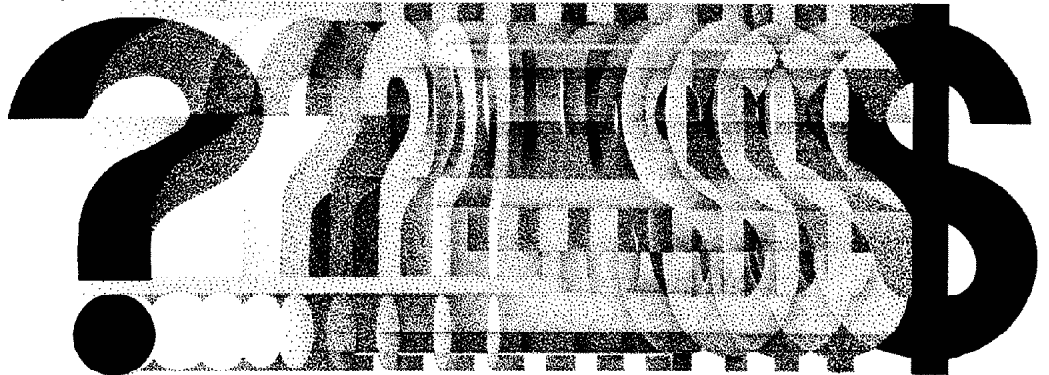


Estimating the Effects of Spending



Contents

	Page
Direct, Indirect, and Induced Effects	6-3
Multipliers	6-5
Economic Impact Models	6-7
How to Use These Rationales in Your Community	6-8
Sources of Information	6-12
Considerations in Using These Rationales	6-12
References	6-13

Direct, Indirect, and Induced Effects

The actual amount spent by greenway visitors, from out of the local area, at businesses within your local economy represents only a portion of the total economic activity resulting from this spending. For instance, greenway visitors purchase goods and services from local businesses. In turn, these businesses and their employees purchase goods and services from other businesses, thereby creating a chain reaction. These purchases of goods and services between firms occur between different economic sectors, such as manufacturing, agriculture and transportation. Therefore, an increase in visitor expenditures is likely to impact related sectors in the economy.

The total impact resulting from an increase in visitor expenditures can be described in terms of *direct*, *indirect*, and *induced* effects. Understanding these three levels of effects is important because they show how the initial greenway-related expenditure generates additional economic activity within your local or regional economy.

