



# UNITED STATES NATIONAL PARK SERVICE APPROACH FOR ESTIMATING VISITOR USE

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Dr. Pamela Ziesler, NPS Visitor Use Statistics Coordinator

## 2022 Visitation Summary

## USNPS Visitor Use Statistics Policy & Purpose

- Why collect Visitor Use Statistics?

## USNPS Visitor Use Statistics Program Overview

- Definitions
- Program Responsibilities

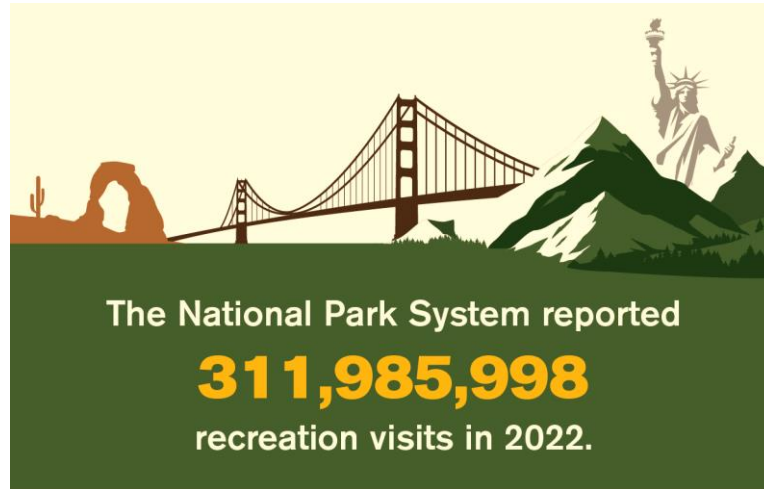
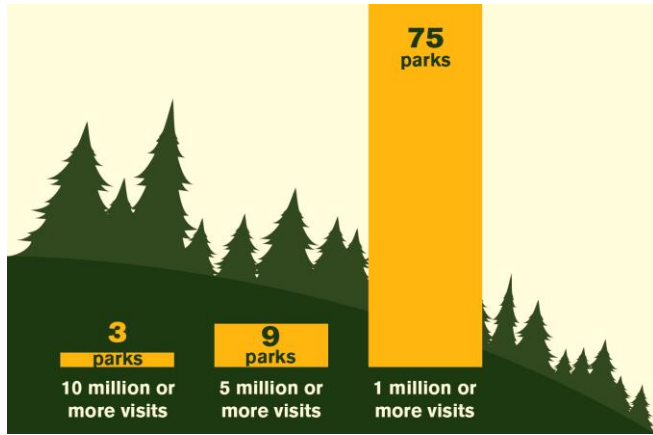
## USNPS Approach Estimating Visitor Use

- Park typologies
- Methods
- Tools and techniques
- Park visitor use estimation systems

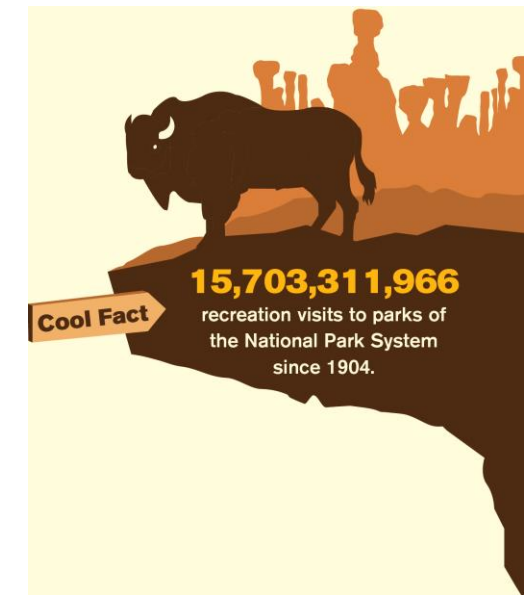
## Applications

- San Juan NHS
- Crater Lake NP
- Arches NP
- Redwood NP

## Questions and Discussion



# USNPS 2022 Visitation



# Policy and Purpose

USNPS Visitor Use Statistics



# USNPS Policy on Visitor Use Reporting

## Required by Executive Order and Other US Laws

- Statistically valid**
- Reliable** – similar results under similar conditions
- Uniform** – same units of measure
- Consistent and Comparable** – enables comparison
- Technically Feasible** – measure what we can
- Operationally Practical** – within resources available

Definitions are  
**FUNDAMENTAL** to a  
successful Visitor Use  
Reporting system



# Why Report Visitor Use?

Seasonal operations decisions – Visitor Centers, lodging, entire parks



Concessions, reservations, and fees management



Estimating size of park facilities - Restrooms, Visitor Centers, parking lots, roads, trails...

