

US Army Corps of Engineers Recreation Economic Assessment System

Estimating Economic Impacts of Corps of Engineers Visitors on Regional Economies

POC: Wen-Huei Chang, 703-428-7214
Wen-Huei.Chang@wrc01.usace.army.mil



**US Army Corps
of Engineers**
Engineer Research and
Development Center

Economic Effects of CE Visitors



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Table 1. Economic Effects of CE Visitor Total Trip Spending in the US Economy (1999)

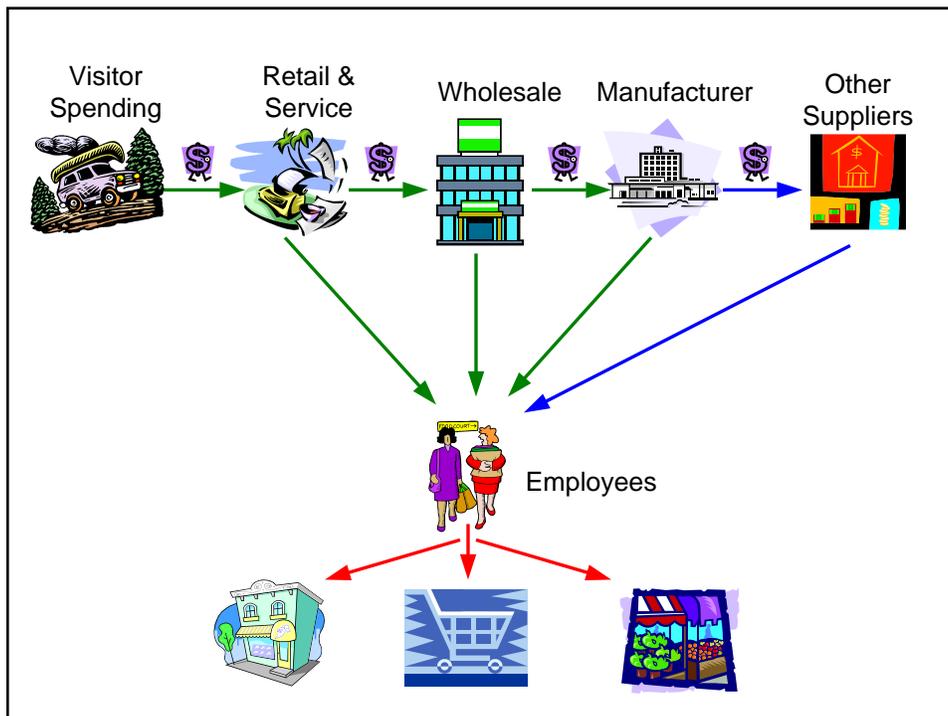
	Sales (\$MM)	Income (\$MM)	Jobs (number of jobs)
Direct Effects	8,909	3,866	199,192
Indirect Effects	6,662	3,197	60,458
Induced Effects	6,673	3,548	87,201
Total Effects	22,244	10,610	346,851

Note. Effects of total trip spending including both within and outside 30 miles of the projects. The total annual visits were 385 million person-trips. The total trip spending was \$9,644 million.

Concepts



- Economic impact analysis (EIA) estimates the contribution of visitor spending to the regional economy
- EIA answers:
 - How much do visitors spend in the region?
 - How does visitor spending contribute to the region's
 - Sales
 - Income
 - Jobs
 - Tax revenue
- EIA benefits:
 - Enhanced communication with user groups and stakeholders
 - Capability to assess the regional economic implications of alternative actions
 - Information for public relations messages



Types of Effects



- *Direct effects*- changes in the industries associated directly with recreation and tourism spending, e.g., hotel.
- *Indirect effects*- changes resulting from the tourism industries made to other “backward-linked” industries in the region, e.g., hotel’s purchases on linen supply and utilities.
- *Induced effects*- changes resulting from household spending of income earned as a result of visitor spending- either directly or indirectly, e.g., apartment rentals paid by hotel employees.

