

Appendix A. Glossary of Economic Impact Terms

Terms are presented in groups within a logical rather than alphabetical order

Region – defines the geographic area for which impacts are estimated. NPS impact regions are generally an aggregation of one or more counties. MGM2 can also make estimates for larger regions.

Sector is a grouping of industries that produce similar products or services. Most economic reporting and models in the U.S. are based on the Standard Industrial Classification system (SIC code) or the new North American Industrial Classification System (NAICS). Tourism is more an activity or type of customer than an industrial sector. While hotels (SIC 70) are a relatively pure tourism sector, restaurants, retail establishments and amusements sell to both tourists and local customers. There is therefore no simple way to identify tourism sales in the existing economic reporting systems, which is why visitor surveys are usually required to estimate tourist spending.

Impact analysis estimates the impact of dollars from outside the region (“new dollars”) on the region’s economy. Impact analysis typically includes only the spending of visitors from outside the region.

Significance analysis estimates the importance or significance of an industry or activity to a region and usually includes spending by both local residents and visitors from outside the region.

Input-output (I-O) model. An input-output model is a representation of the flows of economic activity between sectors within a region. The model captures what each business or sector must purchase from every other sector in order to produce a dollar’s worth of goods or services. Using such a model, flows of economic activity associated with any change in spending may be traced either forwards (e.g., spending generates employee wages which induces further spending) or backwards (e.g., visitor purchases of meals leads restaurants to purchase additional inputs -- groceries, utilities, etc.). Multipliers for a region may be derived from an input-output model of the region’s economy.

IMPLAN is a micro-computer-based input output modeling system. With IMPLAN, one can estimate I-O models of up to 528 sectors for any region consisting of one or more counties. IMPLAN includes procedures for generating multipliers and estimating impacts by applying final demand changes to the model. The current version of IMPLAN is IMPLAN Pro 2.0.

Final Demand is the term for sales to final consumers (households or government). Sales between industries are termed **intermediate sales**. Economic impact analysis generally estimates the regional economic impacts of final demand changes. Visitor spending is one type of final demand.

Direct effects are the changes in economic activity during the first round of spending. For tourism this involves the impacts on the tourism industries (businesses selling directly to tourists) themselves.

Secondary effects are the changes in economic activity from subsequent rounds of re-spending of tourism dollars. There are two types of secondary effects:

Indirect effects are the changes in sales, income or employment within the region in backward-linked industries supplying goods and services to tourism businesses. For example, the increased sales in linen supply firms resulting from more motel sales is an indirect effect of visitor spending.

Induced effects are the increased sales within the region from household spending of the income earned in tourism and supporting industries. Employees in tourism and supporting industries spend the income they earn from tourism on housing, utilities, groceries, and other consumer goods and services. This generates sales, income and employment throughout the region’s economy.

Total effects are the sum of direct, indirect and induced effects.

Multipliers capture the size of the secondary effects in a given region, generally as a ratio of the total change in economic activity in the region relative to the direct change. Multipliers may be expressed as ratios of sales, income or employment, or as ratios of total income or employment changes relative to direct sales. Multipliers express the degree of interdependency between sectors in a region's economy and therefore vary considerably across regions and sectors.

Type I multipliers include only direct and indirect effects. **Type II** multipliers also include induced effects. **Type SAM** multipliers used by IMPLAN adjust the Type II multipliers for income that is not normally re-spent immediately within the region, e.g. wages of commuting workers who live outside the region and contributions to retirement programs.

A **sector-specific multiplier** gives total changes throughout the economy associated with a unit change in sales in a given sector.

Aggregate tourism multipliers sum multiplier effects across many sectors with a single number. They are based on an assumed distribution of tourist spending across these economic sectors, i.e., a weighted average of sector specific multipliers with the percentage of spending in each sector as the weights.

Capture rate is the percentage of spending that accrues to the region's economy as direct sales or final demand. All tourist spending on services within the region is captured, however, tourist purchases of goods is generally not all treated as final demand to the region. For imported goods bought at retail establishments, typically only the retail and possibly wholesale margins will accrue to the local economy.

Purchaser prices are the prices paid by the final consumer of a good or service. **Producer prices** are the prices of goods at the factory or production point. For manufactured goods the purchaser price = producer price + retail margin + wholesale margin + transportation margin. For services, the producer and purchaser prices are equivalent. The **retail, wholesale and transportation margins** are the portions of the purchaser price accruing to the retailer, wholesaler, and shipper, respectively. Only the retail margins of many goods purchased by tourists accrue to the local region, as the wholesaler, shipper, and manufacturer often lie outside the local area.

Measures of economic activity:

Sales or output is the dollar volume of a good or service produced or sold

Final Demand = sales to final consumers

Intermediate sales = sales to other industrial sectors

Income is the money earned within the region from production and sales. Total income includes

Personal income : wage and salary income, including income of sole proprietor's profits and rents

Jobs or employment is a measure of the number of jobs required to produce a given volume of sales/production. Jobs are usually not expressed as full time equivalents, but include part time and seasonal positions.

Value Added is the sum of total income and indirect business taxes. Value added is the most commonly used measure of the contribution of a region to the national economy, as it avoids double counting of intermediate sales and captures only the "value added" by the region to final products.

Appendix B: Converting Visits to Party Nights; The NPSCONVERT.XLS Workbook

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NPSCONVERT.XLS is a stand-alone module for converting NPS visitation numbers to the units recommended in the MGM2 spending and economic impact estimation routine. It converts recreation visits to party nights in the area and also estimates the shares of party nights by lodging segment.

RATIONALE FOR CONVERTING TO PARTY NIGHTS: Visitor spending depends not only on the number of visitors, but also the kinds of visitors. Day visitors have different spending patterns than visitors staying overnight in the area. Spending also can vary considerably within lodging types (backcountry, campers, motel users, inside or outside the park). How much a visitor spends in the area depends on how long they stay in the area, not just how much time they spend in the park. MGM2 therefore uses party nights in the area as the unit of analysis for spending. Eight visitor segments are recommended to capture differences in the mix of visitors associated with spending. The eight visitor segments defined by lodging types are:

- (1) Locals: local visitors, who live in the designated region
- (2) NL-Day: non-local day visitors (not staying overnight in the local area) ,
- (3) Motel-IN : visitors staying in motel/cabin/lodge inside the park,
- (4) CAMP-IN: campers staying inside the park,
- (5) Backcountry: visitor staying in backcountry campsites,
- (6) Motel-OUT: visitor staying in motel/B&B/cabin/rented condo outside park,
- (7) Camp-OUT: visitors staying in campgrounds outside the park, and
- (8) VFR: visitors staying overnight in the area in an owned seasonal homes, with relatives, or other private home

The definition of "local area" may vary from park to park and also rests on the intended use of the spending and economic impact estimates generated with MGM2. The local area should be defined to capture places around the park where visitors will spend money associated with their park visit and should represent a meaningful economic region.

A party night is one party spending one day in the area either within the park or in the local area. The party will generally be all the people traveling in a single vehicle or staying in a single room or campsite. In most cases, this is also the spending unit. As most parks estimate visits via vehicle counts, MGM2 works best when the vehicle is the party unit. Spending averages are also designed with the assumption that the spending unit, vehicle, and group staying in a particular room or campsite represent the "party". Where these assumptions are seriously violated, ad hoc adjustments should be made to either the visit counts or spending averages so that the multiplication of visits by spending per visit yields an accurate estimate of total spending.

The NPS Public Use reports focus on entries to the park and time spent within the park, including overnight stays. NPS Visitation statistics also do not break visitors down into segments. Much of the information needed to convert park visits to party nights by segment can be gleaned from previous or new visitor surveys. This conversion routine is designed to help NPS staff in making the conversion of their visit data to segments and party nights.

WHAT IT DOES : Converts park visit data (recreation visits and overnight stays) to party nights in the area for each of the eight visitor segments (not all parks will require all 8 segments).

STRUCTURE OF WORKBOOK. The NPSCONVERT.XLS workbook has three pages:

Main : A simple interface for entering required inputs, adjusting parameters and inspecting results.

Formulas: The detailed calculations are made here, along with further explanation of them. Experienced spreadsheet users may inspect the formulas here.

Parameters : Additional notes and comments about the input parameters.

Note - Worksheets have been protected to guard against accidentally overwriting important formulas. Cells where inputs are requested on the Main page have a yellow background and text in red. Only these cells may be altered. Simply move to a cell to replace the current value. A copy of the initial default conversion parameter values are at bottom of the Main page. You may copy these to cells above to restore the defaults. Experienced users may unprotect pages to add their own custom features or to modify formats or formulas.

STEPS: To familiarize yourself with the conversion routine, we suggest converting data for your own park unit using annual visit data for a recent year. Enter data on the **Main** page as follows:

1. Enter recreation visits and overnight stay data for a given year in cells B18:B22.
2. Make your best estimate or guesstimate of the percentage of park day visitors (those not staying overnight inside park) who are a) local residents, b) day trippers to the region from outside the local area, c) visitors staying overnight in area outside park in motels, campgrounds or other lodging. (These percentages go in cells B30:B34.). You should make your best estimates of these segment shares based on judgment, visitor survey data, or maybe local tourism studies of visitors to the area. Enter five percentages here that add to 100% at the bottom. NOTE that visitors staying overnight inside the park are not included here. Their shares of overall park visitors are estimated using the park overnight stay data.
3. Enter the conversion parameters (Cells B50:I54) appropriate for your park visitors. There are five required parameters that can vary across the eight lodging segments:

Party size : number of people in party (vehicle)

Length of stay in the area : enter 1 for day trips to area, the average number of nights in the area for overnight visitors. Local tourist surveys or park visitor surveys may have these averages or you may make an intelligent guess.

Nights spent in park : This is the average length of stay for those visitors staying overnight inside the park. You may be able to estimate these averages from registration, reservation or permit data

Re-entry factors : Average number of times a visitor party enters the park during the trip/stay in the area (this would be net of any re-entries already handled by the public use reporting procedures). This may be one of the hardest parameters to estimate but it is crucial to avoid double counting of spending by visitors who enter the park multiple times during a trip to the area.