Accident & incident reporting, risk management, transportation safety, congestion management



Estimates of diminished visitor experience or restricted visitor use when a park facility or resource is damaged



Estimating economic impacts of park visitation



# External Uses for Visitor Use Statistics



- State and local tourism bureaus
- Community planning
- Transportation / shuttle services
- Lodging
- Food, goods & services
- Public safety / emergency services



# Program Overview

USNPS Visitor Use Statistics



# Which parks report? What is reported?

*Official visitor use statistics are estimated only for areas administered by the National Park Service*

Visits

Visitor  
Hours

Overnight  
Stays

*Attempting to estimate a census every month*



# USNPS Visitor Use Definitions

A **Recreation Visit** is the entry of a person onto lands or waters administered by the NPS for recreational purposes

*Only one entrance per day is counted (different than UNESCO 'visit')*

A **Non-Recreation Visit** is the entry of a person onto lands or waters administered by the NPS for other than recreational use

Visits by **NPS personnel** and **visits for park business** are **NOT** reported as visitor use



# USNPS Visitor Use Definitions

A **Visitor Hour** is the presence of one or more persons for continuous, intermittent, or simultaneous periods aggregating 60 minutes

A **Visitor Day** is **12** Visitor Hours



# USNPS Visitor Use Definitions

**Overnight Stay** – an overnight stay is **one person** in a park **for one night**

**3** people staying for **2** nights = **6** overnight stays



# Program Responsibilities

## National

- Collaborate with parks to design data collection system
- Oversight and Guidance
  - Updates, technical support, quality control

## Regional

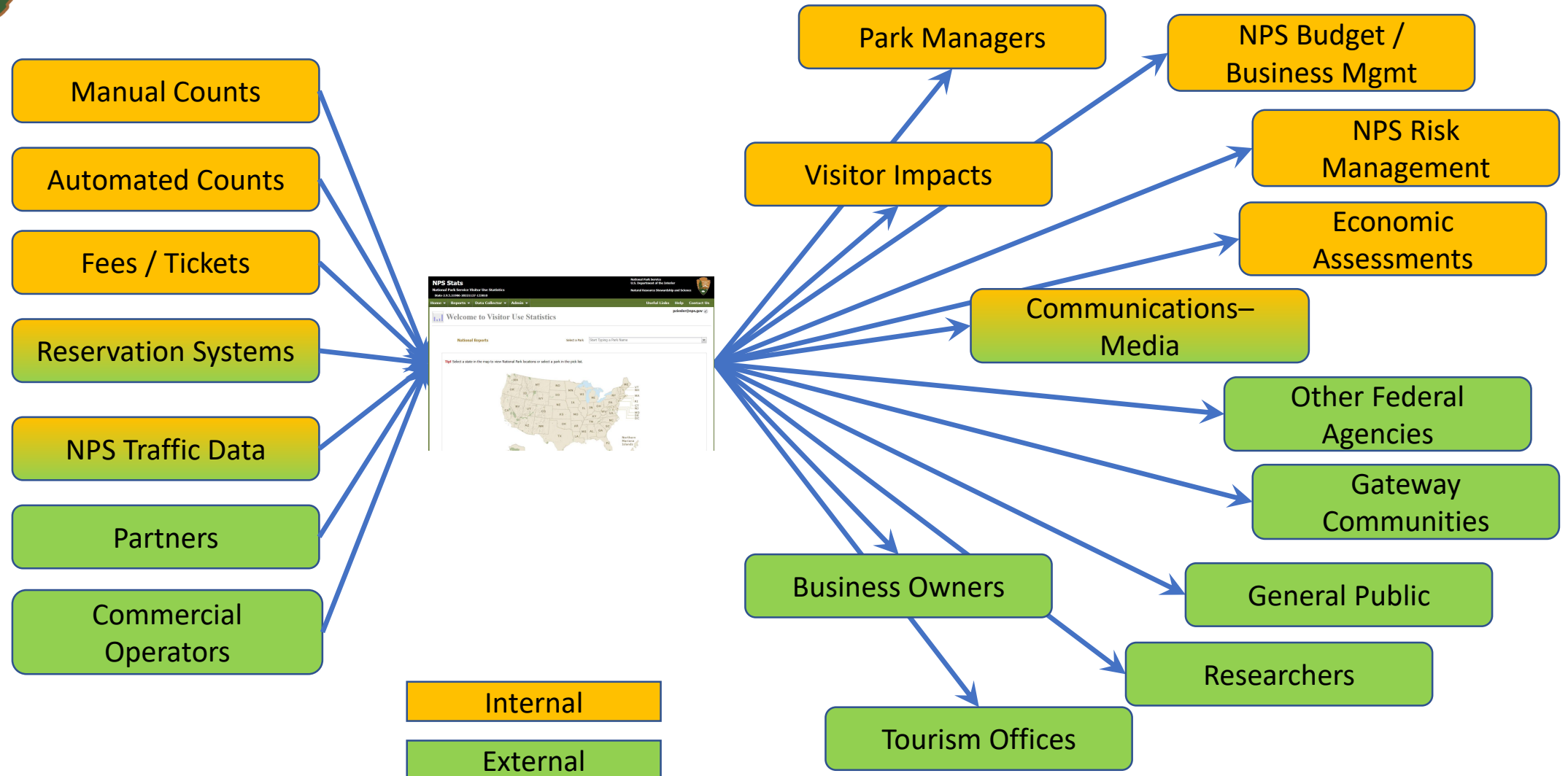
- Coordinate with national program on policy and priorities
- Encourage and ensure timely reporting by parks

