Economic Impacts of Grand Canyon National Park Visitor Spending on the Local Economy, 2003

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January 2005

National Park Service
Social Science Program

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Executive Summary

Grand Canyon National Park hosted 4.125 million recreation visits in 2003. Three fourths of park visitors stay overnight in the region, averaging a two-night stay in the area. Park visitors account for 831,000 room nights in lodges, cabins and motels in the area, with 23% of these room nights inside the park. The 257,000 campsite nights from park visitors are more evenly divided between campers staying inside or outside the park (Table E-1). The three largest visitor segments in terms of total recreation visits are visitors staying overnight at hotels outside the park (45%), day visitors (26%) and visitors staying overnight in park lodges or cabins (11%).

On average, park visitors spent $201 per party per day in the local area. Spending varies considerably across seven visitor segments: from $338 per party per night for visitors staying at park lodges to $43 per day for backcountry camping parties. The average day trip visitor party spends $114 in the region, while campers spend just under $100 per party per night (Table E-1).

Table E1. Grand Canyon National Park Visits and Spending by Visitor Segment, 2003

Segment	Recreation visits (000's)	Party Nights (000's)	Average spending (per party night)	Total spending ($ millions)	Pct of spending
Day trips	1,091	356.8	$114	$40.66	12%
In-Park Hotel	435	190.5	$338	$64.42	19%
In-Park Camp	250	118.9	$98	$11.61	3%
Backcountry Camper	141	87.6	$43	$3.78	1%
Outside Park Hotel	1,858	640.7	$272	$174.43	52%
Outside Park Camp	329	138.1	$97	$13.38	4%
River runners	22	72.4	$412	$29.85	9%
Total	4,125	1,605.1	$201	$338.14	100%

Park visitors spent $338 million dollars within the local region[1], including $137 million inside the park and $201 million in gateway communities. Visitors staying in hotels outside the park accounted for 52% of the total park visitor spending, followed by overnight visitors at park lodges (19%). The majority of visitor spending accrues to the lodging ($95 million) and restaurant ($63 million) sectors (Table E-2).

The local economic impacts of visitor spending were estimated using the National Park Service's Money Generation Model (version 2). The MGM2 model combines park visitation data, spending averages and regional economic multipliers for Coconino County, AZ to estimate spending, income and jobs attributable to park visitor spending in the region.

Park visitor spending generated $112 million in direct personal income (wages and salaries including payroll benefits) for the region and supported 5,655 jobs in tourism-related

[1] The local region is defined to encompass Coconino County, Arizona, including gateway communities of Tusayan, Williams, Flagstaff and Cameron on the South Rim and Jacob Lake, Kanab, and Fredonia on the North Rim.

industries in the area. Including secondary effects the total economic impacts of visitor spending in 2003 was $429 million in direct sales, $157 million in personal income, $245 million value added, and almost 7,500 jobs.

These impacts do not include local impacts of NPS operations or construction activities in the park but do include concession jobs and payroll. Impacts from park visitor spending outside the local region, including that of international visitors, are also not covered.

Table E2. Economic Impacts of Grand Canyon National Park Visitor Spending, 2003

Sector/Spending category	Direct Sales $000's	Jobs	Personal Income $000's	Value Added $000's
Motel, hotel cabin or B&B	90,022	1,638	39,311	63,752
Camping fees	4,774	32	620	1,478
Restaurants & bars	63,093	1,565	25,479	28,748
Admissions & fees	66,225	1,417	24,381	40,913
Other vehicle expenses	32,864	310	5,376	12,309
Retail Trade	31,748	624	14,693	19,171
Wholesale Trade	4,681	50	1,737	3,039
Local Production of goods	5,037	18	410	806
Total Direct Effects	298,442	5,655	112,007	170,216
Secondary Effects	130,892	1,786	44,729	75,237
Total Effects	429,333	7,441	156,736	245,453
Multiplier	1.44	1.32	1.40	1.44

TABLE OF CONTENTS

Introduction 5
Grand Canyon National Park and the Local Region 5
Park Visits 7
METHODS 8
Grand Canyon National Park Visitor Study, 2003 9
MGM2 Visitor Segments 9
Estimates of Park Use by Segment 10
Results 11
Trip Characteristics 11
Recreation Visits 11
Visitor Spending 12
Visits and Spending for Visitors to the North and South Rims 14
Economic Impacts of Visitor Spending 15
Study Limitations and Errors 16
Summary and Discussion 19
References 21

Appendix A. Definition of Economic Terms in the MGM2 Model 22
Appendix B. Multipliers for Coconino County, Arizona by Sector, 2001 23
Appendix C. Supplemental Tables 24

Economic Impacts of Visitor Spending on Local Economy: Grand Canyon National Park, 2003

Introduction

The purpose of this study is to document the local economic impacts of Grand Canyon National Park (GRCA) visitor spending in 2003. Economic impacts are measured as the direct and secondary sales, income, jobs, and value added in the local area resulting from spending by park visitors in the region. The local region is defined to encompass Coconino county, Arizona, including gateway communities of Tusayan, Williams, Flagstaff and Cameron on the South Rim and Jacob Lake, Kanab, and Fredonia on the North Rim. The economic estimates are produced using the Money Generation Model 2 (MGM2) (Stynes and Propst, 2000).

Grand Canyon National Park and the Local Region

Grand Canyon National Park was established in 1919 to protect the magnificent geologic landscapes along the Colorado Plateau in northwestern Arizona. The park encompasses 1.2 million acres. The Colorado River divides the park into two distinct sections, the South Rim and the North Rim. The majority of visits (91%) are to the South Rim where the bulk of visitor facilities and services are located (Public Use Statistics, 2004). The North Rim is only accessible from May to October.

Tusayan, Williams, Flagstaff and Cameron are the major gateway communities for South Rim visitors, all lying within an hour's driving distance of the park. Gateway communities serving the North Rim are Jacob Lake, Kanab, and Fredonia. The driving distance from the South Rim to the North Rim is around 200 miles, so visits to the two sections of the park can be treated largely independently.

Grand Canyon National Park offers abundant recreational activities, from hiking, camping, and white water rafting to mule rides down to the Colorado River or air tours of the canyon. Around 85% of summer visitors come from states other than Arizona and 8% are from other countries (Littlejohn and Hollenhorst, 2004a, 2004b). The park is adjacent to Lake Powell National Recreation Area upstream along the Colorado River and Lake Mead National Recreation Area downstream (Figure 1). The park is about an hour driving time from Interstate Highway 40 to the south

Grand Canyon National Park is located in Coconino County in northern Arizona. The population of the county was 119,892 in 2002 with an average per capita income of $24,543 (Bureau of Economic Analysis, 2004). Flagstaff, roughly 70 miles from the park, is the largest city in the area and the principal trade center for the region. Total personal income in the county in 2002 was $2.06 billion; total full-time and part-time employment was 72,497. Government, health care, retail trade and service industries are the principal employers in the region (Table 1). The accommodation sector reported $74.5 million in earnings in 2002 (Bureau of Economic Analysis, 2004).

