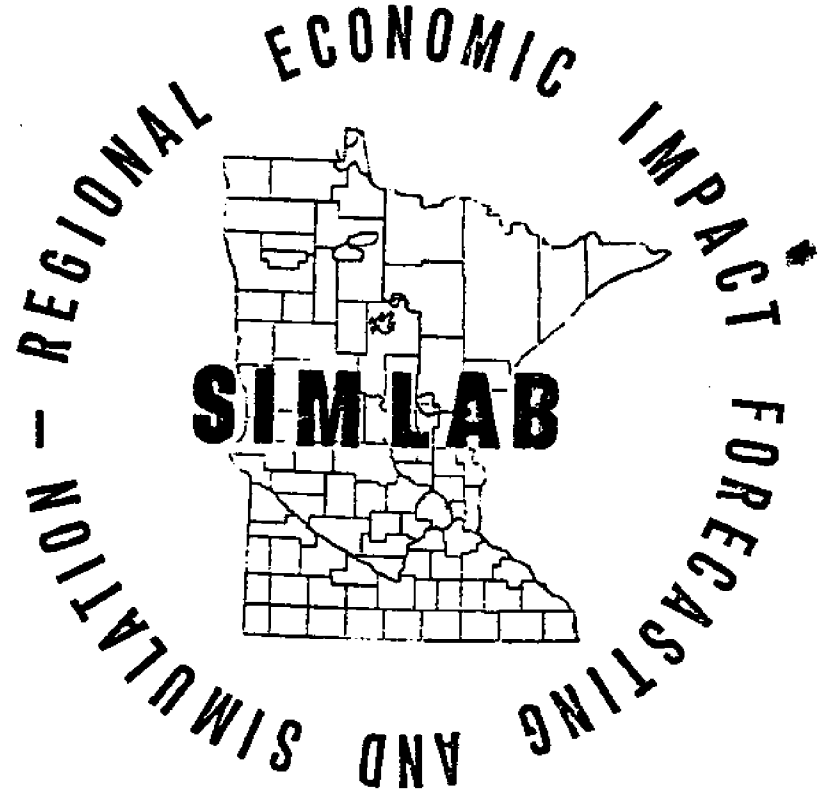
REGIONAL ECONOMIC ACCOUNTS FOR RECREATION RESOURCE PLANNING

Wilbur R. Maki



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REGIONAL ECONOMIC ACCOUNTS FOR RECREATION RESOURCE PLANNING

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The focus of this paper is a small, but, nonetheless important segment of a region's economy, namely, its tourism/recreation industry. This focus stems from an abiding concern about the uncertain and limited role of a region's recreation-related industries in its general economic development. It also stems from the realization that the tourism/recreation industry is actually parts of many existing industries and that it is not readily differentiated as a unique and separate industry group.

The analytical approach presented in this paper avoids the need to redefine industry structure and extensively reconstruct general purpose economic models for tourism/recreation studies. It makes use of matrix methods in linking recreation-related expenditures to changes in regional and national input-supplying industries. Moreover, the methodology for analyzing the growth and development of a tourism/recreation industry cluster can be extended, without industry reclassification, to other industry clusters which relate to uniquely differentiated clientele groups.

Recreation resource planning pertains to the targeting of public capital expenditures in recreation activity areas. Well-established public priorities help explain the location and magnitude of these expenditures, although changes in the perceived importance of a region's recreation-related industries to the residents of the region and the state will lead to changes in these priorities.

The monitoring of the recreation-related activities in a region's economy relates directly to a critical decision information need in recreation

resource planning. Thus, the overall study objectives are two-fold, namely, to develop a methodology and related data for measuring the local and regional economic effects of particular tourism/recreation activities and to demonstrate the use of the methodology and data in targeting public investment in particular tourism/recreation facilities and activity areas.

Study objectives have been achieved in several stages, the first being the construction of a set of regional interindustry accounts as the production module in a computer simulation model for regional impact assessment and forecasting (Hwang and Maki, 1979). A new algorithm has been prepared for the two region inter-industry accounts used in this model. This algorithm recomputes regional input-output coefficients each year when import-export balances change. In addition, this model includes eight other basic modules, with the production, i.e., input-output, module being driven by the market, investment, and demand modules as illustrated in Figure 1. Investment, along with population, labor force and employment, constrain production when these supply-side constraints are relaxed less rapidly than the demand-side constraints. The income payments of all producing sectors are distributed, finally, to the primary resource owners in the value added module. In addition, a financial module contains the relevant data for limiting capital spending in both public and private sectors of a regional economy.