Attribution factor : the percentage of nights to be counted as resulting from the park. Adjust these to reflect multipurpose trips, as needed. For example, in some situations you may only want to take credit for one day's spending of a four night stay in the area. This can be handled by entering 25% in the attribution cell for a given segment. This situation can also be handled by entering a length of stay of 1 instead of 4 and leaving the attribution percent at 100%. Another approach applicable in some situations, is to treat some overnight visitors to the area as if they are day visitors by counting them in the day use column. The

day user spending profile would then be applied to these visits, attributing the equivalent of a days spending to these visitors.

The spreadsheet lets you adjust the estimates of segment shares and other parameters and then evaluate the results. This sensitivity analysis may help in obtaining accurate estimates. For any given set of inputs, you may inspect the detailed outputs and calculations on the **Formulas** page.

4. **Outputs:** The workbook produces estimates of party nights in the area by lodging segment. Segment shares of party nights are also calculated.

WARNING: We recommend transferring the party night information manually to the Visits page of the MGM2 workbook as the number and ordering of segments in MGM2 workbook may not be the same as in the NPSCONVERT routine. The number and order of segments in MGM2 depends on the spending data you choose. The results on **Main** page are formulas, which require Excel's "Paste Special/Values" procedure to be copied correctly to another workbook. In any event, be careful that visit information is matched with the corresponding segments in the MGM2 workbook and check all figures before proceeding.

In MGM2, always select the spending data first as the Visit data will be reset whenever you import a new spending dataset.

Appendix C: Spending Data Files

Introduction

This appendix includes "hard" copies of all the spending profiles that come with the MGM2 software. These profiles are available from the SPEND Page as one of the six generic profiles (Tables C1 through C6) or as one of five individual park profiles that may be imported (Tables C7 through C11). Table C12 lists **additional** spending profiles that are available for downloading from the MGM2 website.

The following abbreviations are used in the tables to denote visitor segments:

- "L-Day User" = local day users
- "NL-Day User" = nonlocal day users
- "Motel-IN" = visitors staying in lodging facilities inside the park
- "Camp-IN" = campers inside the park
- "Backcountry" = backcountry campers
- "Motel-OUT" = visitors staying in lodging facilities outside the park
- "Camp-OUT" = campers outside the park.
- "VFR" = visitors staying overnight with friends and relatives

Tables C7 through C11 were developed based on further analysis of VSP survey data at Michigan State University. We feel that these five profiles are the most reliable and valid of the VSP data sets that we have analyzed thus far. They are provided as an option for those parks that do not have their own expenditure data. Whether importing any of the Table C7-C11 profiles or another individual park profile from the MGM2 website, their limitations must be considered if they are to be used to represent visitor spending at a park for which no survey data are available.

- As indicated in Table C13, we were able to construct only two or three lodging segments for some parks due to the limits of the survey (missing data, missing variables, sample sizes less than 20 for a given segment, etc.).
- The National Park Service (NPS) visitor survey asked visitors to report expenses in four categories—Lodging, Travel, Food, and Other. We do not know the degree to which visitors had difficulty dividing their total trip spending among these four categories. In addition, the percentages used to reallocate spending from these four categories into MGM2's 12 detailed categories are derived from a variety of traveler surveys (Table C14). To the extent that the percentages in Table C14 differ from the manner in which National Park visitors distribute their spending, they may not be appropriate for every park situation.
- Some park spending profiles (e.g., Table C7) are based on "Day-spending", meaning that visitors were asked to report their expenditures for the day they received the survey, instead for their entire trip. These figures may not be comparable to party-night spending averages that were generated by dividing total trip expenditures by length of stay.

Appendix D describes methods for adjusting any of these profiles based on data that you feel are more current and/or accurate.

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Table C1: Generic Spending Profile – Historic Sites- Medium

Visitor Spending by Lodging Segment in Local Area		Party-night	Historic Sites-Medium	
CATEGORY	L- Day User	NL-Day User	Overnight	VFR
Motel, hotel cabin or B&B	0.00	0.00	75.15	0.00
Camping fees	0.00	0.00	0.00	0.00
Restaurants & bars	8.19	13.70	21.43	11.00
Groceries, take-out food/drinks	2.32	3.87	5.70	11.24
Gas & oil	3.45	7.99	8.40	8.54
Other vehicle expenses	0.13	0.30	1.03	0.20
Local transportation	0.43	0.96	4.67	0.58
Admissions & fees	2.58	6.61	6.73	3.39
Clothing	1.60	4.37	5.47	3.05
Sporting goods	0.00	0.34	0.00	2.00
Gambling	0.00	0.00	0.00	0.00
Souvenirs and other expenses	4.99	13.59	9.16	10.00
Total	23.70	51.71	137.75	50.00
Segment Shares				
Number of Cases	1075		61	28
Length of Stay in Area	1.0		3.3	3.6
Party Size	3.2		3.3	3.1
Standard Error of Mean	1.9		60.2	37.3
Percent Error	8%		15%	28%

Comments:

- The "Average" spending of Local Day User is based on the average of four historical parks- Edison NHS, Adams NHS, Pecos NHP, and Lowell NHP, and price adjusted to 1998.
- The spending profile for Non-local Day Users comes from several general traveler and recreation expenditure surveys and has been adjusted to obtain midrange values between low and the high spending averages for non-local day users in those studies. Because the values do not come from a single study, data pertaining to the number of cases, length of stay, etc. are not appropriate here.
- The spending profile for VFR (Visiting friends and relatives) comes from the Pecos NHP VSP survey and was price adjusted to 1998.
- The spending profile for Overnight (Overnight visitors not staying with friends or relatives) comes from the Pecos NHP VSP survey and was price adjusted to 1998.
- The percentages used to distribute the spending into the 12 detailed categories are from Table C14.
- There are no values for segment shares because the generic profiles are composed of average values from a variety of different parks.
- The average "stand error of mean" is the unweighted average of the standard errors of means from four historic parks.

Table C2: Generic Spending Profile – Historic Sites- Low*

Visitor Spending by Lodging Segment in Local Area				Party-night	Historic Sites- Low
CATEGORY	L- Day User	NL-Day User	Overnight	VFR	
Motel, hotel cabin or B&B	0.00	0.00	52.61	0.00	
Camping fees	0.00	0.00	0.00	0.00	
Restaurants & bars	5.73	9.59	15.00	7.70	
Groceries, take-out food/drinks	1.62	2.71	3.99	7.87	
Gas & oil	2.41	5.59	5.88	5.98	
Other vehicle expenses	0.09	0.21	0.72	0.14	
Local transportation	0.30	0.67	3.27	0.41	
Admissions & fees	1.80	4.62	4.71	2.37	
Clothing	1.12	3.06	3.83	2.14	
Sporting goods	0.00	0.23	0.00	1.40	
Gambling	0.00	0.00	0.00	0.00	
Souvenirs and other expenses	3.49	9.51	6.42	7.00	
Total	16.59	36.20	96.42	35.00	
Segment Shares					
Number of Cases	1075		61	28	
Length of Stay in Area	1.0		3.3	3.6	
Party Size	3.2		3.3	3.1	
Standard Error of Mean	1.9		60.2	37.3	
Percent Error	8%		15%	28%	

*For notes on missing data for segment shares and nonlocal day users, see comments below Table C1.

Table C3: Generic Spending Profile – Historic Sites- High*

Visitor Spending by Lodging Segment in Local Area				Party-night	Historic Sites- High
CATEGORY	L- Day User	NL-Day User	Overnight	VFR	
Motel, hotel cabin or B&B	0.00	0.00	97.70	0.00	
Camping fees	0.00	0.00	0.00	0.00	
Restaurants & bars	10.65	17.81	27.86	14.30	
Groceries, take-out food/drinks	3.01	5.03	7.41	14.61	
Gas & oil	4.48	10.38	10.91	11.10	
Other vehicle expenses	0.17	0.40	1.34	0.26	
Local transportation	0.56	1.25	6.07	0.76	
Admissions & fees	3.35	8.59	8.75	4.41	
Clothing	2.09	5.68	7.11	3.97	
Sporting goods	0.00	0.44	0.00	2.60	
Gambling	0.00	0.00	0.00	0.00	
Souvenirs and other expenses	6.49	17.66	11.91	13.00	
Total	30.80	67.23	179.07	65.00	
Segment Shares					
Number of Cases	1075		61	28	
Length of Stay in Area	1.0		3.3	3.6	
Party Size	3.2		3.3	3.1	
Standard Error of Mean	1.9		60.2	37.3	
Percent Error	8%		15%	28%	

*For notes on missing data for segment shares and nonlocal day users, see comments below Table C1.