Table 1. Coconino County Earnings and Employment by NAICS Sector, 2002

NAICS sector	Earnings by place of work ($000's)	Pct of total earnings	Jobs
Farm	-4,014	0%	197
Forestry, fishing, related activities, and other	2,747	0%	233
Mining	4,576	0%	262
Utilities	9,924	0%	201
Construction	127,071	6%	4,274
Manufacturing	139,303	7%	3,334
Wholesale trade	29,301	1%	889
Retail trade	194,168	9%	8,781
Transportation and warehousing	85,214	4%	2,114
Information	19,980	1%	703
Finance and insurance	38,720	2%	1,676
Real estate and rental and leasing	54,570	3%	3,632
Professional and technical services	78,551	4%	3,073
Management of companies and enterprises	4,610	0%	129
Administrative and waste services	28,299	1%	2,249
Educational services	7,616	0%	677
Health care and social assistance	275,685	13%	7,468
Arts, entertainment, and recreation	36,991	2%	2,593
Accommodation and food services	157,164	8%	10,248
Accommodation	74,514	4%	-
Food services	82,650	4%	-
Other services, except public administration	70,916	3%	3,545
Government and government enterprises	696,031	34%	16,168
Total	2,057,423	100%	72,497

Source: Bureau of Economic Analysis, 2004

Grand Canyon NP has a $20 dollar entrance fee for vehicles, $10 per person on foot, bicycle, or bus, and $40 for an annual permit. There are several lodging facilities on the South Rim - the El Tovar Hotel, Thunderbird Lodge, Maswik Lodge, Yavapai Lodge, Bright Angel Lodge & Cabins, and Kachina Lodge. Lodging rates ranged from $55 to $285 per room in 2004. Phantom Ranch, located in the inner canyon, charges $27 per person per night. Two tent campgrounds and one recreation vehicle (RV) campground are available at the South Rim with nightly rates of $10 to $24. There is a $10 fee for backcountry permits plus an additional fee of $5 per person per night for backcountry use.

Grand Canyon Lodge on the North Rim provides 85 frontier cabins, 52 western cabins, 28 pioneer cabins, and 40 motel rooms with nightly rates ranging from $91 to $121 in 2004. The National Park Service operated campground at the North Rim charges $15 to $20 per night for tent and RV camping.

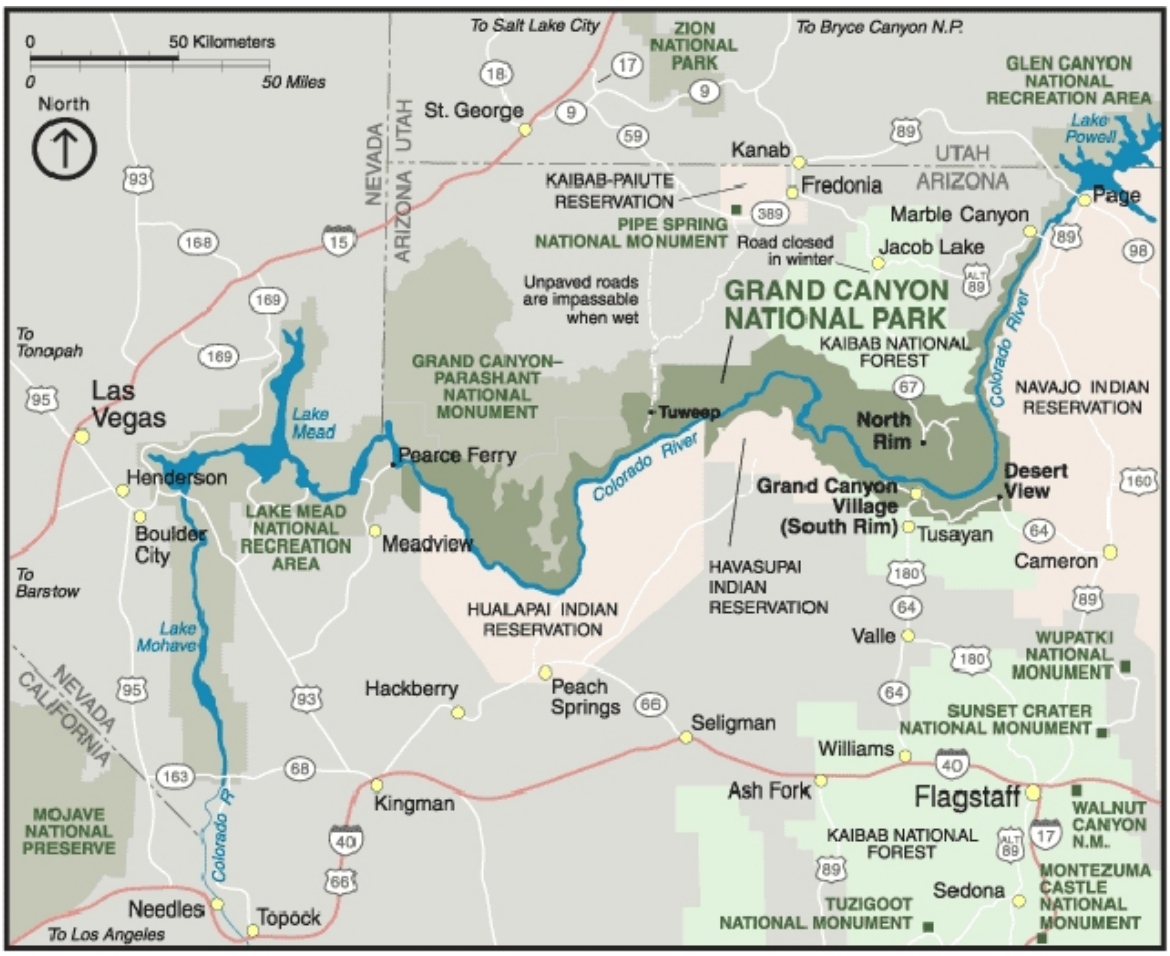

Figure 1. Grand Canyon National Park

Park Visits

Total recreation visits to Grand Canyon NP in 2003 was 4.125 million (Table 2). The park hosted almost 1.2 million overnight stays (person nights) in 2003, half in lodges and cabins. Developed campgrounds accounted for 29% of overnight stays and backcountry camping including river trips 21%. Ninety-one percent of recreation visits were to the South Rim. Park use is fairly evenly distributed throughout the year, with 41% of recreation visits during the summer season from June to August, 2003. The park averages over 300,000 visits during seven of the twelve months. The use of lodging facilities within the park is limited by capacity during much of the peak season.

The park is currently making some adjustments to the official use estimates. The 2003 public use figures counted each day on the river by river runners as a visit to the park. There were 21,613 river runners in 2003 averaging 6.7 nights on the river or a total of 144,800 person nights. These nights are included as backcountry stays in the park overnight stays, but each river runner should be treated as only a single park visit. The public use statistics for 2003 therefore

overestimated park visits by roughly 123,000 visits. The park is also recalibrating formulas for estimating recreation visits from vehicle counters at the North and South Rims. The increase in visits from the recalibration will roughly offset the overcount due to the handling of river runners. Impact estimates in this report are therefore based on the official estimate of 4,124,900 visits in 2003. We have increased the estimates of visits at the North and South rims to compensate for treating river runners each as a single visit.

Table 2. Public Use Statistics for Grand Canyon National Park, 2003

Month	Recreation visits	Lodging	Camping	Backcountry
January	156,481	18,495	1,222	3,836
February	148,388	30,314	1,537	2,609
March	274,120	45,734	5,641	21,030
April	340,245	50,287	22,101	22,266
May	398,371	63,593	45,046	36,617
June	536,251	69,254	64,139	35,442
July	603,109	70,010	68,283	30,334
August	550,855	66,080	59,966	27,275
September	377,719	67,847	40,581	29,438
October	335,317	57,855	26,051	21,260
November	220,124	30,964	5,308	10,550
December	183,920	17,238	1,031	3,614
Totals	4,124,900	587,671	340,906	244,271

Source: NPS Public Use Statistics (2004)

Economic impacts of park visitors reported here covers sales, income and jobs in Coconino county that result from park visitor spending. The local region represents roughly an 80-mile radius around the park, covering gateway communities where park visitors may stay overnight or purchase supplies and souvenirs.

