



Palomar Ranger District

Wildland and
Recreation
Management
Research Laboratory

Technical
Report

Recreation Allocation Study

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Understanding the Trailheads

Overview of CNF

Rising visitation to the Cleveland National Forest (CNF) has led the Forest Service to adopt the 2022 San Diego River Watershed Visitor Use Management Plan to balance recreation, resource protection, and visitor safety. High-use sites such as Three Sisters Falls and Cedar Creek Falls are priorities due to their urban proximity, wildfire potential, limited parking, quantity of Search and Rescue efforts, and status as two of the only accessible waterfalls in the county. Challenges include safety, crowding, and ecological impacts. Current strategies involve education, infrastructure, permits, and enforcement. In 2025, the USFS Washington Office, Aldo Leopold Wilderness Research Institute, and University of Montana's Wildland and Recreation Management Lab completed an allocation study to inform management decisions.

Cha'chaany Hamuk Trailhead

The trailhead provides access to Three Sisters Falls (4.5 miles, 1,000-foot elevation gain) and Eagle Peak (+600 feet). The falls usually dry up in summer, leaving stagnant pools, while Eagle Peak offers climbing opportunities. The site experiences high visitor volumes, particularly on weekends and holidays. The recently reconstructed trailhead includes amenities such as hardpack parking, vault toilets, recycling and trash containers, accessible picnic tables, shade structures, and an information kiosk. The trailhead is located far from any place where visitors could access or refill water bottles, lacks cell service, and inconsistent online directions to the trailhead provided by the platforms like Google Maps and Apple Maps often lead visitors down an avoidable road that requires 4WD. Unlike San Diego River Gorge, no permits are required to visit the falls. The trail's challenge can deceive visitors, and emergency rescues are common due to heat-related illness and the physical demands of the hike.

San Diego River Gorge Trailhead

This site provides access to Cedar Creek Falls, an 80-foot waterfall and pool (6 miles round trip, 1,800-foot elevation loss). The strenuous return hike and summer temperatures exceeding 90°F pose serious risks. The Cedar Creek Falls area requires a permit, which can be obtained online through Recreation.gov, with a limit of five people per \$6 permit. There is limited cell phone reception at the trailhead, so while visitors can access the website via a QR code posted at trailhead, some visitors do not have enough cell phone coverage to purchase a permit (if permits are still available). The permit is only required to enter the quarter-mile radius surrounding the falls, so visitors have the option to hike without entering the permitted area. The hike includes three shaded rest structures and warning signs. Trailhead parking is located right by a neighborhood, the residents of which are invested in the management of the trail.

Capacity Determination

Capacity Determination

To determine the capacity for these trails, a capacity worksheet (originally developed for capacity determinations to be made on Wild and Scenic Rivers) was completed for each trailhead by Kelsey Phillips, as a **separate process** from the allocation study. With support from the Cleveland National Forest staff, the visitor survey, trail counter data, and cell phone data, the capacity was determined to be 40 permits with 5 people per max per permit at San Diego River Gorge trailhead and 420 visitors per day at Cha'chaany Hamuk trailhead. With this determination, the next steps are to determine a rationing strategy for each trailhead.

Cha'chaany Hamuk
Current Use Level:

541

Capacity:

420

San Diego River
Gorge Current Use
Level:

375

Capacity:

200

San Diego River Gorge Trailhead

At SDRG, visitor behaviors are resulting in management and safety concerns, and with changes to education and enforcement, these behaviors may improve. With this assumption in mind, the actual limiting factor to capacity is the number of parking spaces available for visitors. The use limit was determined to be 40 permits per day with 5 people maximum on each permit, based on the number of parking spaces. This capacity also accounts for the creation and implementation of a timed-entry system separating hikers into shifts. This system will allow for tailored within-day heat closures to make sure that hikers are not entering the trail during peak mid-day temperatures (e.g., only offering permits at 7am and 11am, with 20 allotted during each timeframe).

Cha'chaany Hamuk Trailhead

The recommended capacity for Cha'chaany Hamuk is 420 visitors per day, based on [the existing 80 designated parking spots at the trailhead] x [3.5 visitors per car] x [1.5 estimated full lot turnover based on peak use times during the day]. The use at this trailhead is significantly reduced during the week, so an enforced use limit may only be needed on weekend days, and it is recommended that managers start with mandatory but unlimited permits to help forest staff educate and set visitor expectations.