Table C4: Generic Spending Profile – Parks - Medium

Visitor Spending by Lodging Segment in Local Area						Party-night		Parks- Medium	
CATEGORY	L-Day User	NL-Day		Backcountry			Camp-Out	VFR	
		User	Motel-In	Camp-In	Campers	Motel-Out			
Motel, hotel cabin or B&B	0.00	0.00	90.84	0.00	4.50	80.26	0.00	0.00	
Camping fees	0.00	0.00	0.00	15.08	2.00	0.00	19.53	0.00	
Restaurants & bars	11.28	14.98	32.59	9.27	5.80	36.11	11.35	11.00	
Groceries, take-out food/drinks	8.34	5.69	5.52	12.04	4.16	6.01	8.31	11.24	
Gas & oil	6.37	7.97	10.19	13.74	5.00	12.75	10.65	8.54	
Other vehicle expenses	0.60	0.82	1.80	1.07	0.00	1.14	1.17	0.20	
Local transportation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.58	
Admissions & fees	3.00	6.00	9.50	4.99	3.00	9.12	12.08	3.39	
Clothing	1.25	2.00	4.50	2.90	0.96	5.49	6.73	3.05	
Sporting goods	1.12	1.05	1.08	1.13	2.54	1.54	0.61	2.00	
Gambling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Souvenirs and other expenses	6.15	6.57	9.92	5.47	6.04	10.31	12.06	10.00	
Total	38.11	45.08	165.94	65.69	34.00	162.73	82.49	50.00	
Segment Shares									
Number of Cases	177	884	227	144	26	955	199	28	
Length of Stay in Area	1.0	1.0	2.7	4.1	2.7	2.8	2.7	3.6	
Party Size	2.9	3.0	3.0	2.8	2.5	2.8	2.5	3.1	

Comments:

- The medium spending profile is based on the unweighted average of six national parks- Everglades National Park (FL), Great Smoky Mountain National Park (TN-NC), Mammoth Cave National Park (KY), Death Valley NP (CA-NV), Glacier NP (MT), and Big South Fork National Recreation Area (TN-KY).
- "L-Day User"- The unweighted average of survey data from "BISO, GRSM, Everglades NP, and MACA".
- "NL-Day User"- The unweighted average of survey data from " BISO, GRSM, MACA, Everglades NP, Death Valley NP, and Glacier NP".
- "Motel-In"- The unweighted average of survey data from "GRSM, MACA, Everglades NP, and Death Valley NP". .
- "Camp-In"-The unweighted average of survey data from "GRSM, Everglades NP, Death Valley NP".
- "Motel-Out"-The unweighted average of survey data from "GRSM, MACA, Everglades NP, Death Valley NP".
- "Camp-Out"-The unweighted average of survey data from "GRSM, MACA, and Death Valley NP".
- There are no values for segment shares because the generic profiles are composed of average values from a variety of different parks.

Table C5: Generic Spending Profile – Parks - Low*

Visitor Spending by Lodging Segment in Local Area							Party-night	Parks- Low	
CATEGORY	L-Day User	NL-Day		Backcountry			Motel-Out	Camp-Out	VFR
		User	Motel-In	Camp-In	Campers				
Motel, hotel cabin or B&B	0.00	0.00	63.59	0.00	3.15	56.18	0.00	0.00	
Camping fees	0.00	0.00	0.00	10.56	1.40	0.00	13.67	0.00	
Restaurants & bars	7.90	10.49	22.81	6.49	4.06	25.27	7.95	7.70	
Groceries, take-out food/drinks	5.84	3.98	3.86	8.43	2.91	4.21	5.82	7.87	
Gas & oil	4.46	5.58	7.13	9.62	3.50	8.92	7.45	5.98	
Other vehicle expenses	0.42	0.57	1.26	0.75	0.00	0.80	0.82	0.14	
Local transportation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.41	
Admissions & fees	2.10	4.20	6.65	3.49	2.10	6.39	8.45	2.37	
Clothing	0.88	1.40	3.15	2.03	0.67	3.84	4.71	2.14	
Sporting goods	0.78	0.74	0.76	0.79	1.78	1.08	0.43	1.40	
Gambling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Souvenirs and other expenses	4.31	4.60	6.94	3.83	4.23	7.22	8.44	7.00	
Total	26.68	31.56	116.15	45.98	23.80	113.91	57.74	35.00	
Segment Shares									
Number of Cases	177	884	227	144	26	955	199	28	
Length of Stay in Area	1.0	1.0	2.7	4.1	2.7	2.8	2.7	3.6	
Party Size	2.9	3.0	3.0	2.8	2.5	2.8	2.5	3.1	

*There are no values for segment shares in Tables C5 or C6 because the generic profiles are composed of average values from a variety of different parks.

Table C6: Generic Spending Profile – Parks - High*

Visitor Spending by Lodging Segment in Local Area							Party-night	Parks- High	
CATEGORY	L-Day User	NL-Day		Backcountry			Motel-Out	Camp-Out	VFR
		User	Motel-In	Camp-In	Campers				
Motel, hotel cabin or B&B	0.00	0.00	118.09	0.00	5.85	104.34	0.00	0.00	
Camping fees	0.00	0.00	0.00	19.61	2.60	0.00	25.39	0.00	
Restaurants & bars	14.66	19.47	42.36	12.05	7.54	46.94	14.76	14.30	
Groceries, take-out food/drinks	10.84	7.40	7.17	15.65	5.41	7.81	10.81	14.61	
Gas & oil	8.28	10.36	13.25	17.86	6.50	16.57	13.84	11.10	
Other vehicle expenses	0.78	1.07	2.34	1.39	0.00	1.48	1.52	0.26	
Local transportation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.76	
Admissions & fees	3.90	7.80	12.35	6.49	3.90	11.86	15.70	4.41	
Clothing	1.63	2.60	5.85	3.77	1.25	7.14	8.75	3.97	
Sporting goods	1.46	1.37	1.40	1.48	3.30	2.00	0.80	2.60	
Gambling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Souvenirs and other expenses	8.00	8.54	12.90	7.11	7.85	13.41	15.67	13.00	
Total	49.54	58.60	215.72	85.40	44.20	211.55	107.24	65.00	
Segment Shares									
Number of Cases	177	884	227	144	26	955	199	28	
Length of Stay in Area	1.0	1.0	2.7	4.1	2.7	2.8	2.7	3.6	
Party Size	2.9	3.0	3.0	2.8	2.5	2.8	2.5	3.1	

Table C7: Historic Sites- Manassas NBP Spending Profile

Visitor Spending by Lodging Segment in Local Area				Party-Day	Manassas NBP
CATEGORY	L-Day User	NL-Day User	Overnight	VFR	
Motel, hotel cabin or B&B	0.00	0.00	76.23	0.00	
Camping fees	0.00	0.00	0.00	0.00	
Restaurants & bars	4.66	6.84	31.31	11.92	
Groceries, take-out food/drinks	1.32	1.93	8.24	3.37	
Gas & oil	1.06	2.95	8.37	9.66	
Other vehicle expenses	0.05	0.13	1.07	0.43	
Local transportation	0.15	0.41	4.50	1.35	
Admissions & fees	0.76	2.50	6.52	4.61	
Clothing	0.45	1.48	5.68	2.72	
Sporting goods	0.03	0.11	0.69	0.20	
Gambling	0.00	0.00	0.00	0.00	
Souvenirs and other expenses	1.48	4.88	10.10	8.99	
Total	9.94	21.24	152.72	43.25	
Segment Shares					
Number of Cases	72	249	93	28	442
Length of Stay inside the Park	1.0	1.0	1.2	2.6	1.1
Party Size	2.9	3.1	2.9	2.6	3.0
Standard Error of Mean	2.2	1.5	7.0	11.9	
Percent Error	24%	8%	5%	28%	

Reference:

Name: Manassas National Battlefield Park, (MANA)

Location: Manassas, Virginia

Survey Year: 1995

Fee: Entrance fee is \$2.00 per person (under 17 free), good for 3 days.

Region: Visitor spending associated with the trip to Manassas NBP is defined as expenses incurred within 5 miles of the park.

Comments:

- Outliers: group sizes bigger than 10 people, visitors who did not report any spending, or spending over \$300 dollars in each category, were excluded. (n=29)
- Day visitors whose ZIP codes were (20100 to 20199) or (22000 to 22199) were defined as Local Day User.
- The survey asked visitors to report "Day Spending" (spending just for the day they visited the park), instead of total trip spending.
- There are no segment share values due to missing information in the VSP survey.

Table C8: Historic Sites- Pecos NHP Spending Profile

Visitor Spending Profile for Pecos National Historical Park				Party-Night	Pecos NHP
CATEGORY	Day User	Overnight	VFR		
Motel, hotel cabin or B&B	0.00	75.15	0.00		
Camping fees	0.00	0.00	0.00		
Restaurants & bars	6.82	21.43	6.36		
Groceries, take-out food/drinks	1.95	5.70	10.35		
Gas & oil	3.47	8.40	5.48		
Other vehicle expenses	0.15	1.03	0.13		
Local transportation	0.50	4.67	0.39		
Admissions & fees	3.59	6.73	3.99		
Clothing	1.98	5.47	2.99		
Sporting goods	0.00	0.00	0.00		
Gambling	0.00	0.00	0.00		
Souvenirs and other expenses	6.15	9.16	11.02		
Total	24.60	137.75	40.72		
Segment Shares					
Number of Cases	221	61	28	310	
Length of Stay in Area	1.0	3.3	3.6	1.7	
Party Size	2.8	3.3	3.1	2.9	
Standard Error of Mean	1.6	60.2	37.3		
Percent Error	10%	15%	28%		

Reference:

Name: Pecos National Historical Park (PECO)

Location: Pecos, NM

Fee: \$2.00 per person, \$4.00 per car.

Survey Year: 1993

Region: Visitor spending associated with the trip to Pecos NHP is defined as expenses incurred within 20 miles of Pecos area, not including Santa Fe.

Comments:

- Outliers: group sizes bigger than 10 people, length of stay longer than 30 days, and visitors who did not report any expenses in all categories were excluded (n=45).
- In the 1993 visitor survey, 20% of total visitors reported Pecos NHP as their primary destination and 80% reported that it was not their planned destination. However, there is no significant difference in visitor spending between these two segments- primary destination and not a planned destination.
- There are no segment share values due to missing information in the VSP survey.