METHODS

Spending and economic impact estimates are produced using the Money Generation Model 2 (MGM2) (Stynes and Propst, 2000). The three inputs to the model are:

1) Number of recreation visits broken down into distinct visitor segments,
2) Spending averages for each segment, and
3) Economic ratios and multipliers for the local region

Recreation visits to the park in 2003 are based on the National Park Service Public Use Statistics. Reported recreation visits in 2003 are divided among a set of visitor segments and converted to travel party trips and days/nights in the region. Conversions of recreation use from visits (park entries) to trips and party nights in the area are based on trip characteristics measured in the 2003 South and North Rim Visitor Studies (Littlejohn and Hollenhorst, 2004a, 2004b). Visitor spending averages are also estimated from these visitor surveys.

Regional economic multipliers are estimated using an input-output model of the Coconino County economy estimated with the IMPLAN system (MIG, Inc. 1999). The MGM2 model provides a spreadsheet template for combining park use, spending and regional multipliers to compute changes in sales, personal income, jobs and value added in the region.

Grand Canyon National Park Visitor Study, 2003

Park visitor studies were conducted at the North and South Rims from June 22 -28, 2003 (Littlejohn and Hollenhorst, 2004a, 2004b). The studies measured visitor demographics, trip planning, travel expenditures, facility importance, and service quality. South Rim visitor surveys were distributed to a sample of 1,000 visitors at the junction of Main Park Road and Center Road (85%) and at the Desert View gas station (15%). Visitor groups returned 735 questionnaires for a 73.5% response rate. For the North Rim visitor survey, six hundred questionnaires were distributed at the North Rim entrance; 508 of these questionnaires were returned for an 84.7% response rate.

Data from the visitor surveys are used to form segments and to estimate spending patterns and other parameters required by the MGM2 model (party size, length of stay, trip purpose, and park re-entry rates). Averages estimated from the survey are expanded to all park visitors based on the 2003 recreation visit and overnight stay figures for Grand Canyon National Park (NPS Public Use Statistics, 2004). Some adjustments are made to the survey estimates to represent year-round use. The visitor survey did not cover commercial or non-commercial river users who enter at Lees Ferry or visitors to Tuweep. Concession receipts of river guides and backcountry stay figures are therefore used to supplement the spending data from the visitor survey.

The visitor survey measured spending for the entire travel party within ten spending categories. Visitors reported all spending on the trip inside the park and in the surrounding area. The surrounding area for South Rim visitors includes Tusayan, Flagstaff, Williams and Cameron. For North Rim visitors the surrounding area was defined to cover Jacob Lake, Kanab, and Fredonia. Local area residents were instructed to only include spending directly related to the park visit. Readers are referred to the Visitor Survey Project reports (Littlejohn and Hollenhorst, 2004a, 2004b) for further details on survey methods and general visitor characteristics and survey responses. The analysis here focuses on estimates of visitor spending.

MGM2 Visitor Segments

To help explain differences in spending across user groups, survey respondents were divided into six segments. Visitors on day trips were distinguished from those on overnight trips based on whether the visitor stayed overnight in the local region (Coconino county). Overnight visitors are classified based on the type of lodging (hotel, camp or backcountry) and whether they stayed inside or outside the park.

Day trips: visitors who do not stay overnight in the area. This segment includes some local residents[2], but mostly visitors from outside the region who do not stay overnight in the local area. Visitors staying with friends/relatives or at an owned seasonal home in the area are also treated as day trips for the purpose of estimating spending

In-Park Hotel: visitors staying in hotels, cabins, or lodges inside the park

In-Park Camp: visitors staying in campgrounds inside the park

Backcountry campers: visitors staying overnight in NPS backcountry sites

Outside-Park Motel: visitor staying in hotels, motels, cabins, rented condos or B&B's outside the park within the local region

Outside-Park Camp: visitors staying in private or other public campgrounds outside the park within the local region

A seventh segment is added to the MGM2 model for Grand Canyon to account for spending by visitors taking commercial or private rafting trips. River runners were not directly sampled in the visitor survey, so a spending profile was constructed based on commercial guide fees and assuming one additional night outside the park immediately prior to or after the rafting trip.

Estimates of Park Use by Segment

The unit of analysis for estimating visitor spending is the party day/night. Day trips are measured in party days while overnight stays are measured in party nights. The travel party consists of all people in the same vehicle or staying in the same room or campsite. Spending is measured on a party trip basis in the visitor survey and converted to a party night basis by dividing by length of stay in the region. For consistency with the spending data, recreation visit and overnight stay figures in the Public Use Statistics are converted to party trips and party nights in the local region. The following section details the conversion process.

A recreation visit is the count of one person entering the park. Visitor spending depends on how long visitors stay in the area. Recreation visits are therefore converted to party days/nights in the region before applying spending averages. The conversion procedure also avoids double counting spending by visitors who may enter the park multiple times during their trip and takes into account additional days a visitor may spend in the area outside the park.

Formulas for converting recreation visits to party nights[3] are:

Vehicle entries to the park = recreation visits / party size (1)
Party trips to the park = vehicle entries / re-entry rate (2)
Party nights in the area = party trips * length of stay in the area (3)

Distinct re-entry rates, party sizes and length of stay factors were estimated for each visitor segment using the 2003 visitor study data. Separate estimates were made for North and South Rim visitors and for park visitors as a whole.

[2] The visitor survey only included 6 cases living in the local region as defined by zipcodes beginning with 860 and the 84741 zipcode. Local visitors were therefore grouped with other day trips.

[3] A party night is a travel group staying one night in the area. The travel group is usually all individuals in the same vehicle or staying in the same room or campsite. For day trips, estimates are in party days.

Results

Trip Characteristics

Three fourths of park visitors stay overnight in the region. Overnight visitors stay an average of two-nights in the area. The average party size is 2.8. Visitors enter the park an average of 1.6 times during their trip. Trip patterns vary somewhat across visitor segments (Table 3).

Table 1. Grand Canyon Visitor Trip Patterns by Visitor Segment, 2003

	Segment						
Characteristic	Day Trip	In-Park Hotel	In-Park Camp	Back-country	Outside-Park Hotel	Outside-Park Camp	All Visitors
Length of stay	1.00	1.95	2.19	2.09	1.97	2.34	2.03[a]
Party size	2.83	3.07	2.84	2.74	2.80	2.75	2.84
Re-entry rate	1.08	1.45	1.62	1.23	2.04	2.03	1.55

a. The average length of stay is for overnight visitors.

Recreation Visits

The 4.125 million recreation visits to the park in 2003 equates to 957,000 party trips or 1.6 million party days/nights in the region (Table 4). Visitors staying at hotels outside the park account for 45% of recreation visits. Twenty-six percent of visits are day trips to the region (Figure 2). Park visitors account for 190,000 room nights inside the park and 641,000 outside the park in gateway communities. Campsite nights are split more evenly with 119,000 inside the park and 138,000 outside. Backcountry campers contributed 88,000 party night stays in 2003, while 21,613 river runners accounted for 144,000 person nights on the river (or 72,000 party nights based on a party size of 2.0).