The first-stage model has been used in several studies on the regional economic effects of proposed resource development projects, including peat, copper-nickel, and taconite mining, irrigated agriculture, and wood products manufacturing (Maki, et al., 1980). In each of these studies, alternate levels of changes in final demand or gross output were postulated and their effects on employment, income and other valuables were simulated (Maki, et

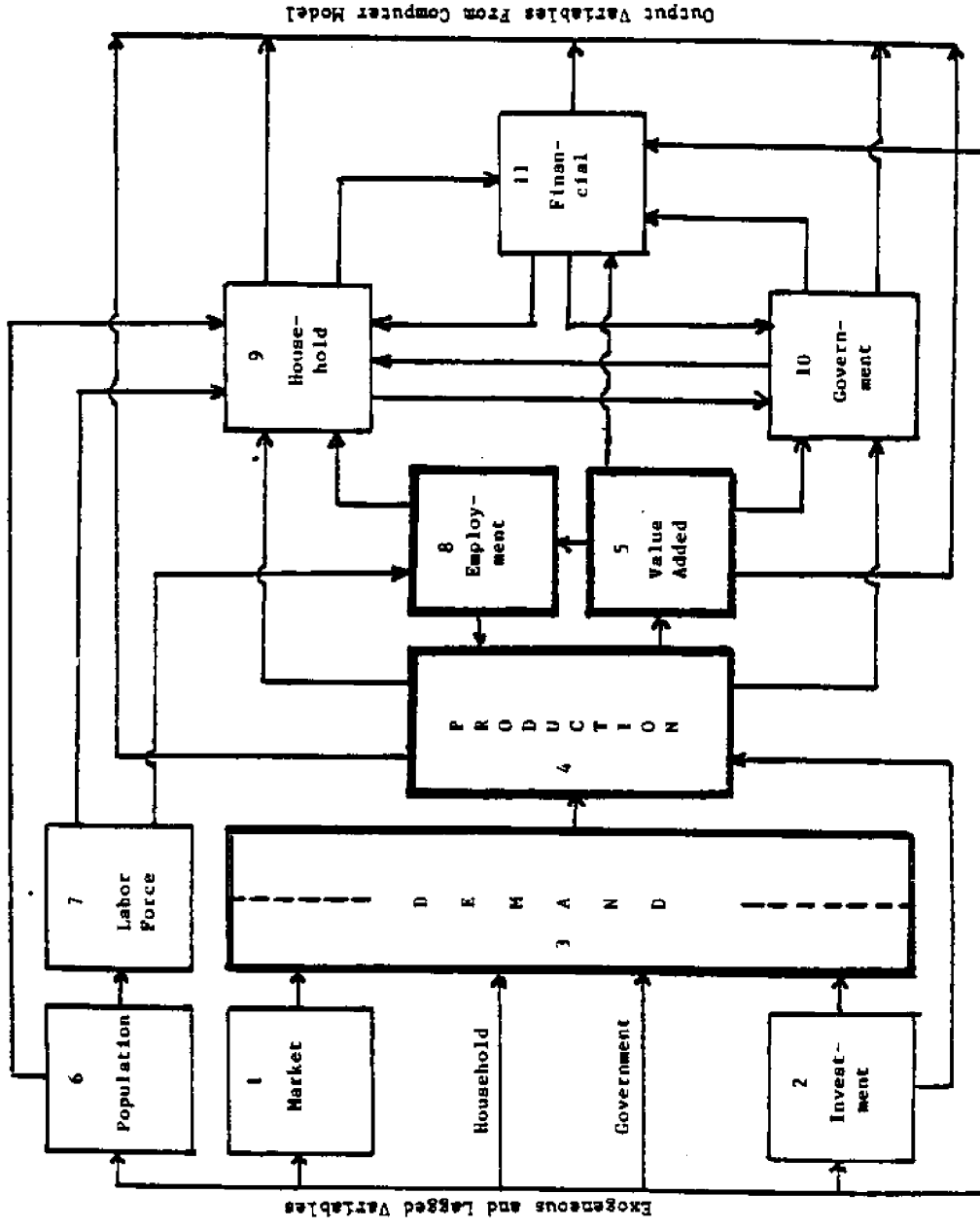

Figure 1. Causal Ordering and Linkages of Modules in Minnesota Regional Economic Impact Forecasting and Simulation System.

al., 1979). A user manuel for one version of this model was completed recently under a cooperative agreement with the U.S. Forest Service (Olson, et al., 1984).

The construction of a fully-interactive tourism/recreation, government, and household modules is part of a second-stage model development effort. In this effort, the existing demand, including investment and market, modules are expanded, sector by sector and then linked to other modules. Each sector is represented by two demand sources--recreation-related and other. Recreation-related personal consumption expenditures are attributed to both resident and non-resident households. Recreation-related private capital formation and government sector purchases are associated with recreation facility and site construction and maintenance. The second-stage model expansion effects are reported under the specific headings of activity accounts, expenditure account, facility, and government account.