## Parks

- Collect data and enter by 15<sup>th</sup> of the month
- Collaborate with national program on design & updates
- Purchase and maintain data collection equipment

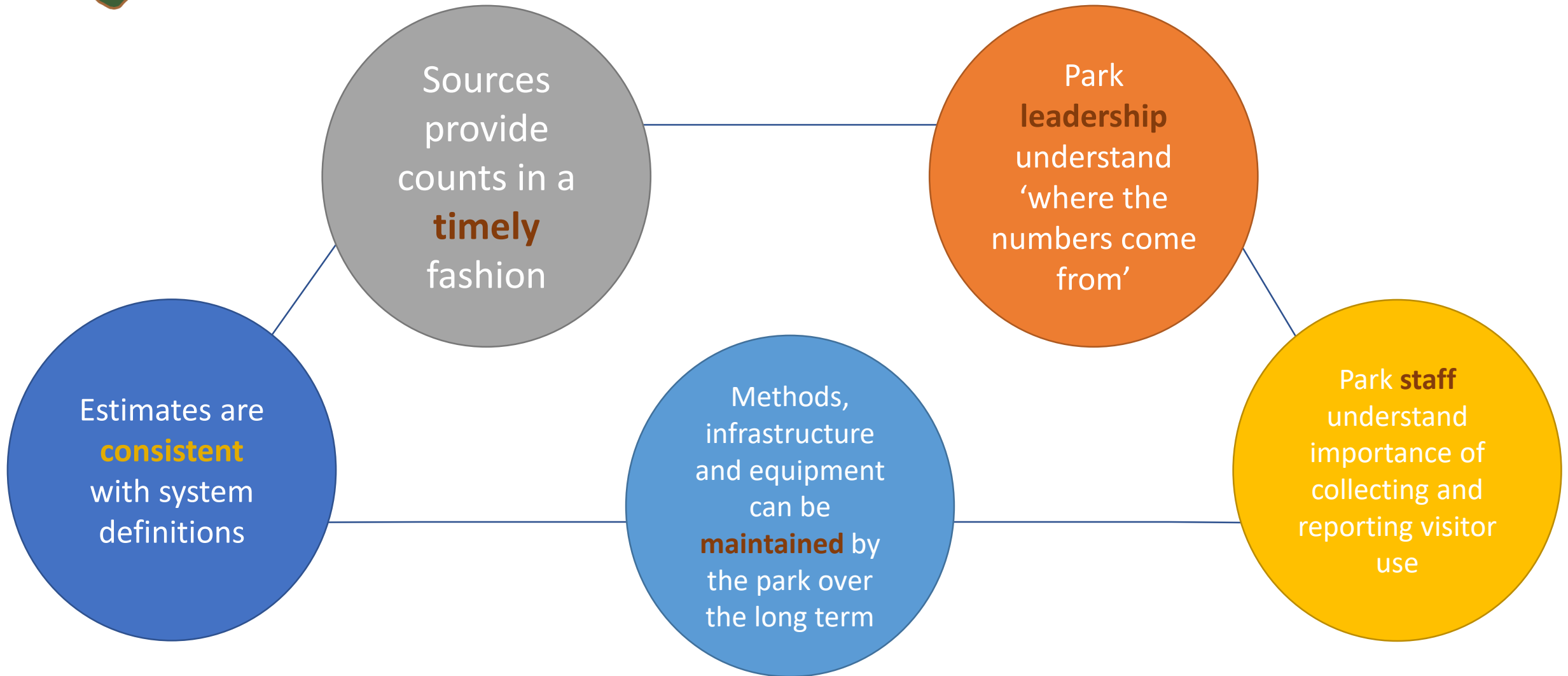


# Data Flow





# Successful Visitor Use Estimation Systems





# Approach for Estimating Visitor Use

USNPS Visitor Use Statistics



# Brief Outline of Approach

Identify Park Typology(s)

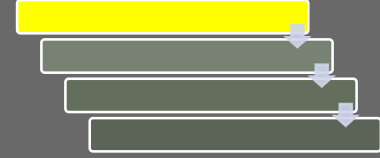
Identify counting and estimation methods

Identify tools and technologies

Visitor Use Estimation System



# Park Typologies



## Describes the “Operating Environment”

- How do visitors access the park?

