

Appendix D: Tips for Estimating Spending Profiles for your Visitors

The MGM2 workbook provides a number of ways to establish a set of spending profiles for a given park. A spending profile gives the average amount spent within a set of 12 spending categories for a given subgroup of visitors (segment) on a party night basis. A party night is one party staying one night in the area. For day users, treat one day as equivalent to one night.

Spending estimates for a particular subgroup of visitors at a particular park may be derived by (a) adapting spending averages from visitor spending studies at similar parks/regions, (b) conducting a visitor survey or adjusting data from a recent visitor spending survey, or (c) using manager judgment or an "engineering" approach.

In some situations you may use a combination of these methods. For example, perhaps a recent park visitor survey was conducted that provides good spending estimates for park day visitors and campers, but the sample sizes were inadequate to profile visitors in motels or backcountry users. The profiles for these two segments might be taken from one of the generic datasets provided in MGM2, from a similar park, or estimated using some judgment. Perhaps a good spending profile for motel users can be taken from a similar park, but the room rates do not match those in the region around your park. You therefore adjust the expense per night for lodging to reflect the local situation.

Be aware that both spending surveys and manager judgment can be prone to error. Spending estimates derived from surveys rest on representative samples¹, clear spending questions and accurate recall, and careful analysis of the data to handle outliers, missing data and other problems common in spending surveys. Sometimes sample sizes are too small for particular segments to reliably estimate a spending average, particularly if spending varies widely within the segment. Managers and other local "experts" may not have a good idea of what visitors spend in the area, particularly outside the park. The itemizing of spending in narrow categories makes it somewhat easier to "construct" a spending profile using what is sometimes called an engineering approach. This involves identifying the products and services a visitor must purchase to "create" their experience and costing each item separately. This method works best if segments are separated based on the items included. For example, visitors in motels will incur a lodging expense that on average should equal the average room rate for the area, while day visitors have no lodging expense. Campers pay the average per night rate for campsites in the area, etc.

Three Approaches or Methods for Generating Spending Profiles

There are three general approaches to estimating spending. These are introduced below and then discussed in more detail. In a given situation you may use just one of these or a combination.

Method A: Adapting spending from other studies. In developing MGM2, we have reviewed a number of previous park visitor surveys and assembled spending profiles from these datasets. Six "generic" spending profiles represent averages across a range of parks, reflecting low, medium, and high spending patterns at different historic sites and parks. Several "custom" spending profiles are also included with MGM2 and these will be expanded as new park visitor surveys are completed. MGM2 users may choose from any of the generic or custom datasets to represent a particular set of park visitors.

Method B: Entering spending profiles from your own visitor survey. If you have spending profiles from a visitor survey conducted at the park or in the local region, you may enter the figures into an MGM2 spending dataset. Spending averages for each segment should be entered onto the MGM2 spending template. You may retrieve the blank.t12.xls template or use the Edit button on the MGM2 workbook Spend page. You must match spending categories from your survey to the twelve MGM2 spending categories. In some cases, this may require apportioning spending to more than one category, for example, many VSP studies ask spending in only four categories: lodging, food, transportation and other. When entering these figures into MGM2, spending on food must be divided between restaurants and groceries.

¹ Watch for non-response bias if response rates are low, or some groups being over-represented due to a higher chance of being chosen.

Method C: Constructing spending profiles using an "engineering" or cost approach. When empirical spending data is lacking or not very reliable, you can construct spending profiles based on judgment using what is sometimes called an "engineering" approach. This is similar to estimating costs for a construction project. You must identify the goods and services the visitor must purchase to "construct" their visitor experience and identify a per unit price for each component. In MGM2, the use of segments, detailed spending categories, and the party-night as the unit of analysis all help to facilitate this approach.

Once you have constructed the spending profiles using any of the methods above, you may adjust them as needed. For example, spending averages reported in previous studies may be price adjusted to a recent year, once they are assembled in the format required by MGM2. The price adjustment will handle changes over time due primarily to increases or decreases in prices. If the mix of goods and service changes, other manual adjustments may be recommended. For example, if local casinos were added after the previous survey, then a new estimate will be needed for casino spending. Similarly, if there were major changes in spending opportunities due to expansion or reductions in restaurants or attractions, spending on the corresponding items might be changed accordingly.