Activity Accounts

A tourism/recreation activity area is populated by groups of recreation industry providers and clientele and related public and private facilities, including site attractions. The Northeast Minnesota Study Region is composed of several recreation activity areas, starting with the Lake Superior North Shore, which extends from near Duluth northeastward about 150 miles to Grand Portage near the U.S.-Canadian border. Another activity area is Duluth, which, together with Superior, Wisconsin, form a metropolitan complex of slightly more than 100 thousand people at the western end of Lake Superior. The Boundary Water Canoe Area, Voyageurs National Park, the Mesabi Range Open

Pit Mines, and Lake Superior National Forest comprise the remaining tourism/-recreation activity areas in Minnesota's recreationally-rich Northeast Region.

Decision Information

Tourism/recreation impact assessments and investment targeting require up-to-date information on (1) recreation activity participation of both residents and non-residents, (2) recreation facility uses and their capacities, and (3) tourism/recreation expenditures—personal, business, and government. In addition, the time spent in each activity provides a useful measure for allocating personal consumption, government, and business final purchases to appropriate tourism/recreation activities and facilities (Wicker, 1979). Until recently, much of the essential information for timely and effective tourism/recreation impact assessments and investment targeting has been lacking (Blank, et al., 1982).

In this study, decision information needs were established by continuing examination of capital spending decisions and related information requests in state agencies and the implications of these findings for the design of a decision-oriented resource management model (Carruthers and Maki, 1971). The model now being implemented incorporates market, product (i.e., site), and regional variables interactively in the determination of facility investment requirements and related economic impacts.

Analytical Framework

Accurate and timely measurement of facility development impacts depends on an economic model of interindustry and interarea transactions. For a small, sparsely-populated area with low internal, but high external, linkages a minimally-adequate economic model can be extremely simple and rudimentary in its representation of (a) the basic, or export-producing sectors and (b) the non-basic, or residentiary sectors. For a large, densely-populated area with internal, and low, but, nonetheless, critically important, external, linkages, a minimally-adequate economic model must provide a highly differentiated representation of all sectors, both export-producing and residentiary, including final demand sectors.

For both small, sparsely-populated and large, densely-populated areas, the measurement of economic impact is burdened by its two-fold task of accounting for supply-side changes in both overall magnitude and spatial-economic incidence. While much economic analysis focuses on supply-side effects as measured by changes in net value added, political decisions are importantly influenced by the distribution of gross changes in value added by all economic activity.

A critical economic question is the importance of redistributive gains and losses. Even though felt needs and financial resources of individuals of varying socio-economic status are likely to differ greatly, and these differences are extremely difficult to measure, the role of economic analysis must include so-called opportunity costs of public facility development. Critically important, therefore, in supply-side impact analyses are the values assigned to benefits and costs of facility development for various socio-

economic groups, differentiated by household income class, in (a) the local community, (b) the development impact region, and (c) the nation.

Supply-side development effects on tourism/recreation industries can be computed with the help of recreation demand multipliers, once the recreation-related spending is linked to individual input-supplying industries in the economic impact region and rest-of-nation. In this study, the regional computer simulation model cited earlier was used in deriving the supply-side development effects.

Several steps are involved in linking recreation-related business, government, and household spending to local industries, starting with public spending on tourism/recreation facilities. Data requirements for implementing this task are illustrated by the distribution of tourism/recreation activities and facilities. The relative importance of a tourism/recreation activity is represented by the number of recreation occasions, that is, the total person-days of participation in each activity class.

All tourism/recreation occasions are summarized under 10 activity classes, which relate, in turn, to corresponding facility classes. Construction, operating and maintenance expenditures are summarized, also, for each facility class and allocated to specific activities according to activity participation and utilization of each type of facility.

Another critical step in deriving recreation demand multipliers is estimation of recreation-related spending in each activity class. A summary of spending for personal consumption in the North Shore recreation focal area illustrates the results of this step of the estimation procedures in Table 1. Personal expenditure profiles for each activity class were derived from a 1981 visitor survey.

Table 1. Visitor Expenditures for Specified Consumer Items per $1 Total Expenditures by Type of Tourism/Recreation Activity, Northeast Minnesota, 1981.[1/]

Expenditure Class No.	Title	Destination Activities: Trail 1	Water 2	Licensed 3	Driving 4	Resort 5	Park 6	Urban 7	Educational 8	Personal 9	En-route Activities 10	TOTAL[2/]
		(dollars)										
1.	Food and bev. off prem. cons.	.116	.153	.036	.019	.070	.019	.021	0	.096	.031	.091
2.	Purch. meals and beverages	0	0	0	.287	.425	.098	.308	0	.145	.188	.272
3.	Lodging	0	0	.345	.385	.480	0	.397	0	0	.365	.358
4.	Repair, grease, rental	0	0	0	.134	0	0	0	0	0	.089	.036
5.	Gasoline and oil	0	0	0	.338	0	0	0	0	0	.259	.107
6.	Taxicab	0	0	0	0	0	0	.025	0	0	0	.002
7.	Bus	0	0	0	0	0	0	0	0	0	.005	.001
8.	Airline	0	0	0	0	0	0	0	0	0	.061	.012
9.	Books, magazines	0	0	0	.002	.001	.002	.017	.702	.239	.003	.015
10.	Nondurable sporting goods	.114	.150	.381	.019	.009	.032	.020	0	.094	.006	.035
11.	Durable sporting goods	.765	.689	.235	.022	.003	.009	.011	0	.109	.007	.041
12.	Admiss. spect. amuse.	0	0	0	.002	.004	.013	.104	.132	.015	.002	.014
13.	Commercial part. amuse.	0	0	0	.007	.004	.023	.036	.095	.272	.001	.013
14.	Other	.005	.008	.003	.005	.003	.004	.061	.071	.030	.003	.010
	TOTAL[3/]	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

