

Urban/Regional Economics

UMD Bureau of Business and Economic Research

IMPACT STUDIES: How are they done?

(For example, the Duluth Botanical Gardens Proposal)

BACKGROUND: THE IMPACT MODEL AND DATA

IMPLAN Professional, as used for the Duluth Botanical Gardens Impact study, is an economic impact assessment modeling system. IMPLAN databases consist of the following components: Employment; Industry Output; Value Added; Employee Compensation; Proprietary Income; Other Property Type Income; Indirect Business Taxes; and more.

THE NATURE OF IMPACTS

Several assumptions are necessary in any impact analysis. This was especially true in the case of the tourism impact analysis in the case of the proposed Duluth Botanical Gardens, since time and money did not allow for surveys or other methods aimed at fine-tuning the analysis. The following assumptions apply to the impacts here reported:

Production, Not Sales: The impacts reported here are based on production, not sales. This is a common approach using the models and tools used for this analysis. What does this mean? The primary implications from these assumptions are for retail and wholesale trade. An example might help: If I buy a car from a local car dealer for \$20,000, how much was produced in Duluth? Well, the car dealer did not manufacture the car. So we can deduct \$15,000 or so dollars that went to Detroit or Japan. Perhaps the owners do not reside in Duluth. We can deduct

their earnings from profit that goes to wherever they reside. That leaves local sales people, maintenance people, etc., for a local impact.

We call that proportion of total sales by the car dealership in our example margins. Margins represent the contribution to local production by the local dealership. This means that the output impacts will be much less than the total sales impact. However, the output impact is a true production impact upon which decisions can be made. Since tourism deals mostly with retail establishments, to use sales as an estimator is misleading relative to the true impact.

Employment Assumptions: Employment figures are based on Department of Commerce definitions. This means that a part-time employee is counted as one employee. There are no adjustments towards full-time equivalent measures.

Once again, this assumption has its greatest effect on sectors such as retail trade. Retail trade hires a significant number of part-time employees. This means that any impact measure in this sector will be inflated when compared to full-time equivalent definitions.

Another required assumption for employment impacts is that there is no excess capacity in the community. New levels of sales require new employees, and we are assuming these new employees are available. Any other assumption would require more time and budget than is available for this analysis.

The Source of Margins: For this analysis, the margins were initially taken from the default values contained in IMPLAN. Each was then reviewed based on other data, such as the Census of Retail Trade, Department of Commerce and a few adjustments were made.

Prices in 1996 Dollars: The most recent IMPLAN model contains a database based on 1996 information. This is taken as the base year for this analysis. An inflation rate of 2% is then factored into the model for each year of the analysis. All figures provided were deflated by this factor. Of course, if there is a desire to have the impacts stated in current dollars, the factor can be added back in.

High and Low Assumptions for New Visitor Days: Probably the most heroic assumption regards tourists. It is difficult to understand what motivates a tourist to come into our region without surveys of our major markets. These markets pretty much follow Interstate 35, with the Twin Cities being our biggest customers, Iowa coming second, Missouri third, and so on. There is some evidence that Chicago residents are increasing in number for our tourist base. Our assumption is that one major motivator for tourism in the region is to see the Lake and related environment offered by Duluth. The landscape proposal being analyzed here maximizes this exposure. Why is this important? Because only new tourist expenditures should be included in any tourism project impact statement. If a new operation only results in a tourist spending money in one Duluth store instead of another, the net impact is zero. For this initial impact study, we present high and low assumptions: that a high of 70,000 new visitor days for Duluth because of this operation, or that a low of 35,000 new visitor days for Duluth because of this operation. For occupancy we assume that an average stay in a hotel/motel is one night.

Personal Tax Assumptions: It is important to note that tax impacts extend beyond those directly paid by employees of the operation. Impacts include the indirect and induced (see below) effects from an initial change in activity. Even if an assumed operation resulted in no direct tax impacts from its own operations, the indirect and induced

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Operations: Direct, Indirect and Induced Impacts from the Operations Assumptions

	Direct*	Indirect*	Induced*	Total*
Labor Income	\$417,876	\$143,425	\$152,633	\$713,934
Output	\$1,057,77	\$392,216	\$373,589	\$1,823,57
Employment	19.5	6.2	7.1	32.7