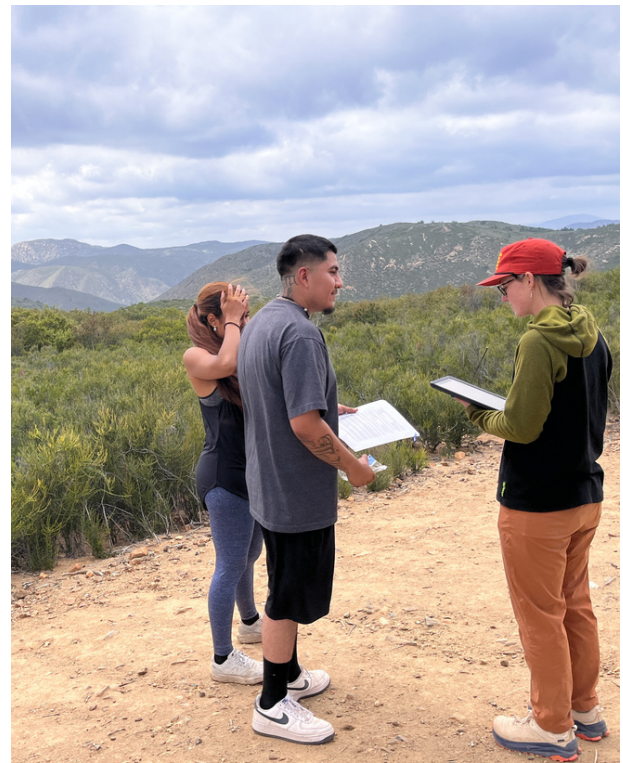
Methods

To inform the management decisions listed on page 3, the U.S. Forest Service, the Aldo Leopold Wilderness Research Institute, and the Wildland and Recreation Management Lab at the University of Montana conducted a two-week allocation study at the trailheads in question. In pairs, the survey technicians collected visitor experience data to inform a rationing strategy for managing waterfall access within the forest. The research method we used was on-site data collection through surveys distributed at the San Diego River Gorge and Cha'chaanny Hamuk trailheads from May 17 to May 30, 2025. The eligible respondents included anyone over the age of 18 exiting from the trailhead while the technicians were distributing surveys.

Researchers positioned themselves at one of the designated sampling locations at a randomized, predetermined day and time block. Researchers approached every *n*th person or group that passed by post-experience and politely asked if they would like to participate in the on-site survey. Visitors that agreed were asked to complete the survey using a tablet or on paper. The study survey was primarily conducted using a tablet to collect data digitally via Qualtrics and the participants were given a laminated copy of the survey to follow along with as the survey verbally administered the survey questions. The survey was available to take in both English and Spanish.

Following the brief introduction of the purpose of the survey, the potential respondent (adult group member with the most recent birth date) was asked if they are willing to complete the 8-minute survey administered by the surveyor. If the person refused, they were be thanked for their time and kindly asked to answer questions that were used to check non-response bias.

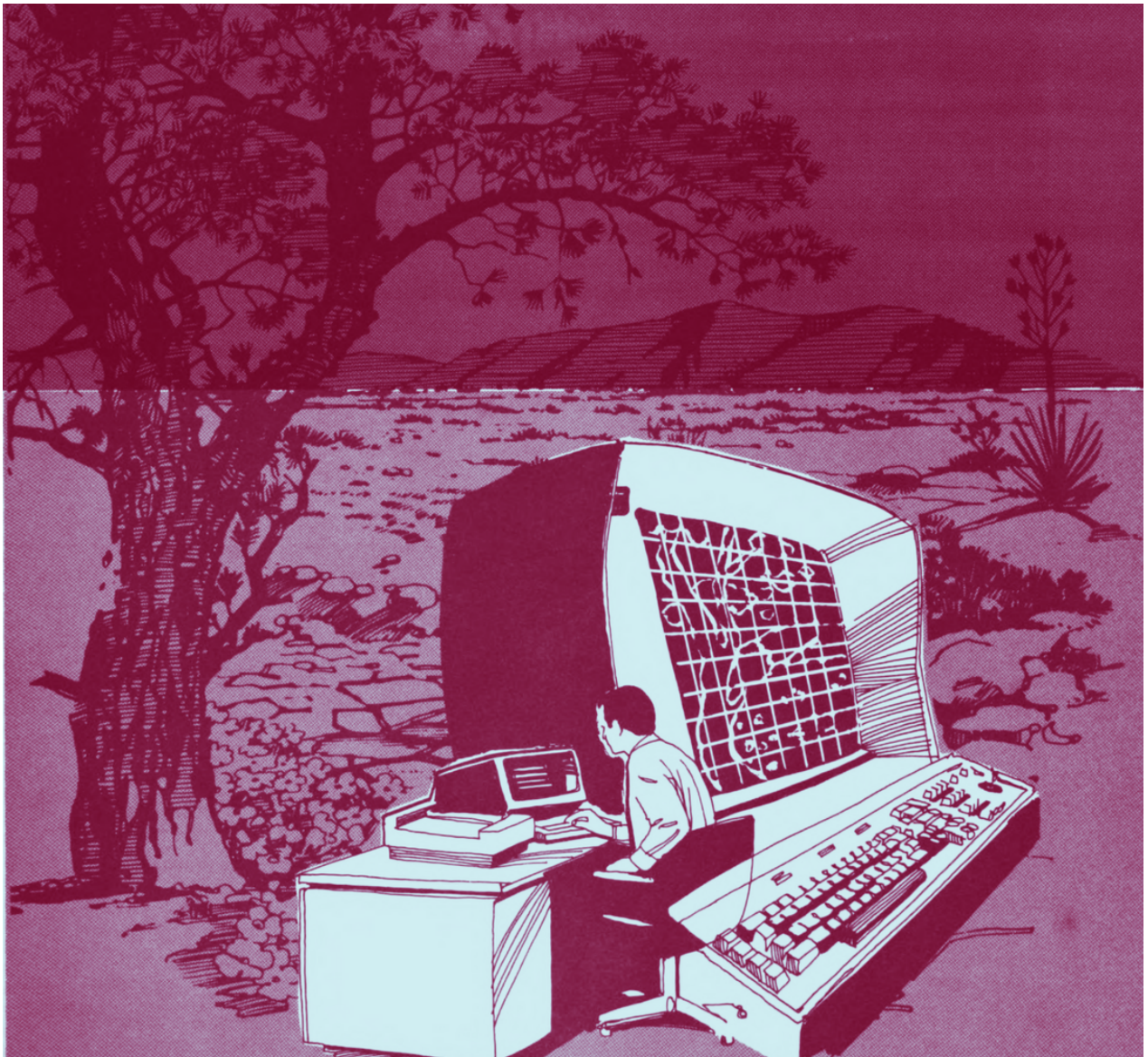
A complete copy of the survey can be found in [here](#).