[1/] Based on Lake Superior North Shore 1981 total visitor expenditures, by item, as follows:

Item	Exp. Class	Total Exp.
Food and beverage	1,2	$11,393,000
Lodging	3	11,029,000
Transportation	4-8	4,998,000
Recreation	9-13	3,652,000
Other	14	304,000
TOTAL		$31,378,000

[2/] Visitor expenditure classes conform with listing in The National Income and Product Accounts; U.S. data were used to allocate survey expenditure totals, by item, to expenditure classes.

[3/] Northeast Minnesota tourism/recreation activity participation rates were used to allocate total expenditures, by expenditure class, to individual activities which, in 1981, were as follows (in $1000):

Trail, 670; Water, 353; Licensed, 1501; Driving, 2985; Resort, 1346; Park, 1740; Urban, 2774; Educational, 336; Personal, 589; Enroute, 9087.

The next step in data preparation is the estimation of specific industry output requirements in each personal expenditures category, as shown in Table 2. Each personal expenditure item includes one or more industry outputs, including various marketing margins. While industry output is represented in producers' prices, personal spending is represented in purchasers' prices.

Supply-side effects on regional industries of changes in individual recreation activities are represented, finally, in Table 3. Overall economy-wide effects are attributed to the industry output requirements of the recreation-related personal consumption expenditures summarized earlier.

Expenditure Account

Tourism/recreation expenditures are included in 14 of the 107 personal consumption expenditure categories in the National Income and Product Accounts. (These categories were listed earlier in Tables 1 and 2.) Private investment categories also conform with corresponding NIPA classifications of new construction and producer durable equipment. In addition, recreation-related private capital expenditures are differentiated from other private capital investment.

Tourism/recreation expenditures relate to the various tourism/recreation activities, firstly, in the construction and maintenance of related facilities and, secondly, in the participation of visitors and residents in these activities. Tourism/recreation expenditures are usually specified with reference to total personal income. They also may be specified with reference to total time spent away from home as a visitor (in away-from-home behavioral settings). Indeed, tourism/recreation activities take place in alternate beha-

Table 2. Visitor Expenditures for Specified Consumer Items per $1 Total Expenditures by Type of Tourism/Recreation Activity, Northeast Minnesota, 1981.[1/]