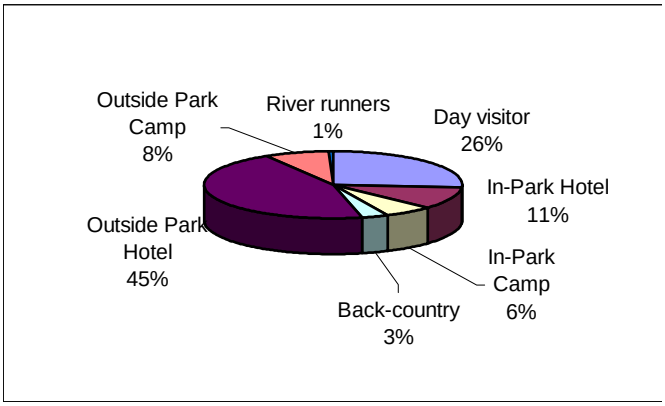

Figure 1. Distribution of Grand Canyon National Park Recreation Visits by Segment

Table 2. Grand Canyon National Park Recreation Visit Estimates by Segment, 2003 (In Thousands)

	Segment							
Visit Measure	Day Trip	In-Park Hotel	In-Park Camp	Back-country	Outside-Park Hotel	Outside-Park Camp	River Runners[a]	Total
Recreation visits	1,091	435	250	141	1,858	329	22	4,125
Vehicle entries	385	142	88	52	664	120	11	1,471
Party trips	357	98	54	42	325	59	11	957
Party nights	357	190	119	88	641	138	72	1,605
Pct of visits	26%	11%	6%	3%	45%	8%	1%	100%
Pct of nights	21%	11%	7%	5%	38%	8%	4%	100%

a. A party size of 2.0 is used to convert river runner visits to travel parties and party nights.

Visitor Spending

On average, park visitors spent $201 per party per day in the region. Spending varies across the seven segments. Visitors on day trips spend $114 per party, while campers average just under $100 per party per night (Table 5). Visitors staying in hotels, cabins and lodges spend considerably more: $338 per party per night if staying inside the park and $272 outside. There were not enough backcountry campers in the survey to estimate a spending average so an average of $43 per party was adopted from the generic MGM2 spending profiles. Based on visitor spending reports, the average room rates were $125 per night inside the park and $103 per night outside. Average reported per night camping fees from the survey data were $16 inside the park and $19 outside.

Spending for river trips, air overflights and other special uses were not fully covered in the visitor survey spending reports. As river trips begin upstream of the park, river runners who do not also enter the park by vehicle were not sampled. A spending profile for river runners was estimated based on river running concessionaire receipts and assuming one additional day of spending prior to or following the raft trip[4]. A party size of 2.0 was assumed as the spending unit for river runners.

[4] As the park re-entry rate for river runners is set to 1.0, entries to the park by vehicle for river runners before or after their trip are treated as a separate visit. The additional expenses for this portion of their trip are therefore counted within one of the other six segments.

Table 3 Grand Canyon National Park Visitor Spending by Segment, 2003 ($ per party night)

	Segment							
Spending category	Day Trip	In-Park Hotel	In-Park Camp	Back-country	Outside Park Hotel	Outside Park Camp	River Runners[a]	Avg[b]
Inside the park								
Hotels/Motel	0	125.34	0	0	0	0		15.54
Camping fees	0	0	16.24	3.09	0	0		1.44
Guide fees	2.9	6.22	2.21	0	1.96	0.61	393.13	2.49
Restaurants/Bars	11.71	75.6	6.7	5.12	10.38	3.48		17.56
Groceries/Take out	1.72	7.75	9.18	1.03	2.19	0.77		3.12
Gas and oil	1.85	3.86	1.74	1.45	0.72	0.98		1.52
Admissions/Recreation	12.12	25.8	7.02	4.19	6.57	5.54		10.05
All other purchases	25.88	33.74	21.85	7.93	19.13	8.37		21.1
Donations	0.33	1.2	0.06	0.03	0.33	0.15		0.38
Sub Total	56.5	279.5	64.99	22.85	41.29	19.9	393.13	73.22
In gateway communities								
Hotels/Motel	0	0	0	0	102.51	0	6.38	42.72
Camping fees	0	0	0	0	0	18.5	0.25	1.68
Guide fees	0	7.47	0	0	1.37	0.22	0.23	1.52
Restaurants/Bars	11.13	7.37	8.88	5.06	42.08	14.82	3.49	23.37
Groceries/Take out	2.65	2.91	3.71	3.38	7.64	11.77	0.85	5.71
Gas and oil	11.67	3.9	8.85	8.9	13.9	11.91	1.68	11.28
Other transportation expenses	22.93	20.24	2.4	0.32	30.87	3.64	3.17	21.26
Admissions/Recreation	3.75	13.92	1.53	0	15.04	9.07	1.46	9.81
All other purchases	5.28	2.78	7.31	2.58	16.98	6.85	1.49	9.99
Donations	0.04	0.07	0	0.06	0.54	0.27	0.04	0.27
Sub total	57.44	58.66	32.69	20.31	230.93	77.04	19.05	127.61
Grand total	113.95	338.16	97.68	43.16	272.23	96.94	412.18	200.82
Pct inside park	50%	83%	67%	53%	15%	21%		36%

a. The spending profile for river runners includes guide fees for two people and one night's spending in gateway communities for a party of two. The per night averages distribute this spending over 6.7 nights.
b. The overall spending averages are computed as a weighted average of the columns (excluding river runners) using the percentage of party nights by each segment as weights.

Total spending is estimated by multiplying the spending averages (Table 5) by the number of party nights by each segment (Table 4). Visitors to Grand Canyon National Park in 2003 spent a total of $338 million in the local area (Table 6). Visitors spent $90 million on motel/hotel rooms including B&B's, cabins and lodges. This represents 63% of the $143 million in room sales reported by the Arizona Office of Tourism (2004) for Coconino county in 2003.

Park visitors spent $63 million on restaurant meals, and $48 million on souvenirs and other expenses. River concessionaire revenues of $28.6 million are included in the $66 million spent on admissions and recreation. Visitors staying in hotels outside the park accounted for 52 percent ($174 million) of the total spending in the region, followed by visitors staying in lodges and cabins inside the park (19%).

Forty-two percent of the visitor spending ($141 million) occurs inside the park (Table 7). Fees for commercial raft trips are treated as inside the park. About $200 million is spent outside the park in gateway communities. Detailed totals for spending inside and outside the park by segment are reported in the Appendix (Table C-1).

Table 4. Total Spending by Grand Canyon National Park Visitors in the Region, 2003 ($ Millions)

	Segment							
Spending Category	Day visitor	In-Park Hotel	In-Park Camp	Back-country	Outside Park Hotel	Outside Park Camp	River runners	Total
Motel, hotel cabin or B&B	0.00	23.88	0.00	0.00	65.68	0.00	0.46	90.02
Camping fees	0.00	0.00	1.93	0.27	0.00	2.55	0.02	4.77
Restaurants & bars	8.15	15.81	1.85	0.89	33.61	2.53	0.25	63.09
Groceries, take-out food/drinks	1.56	2.03	1.53	0.39	6.30	1.73	0.06	13.60
Gas & oil	4.82	1.48	1.26	0.91	9.37	1.78	0.12	19.74
Other transp. expenses	8.18	3.86	0.29	0.03	19.78	0.50	0.23	32.86
Admissions/Recreation	6.83	10.42	1.29	0.38	16.54	2.19	28.59	66.23
Souvenirs/other expenses	11.12	6.96	3.47	0.92	23.14	2.10	0.11	47.81
Total	40.67	64.42	11.61	3.78	174.42	13.39	29.85	338.13
Percent	12%	19%	3%	1%	52%	4%	9%	100%

Table 7. Total Spending by Grand Canyon National Park Visitors by Location Inside and Outside the Park, 2003 ($ Millions)

Spending category	Spending Inside Park	Spending Outside Park	Total	Pct of Total	Pct Inside park
Motel, hotel cabin or B&B	23.9	66.1	90.0	27%	27%
Camping fees	2.2	2.6	4.8	1%	46%
Restaurants & bars	27.0	36.1	63.1	19%	43%
Groceries, take-out food/drinks	4.8	8.8	13.6	4%	35%
Gas & oil	2.3	17.4	19.7	6%	12%
Other transp. expenses	NA	32.9	32.9	10%	0%
Admissions & fees	48.3	17.9	66.2	20%	73%
Souvenirs and other expenses	32.4	15.4	47.8	14%	68%
Total	140.8	197.3	338.1	100%	42%

Visits and Spending for Visitors to the North and South Rims

The South Rim accounts for 91% of recreation visits and 84% of visitor spending. River runners represent less than one percent of park visitors, but 5% of party nights in the area and 9% of all spending. Visitors to the South Rim spend 20% more per day than North Rim visitors and also average longer stays. South Rim visitors spent $283 million in 2003 compared to $25 million for North Rim visitors and $30 million for river runners (Table 8).