Table C9: Parks- Big South Fork NRA Spending Profile

Visitor Spending by Lodging Segment in Local Area						Party-Day	BISO
CATEGORY	L-Day User	NL-Day User	Motel	Camp	Backcountry Campers		
Motel, hotel cabin or B&B	0.00	0.00	66.29	0.00	0.00		
Camping fees	0.00	0.00	0.00	15.38	4.96		
Restaurants & bars	3.58	9.64	21.99	4.57	5.14		
Groceries, take-out food/drinks	13.39	8.22	7.72	10.48	3.69		
Gas & oil	7.69	5.70	9.18	4.22	4.49		
Other vehicle expenses	0.00	1.89	0.02	0.34	0.00		
Local transportation	0.00	0.00	0.00	0.00	0.00		
Admissions & fees	1.51	3.94	7.83	4.56	5.12		
Clothing	0.00	0.69	1.81	1.09	0.79		
Sporting goods	0.00	0.77	0.03	1.57	0.49		
Gambling	0.00	0.00	0.00	0.00	0.00		
Souvenirs and other expenses	1.40	6.80	10.90	4.14	4.93		
Total	27.57	37.64	125.76	46.35	29.60		
Segment shares	20.4%	36.7%	15.3%	23.5%	4.1%		
Number of cases	24	155	46	170	26	421	
Length of stay in area	1.0	1.0	1.9	3.2	2.7	2.1	
Party size	2.6	2.6	2.8	3.0	2.5	2.8	

Reference:

Name: Big South Fork National River and Recreation Area (BISO)

Location: Tennessee and Kentucky

Survey Year: 1994

Fee: No admission fee. The campsite fee ranged from \$12 to 18/per night in 1999.

Region: Visitor spending associated with the trip to Big South Fork NRA is defined as expenses incurred within 30 miles of the park.

Comments:

- Outliers: party-day spending higher than \$1000 are excluded (n=3).
- Segment shares are based on the park overnight stay data (i.e., party-days)
- The visitor segment, lodging inside the park ("Charity"), was excluded from the final analysis due to small number of cases (n=13).

Table C10: Parks- Death Valley NP Spending Profile

Table D10. Visitor Spending by Lodging Segment in Local Area						Party-Night	Death Valley NP
CATEGORY	Day User	Motel-In	Camp-In	Motel-Out	Camp-Out		
Motel, hotel cabin or B&B	0.00	105.35	0.00	67.59	0.00		
Camping fees	0.00	0.00	12.62	0.00	7.94		
Restaurants & bars	14.00	44.11	6.24	28.08	4.06		
Groceries, take-out food/drinks	5.96	7.73	9.29	4.92	6.06		
Gas & oil	6.45	15.13	8.65	12.25	9.69		
Other vehicle expenses	0.83	1.94	1.11	1.57	1.24		
Local transportation	0.00	0.00	0.00	0.00	0.00		
Admissions & fees	4.97	3.78	3.21	7.16	2.48		
Clothing	1.58	1.20	1.02	2.27	0.79		
Sporting goods	1.54	1.17	1.00	2.22	0.77		
Gambling	0.00	0.00	0.00	0.00	0.00		
Souvenirs and other expenses	7.89	6.01	5.10	11.37	3.93		
Total	43.21	186.44	48.24	137.45	36.95		
Segment Shares							
Number of Cases	101	116	75	374	32	698	
Length of Stay in Area	1.0	1.3	2.5	2.9	2.7	2.3	
Party Size	3.0	2.5	2.4	2.6	2.5	2.6	
Std. Error of Mean	7.2	11.9	4.1	6.5	8.8		
Percent Error	17%	7%	9%	5%	24%		

Reference:

Name: Death Valley National Park (DEVA)

Location: California and Nevada

Survey Year: 1996

Fee: A \$10.00 Vehicle Entrance Fee is valid for seven days. Campground Fees range from \$10.00 to \$16.00 per night.

Region: Visitor spending associated with the trip to Death Valley National Park is defined as expenses incurred within 4- hour driving distance (approximately 200 miles) of the park.

Comments:

- Outliers: cases with total spending per party-day of more than \$1000, lengths of stay > 30 days or group size > 10 people were omitted (n=38).
- Since only three cases satisfied the definition as local day users, local and nonlocal day users were merged.
- Users who reported zero nights in the area but reported lodging expenses were excluded in the final analysis (n=34).
- The average motel fee inside the park in 1999 ranged from \$45 to \$345 per night per room.
- There are no segment share values due to missing information in the VSP survey.

Table C11: Parks- Great Smoky Mountain NP Spending Profile

Visitor Spending by Lodging Segment in Local Area					Party-Day		GRSM	
CATEGORY	L-Day User	NL-Day User	Motel-In	Camp-In	Backcountry Campers	Motel-Out	Camp-Out	VFR
Motel, hotel cabin or B&B	0.00	0.00	87.38	0.00	3.65	83.16	0.00	0.00
Camping fees	0.00	0.00	0.00	15.77	1.62	0.00	27.84	0.00
Restaurants & bars	6.98	22.79	36.88	12.08	4.41	46.22	18.75	19.37
Groceries, take-out food/drinks	2.39	9.30	6.47	12.35	3.23	7.39	11.12	6.32
Gas & oil	4.16	14.98	15.08	12.26	3.74	10.92	14.85	10.93
Other vehicle expenses	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Local transportation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Admissions & fees	1.03	11.68	14.07	6.70	2.45	15.84	14.80	8.70
Clothing	1.44	2.12	9.53	5.29	0.67	8.47	10.58	4.00
Sporting goods	1.11	1.03	1.11	1.11	1.83	1.11	1.11	1.11
Gambling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Souvenirs and other expenses	4.61	6.13	13.60	4.57	4.72	25.08	31.44	6.71
Total	21.71	68.02	184.12	70.12	26.33	198.18	130.49	57.13
Segment Shares (percent of nights based on 1985 study)	17%	8%	1%	8%	1%	49%	10%	6%
Number of Cases (1985 study)	257	152	51	28		136	768	379
Length of Stay in Area	1.0	1.0	3.6	5.8		3.6	5.6	3.7
Party Size	2.5	2.6	3.0	3.4		3.0	3.2	3.3
Entry Rate	1.3	1.7	3.5	6.7		3.2	4.8	2.4

Reference:

Name: Great Smoky Mountain National Park (GRSM)

Location: Tennessee and North Carolina

Survey year: 1996

Fee: No entrance fee. Camping fees range from \$10.00 to \$15.00 per night.

Region: Visitor spending associated with the trip to GRSM is defined as expenses incurred within 50 miles of the park, including Knoxville, Asheville and other towns.

Comments:

- The visitor spending profile has been adjusted according to the 1985 and 1996 survey results.
- The sample size for "Backcountry Campers" was too small to be reliable. Thus, these values were estimated from a variety of other sources.

Table C12: Spending Profiles Available from the MGM2 Website

PARKS			
Survey Year	PARKNAME	CITY	STATE
1990	Glacier NP	West Glacier	MT
1993	Mammoth Cave NP	Mammoth Cave	KY
1996	Everglades NP	Homestead	FL
1990	Kenai Fjords NP	Seward	AK
1993	Santa Monica Mountains NRA	Thousand Oaks	CA
1991	City of Rocks NRES	Almo	ID
1997	Voyageurs NP	International Falls	MN
1990	White Sands NM	Holloman AFB	NM
1992	Big Bend NP	Big Bend National Park	TX
1997	Bryce Canyon NP	Bryce Canyon	UT
1990	Canyonlands NP	Moab	UT
1997	Virgin Islands NP	St Thomas	VI

HISTORIC SITES			
Survey Year	PARKNAME	CITY	STATE
1994	San Juan Island NHP	Friday Harbor	WA
1994	Edison NHS	West Orange	NJ
1995	Adams NHS	Quincy	MA
1997	Lowell NHP	Lowell	MA
1989	Muir Woods NM	Mill Valley	CA
1989	Lincoln Home NHS	Springfield	IL

Table C13: Segments List for Historic Sites and Parks (segments that we were able to create from VSP surveys and other sources)

HISTORIC SITES							
Name	Segments						
Pecos NHP	Day User	VFR	OVERNIGHT				
San Juan Island NP	Day User	VFR	OVERNIGHT				
Lincoln Home NHS	Day User	VFR	OVERNIGHT				
Edison NHS	Day User	VFR* ¹	OVERNIGHT*				
Lowell NHP	Day User	OVERNIGHT					
Adams NHS	Day User						
Manassas NBP	L-Day User	NL-Day User	VFR	OVERNIGHT			
Muir Wood NM	L-Day User	NL-Day User	OVERNIGHT				
PARKS							
Name	Segments						
Virgin Island NP	Day User	VFR	OVERNIGHT				
Death Valley NP	Day User	Motel-In	Camp-In	Motel-Out	Camp-Out	Multiple Accommodations*	
Big Bend NP	Day User	Motel-In	Camp-In	Motel-Out	Camp-Out	Backcountry Campers*	
Bryce Canyon NP	Day User	Motel	Camp	VFR			
Santa Monica Mountains NRA	Day User	OVERNIGHT*					
Great Smoky Mountain NP	L-Day User	NL-Day User	Motel-In	Camp-In	Motel-Out	Camp-Out	VFR
Everglades NP	L-Day user	NL-Day user	Motel-In	Camp-In	Out-OVERNIGHT		
Mammoth Cave NP	L-Day User	NL-Day User	Motel-In	Camp-In*	Motel-Out	Camp-Out	
Big South Fork NRA	L-Day User	NL-Day User	Motel	Camp	Backcountry Campers		
City of Rocks NR	L-Day User	NL-Day User	Motel*	Camp			
Glacier NP	L-Day User*	NL-Day User	Motel	Camp	Backcountry Campers*		
Kenai Fjords NP	L-Day User	NL-Day User	Motel	Camp-In	Camp-Out	VFR	
Voyageurs NP	L-Day User	NL-Day User	Motel	Camp	VFR		
White Sands NM	L-Day User	NL-Day User	OVERNIGHT	VFR			
Canyonlands NP	L-Day User*	NL-Day User	Motel	Camp	Backcountry Campers*	VFR	

¹ * segments with sample sizes of less than 20 cases; these segments were excluded from the spending profiles for the individual parks due to concerns about data reliability.