## Stylized, simplified categories

- Channelized Access – Access park through a portal
- Porous Boundary Access
- Landscape-Scale Boundary Access

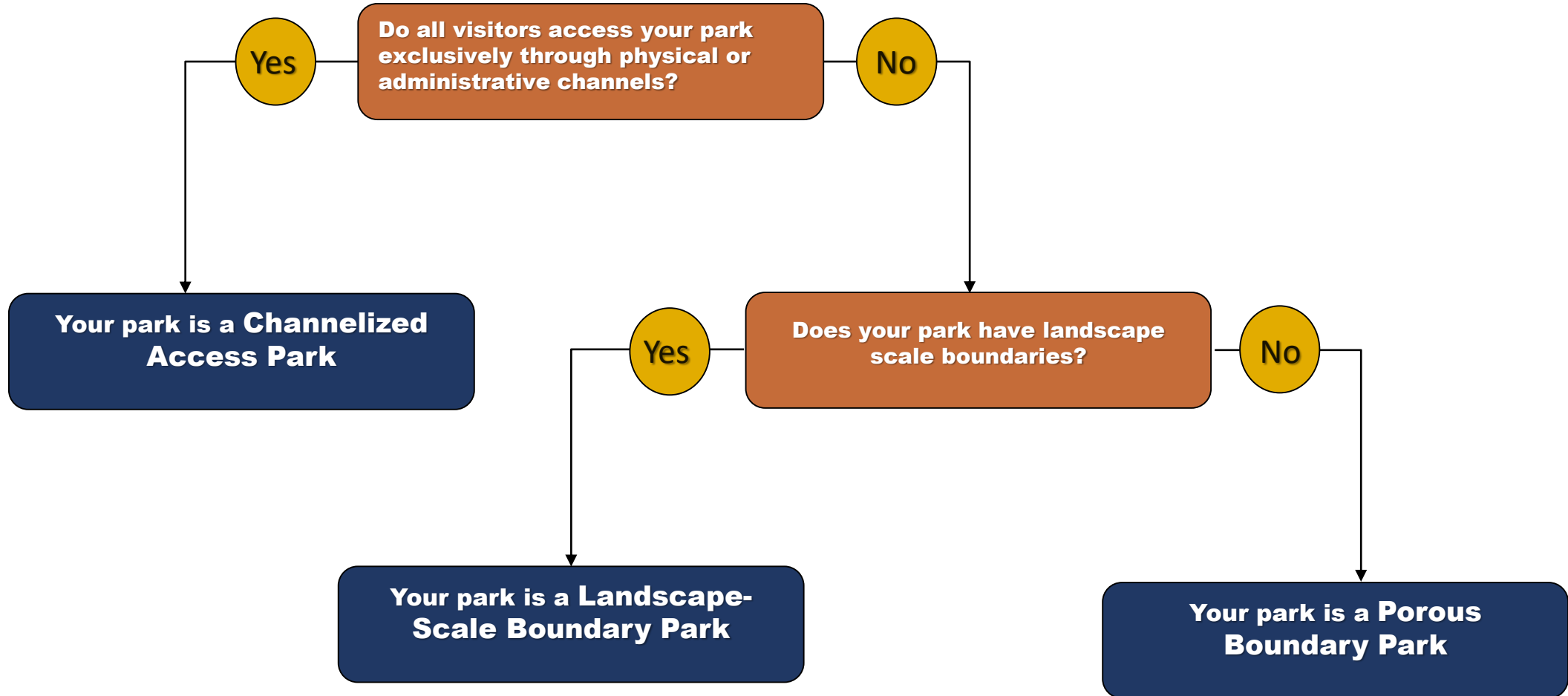
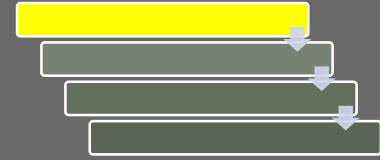
## More than one typology may apply to a park