The average party sizes did not differ significantly between the North and South Rims. South Rim visitors averaged somewhat longer stays except for in-park campers who stayed longer at the North Rim. The average length of stay for overnight visitors, is around 2 days at the South Rim and 1.5 days for North Rim visitors. A more detailed comparison of visitors to the North and South Rims is included in the Appendix (Table C-2).

Table 8. Visits and Spending for North and South Rim Visitors and River Runners

Measure	North Rim	South Rim	River[a]	Total
Recreation Visits	348,030	3,755,669	21,613	4,125,312
Percent of visits	8%	91%	1%	100%
Party nights (000's)	146.9	1,386.1	72.4	1,605
Percent of party nights	9%	86%	5%	100%
Average spending ($ per party per night)				
Inside park	$96	$68	$393	$86
Outside park	$75	$136	$19	$125
Overall average	$172	$204	$412	$211[b]
Total Spending ($millions)				
Inside park	$14	$95	$28	$137
Outside park	$11	$189	$1	$201
Total	$25	$283	$30	$338
Percent of spending	7%	84%	9%	100%

a. River runners are treated as parties of two, spending 6.7 nights on the river and the equivalent of one extra night's spending outside the park.
b. The overall average includes river runners.

Economic Impacts of Visitor Spending

Economic impacts of park visitor spending are estimated by applying the $338 million in spending to an input-output model of the Coconino county economy. The direct economic effects of park visitor spending accrue to tourism-related businesses that sell directly to park visitors, i.e., hotels, restaurants, amusements, gas stations, and retail stores. Secondary impacts are felt within a broader array of businesses in the region that benefit by selling goods and services to directly impacted businesses or from spending by households in the region that earn their income directly or indirectly from park visitor spending.

The $338 million spent by Grand Canyon NP visitors had a direct economic impact of $298 million in direct sales[5], $112 million in personal income (wages and salaries), $170 million

[5] Direct effects are less than total spending, as only the retail and wholesale margins on visitor purchases of goods accrue to the local economy. For example, if a visitor buys $50 dollars worth of clothing at a local store, the store receives the retail margin (assume $20 dollars), the wholesaler or shipper (if local) may receive $5 dollars, and the remaining producer price of the clothing ($25 dollars) leaks immediately out of the local economy, unless the clothing is manufactured in the local region. The local region surrounding Grand Canyon National Park captures

in value added, and supported 5,655 jobs in the region (Table 9). The lodging sectors (hotels and campgrounds) received the largest amount of direct sales ($95 million), followed by restaurants ($63 million).

Secondary effects are estimated using multipliers for the local economy. The sales multiplier for the region is 1.44, meaning that an additional $0.44 in sales is generated through secondary effects for every dollar of direct sales. Secondary effects of the $338 million spent by park visitors contributes an additional 1,786 jobs, $45 million in personal income and $75 million in value added to the local economy. Counting direct and secondary effects, Grand Canyon National Park visitor spending had a local economic impact of $429 million in sales, $157 million in personal income, $245 million in value added, and almost 7,500 jobs in 2003.

Table 9. Economic Impacts of Grand Canyon NP Visitor Spending, 2003

Sector/Spending category	Sales $000's	Jobs	Personal Income $000's	Value Added $000's
Motel, hotel cabin or B&B	90,022	1,638	39,311	63,752
Camping fees	4,774	32	620	1,478
Restaurants & bars	63,093	1,565	25,479	28,748
Recreation/amusements	66,225	1,417	24,381	40,913
Other vehicle expenses	32,864	310	5,376	12,309
Retail Trade	31,748	624	14,693	19,171
Wholesale Trade	4,681	50	1,737	3,039
Local Production of goods	5,037	18	410	806
Total Direct Effects	298,442	5,655	112,007	170,216
Secondary Effects	130,892	1,786	44,729	75,237
Total Effects	429,333	7,441	156,736	245,453
Multiplier	1.44	1.32	1.40	1.44

Study Limitations and Errors

The accuracy of the MGM2 estimates rests on the three inputs to the model: visits, spending averages, and multipliers. Counts of visitors rely on the public use figures, although these must be adjusted to account for multiple entries to the park during the stay in the area. Adjustments were also made to properly account for river runners.

Visitor segment shares and spending averages are derived from the 2003 Grand Canyon National Park South Rim and North Rim Visitor Studies. The sampling errors on the spending averages were 4 -5% overall and ranged from 5- 24% for individual segments[6]. Spending averages can also vary by 4-5 % depending on decisions to treat missing spending data as zeros

86% of visitor spending. Fourteen percent of visitor spending leaks out of the local economy to cover the costs of imported goods bought by visitors

[6] Sampling error depend on the number of cases sampled and the variation in the sample..

or not, and how many and which outliers to delete. The analysis omitted two cases spending more than $3,000 per party per day and 50 cases with missing values on all spending categories (See Table C-7 and C-8 in the Appendix for the distribution of cases omitted for the economic analyses). Treating missing spending data as zeros would lower the overall spending average by 4%.

As the visitor survey only covered a 6-day period during June, 2003, the sample may not accurately represent year-round visitors. For example, if the proportion of visitors staying inside the park from the (unadjusted) sample are expanded to all visitors, hotel overnight stays inside the park are 25% higher than the overnight stays reported in the Public Use Statistics. Visitors staying in park lodges may have been over-represented in the sample or the proportion of visitors staying in park lodges may be lower during other seasons.

Adjustments were employed to the survey results to reduce potential seasonal biases. Segment shares for overnight visitors staying at hotels, tent campsites, and backcountry campsites inside the park were adjusted to be consistent with NPS Pubic Use overnight stay figures. Spending averages were adjusted downward to reflect lower off-season rates. Party sizes were reduced to be consistent with the figures used in the public use count protocols. Lengths of stay and re-entry rates were not adjusted from the VSP survey results.

Customized multipliers were developed for Coconino County, Arizona using the IMPLAN system. There may be some differences in local production functions, for example concession operations, that would affect the multipl, but potential errors in the multipliers likely would have a small affect on the overall results. The Coconino county multipliers are similar to the MGM2 small metro area multipliers as the county includes Flagstaff, a central place for the region.

Depending on the direction and magnitude of errors in visits, spending, and multipliers, the errors may compound or cancel each other. The most important potential errors are in the estimates of visits by lodging segments. As the model is linear, doubling visitors will double spending and impacts. Using a 95% confidence interval around the overall spending averages and assuming visits and multipliers are accurate, park visitor spending is estimated to fall within plus or minus ten percent of the $338 million (between $304 and $372 million).

A better way to validate the MGM2 spending estimates is to compare them with other known measures of economic activity in the area. Table 9 compares the estimated visitor spending on selected items inside the park with Grand Canyon NP concessionaire reports of receipts for 2001.

Assuming no significant changes in concession receipts between 2001 and 2003, the hotel and retail spending figures are quite consistent. The river runner concession category is consistent by definition, as concession receipts were used to estimate spending in this category. The MGM2 estimate of restaurant spending is slightly higher than the 2001 concession reports. Camping and the “other” category are not comparable.