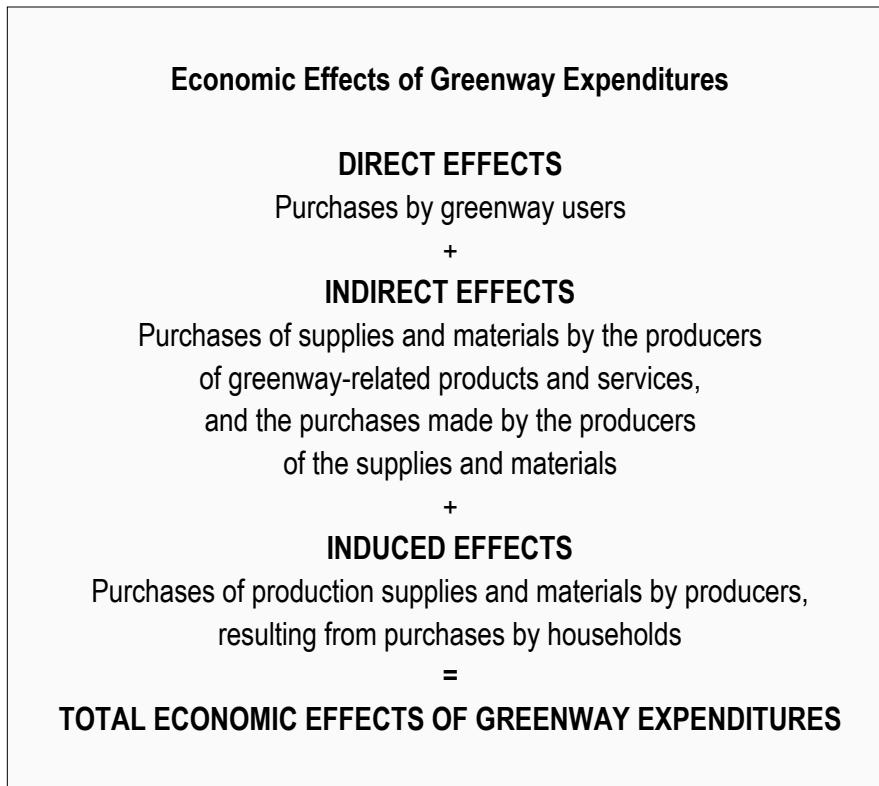


Figure 6-1

Visitor expenditures that may be attributed to a protected river corridor, for example, may include food and beverage, fishing equipment, and gasoline for vehicles and boats. *Direct effects* result directly from the actual purchases by visitors. Local businesses meeting the river visitors' demand for goods and services, must purchase supplies to meet this demand. These purchases (of food and beverage supplies, fishing equipment and gasoline, for example,) by the local businesses, are direct effects. Direct effects are also referred to as first round purchases in some studies.

Indirect effects occur when the suppliers to these local businesses must increase their purchases of production materials and services from other businesses, and those businesses in turn increase their purchases. A chain reaction is created as each supplier must increase their purchase of inputs. Each exchange increases the total indirect effects. For food and beverage, indirect effects are when the local food manufacturers purchase additional produce from local farmers, and the farmers then purchase additional supplies in order to grow products necessary to meet the demand. Another example might be fishing equipment. For instance, the indirect effects attributed to a fishing rod would include purchases by the rod manufacturer for graphite and other materials, and the graphite manufacturers (if local) purchases of local supplies. Thus, indirect effects extend to sectors of the economy beyond recreation-oriented businesses, such as agriculture, manufacturing, and transportation.

The direct and indirect effects of increased spending by greenway visitors can result in an overall increase in the production of goods and services in the local economy. This increase in economic activity can also increase jobs and household incomes within the economy. A portion of the incomes is then spent on other goods and services.

Consumer purchases resulting from the increased income of business owners and households set in motion another sequence of expenditures and purchases. The sum of these impacts over and above the direct and indirect effects are the induced effects. For example, the induced effects would include all the purchases made by households which receive wages from their employment at the rod manufacturer or local market. Induced effects result from wages paid to households by both directly and indirectly affected businesses. These induced effects can be estimated from economic impact models.

If you estimate the direct, indirect, and induced effects of visitor expenditures, you can show the total economic activity which can result from your greenway project. For recreation expenditures, the total economic effects, whether sales, jobs or income, are often approximately one and a half to three times more than the amount of the actual recreation-related expenditures. The magnitude of direct, indirect, and induced impacts depends on the number of visitors attracted to the greenway; the amount they spend; the structure and diversity of the local economy; and the quantity of input supplies purchased within your local community. If the local businesses purchase all their input supplies from outside the area, the direct and indirect impacts on the local economy would be zero. Similarly, if employees reside outside the community they are much less likely to spend their income at local businesses and induced impacts are likely to be minimal.

Multipliers

How are the direct, indirect, and induced effects estimated? Economists often use multipliers to estimate what these effects will be. A multiplier is a ratio, which can be defined as the total effects divided by the direct effect. Multipliers may also be used for indirect or induced effects only. Multipliers are usually written in decimal format such as 1.7. The greater the multiplier, the greater the potential increase in economic activity in the local economy. Multipliers are derived from rather complex economic models.

To estimate what the total effects (direct, indirect, and induced) will be, you multiply the direct effect (first round purchases) by the multiplier to obtain the total effects. Thus, by using multipliers you can show the total amount of economic activity in your community per dollar of direct effect of greenway visitor spending. Multipliers can be used to estimate the total or indirect economic effects in terms of the number of jobs, sales, household income, or other measures of economic activity. For a greenway project, an economist could use an employment multiplier to estimate how many jobs would result from a specific level of greenway-related expenditures. An economist could also use an income multiplier to predict the additional income which would result from an increase in greenway-related expenditures.