## Good starting point

- Eliminate infeasible methods
- Focus on relevant methods



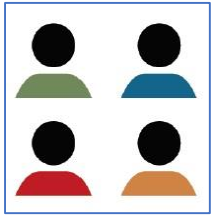
# Typology Flowchart





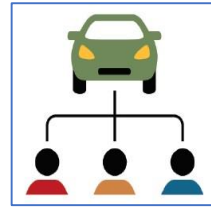
NATIONAL  
PARK  
SERVICE

# Methods



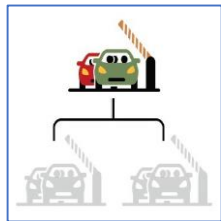
Direct Counts

**KEY: Count  
INDIVIDUAL  
Visits**



Proxy Counts

**KEY: Count  
something  
other than  
individuals**



Statistical  
Estimates

**KEY: Must  
have a  
statistical  
relationship**

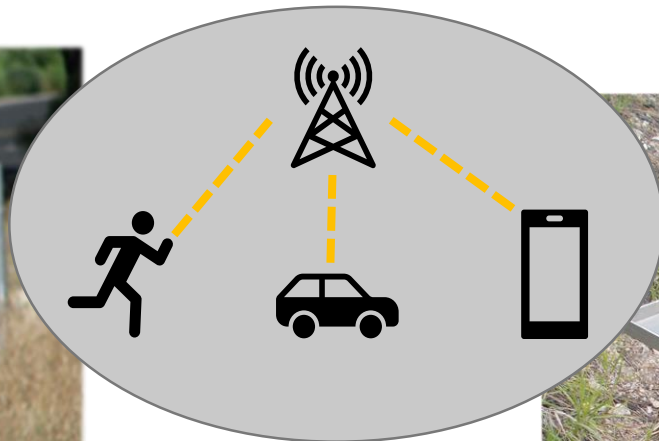
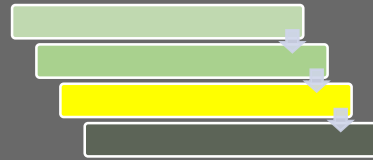


Fixed Estimates

**KEY: Estimate  
does not vary  
with use**



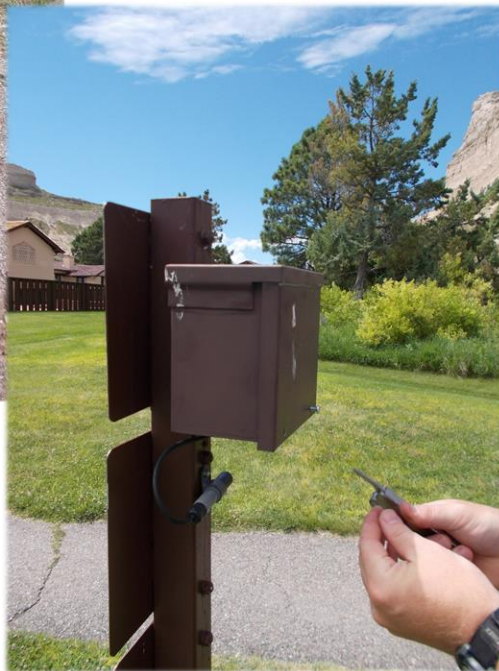
# Tools and Technologies



RECREATION.gov

Where to? Check in → Check out Only show available

- PERMITS**  
**Arches National Park Canyoneering Permits**  
 Arches National Park • Near Moab, Utah  
 ★★★★★ (13)
- PERMITS**  
**Assateague Island National Seashore OSV Permits**  
 Assateague Island National Seashore • Near Berlin, Maryland
- PERMITS**  
**Black Canyon of the Gunnison NP Red Rock Canyon Wilderness Permits**  
 Black Canyon Of The Gunnison National Park • Near Montrose, Colorado



PERSONS-PER-VEHICLE (Private Passenger Vehicles) Tally Sheet

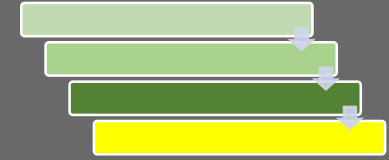
	TALLY VEHICLES BY OCCUPANCY						TOTAL
	1	2	3	4	5	6	
PRIVATE PASSENGER VEHICLES FOR RECREATION VISITS (no buses, NPS vehicles, commercial vehicles, commuters, inholders)	1	14	1				16
TOTAL VEHICLES	1	5	1				7
PERSON MULTIPLIER	x 1	x 2	x 3	x 4	x 5	x 6	SUM OF ENTRIES
TOTAL PEOPLE	1	10	3				14

DATE: 10 / 9 / 20 STARTING TIME 11:00  
 SURVEYOR NAME Potter





# San Juan National Historic Site

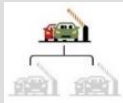


## Channelized Access



Some areas have direct counts

## Porous Access



One area has statistical estimate of visits

## San Juan National Historic Site

### PUBLIC USE COUNTING AND REPORTING INSTRUCTIONS

Following are detailed instructions for collecting and reporting data to be entered on Form 10-157, Revised, Monthly Public Use Report by San Juan National Historic Site. These instructions are effective the date of issuance and will continue in effect unless changed by amendment or by memorandum from the Public Use Statistics Program Center to the superintendent approving a requested change.

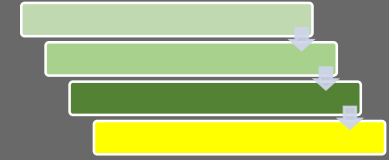
Each item below describes the procedures to be followed in collecting public use data and summarizing the various elements of those data for entry on the corresponding line on the 10-157, Monthly Public Use Report.