Details for Method A : Choosing and adjusting an existing spending dataset

The following steps are recommended for choosing and/or adjusting any of the spending datasets provided with the MGM2 model.

If using the generic spending profiles, the process has three steps (Figure 1):

1. Choose park type (historic or national)
2. Choose the high, medium, or low profile
3. Review the figures and adjust as needed to fit your visitors

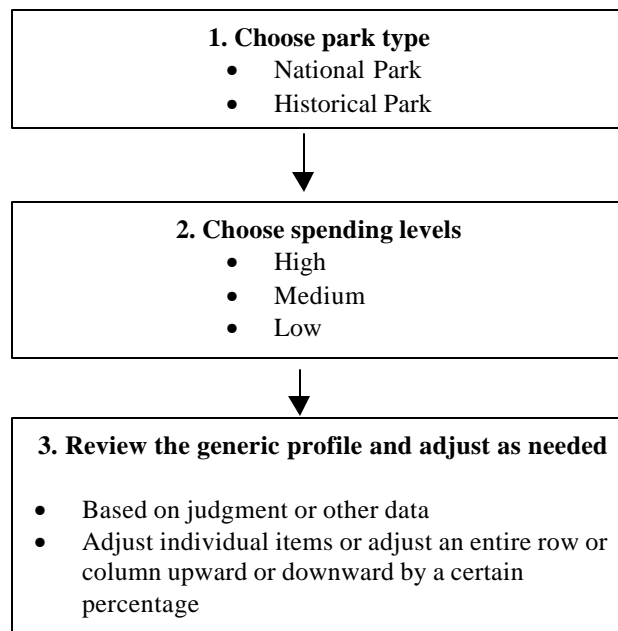


Figure 1: Four step process for selecting and modifying a generic NPS visitor spending profile.

1. Choose a park type. Spending profiles and segments vary somewhat between larger natural resource-based parks, which often include some accommodations within the park versus smaller historic sites and

monuments, which usually do not. Historic sites and monuments are more likely to be located in urban areas, where visits are part of a trip involving other purposes, attractions and activities in the area. Larger natural resource-based parks are more likely to be the primary destination of the trip.

- "Park" spending profiles will likely apply best to National Parks, Preserves, Recreation Areas, Seashores, Lakeshores, and in some cases Parkways, Trails, and Affiliated Areas. The park profiles include eight segments based on lodging types. You may omit any of these that may not apply in a particular situation or may combine two or more segments that have similar spending or due to a lack of ability to discriminate between them.
- Historic Site spending profiles will usually apply better to Historic Sites, Historic Parks, Monuments, Battlefields, and Cemeteries. Historic site profiles include only four segments, local and non-local day users and overnight visitors in motels or private homes (staying with friends or relatives).

2. Choose spending levels. To capture the variations observed across parks in different settings, MGM2 provides low, medium, and high spending profiles. Parks in unique settings may fall outside these ranges, e.g., parks in very remote areas with few nearby places to spend money or parks located in expensive tourist areas. Factors to consider in choosing between the low, medium and high profiles are (1) prices in the area, (2) spending opportunities inside and outside the park, (3) the geographic extent of the region, and (4) kinds of visitors and activities attracted.

- The amount that visitors spend on different items will be partly explained by their cost. The per night costs for motel rooms and campsites in the "generic profiles" can be adjusted to match local rates.
- Visitor spending will be directly related to the spending opportunities in the area. Restaurant spending will be lower in areas with few restaurants or only fast food establishments, and higher in areas with a greater variety of restaurants.
- The larger the geographic region for which you are estimating impacts, the more visitor spending you will likely capture.
- Higher spending profiles will be associated with higher income visitors and special activities requiring additional expenses in the area (e.g. cave tours, downhill skiing or golf). General tourists who spend a small amount of time in the park and more time in gateway communities frequenting other local attractions and souvenir shops will generally outspend visitors who spend most of their time in the backcountry or on long hikes. Be aware of special programs inside and outside the park that involve additional spending. For example, commercial cruises in Kenai Fjord National Park, cave tours in Mammoth Cave National Park, and rock climbing in City of Rocks National Reserve. Visitors participating in recreation activities like these will generally spend larger amounts on admission fees, sporting goods, clothing, souvenirs and other items. We illustrate how to adjust the generic profiles to reflect these kinds of situations below.