Table C14: Default Distributions for Allocating the Four VSP Spending Categories to the 12 MGM2 Categories

VSP Categories	MGM2 Categories	Day User	Motel-In	Camp-In	Backcountry Campers	Motel-Out	Camp-Out	VFR
Lodging ⇒	Motel, hotel cabin or B&B	0%	100%	0%	50%	100%	0%	0%
	Camping fees	0%	0%	100%	50%	0%	100%	0%
Food ⇒	Restaurants & bars	78%	79%	57%	50%	79%	57%	78%
	Groceries, take-out food/drinks	22%	21%	43%	50%	21%	43%	22%
Travel ⇒	Gas & oil	86%	64%	74%	95%	64%	74%	86%
	Other vehicle expenses	3%	7%	10%	5%	7%	10%	3%
	Local Transportation	10%	29%	16%	0%	29%	16%	10%
Other ⇒	Admissions & fees	27%	27%	24%	30%	27%	24%	27%
	Clothing	18%	26%	21%	10%	26%	21%	18%
	Sporting goods	1%	3%	6%	10%	3%	6%	1%
	Gambling	0%	0%	0%	0%	0%	0%	0%
	Souvenirs and other expenses	55%	44%	48%	50%	44%	48%	55%

Source: variety of traveler surveys that have been adjusted to fit the MGM2 framework.

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

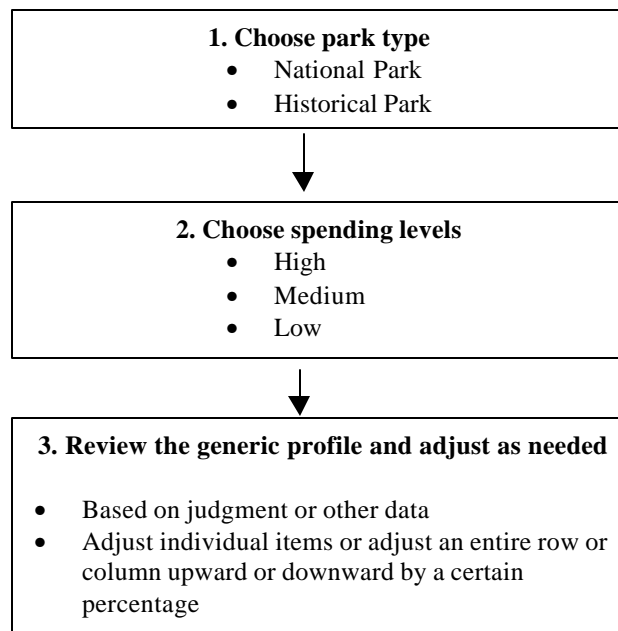


Figure 1: Four step process for selecting and modifying a generic NPS visitor spending profile.

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 = $\$3 * 3$ 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.

Appendix E: MGM2 Multiplier Datasets

The four sets of generic multipliers (Tables E1 to E4) are built into the MGM2 workbook, so they can be readily imported for a particular application. Multipliers for 114 individual regions (Table E5) are also available and can be downloaded from the MGM2 website. The individual region multipliers can be imported into the MGM2 workbook using the "import custom multipliers button" on the Multipliers page. See the MGM2 User's Manual for guidance on interpreting these multipliers or selecting a set of multipliers for a particular application. Users with access to IMPLAN Pro 2.0, may export multipliers from any IMPLAN model to MGM2 (see Appendix F).

Table E1. Multipliers for rural areas (for regions with population below 30,000 and limited economic development)

Sector	<u>Direct effects</u>			<u>Total effects multipliers</u>					RPC (model)	
	Jobs/ MM sales	Personal inc/sales	Property Inc/sales	Value Added /sales	Sales II	JobsII/ MM sales	IncII/ sales	VA II/ sales		Sales I
Hotels And Lodging Places	28.88	0.29	0.10	0.44	1.37	35.24	0.42	0.67	1.25	67%
Eating & Drinking	35.25	0.31	0.07	0.44	1.30	40.41	0.42	0.62	1.19	87%
Amusement And Recreation	33.24	0.34	0.17	0.56	1.32	38.85	0.45	0.76	1.19	54%
Auto repair and service	14.62	0.28	0.12	0.44	1.26	19.23	0.37	0.60	1.16	80%
Local transportation	37.58	0.53	0.08	0.62	1.28	42.94	0.63	0.79	1.11	26%
Food processing	5.68	0.14	0.13	0.27	1.32	10.85	0.25	0.45	1.25	5%
Apparel from purchase	15.83	0.14	0.02	0.17	1.25	19.50	0.22	0.31	1.19	1%
Petroleum refining	0.62	0.05	0.05	0.12	1.51	4.24	0.16	0.44	1.45	5%
Sporting goods	8.32	0.27	0.20	0.51	1.25	12.50	0.36	0.66	1.16	2%
Manufacturing	10.64	0.23	0.16	0.39	1.32	16.11	0.34	0.58	1.21	0%
Retail Trade	39.88	0.51	0.13	0.80	1.26	44.67	0.60	0.96	1.10	74%
Wholesale trade	14.11	0.40	0.13	0.68	1.26	18.84	0.49	0.84	1.12	47%

Retail trade multipliers are the average or sum of the 7 IMPLAN retail trade sectors

Table E2. Multipliers for small metro areas (Larger rural regions or small metro areas with population up to 500,000)

Sector	<u>Direct effects</u>			<u>Total effects multipliers</u>					RPC (model)	
	Jobs/ MM sales	Personal inc/sales	Property Inc/sales	Value Added /sales	Sales II	JobsII/ MM sales	IncII/ sales	VA II/ sales		Sales I
Hotels And Lodging Places	24.57	0.33	0.11	0.50	1.52	33.04	0.52	0.83	1.32	55%
Eating & Drinking	32.28	0.34	0.07	0.47	1.44	38.80	0.49	0.74	1.24	88%
Amusement And Recreation	33.34	0.35	0.18	0.57	1.45	40.61	0.51	0.85	1.25	64%
Auto repair and service	12.75	0.31	0.14	0.48	1.41	18.87	0.45	0.72	1.23	84%
Local transportation	30.74	0.57	0.09	0.67	1.43	37.71	0.73	0.94	1.15	48%
Food processing	5.60	0.12	0.11	0.23	1.33	11.21	0.25	0.45	1.23	42%
Apparel from purchase	14.36	0.21	0.04	0.25	1.36	19.70	0.34	0.46	1.22	3%
Petroleum refining	0.51	0.04	0.05	0.11	1.05	2.77	0.10	0.24	1.01	8%
Sporting goods	12.57	0.21	0.15	0.39	1.42	18.48	0.36	0.64	1.27	2%
Manufacturing	10.42	0.21	0.14	0.36	1.33	15.83	0.35	0.58	1.19	2%
Retail Trade	30.89	0.51	0.13	0.80	1.38	37.00	0.65	1.04	1.13	92%
Wholesale trade	12.74	0.40	0.13	0.69	1.38	18.93	0.55	0.92	1.17	53%

Retail trade multipliers are the average or sum of the 7 IMPLAN retail trade sectors

Table E3. Multipliers for large metro areas (Larger metro areas with population up to 1,000,000)

Sector	Direct effects			Total effects multipliers						RPC (model)
	Jobs/ MM sales	Personal inc/sales	Property Inc/sales	Value Added /sales	Sales II	JobsII/ MM sales	IncII/ sales	VA II/ sales	Sales I	
Hotels And Lodging Places	20.93	0.35	0.12	0.54	1.62	30.26	0.59	0.93	1.36	63%
Eating & Drinking	30.49	0.36	0.07	0.49	1.54	37.86	0.54	0.82	1.29	88%
Amusement And Recreation	30.80	0.35	0.18	0.58	1.56	39.08	0.56	0.93	1.30	73%
Auto repair and service	12.17	0.31	0.14	0.49	1.48	18.80	0.48	0.78	1.26	89%
Local transportation	27.83	0.58	0.09	0.68	1.53	35.52	0.78	1.01	1.18	55%
Food processing	5.55	0.14	0.13	0.28	1.48	11.98	0.31	0.56	1.34	45%
Apparel from purchase	14.00	0.22	0.04	0.26	1.46	20.21	0.38	0.52	1.28	5%
Petroleum refining	0.61	0.05	0.06	0.13	1.40	3.74	0.15	0.38	1.33	11%
Sporting goods	10.91	0.23	0.17	0.44	1.52	17.70	0.42	0.74	1.33	3%
Manufacturing	10.64	0.22	0.15	0.39	1.49	17.22	0.41	0.68	1.31	2%
Retail Trade	27.67	0.51	0.13	0.80	1.46	34.42	0.68	1.09	1.16	94%
Wholesale trade	11.06	0.40	0.13	0.69	1.48	18.08	0.59	0.99	1.21	71%

Retail trade multipliers are the average or sum of the 7 IMPLAN retail trade sectors

Table E4. Multipliers for states (state level regions or regions including larger metro areas with populations of 1 million and more)

Sector	Direct effects			Total effects multipliers						RPC (model)
	Jobs/ MM sales	Personal inc/sales	Property Inc/sales	Value Added /sales	Sales II	JobsII/ MM sales	IncII/ sales	VA II/ sales	Sales I	
Hotels And Lodging Places	18.02	0.37	0.13	0.57	1.70	27.41	0.64	1.01	1.38	66%
Eating & Drinking	27.37	0.38	0.08	0.53	1.64	35.05	0.61	0.91	1.34	89%
Amusement And Recreation	26.87	0.36	0.18	0.59	1.66	35.47	0.62	1.01	1.35	77%
Auto repair and service	11.95	0.31	0.14	0.50	1.57	18.80	0.53	0.84	1.31	84%
Local transportation	24.96	0.59	0.09	0.70	1.64	32.98	0.83	1.09	1.23	71%
Food processing	5.37	0.15	0.14	0.30	1.57	12.11	0.36	0.63	1.39	53%
Apparel from purchase	12.70	0.27	0.05	0.32	1.58	19.72	0.48	0.66	1.34	7%
Petroleum refining	0.61	0.05	0.06	0.13	1.37	3.67	0.15	0.35	1.30	29%
Sporting goods	9.97	0.25	0.18	0.47	1.62	17.11	0.48	0.84	1.39	4%
Manufacturing	10.08	0.24	0.16	0.41	1.59	17.02	0.46	0.76	1.36	3%
Retail Trade	24.73	0.51	0.13	0.80	1.53	31.54	0.71	1.13	1.18	95%
Wholesale trade	9.10	0.41	0.13	0.69	1.57	16.40	0.63	1.04	1.26	91%