#### Recreation Visits

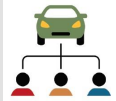
1. The number of visitors to El Morro Fort.
2. The number of visitors to San Cristobal.
3. The estimated number of visitors to Parcel A. Parcel A (grounds only) is estimated as eighty four percent of the number of visitors that are counted at El Morro.



# Crater Lake National Park



## Channelized Access



**Estimate visits from vehicle counts at entrances**



**Direct count of skiers and snowmobilers**

## CRATER LAKE NATIONAL PARK

### PUBLIC USE COUNTING AND REPORTING INSTRUCTIONS

Following are detailed instructions for collecting and reporting data to be entered on Form 10-157, Revised, Monthly Public Use Report by **Crater Lake National Park**. These instructions are effective the date of issuance and will continue in effect unless changed by agreement between the Social Science Program and the Park Superintendent.

Each item below describes the procedures to be followed in collecting public use data and summarizing the various elements of those data for entry on the corresponding line on the 10-157, Monthly Public Use Report.

#### Recreation Visits

1. An inductive loop traffic counter is located at the north entrance station. The vehicle count is reduced by the number of non-reportable vehicles in Table 1. The reduced traffic count is multiplied by the PPV multiplier in Table 2.
2. An inductive loop traffic counter is located at the Annie Spring entrance. The vehicle count is multiplied by the persons per vehicle (PPV) multiplier in Table 2.
3. The number of skiers and snowmobilers entering the park that do not cross a traffic counter.



# Applications

USNPS Visitor Use Statistics



# San Juan NHS - Closure and Recovery

## Recreation Visits by Month San Juan NHS

*Current year data are preliminary and subject to change. Data will be finalized by the end of the first quarter of next calendar year.*

Year	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Total
2023	108,113	116,472	156,169										380,754
2022	54,655	80,147	110,615	94,304	89,034	96,790	109,369	97,976	40,152	57,364	73,304	123,554	1,027,264
2021	13,800	34,853	58,452	66,169	78,151	93,422	127,870	78,648	43,396	48,572	57,519	97,336	798,188
2020	89,378	94,789	74,466	3,561	2,906	9,050	16,770	15,400	7,800	10,975	12,495	19,510	357,100
2019	131,145	114,584	144,548	110,758	87,622	105,643	96,896	89,465	45,912	68,492	77,511	124,769	1,197,345
2018	60,408	59,876	87,304	66,131	67,036	84,350	109,536	80,802	45,518	60,597	74,530	114,317	910,405
2017	127,305	117,124	159,964	111,841	100,020	127,780	161,465	137,953	91,049	0	0	54,279	1,188,780
2016	137,822	134,978	186,127	142,728	98,370	120,556	150,113	106,860	63,282	72,699	95,130	147,888	1,456,553

↑ RECOVERY

↑ RECOVERY

**2020 – beginning of COVID restrictions**

**Late September 2017 – Hurricane Maria hit Puerto Rico**



# Crater Lake NP – COVID 2020

## Recreation Visits by Month Crater Lake NP

*Current year data are preliminary and subject to change. Data will be finalized by the end of the first quarter of next calendar year.*

Year	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Total
2023	4,384	7,998											12,382
2022	6,752	9,213	11,933	14,779	31,822	70,975	139,513	107,351	78,967	39,989	10,481	5,484	527,259
2021	8,026	7,803	15,312	25,680	56,746	95,155	194,712	106,379	64,152	47,196	19,410	7,180	647,751
2020	3,492	3,351	5,304	686	814	59,731	209,677	222,368	59,093	61,613	18,270	26,100	670,500
2019	3,120	2,436	4,800	15,000	11,800	103,442	201,191	169,470	98,266	41,635	16,843	8,601	704,512
2018	9,220	8,000	11,143	19,790	52,298	110,842	179,570	134,628	111,911	58,308	21,309	4,640	720,659
2017	1,935	1,402	8,716	15,043	38,145	136,567	208,237	157,429	84,340	41,231	9,687	9,017	711,749
2016	3,112	7,170	8,961	20,389	40,627	122,905	190,231	176,895	131,760	38,985	10,325	4,984	756,344
2015	10,489	8,635	13,938	16,918	48,217	84,679	147,623	97,673	128,398	42,003	12,769	2,570	614,712
2014	7,501	4,592	15,767	10,125	30,492	76,338	121,701	124,944	87,060	37,254	9,614	10,120	535,508
2013	6,325	5,566	9,637	12,903	86,716	70,665	118,819	110,619	76,796	7,018	8,645	9,318	523,027
2012	7,969	5,629	4,680	27,921	20,402	55,678	111,194	109,410	79,574	24,794	0	0	447,251
2011	6,358	6,312	4,392	8,174	18,618	44,118	109,974	112,491	79,495	28,060	5,559	0	423,551
2010	5,822	6,319	9,465	7,509	25,586	62,567	116,691	90,827	79,222	30,803	8,807	1,701	448,319
2009	6,283	5,796	6,622	10,818	25,533	61,929	108,906	108,605	72,444	27,380	7,975	4,225	446,516
2008	12,451	13,386	2,661	26,931	20,379	48,406	95,659	102,700	59,111	23,117	6,964	3,921	415,686
2007	13,959	850	6,466	21,457	27,607	61,358	105,139	105,549	72,140	26,474	23,676	4,283	468,958
2006	4,039	4,379	5,295	9,737	20,278	52,442	101,557	97,086	64,983	28,526	150	500	388,972
2005	5,835	6,811	10,337	10,392	23,271	59,306	95,993	120,183	61,550	22,934	26,381	4,247	447,240