Table 9. Comparison of Grand Canyon in-park visitor spending and reported concession receipts ($ millions)

Spending Category	2001 Concession Receipts	2003 In-Park Visitor Spending
Hotels and Cabins	25.80	23.88
Camping[a]	0.40	2.20
Restaurants & Bars	20.50	26.96
River Runners	28.47	28.47
Horse	1.83	NA
Retail	37.70	39.48
Others[b]	2.40	19.83
Total	117.20	140.8

a. In-park spending on camping fees include both NPS and concession operated campgrounds and backcountry fees.
b. The "other" category for concession receipts includes vehicle transportation and a miscellaneous category, while the visitor spending "other" category cover $15.4 million in "admissions and fees" (presumably park entrance fees) and donations.

Overall, the consistency of spending estimates with concession receipts helps to validate the MGM2 model estimates. The MGM2 estimates rely on the spending averages from the visitor survey as well as the procedures for converting visits to party days/nights, estimating visitor segment shares, adjusting for potential seasonal biases in the sample, and expanding from the sample to all Grand Canyon National Park recreation visits in 2003.

Visiting Grand Canyon was the primary trip purpose for the majority of visitors, so most of the spending can be directly attributable to the park visit. Three out of four South Rim visitors and two thirds of North Rim visitors indicated that Grand Canyon was the primary destination of their trip (Littlejohn and Hollenhorst, 2004a, 2004b). The results are conservative in that they only include spending within Coconino county and only one night of spending is counted for extended stays in the region primarily to visit relatives, stay at a seasonal home, conduct business, or other reasons. The impact estimates do not therefore include airfares and other expenses outside the local region. This spending can be substantial for international visitors and domestic visitors on extended trips, but spending outside the local area may not be directly associated with the park visit and will not affect the Coconino county economy.

Visitors who live in the local area are often excluded in estimating economic impacts, as their spending does not represent "new" money for the region. Only six of the over 1,200 visitors surveyed were identified as local residents, so distinct spending estimates for locals were not made. The survey may have underestimated local residents.

Summary and Discussion

Visitors to Grand Canyon National Park spent $338 million in the local area (Coconino county, AZ) in 2003. The direct economic impact of this spending was $298 million in direct sales, $112 million in personal income, $170 million in direct value added and 5,655 jobs. Sectors receiving the greatest direct benefit from the park visitors were lodging ($90 million in direct sales), recreation/amusements ($66 million) and restaurants ($63 million). Including multiplier effects, the total economic impacts of Grand Canyon National Park visitor spending on the local region in 2003 was $429 million in sales, $157 million in personal income, $245 million in value added, and 7,441 jobs.

Park visitors account for 63% of all room sales in the county. Including river concessions, two-thirds of park visitor spending occurs in gateway communities surrounding the park. The 7,441 jobs supported by park visitor spending represents 10% of all jobs in the county in 2002. These results illustrate the importance of the park to the local economy.

Different types of visitors have distinct spending and use patterns and therefore they have distinct impacts on the local economy and the park. Table 10 shows the changes in sales, jobs, income and valued added associated with an increase or decrease of one thousand additional visits for each MGM2 visitor segment. These figures can be used to evaluate specific marketing, policy or development actions that may affect the mix of visitors.

For example, the regional economic impacts of attracting an additional 1,000 visitors staying in park hotels is $286,000 in sales, $108,000 in wages and salaries and 5.1 jobs. The impact of this alternative could be compared to others such as expanding campsites, a marketing campaign to increase day trips, etc. An additional 1,000 visitors with the current segment mix supports 2.8 jobs and provides $59,000 in wages and salaries to the region. A loss of 1,000 visitors would yield similar reductions in jobs and income.

The economic impacts presented in this report document the economic significance of 4.13 million recreation visits to Grand Canyon National Park in 2003. The impacts will vary from year to year with changes in prices, visitor volumes, the mix of visitors attracted, and other changes in the park and surrounding communities. The MGM2 model has built-in procedures to price adjust spending averages over time, so updated figures may be obtained fairly easily, if there are not significant changes in visitor use and spending patterns. In the absence of significant structural changes in the local economy, multipliers will be quite stable. So the primary input for updating the estimates are visit estimates, which must take into account any changes in the mix of visitors or their length of stay in the area.

Table 10. Impacts of 1,000 Park Visitors by Segment, Grand Canyon NP, 2003

Segment	Sales	Jobs	Personal Income	VA
Day Trip	$ 46,000	0.8	$ 15,000	$ 24,000
In-Park Hotel	$ 286,000	5.1	$ 108,000	$ 167,000
In-Park Camp	$ 82,000	1.3	$ 27,000	$ 42,000
Backcountry	$ 33,000	0.6	$ 12,000	$ 17,000
Outside-Park Hotel	$ 245,000	4.2	$ 91,000	$ 142,000
Outside-Park Camp	$ 95,000	1.5	$ 31,000	$ 48,000
River Runners	$ 1,990,000	37.9	$ 715,000	$ 1,197,000
General Park Mix	$ 161,000	2.8	$ 59,000	$ 92,000

Note: These estimates are based on 1,000 park visitors (trips). As some visitors enter the park more than once during their trip, recreation visits counted for each 1,000 visitors will be higher. On average each park visitor generates 1.55 visits, counted as entries to the park.

Suggested research to further refine the spending and impact estimates would include (1) a survey of off-season park visitors to better estimate characteristics of visitors on a year-round basis; (2) surveys of visitors taking river trips to identify their spending and use patterns before and after their river trips; (3) cooperative market research studies with local tourism organizations and nearby recreation areas (Lake Powell, Lake Mead, National Forest) to identify use patterns across these area attractions and to address common research needs.

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Appendix A. Definition of Economic Terms in the MGM2 Model

Terms	*Definition*
Sales	Sales of firms within the region to park visitors.
Jobs	The number of jobs in their region supported by the visitor spending. Job estimates are not full time equivalents, but include part time and seasonal positions.
Personal income	Wage and salary income, proprietor's income and employee benefits.
Value added	Personal income plus rents and profits and indirect business taxes. As the name implies, it is the value added by the region to the final good or service being produced. It can also be defined as the final price of the good or service minus the costs of all of the non-labor inputs to production.
Direct effects	Direct effects are the changes in sales, income and jobs in those business or agencies that directly receive the visitor spending.
Secondary effects	These are the changes in the economic activity in the region that result from the re-circulation of the money spent by visitors. Secondary effects capture the sum of indirect and induced effects.
Indirect effects	Changes in sales, income and jobs from industries that supply goods and services to the business that sell directly to the visitors. For example, linen suppliers benefit from visitor spending at lodging establishments.
Induced effects	Changes in economic activity in the region resulting from household spending of income earned through a direct or indirect effect of the visitor spending. For example, motel and linen supply employees live in the region and spend the income earned on housing, groceries, education, clothing and other goods and services.
Total effects	Sum of direct, indirect and induced effects. ▪ Direct effects accrue largely to tourism-related business in the area ▪ Indirect effects accrue to a broader set of economic sectors that serve these tourism firms. ▪ Induced effects are distributed widely across a variety of economic sectors.