Retail trade multipliers are the average or sum of the 7 IMPLAN retail trade sectors

Table E5. Regional models and corresponding parks and cities

Model	Number of counties	NPS Parks/MSA's in the region*	Population (000's)	Area (acres)
<i>California</i>				
CA96	-	State model	31878	155973
SantaMNRA	2	Santa Monica NRA/ Los Angeles MSA, Ventura MSA	9842	5906
LA-MSA	1	Los Angeles MSA	9128	4060
RiversideMSA	2	Joshua Tree NM/ Riverside-San Bernardino	3016	27270
SanDiegoMSA	1	San Diego MSA	2655	4205
OrangeCyMSA	1	Orange County MSA	2637	790
OaklandMSA	2	Oakland MSA	2210	1458
SanFranciscoMSA	3	Golden Gate NRA, etc/ San Francisco MSA	1655	1016
SanJoseMSA	1	San Jose MSA	1600	1291
SacramentoMSA	3	Sacramento MSA	1482	4082
KingsCanyonNP	2	Kings Canyon NP	1101	10788
FresnoMSA	2	Fresno MSA	862	8102
SanFranciscoCo	1	Golden Gate NRA, etc	735	47
VenturaMSA	1	Ventura MSA	715	1846
BakersfieldMSA	1	Bakersfield MSA	623	8142
StocktonMSA	1	Stockton MSA	533	1399
NapaMSA	2	Vallejo-Fairfield-Napa MSA	482	1582
SantaRosaMSA	1	Santa Rosa MSA	421	1576
ModestoMSA	1	Modesto MSA	416	1495
SantaBarbaraMSA	1	Santa Barbara MSA	386	2739
VisaliaMSA	1	Visalia-Tulare-Porterville MSA	350	4824
SalinasMSA	1	Salinas MSA	339	3322
LassenV-NP	4	Lassen Volcanic NP/ Redding MSA	268	13848
SantaCruzMSA	1	Santa Cruz MSA	238	446
SanLuisMSA	1	San Luis MSA	229	3305
ChicoMSA	1	Chico-Paradise MSA	193	1640
MercedMSA	1	Merced MSA	192	1929
YosemiteNP	4	Yosemite NP	189	8870
ReddingMSA	1	Whiskeytown Shasta-Trinity NRA/ Redding MSA	162	3786
RedwoodNP	2	Red Wood NP	150	4581
YoloMSA	1	Yolo MSA	150	1012
YubaMSA	2	Yuba City MSA	137	1233
MendocinoCo	1	(single county region)	83	3509
LavaBedsNM	2	Lava Beds NM	54	10232
SiskiyouCo	1	(single county region)	44	6287
DelNorteCo	1	(single county region)	27	1008
GlennCo	1	(single county region)	26	1315
DeathValleyNP	1	Death Valley NP	18	10192
ModocCo	1	(single county region)	10	3944

Table E5. Regional Models (Continued)

Model	Number of counties	NPS Parks/MSA's in the region*	Population (000's)	Area (acres)
Colorado				
CO96	-	State model	3823	103729
DenverMSA	5	Denver MSA	1867	3761
RockyMtNP	3	Rocky Mountain NP	489	5194
COSpringsMSA	1	Florissant Fossil Beds NM/ Colorado Springs MSA	473	2127
BoulderMSA	1	Boulder MSA	258	743
FtCollinsMSA	1	Fort Collins MSA	222	2601
GreeleyMSA	1	Greeley MSA	152	3993
PuebloMSA	1	Pueblo MSA	131	2389
GDJunctionMSA	1	Colorado NM/ Grand Junction MSA	108	3328
CurecantiNRA	2	Curecanti NRA, Black Canyon of the Gunnison NM	42	5480
MontroseCo	1	Black Canyon of the Gunnison NM	30	2241
MesaVerdeNP	1	Mesa Verde NP	22	2037
AlamosaCo	1	Great Sand Dunes NM	14	723
DinosaurNP	1	Dinosaur NP	12	4743
BentsNM	1	Bent's Old Fort NHS	5	1514
Florida				
FL96	-	State model	14400	53937
EvergladeNP	3	EvergladesNP, Biscayne NP, Dry Tortugas NP/ Miami	2345	4967
TampaMSA	4	Tampa-St. Petersburg-Clear Water MSA	2199	2555
MiamiMSA	1	Miami MSA/ Biscayne NP	2076	1945
FtLauderdaleMSA	1	Ft Lauderdale MSA	1438	1209
OrlandoMSA	4	Orlando MSA	1417	3491
JacksonvilleMSA	4	Ft. Caroline NM, Castillo de San Marcos NM, Ft. Matanzas NM/ Jacksonville MSA	1009	2636
WPalmB-MSA	1	West Palm Beach-Boca Raton MSA	993	1974
SarasotaMSA	2	DeSoto NM/ Sarasota-Bradenton MSA	529	1313
DaytonaMSA	2	Daytona MSA	456	1591
MelbourneMSA	1	Melbourne-Titusville-Palm Bay MSA	454	1019
LakelandMSA	1	Lakeland-Winter Haven MSA	441	1875
PensacolaMSA	2	Gulf Islands NS/ Pensacola MSA	386	1679
FtMyersMSA	1	Fort Myers-Cape Coral MSA	380	804
FtPierceMSA	2	Fort Pierce-Port St. Lucie MSA	287	1128
TallahasseeMSA	2	Tallahassee MSA	259	1183
OcalaMSA	1	Ocala MSA	230	1579
GainesvilleMSA	1	Gainesville MSA	197	874
NaplesMSA	1	Naples MSA	188	2026
FtWaltonB-MSA	1	Ft. Walton Beach MSA	166	936
PanamaMSA	1	Panama MSA	145	764
PuntaGordaMSA	1	Punta Gorda MSA	130	694
JacksonCo	1	(single county region)	45	916
OkeechobeeCo	1	(single county region)	31	774
HolmesCo	1	(single county region)	18	483
TaylorCo	1	(single county region)	18	1042
DixieCo	1	(single county region)	12	704

Table E5. Regional Models (Continued)

Model	Number of counties	NPS Parks/MSA's in the region*	Population (000's)	Area (acres)
<i>Massachusetts</i>				
MASS96	-	State model	6092	7838
GrBoston	4	Massachusetts part of Boston MSA**/ Boston area NHS's and NHP's	2695	1282
MiddlesexCo	1	Longfellow NHS, Lowell NHS, Minute Man NHP	1413	824
Boston	1	Boston African American NHS, Boston NHP	645	59
NorfolkCo	1	Adams NHS, F L Olmsted NHS, J F Kennedy NHS	637	400
WorcesterCo	1	(single county region)	720	1513
EssexCo	1	Salem Maritime NHS, Saugus Iron Works NHS	687	498
SpringfieldMSA	2	Springfield MSA/ Springfield NHS	592	1148
SpringfieldNHS	1	Springfield NHS	442	619
CapeCodNS	1	Cape Cod NS/ Barnstable-Yarmouth MSA	202	396
PittsfieldMSA	1	Pittsfield MSA	135	931
FranklinCo	1	(single county region)	71	702
<i>Michigan</i>				
MI96	-	State model	9594	56809
DetroitMSA	6	Detroit MSA	4318	3897
GrRapidsMSA	4	Grandrapids-Muskegon-Holland MSA	1015	2759
AnnArborMSA	3	Ann Arbor MSA	530	2029
LansingMSA	3	Lansing-East Lansing MSA	448	1707
Kzo-BtCk-MSA	3	Kalamazoo-Battle Creek MSA	444	1882
FlintMSA	1	Flint MSA	436	640
SaginawMSA	3	Saginaw-Bay City-Midland MSA	403	1775
MuskegonCo	1	(single county region)	165	509
BentonHarborMSA	1	Benton Harbor MSA	161	571
JacksonMSA	1	Jackson MSA	155	707
SleepBD-NP	3	Sleeping Bear Dunes NL	125	1612
straits	4	(Mackinac Strait area counties)	99	3766
E-UP	3	(Eastern Upper Peninsula counties)	55	3486
IsleRoyaleNP	2	Isle Royale NP, Keweenaw NHP	38	1553
AlpenaCo	1	(single county region)	31	574
DickinsonCo	1	(single county region)	27	766
RoscommonCo	1	(single county region)	23	521
AntrimCo	1	(single county region)	21	477
PicturedRocksNP	1	Pictured Rocks NL	10	918
LakeCo	1	(single county region)	10	568

* MSA: Metropolitan Statistical Area; NP: National Park; NRA: National Recreation Area; NHS: National Historical Site; NHP: National Historical Park, NL: National Lakeshore; NS: National Seashore

** The BEA defined Boston-Worcester-Lawrence-Lowell-Brockton MSA model was not constructed because data sets for counties in New Hampshire were not available.

Appendix F. Extracting multipliers from IMPLAN Pro 2.0 models

May 30, 2000

For users with access to IMPLAN Pro 2.0, a spreadsheet utility for extracting multipliers from any IMPLAN Pro 2.0 model is included. You can extract multipliers from your own IMPLAN models and save them into Excel files suitable for importing to MGM2. Before you run this program, make sure that you have already constructed the IMPLAN Pro 2.0 models for the region of interest and completed the multiplier construction step (to be consistent with other multipliers used in MGM2, we recommend using Type SAM multipliers in this step).