Results

Analysis

Following data cleaning, 206 and 218 completed surveys were compiled for Cha'chaany Hamuk and San Diego River Gorge Trailheads, respectively, totaling **424 surveys** collected from May 17 to 30, 2025. A total of 387 surveys were completed in English, 37 surveys were completed in Spanish, and three groups were unable to respond to the survey due to a language barrier. No non-response bias was detected. The responses were analyzed in SPSS and JASP.



Cha'chaany Hamuk Visitor Characteristics

Visit History

1st time visiting this year

Visited previously in the year

64.5%

35.5%

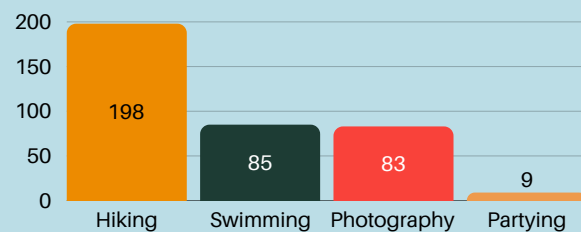
Quick Stats

Average Group Size **3.36**

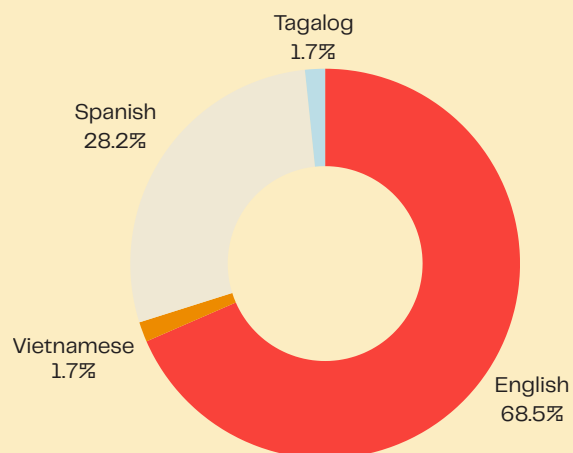
Median Travel Time **1 hr. 30 min.**

Average Age **32 years**

Most Popular Activities

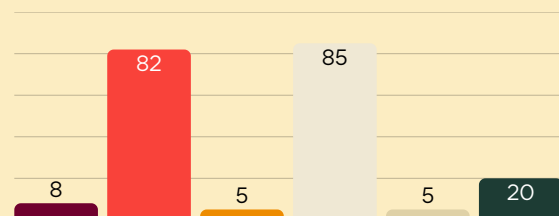


Primary Languages



Ethnicities

(count)



San Diego River Gorge Visitor Characteristics

Visit History

■ 1st time visiting this year ■ Visited previously in the year

76%

24%

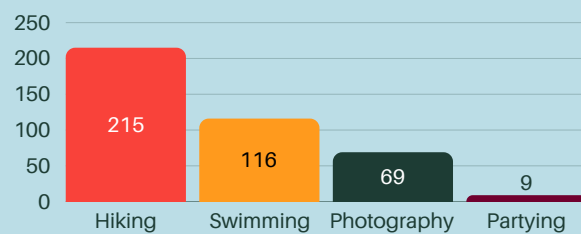
Quick Stats

Average Group Size **3.47**

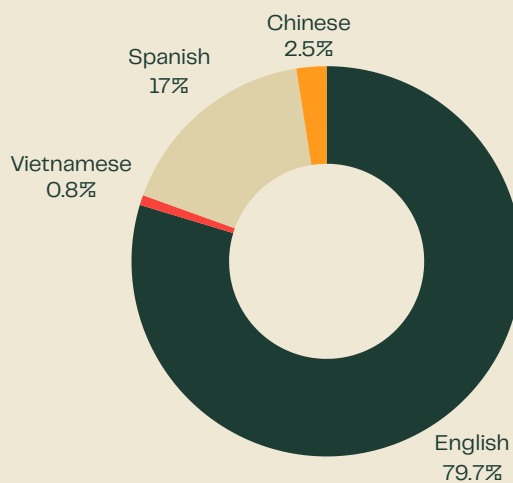
Median Travel Time **1 hr.**

Average Age **34 years**

Most Popular Activities



Primary Languages



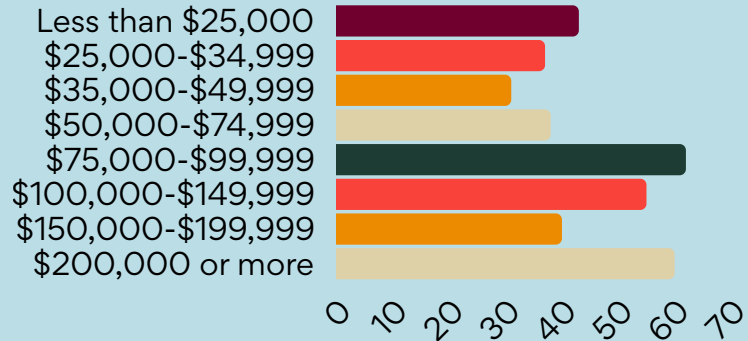
Ethnicities

(count)



Income

"What was your annual household income in 2024, before taxes?"