No.	Industry Title	Food and Bev. Off Prem. Cons.	Food and Bev. Purch. Meals & Bev.	Lodging	Transportation Repr., Grease, Rental	Transportation Gasoline & Oil	Transportation Taxicab	Transportation Bus	Transportation Airline	Recreation Books, mags.	Recreation Sprtg. Gds. Nondur.	Recreation Sprtg. Gds. Dur.	Recreation Adm., Spect. Amuse.	Recreation Commer. Part. Amuse.	Other
								(dollars)							
1.	Dairy and Poultry Prod.	.023	0	0	0	0	0	0	0	0	0	0	0	0	.034
2.	Meat An. and Prodr	.001	0	0	0	0	0	0	0	0	0	0	0	0	0
3.	Food, Feed Gr.	.001	0	0	0	0	0	0	0	0	0	0	0	0	0
4.	Other Crops	.016	0	0	0	0	0	0	0	0	0	0	0	0	0
5.	Forest., Fish. Prod.	.006	0	0	0	0	0	0	0	0	.024	0	0	0	.011
6.	Agr., For., Fish. Serv.	0	0	0	0	0	0	0	0	0	0	0	0	0	.023
15.	Ordn. & Rel.	0	0	0	0	0	0	0	0	0	.024	.040	0	0	0
16.	Meat Products	.235	0	0	0	0	0	0	0	0	0	0	0	0	0
17.	Dairy Products	.119	0	0	0	0	0	0	0	0	0	0	0	0	0
18.	Canned, Froz. Prsv.	.053	0	0	0	0	0	0	0	0	0	0	0	0	0
19.	Grain Mill. Prod.	.003	0	0	0	0	0	0	0	0	0	0	0	0	0
20.	Bakery Prod.	.078	0	0	0	0	0	0	0	0	0	0	0	0	0
21.	Alch. Bev., Soft Dr.	.077	0	0	0	0	0	0	0	0	0	0	0	0	0
22.	Misc. Food Tob.	.056	0	0	0	0	0	0	0	0	0	0	0	0	0
24.	Apparel, Fab. Tex.	0	0	0	0	0	0	0	0	0	0	.020	0	0	0
31.	Printing and Publ.	0	0	0	0	0	0	0	0	.615	.013	0	0	0	0
33.	Petr. Ref. & Prod.	0	0	0	0	.448	0	0	0	0	0	0	0	0	0
44.	Other Non. Electr.	0	0	0	0	0	0	0	0	0	0	.020	0	0	0
47.	Electrical Mach.	0	0	0	0	0	0	0	0	0	.024	0	0	0	0
49.	Other Trans. Equip.	0	0	0	0	0	0	0	0	0	0	.384	0	0	0
51.	Optical, Ophth., Phot.	0	0	0	0	0	0	0	0	0	.096	.071	0	0	0
52.	Misc. Mfg.	0	0	0	0	0	0	0	0	0	.386	.081	0	0	0
53.	Railroad Trans.	.009	0	0	0	.013	.278	.333	.255	.011	0	0	0	.081	0
54.	Local Transit	.006	0	0	0	.008	.167	.167	.157	0	0	0	0	.054	0
55.	Truck Trans.	.010	0	0	0	.013	.278	.334	.275	0	0	0	0	.081	0
56.	Air Trans.	.008	0	0	0	.010	.222	.166	.235	0	0	0	0	.054	0
57.	Other Trans.	.003	0	0	0	.005	.055	0	.078	0	0	0	0	0	0
58.	Communications	0	0	0	0	0	0	0	0	0	0	0	0	0	.080
62.	Wholesale Trade	.064	0	0	0	.110	0	0	0	.077	.096	.081	0	0	.014
63.	Retail Trade	.232	0	0	0	.393	0	0	0	.297	.337	.293	0	0	.023
66.	Hotels, Pers., Rep.	0	0	1.000	0	0	0	0	0	0	0	0	0	0	.241
67.	Business Serv.	0	0	0	0	0	0	0	0	0	0	.010	0	0	.161
68.	Eat. and Drink. Places	0	1.000	0	0	0	0	0	0	0	0	0	0	0	0
69.	Automobile Repair	0	0	0	1.000	0	0	0	0	0	0	0	0	0	0
70.	Motion Pic. & Recr.	0	0	0	0	0	0	0	0	0	0	0	1.000	.730	.253
71.	Health Services	0	0	0	0	0	0	0	0	0	0	0	0	0	.080
72.	Educ., Nonpr.	0	0	0	0	0	0	0	0	0	0	0	0	0	.034
74.	State and Local Enter.	0	0	0	0	0	0	0	0	0	0	0	0	0	.046
	TOTAL	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

1/ Based on allocation of specified industry inputs to expenditure class in: Ritz, Philip M., Eugene P. Roberts, and Paula G. Young, Dollar-Value Tables for the 1972 Input-Output Study Survey of Current Business 59(4):51-72, 1979.

Table 3. Direct and Indirect Effects of Specified North Shore Visitor Expenditures on Northeast Minnesota Gross Output and Related Personal Earnings and Employment, 1981.

Industry No.	Industry Title	North Shore Visitor Expenditures	Direct and Indirect Effects: Gross Output	Personal Earnings	Employment
		($1,000)	($1,000)	($1,000)	(number)
1.	Dairy and Poultry Prod.	76	113	12	4.4
2.	Meat An. & Prod.	3	4	0	0.1
3.	Food, Feed Gr.	3	4	0	0.2
4.	Other Crops	46	71	12	4.8
5.	Forest., Fish. Prod.	47	61	21	0.9
6.	Agr., For., Fish. Serv.	7	10	3	0.2
15.	Ordnance	76	76	0	0
16.	Meat Products	669	1,081	98	8.4
17.	Dairy Products	339	505	39	3.9
18.	Canned, Froz. Prsn.	151	208	45	3.1
19.	Grain Mill. Prod.	9	12	2	0
20.	Bakery Prod.	222	272	77	3.4
21.	Alch. Bev., Soft Dr.	219	264	62	2.9
22.	Misc. Food, Tob.	159	187	34	1.6
24.	Apparel, Fab. Tex.	25	35	12	1.4
31.	Printing and Publ.	304	481	210	9.9
33.	Petr. Ref. and Prod.	1,506	1,790	93	3.3
44.	Other Non. Electr.	25	37	4	0.3
47.	Electrical Mach.	26	35	5	0.3
49.	Other Trans. Equip.	479	679	125	9.0
51.	Optical, Opth., Pho.	193	271	38	2.6
52.	Misc. Mfg.	552	846	116	9.0
53.	Railroad Trans.	237	327	127	6.1
54.	Local Transit	144	180	40	4.0
55.	Truck Trans.	242	315	132	7.2
56.	Air Trans.	189	262	83	3.3
57.	Other Trans.	58	94	37	1.5
58.	Communications	24	29	11	0.5
62.	Wholesale Trade	798	987	385	22.6
63.	Retail Trade	2,862	3,478	1,620	195.1
66.	Hotels, Pers., Rep.	11,103	15,253	5,251	550.1
67.	Business Serv.	61	86	27	1.6
68.	Eat. and Drink. Places	8,547	12,813	2,493	337.4
69.	Automobile Repair	1,149	1,474	354	25.4
70.	Motion Pic and Recr.	809	1,062	415	33.7
71.	Health Services	24	30	14	.9
72.	Educ., Nonpr.	10	13	5	.5
74.	State and Local Enter.	14	23	6	.4
	Visitor Expenditures	31,378	43,470	12,007	1,259.9