*1996 Dollars

Tourism: Direct, Indirect and Induced Impacts from the New Tourism in the Region

	Direct*	Indirect*	Induced*	Total*
HIGH:				
Labor Income	\$2,106,985	\$702,055	\$763,852	\$3,572,892
Output Impact	\$6,314,169	\$2,010,325	\$1,869,630	\$10,194,124
Employment	144.3	30.8	35.5	210.6
LOW				
Labor Income	\$925,417	\$300,759	\$333,429	\$1,559,605
Output	\$2,758,642	\$861,954	\$816,114	\$4,436,709
Employment	62.2	13.1	15.5	90.8

*1996 Dollars

Construction: Direct, Indirect, and Induced Impacts from the Assumed

	Direct*	Indirect*	Induced*	Total*
Labor Income	\$2,040,403	\$815,031	\$776,467	\$3,631,900
Output Impact	\$6,643,396	\$2,086,144	\$1,900,508	\$10,630,049
Employment	74.6	34.6	36.1	145.3

*1996 Dollars

Tax Impact

	Household Based	Indirect Business
Construction	\$133,307	\$329,611
Operations	\$25,812	\$46,352
Tourism (High)	\$128,849	\$534,370
Tourism (Low)	\$56,220	\$232,080
High TOTAL	\$287,968	\$910,333
Low TOTAL	\$215,339	\$608,043



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TYPES OF MULTIPLIERS

There are several types of multipliers used in this analysis, specifically, Direct, the Indirect, and the Induced. The total of these three make up the Total Impact. In the impact data to be presented, all of these impacts will be listed. The following definitions apply:

Direct: The direct impact comes from the operation itself. Remember that in the case of retail or service operations, margins constitute the basis for direct impact estimates.

Indirect: The indirect impacts stem from the interaction between the facility and other local businesses. The interaction comes from the facilities purchase of locally produced products. Only purchases and sales from local businesses count in this calculation. It is important to note that the purchases by the facility under consideration are the direct impacts. The indirect impacts come from these second-round businesses purchasing needed local goods and services in order to provide for the increased production in the region as a result of the facility's direct expenditures. Then third round increases in activity occur, fourth round, and so on until the multiplier has played itself out.

Induced: Induced impacts stem from the earnings of employees in each round of impact activity. Employees spend a portion of their personal income in the region, creating rounds of induced activity.

Total: The total impact is simply the direct, plus the indirect, plus the induced impacts.

TYPES OF MEASURES

Our impact estimates include the following measures: output, employment, personal income and personal taxes.

Output: Output impacts represent the new direct, indirect, and induced production from local industries as a result of the new facility. Output is generally not the same as sales, as discussed above.

Employment: Employment impacts are the direct, indirect, and induced impacts from industry activity in the region as a result of the new operation. Remember, an employee is an employee, whether full- or part-time.

Personal Income: Personal income impacts are the direct, indirect and induced impacts from industry activity in the region as a result of the new operation. Personal income includes employee compensation plus proprietor's income if the proprietor is a local individual.

Taxes: Tax impacts are based on household factors and on indirect taxes. Household taxes include personal taxes, property taxes, as well as estimated various other income based taxes. Indirect taxes include sales taxes and excise taxes. All tax estimates are for state and local taxes. Federal taxes are included.

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IMPACTS FROM CONSTRUCTION, OPERATIONS, FROM NEW VISITOR DAYS, TAXES

The construction associated with this project is assumed to take place in the year 2000. All construction expenditure estimates were provided by the supporters of this development plan. We then discounted these estimates to 1996 dollars based on the 2% per annum inflation rate assumed for this project. The initial assumptions for this impact were a total construction cost of \$7,250,000. Of course, the construction impacts are for one year only and do not extend into the future.

The operations associated with this project are assumed to begin in the year 2001. The impacts listed here are for that one year. The assumption is that the operations impact would continue indefinitely into the future. The initial assumptions for this impact were a total operations cost of \$1,514,400.

The tables on page 15 reflects high (70,000) and low (35,000) assumptions of additional visitor days for the region to take advantage of this new park. This number would begin with the operations in the year 2001. The expenditures of these tourists are assumed to concentrate in a few local industries. Impacted industry sectors included are: Retail, Eating & Drinking, Lodging, Advertising, Theater, Sports, Motion Pictures, Transportation, Food Stores, Banking, and Rental. Remember that the direct impact on retail trade is based on margins, not on sales.