3. Review the generic profile and adjust to best fit your visitors. Due to the uniqueness of each park, the selected generic profile should be carefully examined and adjusted, as needed, to best fit your visitors. Presenting the spending profiles by segment, within detailed categories and on a party-night basis should help facilitate the adjustments. For example, the amount reported for lodging expenses should reflect the local room and campsite rates. Visitors included in the motel segment will incur a room cost which on a party night basis should equal an average room rate for the area. Expenses that are more difficult to estimate are ones that only some visitors may incur and the amount spent varies widely, e.g. souvenirs. Observe that in the absence of the lodging segments, identifying an average spending on rooms would be quite complicated, as it reflects both what percentage of visitors stay in a motel and the average room rate for those who do. If the unit for spending were the person night or party trip, the average would depend on party size or length of stay in the area.

Example: Adjusting Spending Profiles

Some of the kinds of adjustments that might be made to adapt a given set of spending profiles are illustrated below:

- (1) **adjusting spending for a single segment up or down by a fixed percentage**, usually to reflect something unique about that particular subgroup of visitors at this park, e.g. campers at the park in question are high income and there are many spending opportunities near the campgrounds - adjust all camper spending categories upward by 20%. You might use the high spending profile for campers, while choosing the medium ones for all other segments. To do this start with medium profiles and manually replace camping segment columns.
- (2) **adjusting spending in one category for all segments**, usually to reflect spending opportunities and prices for that set of goods or services. E.g., many fine restaurants nearby, increase restaurant spending by 10% across all segments. Or if the park has a casino nearby. Add figures for casino spending to each segment.
- (3) **adjusting spending for individual categories and individual segments**. Start by adjusting lodging expenses to reflect local room and campsite rates, adjust admissions and fees to reflect the park entrance fee and fees at other nearby attractions. See Method C details for other tips for adjusting spending data.

Table D1 illustrates the process by adjusting an entire spending profile, category by category, to fit a particular park and subgroup of visitors. It begins with the generic medium level spending profile for visitors staying inside the park in a lodge or cabin and adjusts the profile for this segment to fit a local situation. You may repeat this process for each segment. In choosing which segments and categories to adjust, pay the most attention to those spending categories that account for the greatest amount of spending and those segments with higher spending averages and accounting for a higher percentage of visitors.

Table D1. Adjusting the generic park medium spending profile for a particular application

Spending Category	Medium generic profile	Local Conditions	Adjusted Value
Motel, hotel cabin or B&B	90.84	Average room/cabin rate charged within the park is \$85 per room per night	\$85.00
Camping fees		Not relevant to motel segment, \$ 0.	0.00
Restaurants & bars	32.59	Few restaurants nearby, lower priced ⇒ decrease by 10%	$32.59 * 0.9 = \$29.33$
Groceries, take-out food/drinks	5.52	Few nearby grocery stores, limited selection ⇒ decrease by 10%	$5.52 * 0.9 = \$4.97$
Gas & oil	10.19	Rural area, sightseeing popular, region is 150 mile radius around park, available gas stations ⇒ increase by 20%	$10.19 * 1.2 = \$12.23$
Other vehicle expenses	1.80	No change	\$1.80
Local transportation	0.00	None available, no change	\$0.00
Admissions & fees	9.50	Park entrance fee of 5 dollar per vehicle per day Major park attraction charges another 3 dollars per person, half of these visitors attend. Fee* average party size * participation rate = $\$3 * 3 \text{ people} * 50\% = \4.50 .	$\$5 + \$4.50 = \$9.50$
Clothing	4.50	Many stores with popular selling t-shirts, hats etc., large gift shop in lodge ⇒ increase 10%	$4.50 * 1.1 = \$4.95$
Sporting goods	1.08	Most lodge guests not participating in activities requiring special gear, limited gear available locally ⇒ decrease by 20%	$1.08 * 0.8 = \$0.86$
Gambling	0.00	No casinos here, keep at 0.	\$0.00
Souvenirs and other expenses	9.92	Average number of moderately priced souvenir shops, typical visitor spending ⇒ no change	\$9.92
Total	\$165.94	Overall about a 5% increase from original value	\$158.56

Details for Method B: Entering spending data from a local visitor survey.