Appendix B. Multipliers for Coconino County, Arizona by Sector, 2001

	Direct effects				Total effects multipliers				
Sector	Jobs/ MM sales	Personal Inc/sales	Property Inc/sales	Value Added /sales	Sales II	JobsII/ MMsales	IncII/ sales	VA II/sales	Sales I
Hotels and motels	20.54	0.44	0.18	0.71	1.42	26.89	0.58	0.95	1.15
Other accommodations	7.50	0.13	0.15	0.31	1.53	15.49	0.30	0.62	1.39
Food services	28.00	0.40	0.00	0.46	1.46	34.86	0.55	0.71	1.19
Amusement and recreation	24.15	0.37	0.20	0.62	1.45	31.31	0.52	0.87	1.20
Automotive repair	10.66	0.16	0.18	0.37	1.38	16.34	0.29	0.58	1.24
Passenger transportation	31.38	0.50	0.02	0.57	1.52	39.67	0.69	0.86	1.19
Food manufacturing	5.60	0.12	0.11	0.23	1.33	11.21	0.25	0.45	1.23
Sporting goods manufacturing	6.53	0.20	0.05	0.27	1.37	11.84	0.33	0.47	1.22
Other manufacturing	10.27	0.23	0.10	0.34	1.34	15.00	0.34	0.53	1.18
Retail Trade	22.19	0.46	0.04	0.60	1.51	30.18	0.64	0.90	1.21
Wholesale trade	12.17	0.37	0.09	0.65	1.40	18.60	0.51	0.88	1.16

Source: IMPLAN model for 2001

Brief explanation of table:

Direct effects are economic ratios to convert sales to jobs, income and value added.
Jobs/MM sale measures the number of jobs per million dollars in sales.
Income/sales is the percentage of sales going to wages and salaries (includes sole proprietor's income)
Value added/sales is percentage of sales that is value added (Value added covers all income, rents, profits and indirect business taxes).

Total effects are multipliers that capture the total effect relative to direct sales.

Sales II multiplier = (direct + indirect + induced sales)/ direct sales
Sales I captures only direct and indirect sales =(direct + indirect sales)/ direct sales
Jobs II/ MM sales = total jobs (direct + indirect + induced jobs) per million dollars in direct sales.
Income II /Sales = total income (direct + indirect + induced income) per dollar of direct sales
VA II/ Sales = total value added (direct + indirect + induced value added) per dollar of direct sales.

Using the hotel sector row to illustrate:

Direct Effects: Every million dollars in hotel sales creates 20.54 jobs in hotels. Forty-four percent of hotel sales goes to wages and salaries of hotel employees and 71% of hotel sales is value added. The remaining 29% of hotel sales goes to purchase inputs by hotels. The wage and salary income creates the induced effects and the 29% spent on purchases by the hotel starts the rounds of indirect effects.

Multiplier effects: There is an additional 15 cents of indirect sales in the region for every dollar of direct hotel sales (type I sales multiplier = 1.15). Since the Type II sales multiplier for hotels is 1.42, 42 cents in secondary sales results for every dollar of direct sales, i.e., 15 cents in indirect sales and 27 cents in induced sales. An additional six jobs are created from secondary effects for each million dollars in hotel sales (26.89 total jobs – 20.54 direct jobs per million sales). These jobs are scattered across other sectors of the local economy. Including secondary effects, every million dollar of hotel sales in the Coconino county region yields $1.42 million in sales, $580,000 in income, and $950,000 in value added.

Appendix C. Supplemental Tables

Table C1. Total Spending by Grand Canyon National Park Visitors in the Region, 2003 ($ Thousands)

	Segment							
Spending category	Day visitor	In-Park Hotel	In-Park Camp	Back-country	Outside Park Hotel	Outside Park Camp	River runners	Total
Inside the park								
Hotels/Motel	0	23,876	0	0	0	0	0	23,876
Camping fees	0	0	1,931	271	0	0	0	2,202
Guide fees	1,035	1,185	263	0	1,256	84	28,466	32,289
Restaurants/Bars	4,179	14,401	797	449	6,651	480	0	26,957
Groceries/Take out	614	1,476	1,091	90	1,403	106	0	4,781
Gas and oil	660	735	207	127	461	135	0	2,326
Admissions/Recreation	4,325	4,915	835	367	4,210	765	0	15,416
All other purchases	9,235	6,427	2,598	695	12,258	1,156	0	32,368
Donations	118	229	7	3	211	21	0	588
Sub Total	20,165	53,245	7,728	2,001	26,450	2,747	28,466	140,803
In gateway communities								
Hotels/Motel	0	0	0	0	65,684	0	462	66,145
Camping fees	0	0	0	0	0	2,554	18	2,572
Guide fees	0	1,423	0	0	878	30	16	2,348
Restaurants/Bars	3,972	1,404	1,056	443	26,963	2,046	253	36,136
Groceries/Take out	946	554	441	296	4,895	1,625	62	8,819
Gas and oil	4,164	743	1,052	780	8,906	1,644	122	17,412
Other transportation expenses	8,182	3,856	285	28	19,780	503	230	32,864
Admissions/Recreation	1,338	2,652	182	0	9,637	1,252	106	15,167
All other purchases	1,884	530	869	226	10,880	946	108	15,443
Donations	14	13	0	5	346	37	3	419
Sub total	20,500	11,174	3,885	1,779	147,969	10,638	1,379	197,325
Grand total	40,665	64,419	11,613	3,780	174,419	13,385	29,846	338,128
Percent	12%	19%	3%	1%	52%	4%	9%	100%

Table C2. Comparison of North and South Rim Visitors

	Segment						
Characteristic	Day trip	In-Park Hotel	In-Park Camp	Back-country	Outside-Park Hotel	Outside-Park Camp	Total
South Rim							
Length of stay (days/nights)	1.0	2.1	2.1		2.0	2.5	2.0
Party size[a]	2.8	3.1	2.9		2.8	2.7	2.7
Entry rate (park entries per trip)	1.1	1.6	1.6[b]		2.1	2.3	1.7
Recreation visits (000's)	976	338	225	113	1,840	263	3,756
Party nights (000's)	315	142	108	85	626	109	1,386
Percent of Visits	26%	9%	6%	3%	49%	7%	100%
Percent of party nights	23%	10%	8%	6%	45%	8%	100%
Spending ($ per party per night)							
Spending inside the park	$56	$283	$65		$42	$18	$66
Spending outside the park	$65	$67	$38		$230	$81	$143
Total spending	$121	$350	$103		$271	$99	$209
Number of cases	111	57	14	0	302	25	509
North Rim							
Length of stay (days/nights)	1.0	1.7	2.4	1.9	1.5	1.9	1.5
Party size[c]	2.8	2.9	2.8	2.1	2.9	3.1	2.9
Entry rate (park entries per trip)	1.0	1.2	1.9	1.4	1.3	1.4	1.2
Recreation visits (000's)	122	66	31	14	73	42	348
Party nights (000's)	42	32	15	9	30	19	147
Percent of Visits	35%	19%	9%	4%	21%	12%	100%
Percent of party nights	29%	22%	10%	6%	21%	13%	100%
Spending ($ per party per night)							
Spending inside the park	$63	$268	$67	$24	$36	$27	$96
Spending outside the park	$24	$36	$10	$21	$244	$62	$75
Total spending	$87	$304	$76	$45	$280	$89	$172
Number of cases	127	67	26	16	88	38	362

[a] South Rim party sizes were reduced by 15% to adjust for smaller off-season party sizes and for consistency with the overall party size of 2.84 that is used in the Public Use Statistics calculations for Grand Canyon National Park.

[b] Due to a small sample size, the re-entry rate for the In-Park Camp segment was set equal to the In-park Hotel segment.

[c] Party sizes for the North Rim were reduced by 10%.