Park facilities  
closed for COVID  
precautions  
March 25-June 7  
2020

Late summer  
surge of visitors  
August 2020 –  
**highest month  
ever**





# Crater Lake NP – Wildfire Smoke

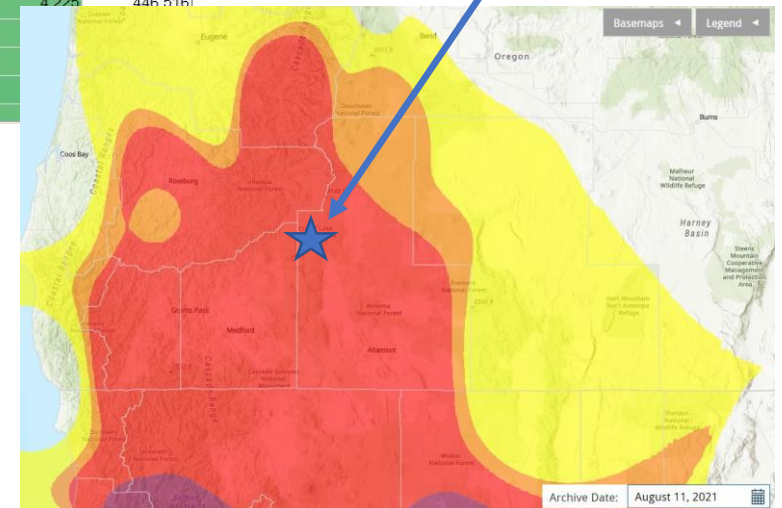
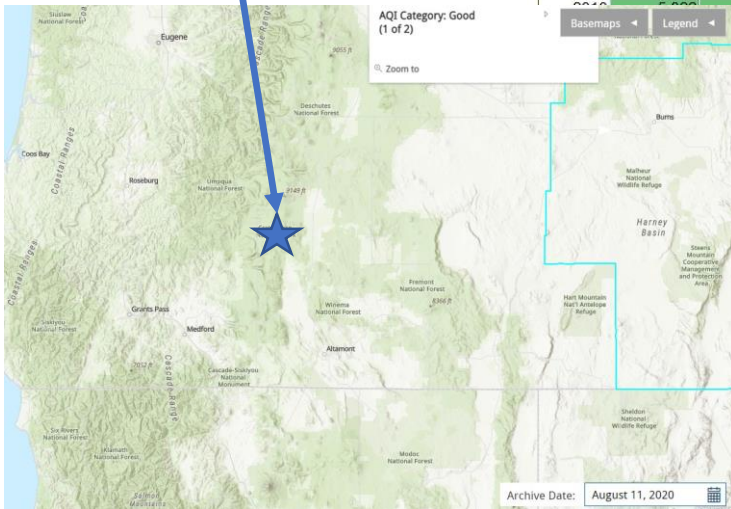
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2016	3,112	7,170	8,961	20,389	40,627	122,905	190,231	176,895	131,760	38,985	10,325	4,984	756,344
2015	10,489	8,635	13,938	16,918	48,217	84,679	147,623	97,673	128,398	42,803	12,769	2,570	614,712
2014	7,501	4,592	15,767	10,125	30,492	76,338	121,701	124,944	87,060	37,254	9,614	10,120	535,508
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2007	5,000	850	6,466	21,457	27,607	61,358	105,139	105,549	72,140	26,474	23,676		
2006	5,000	4,379	5,295	9,737	20,278	52,442	101,557	97,086	64,983	28,526	150		
2005	5,000	6,811	10,337	10,392	23,271	59,306	95,993	120,183	61,550	22,934	26,381		