If you do not wish to base your spending profiles on one of the generic or custom datasets, we recommend using the blank.t12.xls worksheet utility (Table D1). The "blank.t12.xls" file is provided to help you construct your own set of spending profiles, either from judgment/an engineering approach or a recent visitor survey. If you enter the data in designated cells on this template and save the file with the *.t12.xls extension, it can be imported for use in the MGM2 workbook (choose import custom spending profiles).

You may also use the Edit Spending profiles button on the SPEND page of the MGM2 workbook to enter a complete set of spending data.

Table D21. The blank.t12.xls worksheet template

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	Table 1. Visitor Spending by Lodging Segment in Local Area						Spending Unit	Park Name			Year		
2	SEGMENT												
3	CATEGORY	Seg1	Seg2	Seg3	Seg4	Enter segment names on this row							
4													
5	Motel, hotel cabin or B&B												
6	Camping fees												
7	Restaurants & bars												
8	Groceries, take-out food/drinks												
9	Gas & oil												
10	Other vehicle expenses												
11	Local transportation												
12	Admissions & fees												
13	Clothing												
14	Sporting goods												
15	Gambling												
16	Souvenirs and other expenses												
17	Total												

Steps:

1. Retrieve the file, **Blank.t12.xls**
2. Enter information as follows:
 - Enter year of the survey/spending data in Cell L1 (Year)
 - Enter name of the park in Cell I1 (Park name)
 - Enter the spending unit in Cell G1 (Spending Unit). For consistency with other MGM2 datasets we recommend entering spending on a party night basis.
3. Enter segment names in row 3 starting in Cell B3. Whenever possible, develop distinct spending profiles for different segments. Lodging segments are recommended, but you can use any segments for which you will be able to estimate both spending and visits.
4. Enter spending averages by item for each segment in the appropriate cell. As part of this process you may need to adjust the spending averages to a party night basis or otherwise modify individual values to reflect the portion to be attributed to the park visit and to be included in the analysis.

4a. Converting across spending units: If the original spending profile is based on units other than party-nights, it must be converted to a party night basis. The conversion routine should be applied segment by segment, to take into account different lengths of stay and party sizes of each segment.

- To convert from party-trip to party-day:

Party day spending = party trip spending / average length of stay

- To convert from person-day to party-day:

Party day spending = person day spending * average group size

- To convert from person-trip to party-night:

Party day spending = person trip spending * average group size / length of stay

4b. Redistributing spending across spending categories: The twelve MGM2 spending categories are fixed, so spending must be adjusted to fit these categories. Many National Park Service visitor surveys have measured spending in only four categories- *Lodging, Travel, Food, & Other*. When entering the data into MGM2, *Food* must be divided between restaurants and groceries, *travel* between gas & oil, vehicles expenses, and local transportation and *Other* between admission fees, clothing, sporting goods, gambling, and souvenirs. The percentages needed to make these allocations may be taken from any of the generic or custom profiles that would best fit the situation. Judgment or other data may also be used to redistribute the spending.

5. Enter supporting information:

Space is provided at the bottom of each *.t12.xls file for supporting information, such as segment shares, number of cases, length of stay in area, party size, etc. The supporting information is not retrieved into the MGM2 model when you import a spending dataset, but it serves to document the spending data. To inspect information in any of the MGM2 *.t12.xls files, retrieve it directly in Excel (choose File, Open, and enter the file name in the box - if you enter *.t12 in the File name box, Excel will display all of the t12 spending files in the active folder.)

6. When finished, Save the file as an Excel workbook, maintaining the *.t12.xls extension. When prompted for a file name, enter NAME.t12. Excel will add the xls extension. This file can now be imported using the "import custom spending profile" button on Spend page of MGM2 workbook.

7. Cautions

- The format of the *.t12 template is fixed. All numbers must be entered into the appropriate cells. Do not alter the spending category labels. You may change segment names in row 3.
- The expenses entered in the *.t12 file should cover all spending in the local region that you wish to include in the analysis. Airfares and purchases of durable goods should generally be excluded from trip expenses, as they do not generally accrue to the local region.
- When entering data from visitor surveys, be aware of possible errors due to biases in the sample or question formats. Spending averages for each segment should be based on at least 50 cases, and preferably more than 100.

Details for Method C. The Engineering approach

In an engineering approach, you identify the goods and services that a visitor will purchase to "construct" their trip and then cost out each item. For example, for a park visitor who stays two night in the area with a travel party of 3 people, the per night expenses would entail (1) the cost of a room or campsite, (2) food for three people for one day, (3) transportation, park admissions and other amusements expressed on a per party per day basis, and (4) souvenirs and other purchases expressed on a per party per day basis.