Table 6-1 presents economic multipliers for recreation spending at five state parks in Georgia. For this study, the local economic impact region was the

county in which the state park was located. This study found recreational spending appears to be associated with relatively large multipliers. This means new or expanded recreation facilities within these regions would bring new dollars into the area, which through multiplier effects, would stimulate considerable economic activity. Multipliers vary by county, in part, because the structures of the local economies are different.

Table 6-1 lists four multipliers which are commonly used: gross output, total income, value added, and employment. The gross output multiplier is generally the highest, however, the other multipliers are generally more useful indicators of economic activity in your local economy. Definitions of these multiplier terms are as follows:

Table 6-1

Local Economic Multipliers for Recreational Spending at Representative Georgia State Parks					
Economic Indicator	Unicoi	Red Top	F. D. Roosevelt	Dahlonega Gold Museum	Little Ocmulgee
Gross Output	1.56	1.79	1.51	1.48	1.97
Total Income	1.68	2.08	1.68	1.55	2.14
Value Added	1.67	2.06	1.66	1.55	2.12
Employment	1.21	1.23	1.23	1.21	1.32

Gross output Value of all outputs produced in the local region; an indicator of economic activity similar to the gross national product (GNP) of the U.S.

Total income Wages and salaries paid to employees and property income

Value added Sum of employee wages and salaries, indirect business taxes, and property income

Employment The number of people employed by firms and businesses in the local region

Remembering that the multiplier for total effects is the ratio of direct effects to total effects, this table can be used to estimate the total effects (direct, indirect, and induced) per unit of a direct effect. Using Table 6-1, the employment multiplier for Red Top State Park is 1.52. This means that there will be 1.52 jobs

created in the local economy for every one job resulting from the direct impacts of recreation spending at Red Top. Therefore, if 10 new jobs resulted from the direct impacts of recreational spending, 15 total new jobs would eventually be created. Ten of these 15 would be the result of the direct impacts, and five additional jobs from the indirect and induced impacts. Remember the direct impact on employment results from the jobs provided by the recreation-related businesses themselves. The indirect impact on employment results if the recreation business buys production materials and services locally from other businesses, thereby increasing the number of jobs in those businesses.

In another study, total effects were computed for three National Park Service river sites in the eastern United States. In this study, employment multipliers ranged from 1.57 to 1.84. The total gross output multiplier was approximately 2 for recreational expenditures at each of the river areas. Similar to the Georgia State Park study, the authors concluded that recreation expenditures do stimulate economic activity. The study also noted that as the local economies around the river sites diversify and become more self-sufficient, visitor spending on river recreation will have an even larger effect on the local economy (Cordell, et al., 1989).

Once again, multipliers are derived from rather complex economic models. However, in many cities, counties, and states, multipliers have already been calculated and may be appropriate for your project. Caution should be exercised when using or interpreting multipliers. Make certain you know what the multipliers are describing. To use multipliers correctly, it is best to work with an economist or someone very familiar with their use.

Economic Impact Models

Economists often use computerized *input-output models* to derive multipliers. These models are very helpful for understanding the inter-relationships in a local economy. An input-output model which can be used to estimate the impacts of outdoor recreation is the USDA Forest Service's IMPLAN. There are other types of economic impacts analysis models used, such as economic base and econometric models, but they are not discussed here.

An input-output analysis usually shows the relationships between industries in a particular local economy using a matrix or table. This dollar flow table lists all

the sales and purchases made by the different sectors of the economy over a period of time. For example, in the Georgia state parks study, to construct the dollar flow table researchers had to determine how recreation expenditures would be allocated through increased purchases of materials and supplies across various economic sectors. Recreational spending was determined to include purchases of gasoline for automobiles, recreational vehicles, and boats. Thus an increase in purchases of gasoline by park visitors would result in increased purchases by producers of gasoline, i.e., lubricating oils and greases, petroleum and coal, etc.