Good visibility /  
good air quality  
August 2020

Poor visibility /  
poor air quality  
August 2021



# Application: Modeling Change in Visits with Increasing Temperatures – Arches National Park

RESEARCH ARTICLE

## Protected Area Tourism in a Changing Climate: Will Visitation at US National Parks Warm Up or Overheat?

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### Abstract

Climate change will affect not only natural and cultural resources within protected areas but also tourism and visitation patterns. The U.S. National Park Service systematically collects data regarding its 270+ million annual recreation visits, and therefore provides an opportunity to examine how human visitation may respond to climate change from the tropics to the polar regions. To assess the relationship between climate and park visitation, we evaluated historical monthly mean air temperature and visitation data (1979–2013) at 340 parks and projected potential future visitation (2041–2060) based on two warming-climate scenarios and two visitation-growth scenarios. For the entire park system a third-order polynomial regression model explained 60% of the visitation to historic visitation trends. Visitation

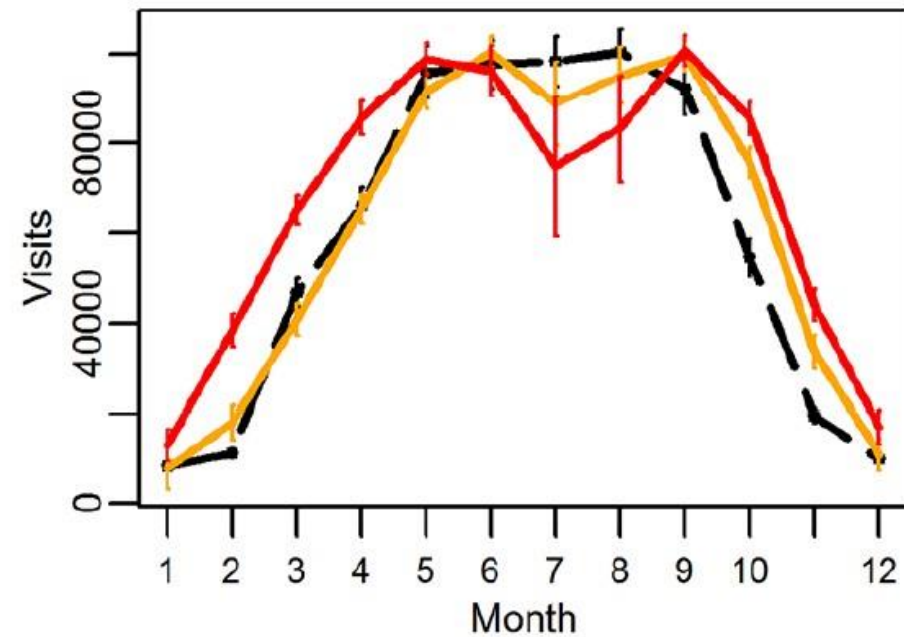


CrossMark  
click for updates

OPEN ACCESS

Citation: Fischelli NA, Schuurman GW, Monahan WB, Ziesler PS (2015) Protected Area Tourism in a

d) Arches National Park



# Application: Using Mobile Device Data to Understand Visitor Patterns – Redwood National Park

## Redwood NP (2022 / 23)

“What proportion of visitors to each subdistrict are counted on a permanent counter?”

Giving us a  
different  
perspective







# Online Resources

Contact: [pamela\\_ziesler@nps.gov](mailto:pamela_ziesler@nps.gov)

Visitor Use Statistics Data and Park Procedures: [irma.nps.gov/stats](http://irma.nps.gov/stats)

**NPS Stats**  
National Park Service  
U.S. Department of the Interior  
Natural Resource Stewardship and Science

Home | Reports | Data Collector | Admin | Useful Links | Help | Contact Us

Welcome to Visitor Use Statistics

National Reports

Select a Park: Start Typing a Park Name

Tip! Select a state in the map to view National Park locations or select a park in the pick list.

NPS.gov / Home / Visitor Use Statistics

## NPS Visitor Use Statistics

### Program Overview

The NPS Social Science Program is responsible for coordinating visitor use statistics reporting for units administered by the NPS. "Visitor Use Statistics" refers to a formal set of statistics collected by the National Park Service that address how many people visit parks and how long they stay. Program staff work with parks to develop appropriate data collection procedures and provide quality control for visitor use data. Such coordination ensures that visitor use data are consistent and reliable throughout all units of the National Park System.

Interest in NPS visitation data goes back over a century when the first data were collected in 1904. In that first year, six national parks reported a total of 140,954 visitors. Early methods of data collection were informal and documented such things as number of visitors, modes of transportation, and trip origins. Since then, visitor use counting and reporting requirements have been formalized into policy and estimation procedures are designed to take advantage of new technologies.

NEED TO KNOW	
History & Policy	>
Visitor Use Definitions	>
FAQs	>
Access Data	>

Visitor Use Statistics Program  
Information and Definitions:  
[www.nps.gov/subjects/socialscience/  
visitor-use-statistics.htm](http://www.nps.gov/subjects/socialscience/visitor-use-statistics.htm)

Thank you

Questions and Discussion