vioral settings, which prescribe participant roles that intentionally differ from those prescribed for non-recreating local residents (Fox, 1983; Wicker, 1979).

Changes in tourism/recreation expenditures in the study region are entered in the regional economic model as corresponding changes in final purchases. Extensive use of matrix methods helps translate tourism/recreation market development scenarios into facility operation, maintenance and development outlays, and, finally, into corresponding changes in tourism/recreation activity participation and related expenditures.

Effective use of matrix methods starts with the preparation of working tables, which are described as follows:

1. Total developmental and maintenance expenditures (in constant dollars) for specified tourism/recreation facilities, including initial construction and annual operating expenditures, by year;
2. Total annual resident and non-resident participation (based on average daily, weekly, and seasonal rates) in specified tourism/recreation activities, by year;
3. Total and expected activity utilization rates (based on daily, weekly, and seasonal patterns) for specified tourism/recreation facilities, by activity and year;
4. Total annual recreation-related expenditures (based on average daily, weekly, and seasonal expenditures in constant dollars) of residents and non-residents in specified tourism/recreation activities, by type of expenditure and year;
5. Total private recreation-related capital expenditures (in constant dollars) in specified industry, by type of expenditure and year;

6. Total federal, state, and local government current and capital expenditures (in constant dollars) for specified industry output, by level of government, type of expenditure and year; and
7. Total requirements (in constant dollars) of specified industry output, by economic unit, type of expenditure, and year.

Thus, recreation-related spending for each final demand sector -- household, business, and government -- is estimated and its distribution, by type of facility, activity, and industry, is derived.

Activity participation and facility utilization budgets are prepared, finally, from the statistical series. The budgets show the proportion of total personal time and money spent in each activity and total business and government spending for each type of facility. From these budgets, the spending coefficients are derived for use in the matrix transformations of recreation-related facility expenditures into corresponding industry output, employment, and earnings effects, as illustrated earlier.

Thus, the use of matrix methods in linking recreation-related expenditures to changes in regional and national input-supplying industries avoids the need to redefine industry structure. General purpose interindustry transactions tables are more effectively and economically used in tourism/-recreation industry studies than more costly special-purpose interindustry transactions tables. The special-purpose tables require careful, but still arbitrary, differentiation of a tourism/recreation industry clusters in each region.

In summary, therefore, the matrix methods approach in model estimation is implemented in a final series of steps, as follows:

1. Prepare vector of tourism/recreation public facility development expenditures [FG];
2. Prepare activity-facility [AFG] matrix of technical coefficients showing distribution of public facility development expenditures (based on activity use) by activity; post-multiply matrix by vector to obtain a new vector [AG] of public facility development expenditures, by activity;
3. Prepare additional activity expenditure vectors for public facility operation [AO], private facility development [AB], non-resident personal spending [AN], and resident recreation-related personal spending [AR];
4. Prepare expenditure-activity matrices of technical coefficients showing distribution of specified activity-related expenditure, by type of public capital goods expenditure [ECG], private capital goods expenditure [ECB], public operating expenditure [EOG], non-resident personal expenditure [EPN], and resident, recreation-related personal expenditure [EPR]; post-multiply matrix by corresponding vector in Step 3 to obtain new vectors [EG], [EB], [EO], [EN], and [ER], respectively;
5. Prepare industry-expenditure matrices of technical coefficients showing distribution of specified type of expenditure, by industry, for public capital goods [ICG], private capital goods [ICB], public operating expenditures [IOG], non-resident personal expenditure [IPN], and resident, recreation-related personal expenditure [IPR]; post-multiply by new vectors in Step 4 to obtain industry output requirement vectors [IG], [IB], [IO], [IN], and [IR], respectively;

6. Prepare tables of industry-specific effects on output, employment, and earnings by pre-multiplying industry vectors in Step 5 with appropriate Type I or Type II multipliers;
7. Alternatively, use Northeast Minnesota computer simulation model to obtain industry effects from specified tourism/recreation industry expenditures.

Organization of tourism/recreation expenditure data is prescribed by (1) the data requirements of the economic model(s), and (2) the matrix method of implementing either the regional input-output approach or the regional computer simulation approach in economic impact assessment. Again, the overall structure of the study represented in Figure 1 provides the conceptual framework for expenditure data organization.