How much water did you take on this trip?



25th percentile = 1 liter



Median = 2 liters



75th percentile = 3 liters

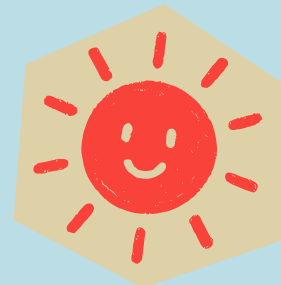
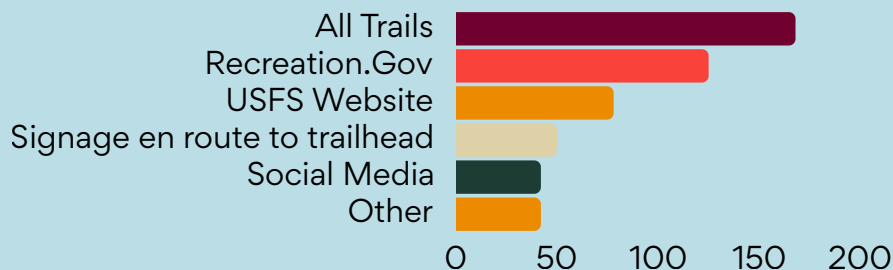
Some respondents appeared to answer this question based on the total amount of water brought for their group, while others answered for themselves personally. Therefore, we should consider that the amount of water visitors report bringing could be lower than was stated.



87% of visitors felt that they brought enough water.

Heat Closures

"Where did you check for information regarding heat closures?"



"Other" responses primarily included weather apps or forecast websites.

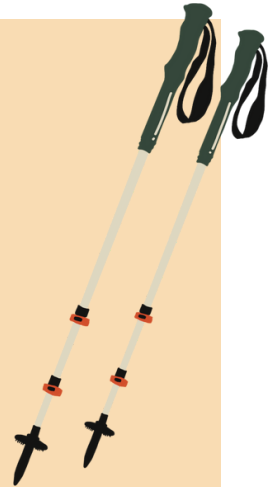
Crowding



3.2 out of 9 average level of **crowding** reported by visitors at **San Diego River Gorge**.



4.2 out of 9 average level of **crowding** reported by visitors at **Cha'chaany Hamuk**.



This suggests the current capacity at SDRG may be reducing feelings of crowding.

Crowding Expectations

Visitors' expectations of how many people they would encounter AND the negative behavior of people they did encounter both correlated significantly with their perceived level of crowding.



Weekend vs Weekday Crowding

1.7x higher levels of crowding was reported at **Cha'chaany Hamuk on weekends** compared to weekdays, a statistically significant difference.

There was a significant difference between perceived crowding on weekends (and holidays) and weekdays (measured on a 9-point scale). This tells us that perhaps a use limit is more needed on the weekend days.

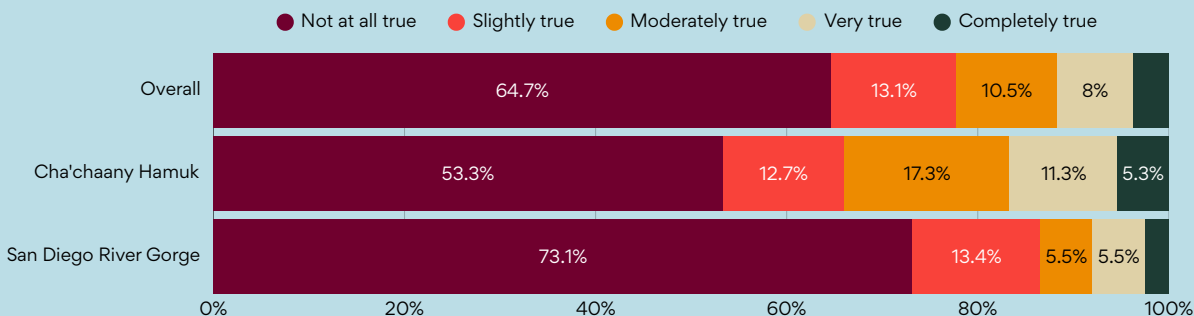
Valuation of *Freedom of Access*

1.4x more agreement with the statement “I **prefer not limiting use** on these trails because I **value freedom of access more than seeing fewer people** on the trails” at Cha'chaany Hamuk compared to San Diego River Gorge, a statistically significant difference.

Hispanic and/or Latino visitors were **8% more likely to agree** that they “**prefer not limiting use** on these trails because I **value freedom of access more than seeing fewer people** on the trails” compared to those not identifying with this racial and ethnic group, a statistically significant difference.