Table C3. South Rim Visitor Spending by Lodging Segment, 2003 ($ per party per trip)

Spending Category	Day visitor	In-Park Hotel	In-Park Camp	Outside-Park Hotel	Outside-Park Camp
Expenditures inside Park					
Hotels/Motel	0.00	261.07	0.00	0.00	0.00
Camping fees	0.00	0.00	37.12	0.00	0.00
Guide fees	3.40	14.45	5.70	4.09	1.90
Restaurants/Bars	10.51	156.88	12.15	20.56	7.30
Groceries/Take out	1.79	16.80	21.72	4.63	1.37
Gas and oil	1.00	7.91	2.38	1.43	2.13
Admissions/Recreation	12.08	62.70	13.37	13.50	13.68
All other purchases	26.42	63.98	46.08	39.28	18.24
Donations	0.35	2.65	0.00	0.65	0.42
Sub Total	55.54	586.45	138.50	84.14	45.03
Expenditures outside park					
Hotels/Motel	0.00	0.00	0.00	206.63	0.00
Camping fees	0.00	0.00	0.00	0.00	45.71
Guide fees	0.00	20.13	0.00	2.91	0.00
Restaurants/Bars	12.65	15.91	23.08	84.22	39.63
Groceries/Take out	2.93	5.92	9.50	15.06	31.05
Gas and oil	12.44	7.42	21.10	27.73	29.37
Other transportation expenses	26.80	45.84	4.75	61.28	7.60
Admissions/Recreation	4.48	39.04	4.08	31.64	27.47
All other purchases	5.88	3.98	19.34	33.81	18.89
Donations	0.05	0.17	0.00	0.44	0.80
Sub total	65.22	138.40	81.83	463.71	200.53
Grand total	120.75	724.85	220.33	547.86	245.56
Number of cases	106	57	14	302	25
Pct of inside park spending	46%	81%	63%	15%	18%

Table C4. South Rim Visitor Spending by Lodging Segments, 2003 ($ per party per day)

Spending Category	Day trips	In-Park Hotel	In-Park Camp	Back-country[b]	Outside-Park Hotel	Outside-Park Camp
Motel, hotel cabin or B&B	0.00	126.11	0.00	0.00	102.46	0.00
Camping fees	0.00	0.00	17.32	3.07	0.00	18.43
Restaurants & bars	23.16	83.47	16.44	10.10	51.95	18.92
Groceries, take-out food/drinks	4.71	10.97	14.57	4.38	9.76	13.07
Gas & oil	13.43	7.41	10.96	10.26	14.46	12.70
Local transportation	26.80	22.14	2.22	0.32	30.39	3.06
Admissions & fees	20.36	67.25	10.80	4.25	26.18	17.97
Souvenirs and other expenses	32.30	32.83	30.53	10.42	36.25	14.97
Total	120.76	350.18	102.82	42.81	271.44	99.14
Standard error of mean	15.12	29.11	19.78	-	13.04	19.82
95% Confidence Interval[c]						
Lower bound	150.39	407.20	141.58	-	297.21	137.86
Upper bound	90.52	291.92	63.27	-	245.58	59.37

[a] Due to small samples, the spending profiles of local day visitors was adopted from the non-local day visitors with a 20% reduction.
[b] The spending profile of backcountry campers was adopted from the MGM2 generic spending averages.
[c] 95% Confidence Interval = mean ± 1.96* standard error of mean

Table C5. North Rim Visitor Spending by Lodging Segments, 2003 ($ per party per trip)

Spending Category	Day visitor	In-Park Hotel	In-Park Camp	Back-country	Outside-Park Hotel	Outside-Park Camp
Expenditures inside park						
Hotels/Motel	0.00	206.57	0.00	0.00	0.00	0.00
Camping fees	0.00	0.00	28.38	6.00	0.00	0.00
Guide fees	0.71	6.87	0.77	0.00	1.63	0.00
Restaurants/Bars	17.69	125.90	26.65	9.94	19.59	10.68
Groceries/Take out	1.47	11.30	12.62	2.00	1.43	3.05
Gas and oil	5.87	6.63	10.62	2.81	1.35	2.79
Admissions/Recreation	12.80	22.31	24.88	8.13	7.84	10.79
All other purchases	24.45	69.81	56.46	15.38	22.73	23.53
Donations	0.25	1.64	0.77	0.06	0.68	0.18
Sub Total	63.24	451.01	161.15	44.31	55.25	51.03
Expenditures outside park						
Hotels/Motel	0.00	0.00	0.00	0.00	158.36	0.00
Camping fees	0.00	0.00	0.00	0.00	0.00	36.05
Guide fees	0.00	2.01	0.00	0.00	0.74	2.05
Restaurants/Bars	4.57	10.85	2.50	9.81	70.69	19.92
Groceries/Take out	1.49	5.15	1.73	6.56	14.97	17.13
Gas and oil	8.66	8.00	11.38	17.25	24.20	23.34
Other transportation expenses	6.10	25.06	7.69	0.63	56.53	11.18
Admissions/Recreation	0.55	0.30	0.00	0.00	10.85	2.63
All other purchases	2.71	8.64	0.38	5.00	30.06	7.50
Donations	0.00	0.07	0.00	0.13	6.93	0.13
Sub total	24.08	60.09	23.69	39.38	373.34	119.95
Grand total	87.31	511.10	184.85	83.69	428.59	170.97
Pct of inside park spending	72%	88%	87%	53%	13%	30%
Number of cases	127	67	26	16	88	38

Table C6. North Rim Visitor Spending by Lodging Segments, 2003 ($ per party per day)

Spending Category	Day visitor	In-Park Hotel	In-Park Camp	Back-country	Outside-Park Hotel	Outside-Park Camp
Motel, hotel cabin or B&B	0.00	123.18	0.00	0.00	103.18	0.00
Camping fees	0.00	0.00	11.71	3.23	0.00	18.77
Restaurants & bars	22.26	81.55	12.03	10.63	58.82	15.93
Groceries, take-out food/drinks	2.96	9.81	5.92	4.61	10.68	10.51
Gas & oil	14.53	8.72	9.08	10.80	16.65	13.60
Local transportation	6.10	14.94	3.17	0.34	36.83	5.82
Admissions & fees	14.31	19.80	10.90	4.48	18.68	8.22
Souvenirs and other expenses	27.16	46.78	23.46	10.97	34.39	16.15
Total	87.31	304.79	76.29	45.06	279.23	89.00
Standard error of mean	10.02	23.94	18.02	8.45	17.19	9.93
95% Confidence Interval						
Lower bound	106.95	351.71	111.60	61.62	312.92	108.46
Upper bound	67.68	257.86	40.97	28.51	245.54	69.54

Table C7. Valid Cases and Outliers by Lodging Segments, Grand Canyon NP South Rim Visitor Survey

	Day visitor	In-Park Hotel	In-Park Camp	Outside-Park Hotel	Outside-Park Camp	Back-country	Others	Total	Pct
1. Valid cases	111	57	14	302	25	1	82	592	81%
2. Missing value on all spending categories	18	4	1	8	1	0	7	39	5%
3. Length of stay longer than 7 days	10	2	1	6	1	0	10	30	4%
4. Party size larger than 8 persons	0	1	1	4	2	0	5	13	2%
5. Party night spending higher than $3000	0	0	0	0	0	0	2	2	0%
6. Day visitors with lodging expenses	37	0	0	0	0	0	0	37	5%
7. Overnight visitors with zero spending	0	2	1	16	2	0	1	22	3%
Total	176	66	18	336	31	1	107	735	100%

Table C8. Valid Cases and Outliers by Lodging Segments, Grand Canyon NP North Rim Visitor Survey

	Day visitor	In-Park Hotel	In-Park Camp	Backcou ntry	Outside-Park Hotel	Outside-Park Camp	Others	Total	Pct
1. Valid cases	127	67	26	16	88	38	74	436	86%
2. Missing value on all spending categories	8	2	0	0	0	0	1	11	2%
3. Length of stay longer than 7 days	3	1	1	0	1	2	2	10	2%
4. Party size larger than 8 persons	0	0	0	0	0	3	2	5	1%
5. Day spending higher than $1500	1	1	0	0	0	0	0	2	0%
6. Day visitors with lodging expenses	27	0	0	0	0	0	0	27	5%
7. Overnight visitors with zero spending	0	3	0	0	5	0	9	17	3%
Total	166	74	27	16	94	43	88	508	100%