The final demand sectors drive both the input-output and the computer simulation models. The exogeneous demand is represented by the non-resident personal spending in the region. The endogeneous demands are represented by the resident, recreation-related, private capital, and government capital and operating expenditures while the total tourism/recreation demand is the sum of the exogeneous and endogeneous demands. It is, in part, affected by the direct, indirect, and induced effects of its total demand, which are appropriately viewed as "feedback" effects. The computer simulation approach, as well as the Type II multipliers, include, in varying degree, the induced effects of personal spending and incorporate their feedback effects in the final results.

Thus, the task of preparing the tourism/recreation expenditure accounts for use in the two economic models focuses on the multi-state tourism/recreation market and Northeast Minnesota's share of each state and substate

market. Each regional market (of individual states and the rest of Minnesota) is represented by its total recreation-related personal spending. The total spending is a function of total population, per capita disposable income, and other variables. The distribution of total spending among recreation focal areas is a function of distance to each area and the perceived quality of each area's tourism/recreation facilities (Sutherland, 1982). State-sponsored tourism advertising and promotional campaigns are intended to enhance a recreation area's image as a provider of a unique and fulfilling recreation experience. Without a qualitatively competitive product, however, the market development programs would fail their promises. The overall analytical framework thus integrates the evaluation of market and product strategies as a decision aid in both market promotion and facility development programs.

Facility Account

The private sector accounts for much of the tourism/recreation facility development in Northeast Minnesota. It provides the essential financial and personnel resources for new investment in the region's tourism/recreation economy. The public sector serves in a facilitating and supportive role as the principal landowner and provider of water and wilderness access services and facilities. The decision focus in tourism/recreation facility development is on new investment. In addition, some decisions deal with replacement and/or abandonment of existing facilities.

A tourism/recreation activity classification system for facility planning is presented in Table 4. The individual elements in the 10 activity classes

Table 4. Tourism/Recreation Facilities and Related Activities, Northeast Minnesota, 1984.

Activity Class	Tourism/Recreation Activity	Tourism/Recreation Facility
TRAIL	Bicycling	Bicycle Trails
	Hiking	Hiking Trails
	Back Packing	Back Packing Trails
	Horseback Riding	Horseback Trails & Stables
	Cross Country Skiing	Cross Country Trails
	Snowmobiling	Snowmobile Trails
	Sledding & Tubing	Open Space
	Four Wheeling	Four Wheel Drive
WATER	Canoeing	Canoe Portage
		Water Access
		Minor Docking Facility
	Swimming	Bathing Beaches
		Swimming Pools
	Sail, Mtr. Boat/Wtr. Ski	Boat Dock., Launching, Mooring
LICENSED	Ice Fishing	Fishing,Rental, Bait
	Fishing	Fishing,Rental, Bait
	Hunting	Wildlife Areas
DRIVING	For Pleasure	Streets, Roads, Waysides
RESORT	Downhill Skiing	Downhill Ski Areas
	Golf	Golf Courses
	Tennis	Tennis Courts
	Archery, Shooting Range	Archery Ranges
	Lodging	Resorts
PARK	Camping/Wilderness	Campgrounds, Wilderness
	Camping/Developed	Campgrounds, Developed
	Picnicing	Picnic Grounds
	Cooking	Complementary
URBAN	Ice Skating	Ice Skating Rinks
	Baseball/Softball/Ft.ball	Baseball, Football Fields
	Movies	Motion Picture Theaters
	Live Entertainment	Other Entertainment
	Dining for Pleasure	Dining Rooms
	Shopping	Retail Trade
EDUCATIONAL	Visit Hist. Sites	Museums, Gardens, Zoos, Hist.
	Visit Interp. Centers	Learning Resource Centers
	Industry Tours	Industry Centers
PERSONAL	Nature Study	Complementary
	Sun Bathing	Complementary
	Reading	Complementary Bookstore
	Jogging	Complementary Sports Stores
	Picture Taking	Complementary Photo Services
ENROUTE	Lodging	Hotel, Other Lodging
	Driving	State, Federal Highways

cited earlier are listed according to their facility requirements. One activity, for example, canoeing, may require more than one facility. In most cases, however, a single activity is associated with a single facility.

Individual tourism/recreation facilities are related to the level and type of tourism/recreation activities supported, or made possible, by these facilities. Thus, the availability of appropriate facilities is viewed as a necessary, but not a sufficient, condition for the tourism/recreation activities. Scenic, cultural, historical, and environmental attractors, which are advantageously located with reference to their market areas, are, of course, essential requirements of viable recreation activity areas.

The tourism/recreation facility component of the regional economic model is fitted to recently compiled facility survey data (Minnesota Department of Natural Resources, 1979). These data are summarized for nine facility classes, which correspond with the activity classes. In the simple counting of individual facilities, public facilities far outnumbered private facilities. Total private sector revenues, of course, far exceed total public service revenues. A 1978 facility survey also shows the distribution of recreation occasions among nine of the 10 facility groups (Minnesota Department of Natural Resources, 1978).