Sales Jobs Income Value Added

Margining Example



Souvenirs purchased from local shop for \$100

Purchaser Price = Local Margins + Non-Local Margins + Producer Price
 \$100 \$30 \$10 \$60 (20L + 40NL)

If only \$20 worth of souvenirs are made locally, only the local portion of producer price (\$20) and local margins (\$30) would accrue to the local economy as direct sales

Direct sales effects = \$50 (\$20 Local Production + \$30 Local Margins)

Capture rate = 0.5 (\$50 / \$100)

Total sales effects = \$50 × Sales Multiplier or,
 = \$100 × 0.5 (capture rate) × Sales Multiplier

Useful Multipliers and Ratios



- Capture Rate
- Type I Sales
- Type II Sales
- Direct Income / Direct Sales Ratio
- Direct Job / Direct Sales Ratio
- Total Income / Direct Sales Ratio (Type II Income)
- Total Jobs / Direct Sales Ratio (Type II Jobs)



Multipliers



A multiplier is a number that quantifies the extent of the cumulative effects of the money within the region's economy. Multipliers are expressed as ratios of total effects to direct effects.

- *Type I multiplier =*
$$\frac{\text{direct effects} + \text{indirect effects}}{\text{direct effects}}$$
- *Type II multiplier =*
$$\frac{\text{direct effects} + \text{indirect effects} + \text{induced effects}}{\text{direct effects}}$$

Capture Rate and Margins



- Visitors pay retail prices on goods- Purchaser Price

$$\text{Purchaser Price} = \text{Producer Price} + \text{Margins} \\ (\text{Transportation Cost} + \text{Wholesale and Retail Markups})$$

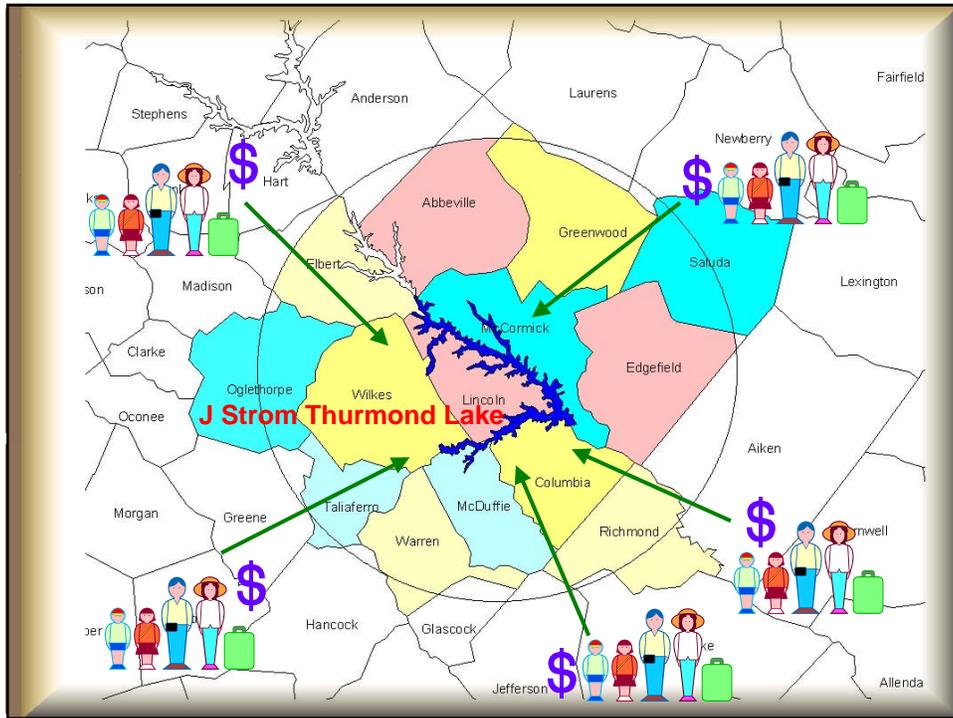
- Only margins may be captured by local economy as direct sales if goods are imported
 - Margins accruing to local economy- Retail markups, margins from local operated wholesale trade and transportation

$$\text{Capture Rate} = \frac{\text{direct sales accruing to local business}}{\text{total visitor spending}}$$

Steps in an EIA



- Define the actions
- Identify visitors/visits affected
- Define the study region
- Specify inputs
 - Visits
 - Spending
 - Multipliers
- Inspect, interpret and communicate results



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Economic Impacts =
 Visits × Spending × Multiplier





Recreation Economic Assessment System



- Spending profiles- Enter visitor spending profiles or select existing profiles from the model.
- Visitor segments- Enter visitation data for up to 12 market segments or select visitation data from a built-in list.
- Tax effects- Choose or enter applicable state and local tax rates – model provides 2000 state sales tax and federal gasoline tax rates.
- Sector-specific multipliers- Choose multipliers for the study region – model provides four sets of “generic” multipliers for 12 sectors.
- Model handles margins and local productions for purchases on goods.
- Automated calculation, saving, printing, and charting using Visual Basic Macros.