Careful choice of segments and the spending units can help in estimating spending. For example, segments based on lodging type and spending based on party nights allow you to use the nightly room rates for those who use motels, campground rates for campers, and to omit lodging for those staying with friends and relatives or on day trips. These segments can also be helpful in estimating other expenses, such as the split of food between groceries and restaurants.

Some spending categories are best estimated on a party night basis (lodging), others on a person day (meals), and still others on a party trip basis (souvenirs, transportation). We recommend estimating each item on the most logical basis first and then converting all to a common basis (such as party nights). One must also be careful to account for the fact that some visitors may not spend anything in a given category. The averages for each segment must reflect both spenders and non-spenders. The lodging segments help to separate those who spend money on lodging from those who do not.

There are a number of simple, but useful procedures/rules to keep in mind when estimating spending averages for a particular visitor segment.

Rule 1: Adjusting for non-spenders.

Spending average = percent of visitors spending money on the item times the average expense of those who do.

e.g. If half of Mammoth Cave NP visitors take a cave tour and those who do spend \$10 on tours, the average spending across all visitors is \$5 (50% * \$10).

Rule 2: Expanding per person spending to party spending.

Spending average for party = per person spending average times party size

e.g. If the average meal expense per person per day is \$15 and the average party size is 2.0, then spending per party is \$30 per party per day.

Rule 3: Distributing trip expenses across the length of stay in the area

Spending average per night = total trip expense /length of stay in area

e.g. If a typical party spends \$20 on fuel in the area and averages a four night stay, they average \$5 per party per night.

Rule 4 : Using local motel or campsite rates to estimate per night lodging expenses.

- Information regarding average room rates across different lodging types may be obtained from local sources. Fees charged within the park should be obtained from park staff or concessionaires.

- Smith Travel Research reports average room rates² for limited-service³ and full-service⁴ hotels based on location and price category.
- Be careful to adjust lodging rates to reflect seasonal differences and any special discounts for seniors or others. The rates used in MGM2 should reflect the accommodations that park visitors use and the rates they pay.

Table D3. Average room rates for limited service hotels for 1996 and 1999 by location and price category

Room Rate	Location					Price Category			
	Urban	Suburban	Airport	Highway	Resort	Upscale	Mid-Price	Economy	Budget
1996	\$ 71.20	\$ 61.31	\$ 55.37	\$ 51.94	\$ 69.83	\$ 75.74	\$ 58.10	\$ 48.81	\$ 43.05
Price adjust to 1999	\$ 80.18	\$ 69.04	\$ 62.35	\$ 58.49	\$ 78.64	\$ 85.29	\$ 65.43	\$ 54.97	\$ 48.48

Table D4. Average room rates for full service hotels for 1996 and 1999 by location and price category

Room Rate	Location					Price Category			
	Urban	Suburban	Airport	Highway	Resort	Upscale	Mid-Price	Economy	Budget
1996	\$ 107.39	\$ 81.64	\$ 83.90	\$ 69.83	\$ 119.20	\$ 120.98	\$ 84.90	\$ 73.29	\$ 56.98
Price adjust to 1999	\$ 120.93	\$ 91.94	\$ 94.48	\$ 78.64	\$ 134.23	\$ 136.24	\$ 95.61	\$ 82.53	\$ 64.17

Rule 5. Adjusting Admissions & fees to a party night basis.

Expenses for admissions and fees may include expenses in the park and outside. In some cases, fees paid directly to the park should be omitted in the analysis. Admission fees may be collected on a per person, per vehicle, or per trip basis. Rules 1-3 will frequently be used to convert admissions and fees to a party night basis.

- For attractions with a per person admission, use Rules 1 and 2.
- If the park admission fee covers several days, use Rule 3.
- Use reported admissions fees in the same way lodging rates are used in Rule 4.
- Be careful to adjust for rates and spending that may vary by season and to take into account any special discounts.

² The data for 1996 average room rates is provided by Smith Travel Research

³ Limited-service refers to hotels with few services and amenities, without food & beverage service.

⁴ Full-service refers to hotels with a restaurant, lounge facilities, meeting space, and generally, a higher price.