Because several recreation occasions are typically reported for each day of activity participation, the total number of recreation occasions (i.e., the number of different recreation experiences each day) is much larger than the total number of person-activity days. Residents account for a larger share of the total number of recreation occasions than nonresidents, although licensed (e.g., fishing, hunting), park, educational and personal activities are more popular with non-residents than residents in Northeast Minnesota. Enumeration

procedures and definitions for reporting tourism/recreation activity participation lack the rigor and precision for useful quantitative analysis and comparison and, hence, one of early recommendations pertains to the design and implementation of new survey instruments to economically obtain the essential decision information which is now lacking.

The next steps in model implementation involve the compilation of facility maintenance and development expenditures and the preparation of facility cost and use functions. Completion of these steps is likely to be delayed by the lack of appropriate economic accounts for sorting expenditures and revenue into functional categories, like the activity and facility classes listed in Table 4. Similarly, detailed private sector data are lacking on facility operating and replacement costs. Additional facility surveys are needed to provide these data. Private sector facility requirements are incorporated in the existing investment module of the regional economic model. Facility requirements of recreation-related activities in the private sector are not differential from other facility requirements. This differentiation occurs, however, in the private capital formation account.

The organization of a decision-focused data base for recreation resource management is prescribed by the arrangement of data elements in the regional economic model and, particularly, the tourism/recreation module. Two sets of data are utilized, namely, the base-year facility and user surveys and the annual, quarterly, and monthly time series for updating the base-year surveys. These surveys help monitor the status of existing tourism/recreation facilities and their contribution to the growth and development of the region's tourism/recreation industry. Facility and site development is, in short, product development, the "product" being the tourism/recreation experience.

Formulation of product development strategies in the tourism/recreation industry is essentially a public-private partnership in Northeast Minnesota. It is part of the state's market development strategy for promoting its tourism/recreation activities. It is, also, one of the two critical variables (the other being distance from market to focal area) in accounting for the region's share of the tourism/recreation market in the rest of the state and in other states.

Government Accounts

Recreation market and site development programs of state and local governments are represented in the government sector accounts as special categories of current and capital spending. The additional set of accounts relates the functional categories of spending to total spending and total revenues of state and local governments. Federal government spending is involved, also, in forest, park, and water development projects.

Government Revenue

State and local government revenues are collected from individual households and businesses in the form of income, sales, and other gross receipt taxes, fees and licenses, service charges, property assessments, enterprise receipts (primarily municipally-owned utilities and, in Minnesota, municipal liquor stores), and trust fund revenues. In addition, intergovernmental transfers, specifically, federal-to-state and federal-to-local, complete the listing of revenue sources.

Two sets of government accounts were established for this study -- one for the region, the other for the state. The state accounts include all state and local government revenues while the regional accounts include only local government revenues.

A base variable is identified for each revenue source. For individual income taxes, the base variable is taxable income, which consists largely of wage and salary payments and property income. Thus, the two components of total personal income serve as proxies for state taxable income. Similarly, a base variable, and its proxy, are acquired for sales, use, and gross receipts taxes. Because the individual income tax rate is differentiated by income class, the distribution of earnings per tax filer in the household module is correlated with the distribution of earnings per wage and salary worker, by industry and occupation, in the employment module. Thus, the contribution of each revenue source is ascertained, given its base variable and corresponding rate of revenue yield.

All state and local government revenues, except federal transfers, relate to the value added module. This module collects the income payments of individual industries for the reimbursement of labor, capital, and entrepreneurial services and then distributes these payments to their final recipients -- household, business, and government.

Government Spending

State and local government spending is restricted by its total revenues and debt financing. Some revenue sources are dedicated for specified spending functions, like state aids to local schools. Government financing constraints

are imposed through the financial module.

The principal purpose of the government spending account is to link the revenue source to total spending and to derive year-to-year changes in the functional categories. Thus, the spending account serves as part of an integrated annual budget for the state and its local governments.

The functional categories of state and local spending include education services (higher education, local schools, and other education); income maintenance and social services (health care and sanitation, hospitals, and welfare); streets, roads and highways; public safety; recreation and natural resources; municipal services (water, sewerage, other); and general administration. Recreation-related facility construction and maintenance is included under both current and capital expenditures in several functional areas. Moreover, the functional categories spread across several state and local agencies. Thus, the spending accounts relate, also, to the recreation facility accounts.

In summary, the government accounts are used in forecasting revenues and their implications for spending at the state and the substate regional levels of public resource management. A common analytical framework is used in implementing the government accounts. It makes use of the same matrix methods prescribed for the recreation expenditure accounts. Both accounts represent extensions of the demand module in the economic impact forecasting system for the study region. The government accounts also relate to value added module and its income recipients, who impose together, form a critical set of constraints on state and local government spending.

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