Behavior at the Falls

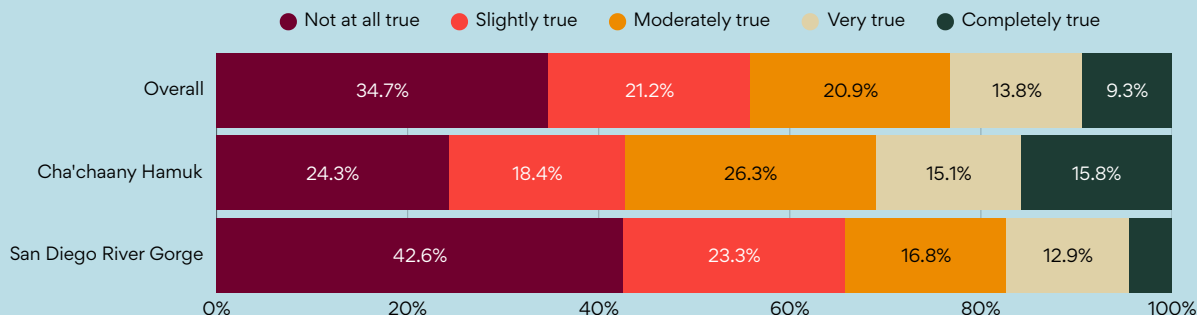
The behavior of other people at the falls caused me to feel anxious.



There is a medium, positive correlation between perceptions of crowding and agreement with this statement. This suggests that the behavior may relate to crowding as well, wherein a use limit may not help with feelings of crowdedness directly. The correlation between the behavior of others and crowding is higher at Cha'chaany, further suggesting that, at this site, the number of visitors is only partially explaining the feeling of crowdedness.

Expectations Regarding Quantity of Visitors

The number of people I encountered was more than I expected.



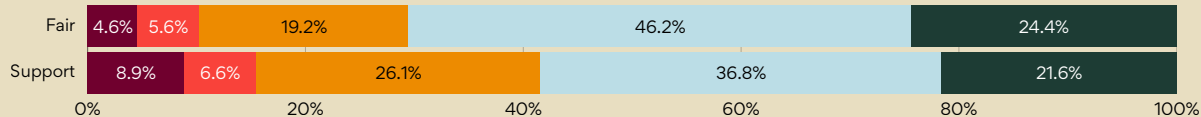
There is a strong, positive correlation between perceptions of crowding and agreement with this statement. Therefore, adjusting visitors' expectations to high use levels may help increase visitors' comfort with the number of people they encounter.

Some were surprised by the number of people they encountered, with one visitor saying, "Was it really 75 permits for one day? It felt like they were more than 75 permits." Others pointed out how few people they saw, sharing: "we were the only people climbing on Eagle Peak."

Perceived Fairness & Support for Permit Distribution Techniques

Preferred

First-come, first-served

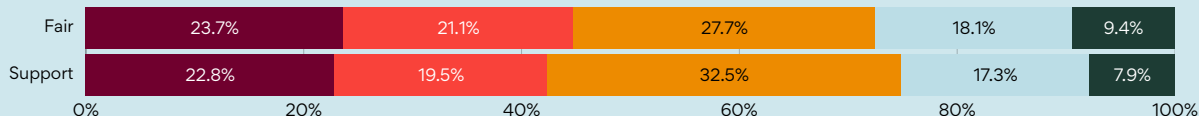


Preferred

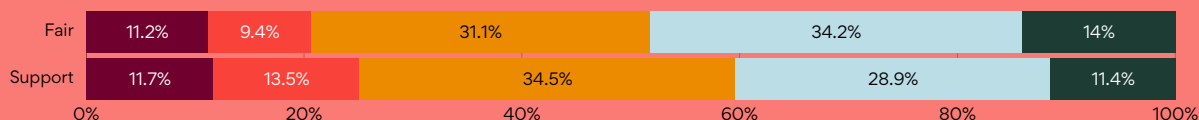
Online advance reservations



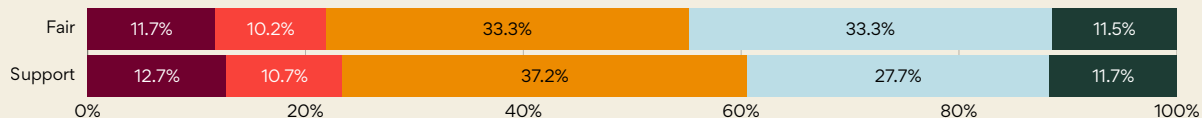
Online lottery



Combination of techniques



Combination of timeframes



● Very unfair
 ● Unfair
 ● Neither fair nor unfair
 ● Fair
 ● Very fair

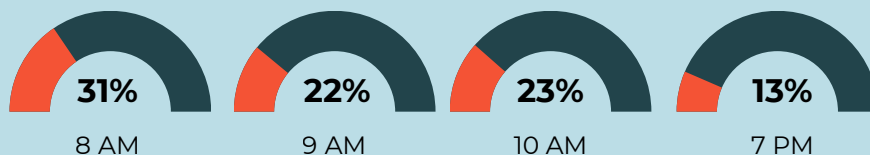
● Strongly oppose
 ● Oppose
 ● Neither support nor oppose
 ● Support
 ● Strongly Support

Permit Booking Availability

What hour of the day would you be most available to go online to Recreation.gov to book a reservation to visit this trailhead?