Steps for extracting multipliers from IMPLAN Pro 2.0 models:

1. Open the Excel file "MExtractor.xls". When prompted, selected "Enable macros".
2. Click on the "GET MULTIPLIERS" button to extract multipliers from your IMPLAN model. You will be prompted to select the IMPLAN Pro model of the desired region (an IMPLAN Pro *.iap file). Select the file and click OK. The extraction process may take a few minutes. Make sure that the status above is "multipliers have been reset". If not, click on the "RESET MULTIPLIERS" button to reset the multipliers.
3. When extraction is completed, inspect the results and then click the "SAVE MULTIPLIERS" button to save the multipliers page into an Excel file. The procedure will automatically add an "m12.xls" extension to the file. Replace the NAME with one that identifies the region and save the file as NAME.m12.xls. MGM2 will look for Excel files with "m12" extensions when importing multipliers. Put the multiplier file in the folder where the MGM2 workbook is stored. This file is ready to be imported to MGM2 using the "import custom multipliers" button on the MGM2.XLS Multiplier Page.
4. If extracting multipliers from several IMPLAN Pro models, click the "RESET MULTIPLIERS" button after each extraction. You should reset the page before extracting multipliers.

Appendix G: MGM2 Shortform

May 31, 2000

MGM2Shortform.XLS is a Microsoft Excel Workbook rendering of the MGM2 Paper and Pencil Form. This shortened version of the MGM2.XLS Workbook employs four visitor segments and uses an aggregate spending average for each segment and aggregate multipliers.

Inputs on the form include:

1. Visits in party nights for four segments :

Local : visitors from the local area

Non-Local Day Users: visitors from outside the region not staying overnight in the area

Motel: visitors staying in motels, cabins, B&B's in the local area (inside or outside the park)

Camp: visitors staying in campgrounds in the local area (inside or outside the park)

Visitors staying with friends and relatives should be treated as day users

2. An overall average spending figure for each segment on a party day/night basis

3. Parameters for converting from park visits to party nights

Length of stay in the area

Party size

Re-entries to park

Percent of activity/spending to attribute to the park

Users may select the MGM2 generic spending and multiplier values from drop down lists

Outputs

Visitor spending and the associated direct and indirect economic impacts are summarized. Impacts reported include sales, personal income, jobs, and value added.

The MGM2Shortform.xls Workbook has five pages

Instructions

MGMSHORT - The main worksheet

Defaults - containing default spending and multiplier tables

Input Summary

Output Summary

Appendix H. MGM2 Pencil and Paper Version

Instructions

The pencil and paper version of the MGM2 model is designed for users who may not have access to an electronic spreadsheet capable of running the Excel versions. This version is designed to manually enter the information and carry out the calculations by hand/with a calculator. The model has therefore been simplified to reduce complexity and the number of calculations, while maintaining some of the key refinements over the original MGM model.

In particular, this version:

- Breaks visitors down into at most four segments.
- Uses the party night as the unit of analysis
- Uses an overall average spending for each segment not itemized by spending categories
- Provides suggested spending averages and multipliers based on observed ranges for National Park visitors/areas.
- Computes direct and total economic impacts based on aggregate economic ratios and multipliers. These are derived from the disaggregate ones in the full MGM2 model using typical distributions of visitor spending across spending categories and economic sectors.

There are two forms:

FORM A: Calculations and Impact Estimates

FORM B: Input Values

First complete FORM B, where you make choices for the various inputs that describe your park visitors and the local economy around the park.

Then complete FORM A, which carries out the calculations using the choices you have entered on FORM B.

FORM A has all of the important information that you may want to disseminate to those interested in the results, while FORM B provides a complete record of the inputs and assumptions on which the results are based.

FORM B INSTRUCTIONS

- B1. Enter the number of recreation visits to the park. If making an annual estimate of impacts of all park visitors, enter annual recreation visits from the Public Use Reports. If evaluating impacts of some subgroup of visitors or a change in visitors due to some action, enter the number of visits associated with the given scenario.
- B2. Enter segment shares. While you can simply fill in the "Totals" column to carry out the analysis similar to the earlier Money Generation Model, the model encourages you to identify the kinds of visitors attracted to the park. Enter the percentage of visits in B1 for each of the four visitor segments:

LOCAL are visitors from the local area
 NL-Day are day visitors to the area from outside the local area
 MOTEL are visitors staying in commercial lodging either inside the park or in the local area (includes lodges, motels, cabins, B&B's, condo's or rented homes).
 CAMP are visitors staying in campgrounds either inside or outside the park.

Be sure the four percentages add to 100%. If you have no visitors for a given segment, enter zero in that cell. Visitors can be excluded in the economic analysis (e.g. local visitors) by entering zero percent in line B3d (see below).

- B3. Enter parameters for converting recreation visits to party nights in the area. There are four parameters for each segment:

- B3a: Length of stay** is the number of nights a visitor spends in the area. Enter an average value for each segment. Length of stay is 1 for day visitors.
- B3b: Party size** : the number of people per party (vehicle). This should reflect an average across the period covered by the visits that are entered. Off-season party sizes may be different than those during the peak season.
- B3c: Park entries per trip**: This is the number of times a person or party will be counted as a visitor during their stay in the area. If the visit data entered in B1 represents park entries, you must adjust for visitors that may be counted more than once on the same trip to the area. For example, someone staying in a motel outside the park for 3 nights, may enter the park each day and be counted as 3 distinct visits.
- B3d: Percent attributed to the park**: This field is included to adjust for visits to the area that may not be directly attributable to the park. Enter 100% to include all of the nights for a given segment and 0% to exclude a particular segment completely. To omit spending by local residents, enter 0% in the local column. Some nights and associated spending for other segments may also be omitted in the analysis by entering a percentage that is less than 100%. For example if 10% of park visitors using motels came to the area on business rather than specifically to visit the park, enter 90% in the motel column. This will then count only 90% of the nights and spending by park visitors staying in local motels as attributable to the park. If you have no good reason to exclude some spending or no information on which to base an attribution, enter 100%.

- B4. Enter an estimate of the average amount spent by each segment on a party night basis. The spending figure should reflect all spending by the party in the local region (as you have defined it). Spending should be entered on a per party per night basis (per day for day visitors). Suggested ranges for the spending averages are indicated by the "generic" spending averages in Table S1 and averages for selected parks in Table S2. These averages were estimated in park visitor surveys. All figures are in 1998 dollars.
- B5. Enter economic ratios and multipliers for the region. Considering the characteristics of the region surrounding the park for which you are estimating impacts, choose a set of economic ratios and multipliers. The table of "generic" multipliers to the right of the entry cells on Form B identifies the ranges in which these values should usually fall. Some parks in unique settings may fall outside these ranges.

The four generic sets of multipliers show how the values may change as one moves from a mostly rural area to large and economically diverse regions. You may pick one of the generic sets of multipliers or interpolate and extrapolate to choose a value. You may also substitute multipliers for your particular area, although you should not attempt this without a good understanding of how these multipliers are defined and used.

Users with limited experience with multipliers should select one of the generic sets.

- Choose Rural : for smaller regions with fairly limited economic development.
- Choose Small metro : for regions up to 500,000 in population. These can either be larger geographic areas with several small cities or the region surrounding a moderate sized city.
- Choose Large metro : for regions up to one million in population.
- Choose State : for large SMA's over a million in population or broad regions encompassing an entire state or a multi-state region.

The most commonly cited multiplier in recreation and tourism economic impact studies is the Type II sales multiplier. Many studies have used a value of 2.0 for this multiplier. In many cases, it was taken from a state model, which would considerably exaggerate the impacts when applied to a local region, particular if the region is largely rural. The corresponding "generic" multipliers in Table 2 are the total effects sales Type II (SAM) multipliers. Note that these range from 1.32 for rural regions to 1.62 for a statewide analysis, considerably lower than 2.0.

Visitor spending is mostly for services and retail purchases. These sectors tend to have high employment and income to sales ratios, but fairly limited indirect effects. Most of the secondary effects arise from the induced effects of tourism-related employee spending in the local area. Due to a wide range of approaches for estimating these induced effects, reported tourism sales multipliers have varied quite widely. In many cases they have been greatly exaggerated. The Type SAM multipliers recommended here are lower, more conservative, and probably a more accurate representation of the induced effects of park visitor spending.

FORM A INSTRUCTIONS

All of the calculations are carried out on Form A. Place Form A and Form B side-by-side and get out your calculator. Instructions are provided by Line number on the Form.

Step 1: Compute visits by segment

Line 1: Enter recreation visits from line B1 of Form B

Line 2: Enter the four segment shares from line B2 of Form B.

Line 3: Multiply the percentages in Line 2 by total visits in Line 1 to estimate visits by segment. Summing Line 3 across the four segments should yield the same total visits as in Line 1.

Step 2: Convert visits to party nights

Line 4: Use the equation below to compute party nights for each segment. For each segment, multiply visits for the given segment from Line 3 by the corresponding length of stay and then divide this by the product of the party size and re-entry factors.

$$\begin{aligned} \text{Party nights} &= (\text{Visits} * \text{Length of Stay}) / (\text{Party size} * \text{Re-entry Factor}) \\ \text{Line 4} &= (\text{Line 3} * \text{Form B3a}) / (\text{Form B3b} * \text{Form B3c}) \end{aligned}$$

Sum party nights for the four segments and enter this in the total cell on Line 4.

Line 4A: Multiply Line 4 by the attribution percentages (Form B3d) to compute party nights in the area to be attributed to the park.

Sum party nights for the four segments and enter this in the total cell on Line 4A.

Step 3: Compute Total Spending

Line 5 : Enter spending averages for each segment from Form B, section B4.

Line 6 : For each segment, multiply party nights from Line 4A by the average spending per night from Line 5. Divide these results by 1,000 to express spending in \$000's.

Sum Line 6 across the four segments and enter in the total column of Line 6.

Step 4: Estimate Economic Impacts

Impacts are computed for total spending indicated in the Totals cell on Line 6.

Line 7: Direct sales = total spending * capture rate. Multiply total spending (Line 6, total) by the capture rate (Form B5a).

Line 7A: Direct personal income = direct sales * direct income to sales ratio. Multiply Line 7 by Form B5b.