Once the dollar flow table is constructed, another table is then constructed to derive the multipliers. This final table shows the total dollar amount change in each economic sector caused by a \$1 change in output in any particular sector.

Once again, using multipliers in calculating the direct, indirect, and induced economic effects of your project will probably require the expertise of an economist. However, if this level of analysis is not feasible or warranted, it is still important to recognize that multiplier effects will be generated in the economy, even if they cannot be calculated. When multipliers are used, they can clearly show how attracting new visitor dollars into a region can stimulate considerable economic growth. Multipliers can also be used to show how a decline in visitor expenditures results in decreased local economic activity.

- In 1985, purchases associated with water-related (rivers and lakes) outdoor recreation in Minnesota totalled nearly \$1.2 billion. Adding the multiplier effects of these purchases brought the total impact to \$1.9 billion. This level of expenditures was linked to 37,600 jobs in the state, or 2.1 percent of total state employment (Kelly and Sushak, 1987).

How to Use These Rationales in Your Community

Calculate the economic impacts of your project. The following are the four steps you might work through to determine what to calculate, as well as how to do it. Be sure to use constant dollars. (See Appendix B)

Step 1: Define your economy and your project. An economy can be a commercial area, a town or city, a region, state, nation, or any other unit. It is where the majority of users and employees live and spend their money. Usually, the larger the economic land unit, the greater the economic impact, because more dollars circulate within the defined economy. Often the economy is defined for political reasons. If the County Supervisors are the relevant decision-makers, they will be interested in how the existing or proposed greenway affects the County.

A project can be an existing greenway, or one that is proposed. You should be as specific as possible regarding the geographic extent of the project, the type of recreation activities that occur there, who the users are and where they come from, and the resources necessary to construct/maintain it.

Step 2: Determine user expenditures per site visit. An effective method to determine resident expenditures associated with the greenway is to hand out a mail-back questionnaire to a random sample of users. Make certain to provide a map with the survey which includes the greenway and the boundaries of the economy you have defined. You may also wish to consider on-site interviews and/or telephone surveys using staff, volunteers, and/or user groups. Contact a local university for examples of questionnaires and assistance in constructing and analyzing the survey. Test the survey before conducting the actual survey. When you hand out mail-back surveys, ask for the name and phone number of the respondents so you can contact them if the completed survey is not returned promptly. Examples of survey questions are included in Appendix C.

The survey results should allow you to determine the number of users, number of visits, expenditures per user in the local area, activities they are participating in, how much of their activity occurs within the greenway, frequency of use, percentage of residents compared to non-resident users. From this, calculate local expenditures per day for each type of user surveyed. Multiply those expenditures by the number of annual users in each category, then add

these together for an estimate of total annual expenditures associated with your greenway. If use varies by season, day of the week, or time of day, be sure your calculations incorporate an annual average. If you are proposing a greenway, make some assumptions about likely expenditure patterns. Base your assumptions on sound logic.

Step 3: Apportion expenditures on recreation equipment, supplies, and clothing. This survey could include questions regarding annual expenditures made on equipment, supplies, and apparel. If so, to assess effects on the local economy, only those expenditures that were made within the region outlined on the survey map can be counted. Also, you can only attribute the portion of the equipment expenditures that relate to the proportion of the total use that occurs at the greenway. For example, if a person spends \$50 per year on running clothes and half of their running is done at the greenway, the greenway-related expenditure is \$25. If purchases are made that will last a number of years, divide the expenditures by the typical life of the equipment, then apportion for annual information.

To make these calculations, calculate the annual amount your users spent on equipment, supplies, and clothing for their activity. Determine if the equipment and supplies were purchased from businesses in your local economy. Find out what percentage of time they pursue their activity within the greenway. Then multiply this percentage by the amount spent on the equipment within the local economy. Table 6-1 can be used to estimate the expenditures for new entrants into a particular recreational activity.