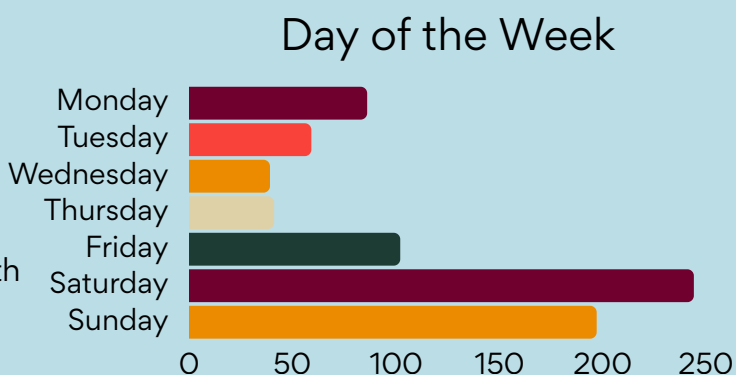
Specifically, visitors were most available between 8 and 10 AM and 6 and 7 PM.

Hours of the day with the most availability



What days of the week would you be most available to go online to Recreation.gov to book a reservation to visit this trailhead?

37.1% (n=171) of visitors selected both Saturday and Sunday.



How far in advance would you prefer to book a reservation?

Mean	approx. 12 days
Median	4 days
Min. / Max. / Mode	0 days / 10 months / 1 day

Possible Booking Windows based on survey data.

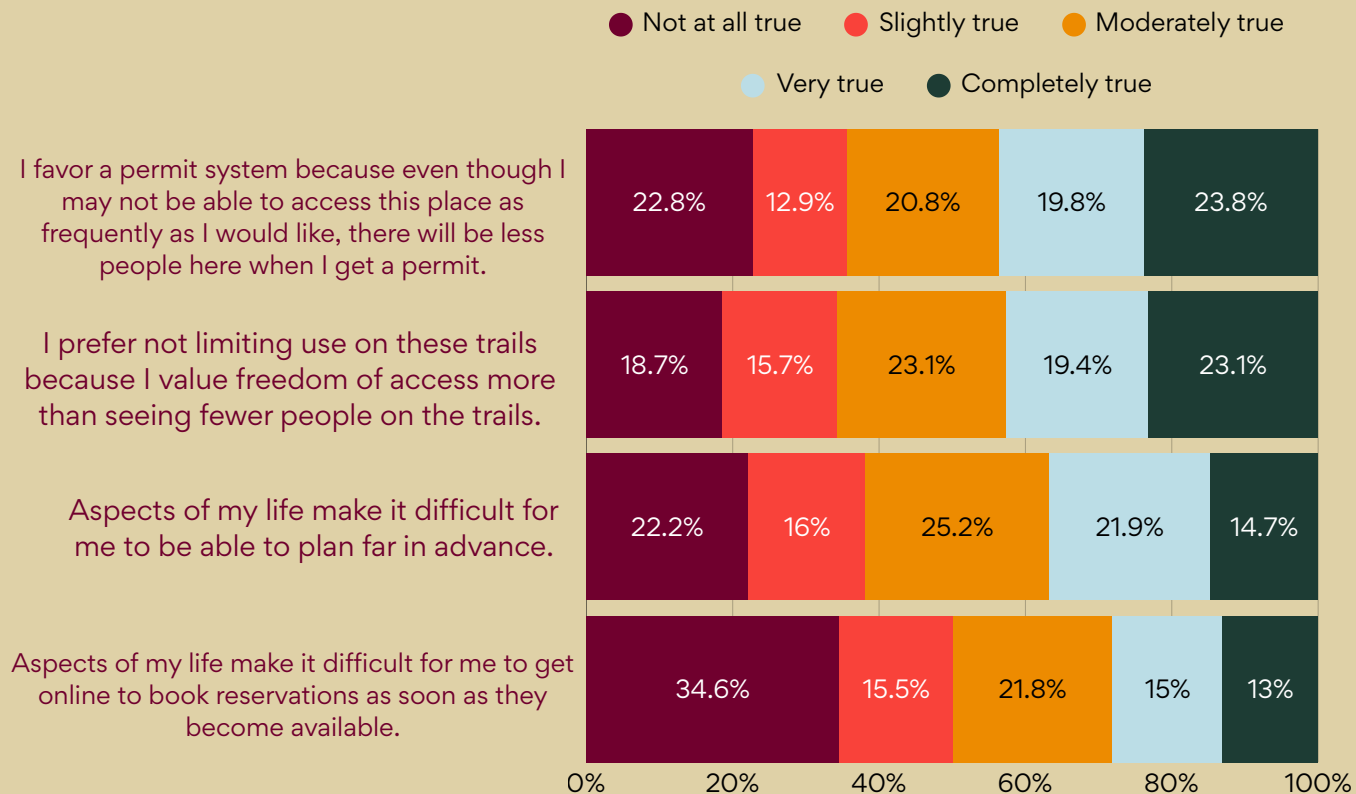
1 window (not recommended)	1 day
2 windows	2 days and 1 week
3 windows	1 day, 3 days, and 1 week