REAS Spending



- Spending profiles by segment
 - Model default
 - Import custom spending profiles
- Price indices to adjust year
- Adjust existing spending profiles (increase/decrease to certain percentage)
- Edit existing spending or create your own

REAS Visitation



Segments with distinguish spending patterns



Local vs. Non-Local
Day use vs. Overnight
Camp vs. Hotel/Motel
Boat, Fish, Sightsee, etc.
(NRMS)!!!!



REAS handles up to 12 segments and has 6 pre determined segments:

Day/Boat	Camp/Boat	Other Overnight/Boat
Day/Non-Boat	Camp/Non-Boat	Other Overnight/Non-Boat

REAS Multipliers



- Generic or custom sets of sector-specific multipliers for 12 sectors
- Generic multipliers for four types of regions- rural, small metro, larger metro, and state level analysis
- Multipliers estimated from IMPLAN
- Model handles margins and local productions for purchases on goods

Multipliers developed for four types of regions

Group 1: Rural

Smaller rural regions with low population (below 30,000).

Group 2: Small metro

Larger rural regions or small metro areas with population up to 500,000. Regions with smaller populations that serve as population centers of the surrounding areas may fit into this category

Group 3: Large metro

Medium to larger metro areas with population up to 1,000,000. Regions with smaller populations that serve as population centers of the surrounding areas may fit into this category.

Group 4: State

State level regions or regions including larger metro areas (1,000,000 and more).

REAS Outputs

- Summary report- Model automates converting results into a short report.
- Detailed estimates of direct effects for sales, jobs, income and value added.
- Aggregate estimates for all secondary effects.
- Marginal effects- Report impacts per thousand dollars of visitor spending and per 1,000 person-trips.
- Tax effects of direct sales and income.
- Charts for spending and visitation data.

Sample Multipliers



Multipliers for the hotel sector by generic region

Multipliers	Rural	Small Metro	Large Metro	State
Direct effects				
Jobs/ MM sales	28.88	24.57	20.93	18.02
Personal inc/sales	0.29	0.33	0.35	0.37
Property Inc/sales	0.1	0.11	0.12	0.13
Value Added /sales	0.44	0.5	0.54	0.57
Total effects				
Sales I	1.25	1.32	1.36	1.38
Sales II (SAM)	1.37	1.52	1.62	1.7
Total jobs/ \$ MM direct sales	35.24	33.04	30.26	27.41
Total income/ direct sales	0.42	0.52	0.59	0.64
Total value added / direct sales	0.67	0.83	0.93	1.01

Sample Impact Report



Table 1. Economic Impacts of Visitor Spending : Direct Effects

Sector/Spending category	Direct Sales \$Millions	Jobs	Personal Income \$Millions	Value Added \$Millions
Motel, hotel cabin or B&B	14.83	343	4.84	7.35
Camping fees	10.69	247	3.49	5.30
Restaurants & bars	95.13	2,892	32.40	45.13
Groceries, take-out food/drinks	51.21	270	5.94	11.67
Gas & oil	7.24	3	0.29	0.79
Other auto expenses	13.60	163	4.15	6.55
Other boat expenses	9.03	84	2.62	2.65
Entertainment and recreation fees	17.44	547	6.03	9.87
Sporting goods	0.99	12	0.21	0.39
Souvenirs and other expenses	0.84	8	0.17	0.30
Local transportation	-	-	-	-
Other	-	-	-	-
Retail Trade	75.88	2,207	38.71	60.46
Wholesale Trade	16.91	203	6.83	11.63
Total	313.79	6,981	105.67	162.10

Sample Impact Report



Table 2. Direct and Total Economic Impacts of Visitor Spending

Economic measure	DIRECT EFFECTS	Multiplier*	TOTAL EFFECTS
Output/Sales (\$ Millions)	\$313.79	1.40	\$439.53
Personal Income (\$ Millions)	\$105.67	0.48	\$151.35
Value Added (\$ Millions)	\$162.10	0.77	\$240.56
Jobs	6,980	28	8,843
Total Visitor Spending (\$ Millions)		\$439.49	
Capture rate		71%	
Effective spending multiplier		0.99	
* Ratios of total effects to direct sales			