Line 7B: Direct jobs = (direct sales * direct jobs to sales ratio)/1000. Multiply Line 7 by Form B5c /1000. Since the job to sales ratio is expressed in jobs per million sales and Line 7 is in 000's, be sure to divide by 1000 to get the correct number of jobs.

Line 7C: Direct value added = direct sales * value added to direct sales ratio. Multiply Line 7 by Form B5d.

Line 8: Total sales = direct sales * sales Type II (SAM) multiplier. Multiply Line 7 by Form B5e.

Line 8A: Total personal income = direct sales * total income to sales ratio. Multiply Line 7 by Form B5f.

Line 8B: Total jobs = (direct sales * total jobs to sales ratio)/1000. Multiply Line 7 by Form B5g /1000. Since the job to sales ratio is expressed in jobs per million sales and Line 7 is in 000's, be sure to divide by 1000 to get the correct number of jobs.

Line 8C: Total value added = direct sales * total value added to direct sales ratio. Multiply Line 7 by Form B5h.

Money Generation Model - Paper and Pencil Version

Form A: Calculations and Impact Estimates

Step 1: Enter Recreation Visits and Segment Shares

Line 1	Enter Total Recreation Visits					
		Visitor segments				
		Local	NL-Day	Motel	Camp	Total
Line 2	Enter Segment Shares					100%
Line 3	Compute Visits by Segment					

Step 2: Convert visits to party nights by segment

		Local	NL-Day	Motel	Camp	Total
Line 4	Party nights in area					
Line 4A	Party nights included in analysis					

Step 3: Compute Total Spending

		Local	NL-Day	Motel	Camp	Total
Line 5	Average spending per party night					
Line 6	Total spending (\$000's)					

Step 4: Estimate Economic Impacts

	Direct Economic effects	Totals
Line 7	Sales (\$000's)	
Line 7A	Personal Income (\$000's)	
Line 7B	Jobs	
Line 7C	Value added (\$000's)	

	Total Economic Effects	Totals
Line 8	Sales (\$000's)	
Line 8A	Personal Income (\$000's)	
Line 8B	Jobs	
Line 8C	Value added (\$000's)	

Money Generation Model - Paper and Pencil Version

Form B: Input Values

Enter the requested information on this form. Entries in the shaded cells are used in computing spending and economic impacts on Form A. Form B provides a record of the values on which impact estimates are based. See Instruction Sheet for more detailed instructions for each item.

B1. Enter Total Recreation Visits

--

Visitor segments

Local NL-Day Motel Camp Total

B2. Enter Segment Shares

				100%
--	--	--	--	------

Shares must add to 100%

B3. Enter parameters for converting visits to party nights for each segment

Visitor segments

Local NL-Day Motel Camp

	Local	NL-Day	Motel	Camp
B3a. Length of stay in area (days/nights)	1.0	1.0		
B3b. Average party size				
B3c. Park entries per trip				
B3d. Percent attributed to park				

B4. Enter average spending for each segment on a party night basis

Visitor segments

Local NL-Day Motel Camp

	Local	NL-Day	Motel	Camp
B4. Average Spending per party night				

Spending should include all spending by the party in the local area on a per day or per night basis. See sample spending tables below for guidance.

B5. Enter economic ratios and multipliers for the region

The table to the right shows "generic" values for regions of increasing size and economic diversity. Choose a value for your region based on this table.

Multiplier	Selected Value	Type of Region			State
		Rural	Small metro	Large metro	
Direct effect ratios					
B5a. Capture rate		74%	79%	80%	83%
B5b. Income/sales		0.34	0.35	0.36	0.36
B5c. Jobs/ MMsales		31.46	26.37	23.74	20.22
B5d. Value added/Sales		0.51	0.53	0.55	0.55
Total effect multipliers					
B5e. Sales Type II (SAM)		1.32	1.44	1.55	1.62
B5f. Total Income/direct sales		0.45	0.51	0.56	0.59
B5g. Total jobs/ direct sales		36.76	33.10	31.24	27.74
B5h. Total Value added/direct sales		0.71	0.80	0.88	0.94

Sample Park Visitor Spending Averages by Segment

Table S1 reports the "generic spending averages" used in the full featured Excel version of MGM2. The generics capture the range of spending averages observed in previous park visitor surveys. All figures are in 1998 dollars. Parks in unique settings may fall outside these ranges. Table S2 reports spending averages observed at selected parks where visitor spending surveys have been conducted.

Table S1. Generic Spending averages by segment

	Visitor Segment			
	Local	NL-Day	Motel	Camp
Historic site- Low spending	16.59	36.20	96.42	
Historic site- Medium spending	23.70	51.71	137.75	
Historic site- High spending	30.80	67.23	179.07	
Park- Low spending	26.68	31.56	116.15	45.98
Park- Medium spending	38.11	45.08	165.94	65.69
Park- High spending	49.54	58.60	215.72	85.40

Table S2. Spending profiles from selected parks

	Visitor Segment			
	Local	NL-Day	Motel	Camp
Big South Fork National River and Recreation Area	27.57	37.64	125.76	46.35
Death Valley National Park		43.21	161.95	42.59
Great Smoky Mountain National Park	21.71	68.02	191.15	100.31
Manassas National Battlefield Park	9.94	21.24	152.72	
Pecos National Historical Park		24.60	137.75	

Appendix I . List of MGM2 Files

File name	Size	Date	Comments
MGM2 Manuals and Documentation			
MGM2.doc	966K	06-01-00	Complete Manual
AppendixA.doc	27K	05-25-00	Glossary of Economic Terms
AppendixB.doc	29K	05-28-00	NPS Convert routine documentation
AppendixC.doc	589K	05-31-00	Spending data files
AppendixD.doc	110K	05-30-00	Tips for estimating spending profiles
AppendixE.doc	154K	05-26-00	Multiplier data files
AppendixG.doc	21K	05-31-00	MGM2 Short Form
AppendixF.doc	22K	05-31-00	MGM2 Paper and pencil version
AppendixH.doc	36 K	05-26-00	List of MGM2 files
AppendixI.doc	29K		
P&Pform.PDF	32K	05-31-00	Paper and pencil form in PDF
MGM2 Software			
MGM2.xls	314K	05-31-00	MGM2 Main Workbook
Mextractor.xls	441K	05-31-00	Multiplier extractor
MGM2Shortform.xls	66K	05-31-00	MGM2 Shortform
NPSconvert.xls	58K	05-31-00	NPS Visit conversion routine
MGM2operate.xls	63K	05-31-00	For Operating & Construction Impacts
P&Pform.xls	28K	05-31-00	Paper and Pencil Form
MGM2 Software.zip	235K	06-01-00	All above software in zip file
Spending Data Files (See Appendix C)			
Spending.zip	149K	05-31-00	All spending files zipped
Adams 1998.t12.xls	16K	05-23-00	
Big Bend 1998.t12.xls	19K	05-22-00	
Big South Fork 1998.t12.xls	16K	05-23-00	
Blank.t12.xls	18K	05-30-00	
Bryce Canyon 1998.t12.xls	18K	05-23-00	
Canyonlands 1998.t12.xls	19K	05-23-00	
City of Rock 1998.t12.xls	18K	05-23-00	
Death Valley 1998.t12.xls	19K	05-23-00	
Edison 1998.t12.xls	15K	05-23-00	
Everglades 1998.t12.xls	19K	05-23-00	
Glacier 1998.t12.xls	18K	05-23-00	
Great Smoky Mountain 1998.t12.xls	19K	05-23-00	
Historical Parks- generic low	17K	05-23-00	
Historical Parks- generic medium	17K	05-23-00	
Historical Parks- generic high	18K	05-23-00	
Spending Data Files (continued)			
Kenai Fjords 1998.t12.xls	19K	05-22-00	
Lincoln Home 1998.t12.xls	19K	05-23-00	
Lowell 1998.t12.xls	18K	05-23-00	

Mammoth Cave 1998.t12.xls	19K	05-22-00
Manassas 1998.t12.xls	18K	05-23-00
Muir Woods 1998.t12.xls	18K	05-23-00
Park- generic profile - medium	18K	05-23-00
Park- generic profile - high	18K	05-22-00
Park- generic profile - low	17K	05-29-00
Pecos 1998.t12.xls	16K	05-23-00
San Juan Island 1998.t12.xls	18K	05-23-00
Santa Monica 1998.t12.xls	17K	05-22-00
Virgin Island 1998.t12.xls	18K	05-22-00
Voyageus 1998.t12.xls	19K	05-22-00
White Sand 1998.t12.xls	18K	05-22-00

Multiplier Files (see Appendix E)

Mults.zip	35K	05-31-00
AnnArborMSA-3.m12.xls	25K	02-29-00
BentsNM.m12.xls	30K	02-29-00
CA96.m12.xls	34K	02-29-00
CO96.m12.xls	29K	02-29-00
CurecantiNRA.m12.xls	27K	02-29-00
DeathV-NP.m12.xls	31K	02-29-00
DenverMSA.m12.xls	35K	02-29-00
DinosaurNP.m12.xls	27K	02-29-00
EvergradeNP.m12.xls	38K	02-29-00
FL96.m12.xls	35K	02-29-00
IsleRoyaleNP.m12.xls	23K	02-29-00
KingsCanyonNP.m12.xls	32K	02-29-00
LassenV-NP.m12.xls	33K	02-29-00
LavaBedsNM.m12.xls	30K	02-29-00
MASS96.m12.xls	37K	02-29-00
MesaMerdeNP.m12.xls	28K	02-29-00
MI96.m12.xls	36K	02-29-00
PicturedRockNL.m12.xls	23K	02-29-00
RedwoodNP.m12.xls	34K	02-29-00
RockyMtNP.m12.xls	29K	02-29-00
SanFranciscoMSA.m12.xls	57K	02-29-00
SantaMonicaNRA.m12.xls	38K	02-29-00
SleepBD-NL.m12.xls	32K	02-29-00
SpringfiledNHS.m12.xls	32K	02-29-00
YosemiteNP.m12.xls	35K	02-29-00

All Multiplier files zipped