Cancellation Notification Preferences



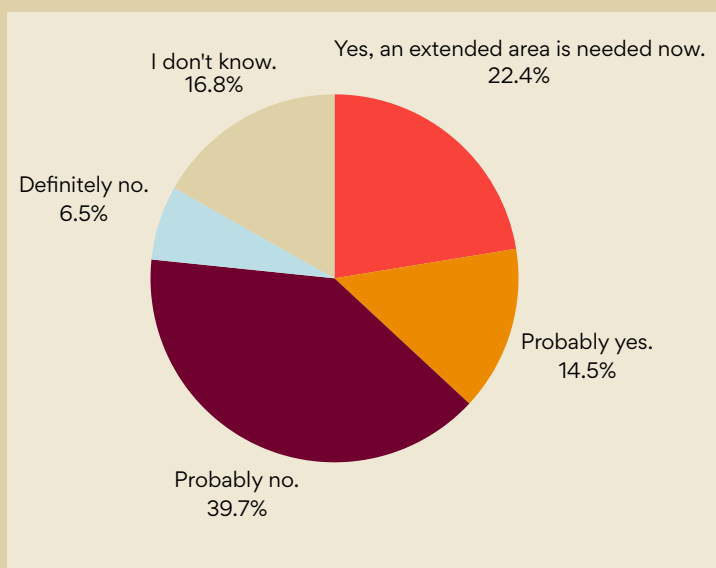
Most visitors were **interested in being notified via text (n=263) or email (n=222) if a permit was available for them to attempt to book** from a pool of cancellations. Originally, we asked visitors if they would like to obtain a permit onsite via a QR code, knowing there was a possibility they would arrive and all permits could be booked, but we didn't retain that question throughout the survey period because visitors were overwhelmingly opposed to that option. This was likely due to the long distance many visitors are traveling from (see pages 7 and 8 for more information on visitor's travel to the trailheads). Similarly, visitors were not interested in checking for cancellations manually on Recreation.Gov (n=42) or in-person at the trailhead (n=25).

Permit Perspectives

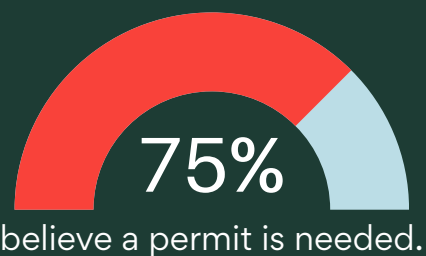


Extending the Permit Area at San Diego River Gorge

Do you feel that extending the need for a permit beyond the ¼ mile area is needed?

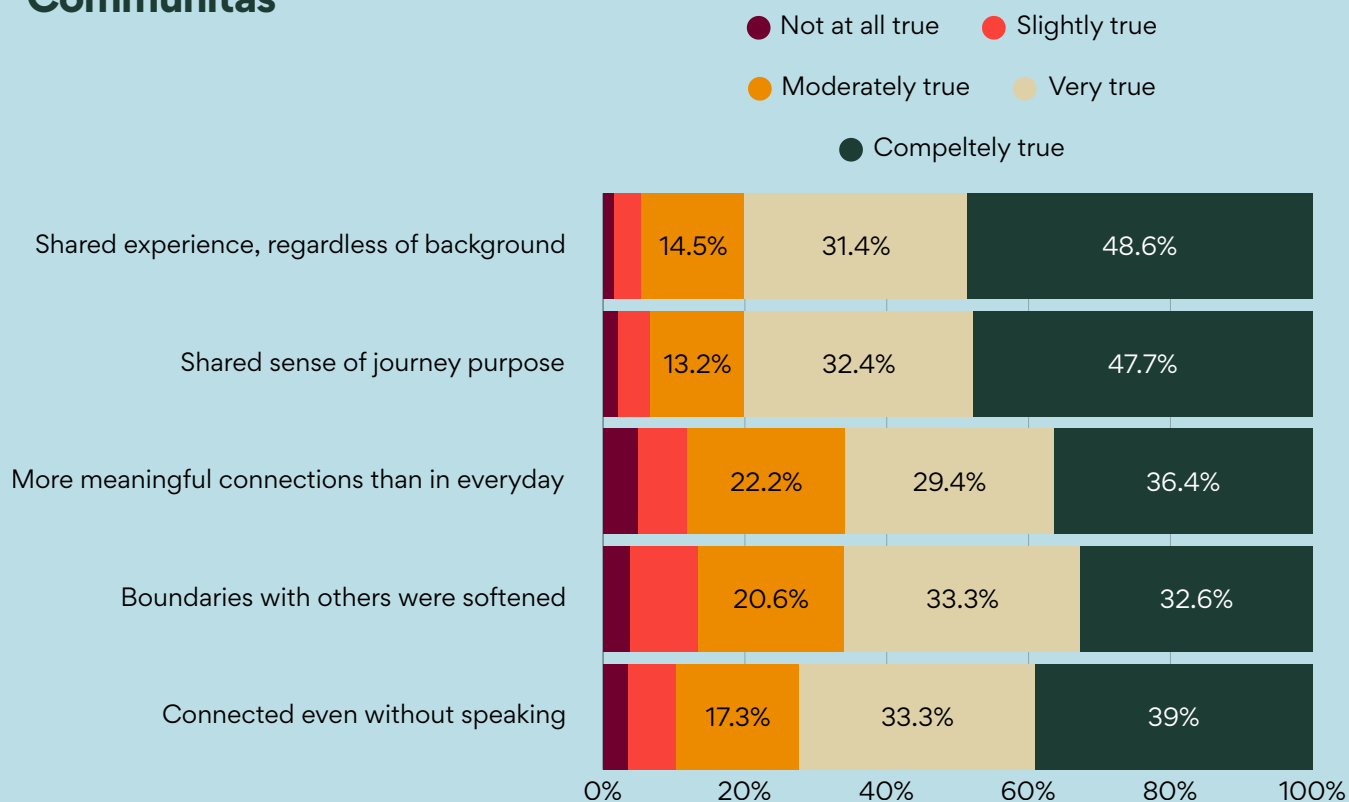


Visitors who responded with a "no" were then asked if they believed a permit area should exist at all.

