. Final Letter

June 11, 2019

[name]
[street address]
[city, state zip]

Dear [name],

We mailed you a few weeks ago to ask about your concerns and views on natural resource management in Clark County. If you have not already done so, please fill out the questionnaire for the chance to win a **$500 cash card**. Your responses are critical to this effort to provide public input into natural resource management.

Use the link and password below to access the online questionnaire. Alternatively, you can use the QR code on this letter with your smartphone:

tinyurl.com/Clark20 **Password: [ID]**

All University research adheres to strict federal privacy standards to ensure **complete confidentiality**. No information from this study will be shared or used in any other context.

For questions about the study, visit the FAQ sheet on the first page of the survey.

Sincerely,

Michael Taylor, Ph.D.
Assistant Professor,
University of Nevada Reno.

Conservation District of Southern Nevada
Serving Clark County

Junio 11, 2019

[name]
[street address]
[city, state zip]

Querido/a [name],

Hace unas semanas le enviamos un correo electrónico para preguntarle sobre sus inquietudes y opiniones sobre la gestión de recursos naturales en el Condado de Clark. Si aún no lo ha hecho, complete el cuestionario para tener la oportunidad de ganar una **tarjeta de efectivo de $500**. Sus respuestas son fundamentales para este esfuerzo de proporcionar aportes públicos al manejo de los recursos naturales. Utilice el enlace y la contraseña a continuación para acceder al cuestionario en línea. Alternativamente, puede usar el código QR en esta carta con su teléfono inteligente:

tinyurl.com/Clark20 **Contraseña: [ID]**

Toda la investigación de la Universidad se adhiere a estrictos estándares federales de privacidad para garantizar la **confidencialidad completa**. Ninguna información de este estudio será compartida o utilizada en ningún otro contexto.

Para preguntas sobre el estudio, visite la hoja de preguntas frecuentes en la primera página de la encuesta.

Sinceramente,

Michael Taylor, Ph.D.
Profesor asistente,
La Universidad de Nevada, Reno.

A5. Difference of Means by Race

Table 5.1: Differnce of means by racial groups for ranked resource concerns

	White	Black	Native American	Asian	Pacific Islander	More than one race	Other
	Mean	Mean	Mean	Mean	Mean	Mean	Mean
	ci95	ci95	ci95	ci95	ci95	ci95	ci95
Air quality ranked top 3	0.64	0.90	0.50	0.71	0.67	0.50	0.61
	0.56,0.71	0.67,1.13	-5.85,6.85	0.26,1.17	0.12,1.21	-0.42,1.42	0.39,0.82
Habitat ranked top 3	0.33	0.10	0.50	0.00	0.33	0.50	0.30
	0.25,0.40	-0.13,0.33	-5.85,6.85	0.00,0.00	-0.21,0.88	-0.42,1.42	0.10,0.51
Invasive weeds ranked top 3	0.09	0.10	0.50	0.14	0.33	0.00	0.00
	0.04,0.13	-0.13,0.33	-5.85,6.85	-0.21,0.49	-0.21,0.88	0.00,0.00	0.00,0.00
Wildfire ranked top 3	0.12	0.10	0.00	0.00	0.17	0.00	0.04
	0.07,0.18	-0.13,0.33	0.00,0.00	0.00,0.00	-0.26,0.60	0.00,0.00	-0.05,0.13
Water quality ranked top 3	0.76	0.90	0.50	1.00	0.50	0.50	0.48
	0.70,0.83	0.67,1.13	-5.85,6.85	1.00,1.00	-0.07,1.07	-0.42,1.42	0.26,0.70
Water quantity ranked top 3	0.83	0.80	1.00	0.86	0.33	1.00	0.70
	0.77,0.89	0.50,1.10	1.00,1.00	0.51,1.21	-0.21,0.88	1.00,1.00	0.49,0.90
Accessible public lands ranked top 3	0.19	0.10	0.00	0.29	0.17	0.50	0.09
	0.13,0.26	-0.13,0.33	0.00,0.00	-0.17,0.74	-0.26,0.60	-0.42,1.42	-0.04,0.21
Observations	160	10	2	7	6	4	23