Make an assumption on how many new entrants could be expected as a result of greenway, river, or trail protection. Multiply the number of entrants by the appropriate entry in Table 6-1. Estimates will vary by community. You may wish to contact local retailers for more appropriate estimates for your project.

Step 4: Show how your project supports the local economy.

Total the resident expenditures in the region from the preceding steps and summarize your findings.

Determine the potential impacts of a proposed project. Your project can stimulate the local economy by increasing the demand for recreation-related goods and services. To estimate expenditures which may result from establishing your greenway, river or trail project, work through the calculations in steps 1 through 4 listed above. Rather than conduct a survey to determine actual expenditures, you can forecast the types and number of users your project is likely to attract. Document your assumptions carefully and thoroughly.

Commission your own study. The U.S. Travel Data Center is available to prepare estimates of the impact of travel on communities. A local university may have graduate students available to conduct such a study. There are also consultants specializing in travel impact studies. In most large cities, travel-related businesses pool their funds to commission expenditure pattern studies. You may wish to coordinate with them to get your greenway on their list of visitor attractions.

Input-Output Models. Nationally, the two Input-Output models most often used in recreation and tourism analysis are IMPLAN (U.S. Forest Service) and RIMS-II (Bureau of Economic Analysis). Both of these models allow for determining multipliers down to a county level. Information on IMPLAN is available through the Minnesota IMPLAN Group, Inc. at (602) 439-4421. Use of IMPLAN is available to representatives of public agencies. Information on the use of RIMS-II is available from BEA's Regional Economic Analysis Division, at phone number (202) 606-5343. Fees are associated with accessing either of these models. Be sure to check that these models are appropriate for the size of your study area and the level of analysis you need. It is suggested that the above systems only be used for an analysis of three or more counties.

Some manipulation is necessary to generate multipliers specific to the recreation/open space sectors of your economy. Someone familiar with economic modelling should be contacted to provide technical assistance. Before attempting to adapt a national model, we recommend you first contact your state Department of Commerce to determine if an Input-Output model has been developed that could be applied to your economy.

Sources of Information

Municipal Recreation Economic Impact Model. The Canadian Ministry of Tourism and Recreation has made this impact model available in both print and electronic disk versions. The model is intended to help municipal governments assess the economic implications of municipally-supported recreation activities. Contact:

Mr. Chandra Giocool
Ministry of Culture, Tourism and Recreation
8th Floor, 77 Bloor Street West
Toronto, Ontario
M7A 2R9
Phone: (416) 314-7670

Sport Fishing Institute (SFI). This group has recently completed a user-friendly handbook on *How to Conduct an Economic Impact Analysis*. This guide is intended to give state fish and wildlife agencies the ability to conduct their economic analyses of fishing, hunting, and wildlife-related recreation. It provides a comprehensive explanation on collecting expenditure data and using RIMS-II multipliers. Although the focus is on the state-level impacts of recreation expenditures, the document could prove very helpful in understanding economic impact analysis. An appendix in the report lists sources of fishing activity data available from various state agencies. (Contact Robert Southwick of SFI regarding availability of this report at (202) 898-0770).

Considerations in Using These Rationales

Be cautious. Your greenway may have opposition. If economics become a point of contention, your analyses may be closely scrutinized. Document all your assumptions and be able to retrace your calculations upon request. The best defense is a good offense. Be knowledgeable concerning your method, results, and potential limitations. This will also put you in a good position to scrutinize other economic analyses presented by opposing interests.

References

Kelly, Timothy J. and Ronald M. Sushak. 1987. "Significance of Water-Related Outdoor Recreation to the State and Regional Economies in Minnesota." MN: Minnesota Department of Natural Resources, Division of Waters, Office of Planning for the Water Allocation Project.

Van Horne, Merle. 1987. "Economic Impact of Parks Methods Assessment." Draft memo. Washington, D.C.: National Park Service, Recreation Resources Assistance Division.