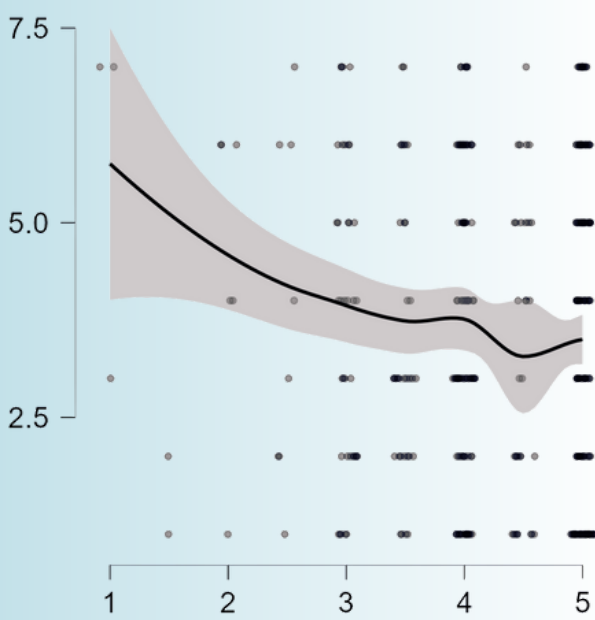


Reducing impacts to nature and improving the quality of the visitor experience were the top reasons given for extending the permit zone.

Communitas



Crowding



Communitas is an experience that can be found in recreation and tourism settings, wherein **visitors find a spontaneous feeling of shared experience, belonging, and kinship with their fellow hikers.** When comparing the relationship between communitas and crowding, we find that the two experiences were significantly, negatively correlated (-.131) across the two trailheads included in this study. This suggests that **those who experienced communitas were less likely to experience crowding.**

Implications

> Engineering & Design

Capacity. As noted on page 4, a parallel process to determine trail capacity occurred. Review the worksheets and consider possibly setting a use limit of 40 permits with a maximum of 6 people per permit at San Diego River Gorge trailhead and 420 visitors per day at Cha'chaany Hamuk trailhead.

Symbolic fencing and signage. Managers may consider installing symbolic fencing and signage (e.g., *Danger Rattlesnakes* or *Danger Loose Rock*) at points around the falls where accidents most often occur.

> Enforcement

SAR reporting. Managers may consider developing communication with San Diego County and other necessary parties to ensure all SAR efforts are being reported. This may allow for better pattern recognition and, by extension, incident prevention.

Prohibit pets. Instead of relying on a volunteer to convince hikers it is too hot to bring their dog, managers may consider making the decision for all visitors - no pets allowed.

> Education

Utilize existing communication channels. Managers may consider if there is value in setting up reminders in Recreation.Gov to permit holders with information about what to expect on the hike, and if it may be worthwhile to remove the note that requires visitors to print a copy of their permit.

Develop AllTrails trail profiles. Managers may consider looking into AllTrails and their Public Lands Program resource, given the majority of visitors refer to AllTrails for their information. AllTrails could feature information about navigating to the trailhead and the last stops for purchasing water.

Develop trailhead signage. Dependent upon management decisions, it may be worthwhile to post signs in Spanish and update signs to reflect management changes and an illustration with the recommended amount of water.



Capacity and Rationing

Cha'chaany Hamuk Trailhead

Possible Capacity*

420 Visitors per day

Rationing Strategy

When: If use increases, consider rationing use on weekends only during peak season.

How: Online Reservation

Possible Booking Windows based on survey data.

1 window (not recommended)	3 days
2 windows	2 days and 1 week
3 windows	1 day, 3 days, and 2 weeks

San Diego River Gorge Trailhead

Possible Capacity*

40 Permits per day

6 Maximum number of individuals on each permit

2 Timed-entry periods per day
(20 permits per period)

Rationing Strategy

When: Only during peak season.

How: Online Reservation with timed-entry

Possible Booking Windows based on survey data.

1 window (not recommended)	1 week
2 windows	2 days (1/3) and 1 week (2/3)

For support, reach out to Liz Townley (elizabeth.townley@usda.gov), Chris Armatas (christopher.armatas@usda.gov), or Will Rice (william.rice@umontana.edu).

*The capacity recommendation is the result of a separate, parallel process, not this allocation study.

Appendix

- [Cedar Creek Falls User Capacity Analysis](#)
- [Three Sisters Falls User Capacity Analysis](#)
- [Survey - English](#)
- [Survey - Spanish](#)

Other Resources

- [Allocating Recreation with Fairness at the Forefront: A Research-Based Planning and Management Guidebook](#)
- [San Diego River Watershed Visitor Use Management Plan](#)
- [AllTrails Public Lands Program](#)





Made with love and data in
Missoula, Montana USA.

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