ASSESSING CHANGES IN THE IMPORTANCE OF TOURISM IN THE NORTHEAST[1]

Tommy L. Brown
Department of Natural Resources
Cornell University

INTRODUCTION

It is widely acknowledged that tourism is a vital component of the economy of counties and states in the Northeast, as well as in other regions of the US. Nearly all states claim tourism as one of their three largest industries. Yet data which accurately measure tourism and its economic impacts are woefully lacking.

A number of data sources serve as useful indicators of tourism levels. Visits to state and national parks and other recreation areas, out of state hunting and fishing license sales, and boat registrations are examples. These data are useful indicators of levels of travel, but they provide little information on the economic impacts of tourism.

In response to the gasoline shortages and increased prices that first began in 1973-74, a federally funded regional research project of the Northeast Agricultural Experiment Stations, NE 100: "Recreation Marketing Adjustments in the Northeast", was formed. This project had as its objectives the examination of changes in recreation activity patterns by households in the Northeast, and the impacts of changes in recreation/travel patterns on subregional economies. This paper examines the indicators of economic change related to tourism that are derivable from secondary data sources.

EVALUATION OF SECONDARY DATA SOURCES

Data sources useful to this effort had two requirements: comparable economic data by states and substate units throughout the Northeast, and data for at least two time periods. Because of differences in the collection and reporting of employment and sales data by state labor and tax departments in the Northeast, these potential data sources were not acceptable for this effort. National data sources were then examined. Three data sources, all published by Bureau of the Census, proved potentially useful to the study: The Census of Retail Trade and the Census of Selected Services, published in 1972 and 1977, and County Business Patterns, published annually.

Each of these data sources reports the number and size of firms by Standard Industrial Classification (SIC) codes. The Census of Selected Services includes lodging data and other amusement and recreation services (e.g., movies, bowling alleys, race tracks), while the Census of Retail Trade includes such sectors important to tourism as sporting goods stores and bicycle shops, eating and drinking places, and gasoline service stations. County Business Patterns reports all of the above sectors. The Censuses of Retail Trade and Selected Services are more complete in their coverage, in that they utilize Internal Revenue Service and Social Security Administration data on small firms, including those with no employees. County Business Patterns, on the other hand, restricts its coverage to employment covered by the Social Security Program, excluding the self-employed.

Censuses of Selected Services and Retail Trade provide data on the number of firms, annual sales or receipts, and number of paid employees for the week of March 12. Obviously March 12 is a poor time choice for assessing impacts of tourism. County Business Patterns has provided annual payroll data only since 1974. Number of establishments and number of employees the week of March 12 have been provided annually since 1964. However, due to changes in data collection procedures, paid employee data is not comparable prior to 1974.

The difficulty in utilizing these data sources to evaluate the changing importance of tourism is reflected in the categories in which the data are reported, and in the inherent

[1]Presented at the Recreation Trends Symposium, Durham, New Hampshire, April 21-23, 1980.

difficulty in measuring tourism. With the exception of the lodging sector, the clientele of other retail firms serving tourists also serve local residents. Moreover, the proportion of sales to local residents is often in excess of that to tourists. As a result, differences in tourism-related sales by a given restaurant or sporting goods store from year to year can easily be masked by changes in sales to local residents, if the latter trends in the opposite direction from the former. The author has experienced this problem in studies of the impact of salmon fishing in New York (Brown, 1975).

Kahn (1975) correctly points out that the lodging sector is not exclusively tourism-oriented in that restaurant facilities and meeting rooms receive local as well as tourist trade. However, unlike such major tourism sectors as restaurants and service stations, the majority of the volume in the lodging sector is tourism-derived. This is particularly the case in rural areas, which is the focus of the NE-100 study.

As a result of the above problems, it is the author's conclusion that comparisons of lodging statistics provide the best indication of changes or differences in economic impacts of tourism. This is in contrast to the use of many sectors in an analysis of factors affecting regional employment in tourism by Ellerbrock and Hite (1980). It is justified, however, by the preceding discussion, plus the interrelated observations that (1) travel of any notable economic consequence to the destination community involves overnight lodging, and (2) overnight lodging is often the largest expenditure component of tourists at the travel destination. Therefore, this analysis is limited to an analysis of changes in the lodging sector in the Northeast.

Of the available lodging measures, the number of firms is the least valid trend measure. The replacement of several small firms by a few larger firms may give the erroneous impression that tourism has declined over time. The number of employees is a moderately sensitive measure, but due to the collection of data during the week of March 12, it has limited utility. Annual sales/receipts is the most sensitive measure of changes or differences in lodging-related tourism, and is therefore the primary measure used in this paper.

METHODS

In comparing the importance of tourism to several areas over a specified time period, two types of measures are useful. The first is a comparative measure of the relative importance of tourism to the economies of the areas served and an indication of whether the economies being compared are growing more dependent, or less dependent, on tourism on a relative basis. The second useful measure is a quantitative comparison among study areas of the magnitude of the industry, the relative change in the magnitude of the industry over time, and factors which relate to differences in growth rates.

A comparative measure of the relative importance of tourism to the economies of states and counties in the Northeast was achieved by developing location quotients for all states, and for counties in which secondary data were available. Described in some detail by Isard (1976), location quotients (LQs) can be developed for employment, income, sales, or other economic parameters. LQs compare the proportion of a smaller area's economy devoted to a particular sector to the analagous proportion for a larger geographic area, of which the smaller area is a component part. In comparing a lodging receipts LQ of a county with its state, for example, an LQ of 1.0 indicates that the proportion of the county's total receipts or sales derived from lodging is the same as that for the state. If the LQ were 2.0, the proportion of all county receipts derived from lodging would be twice that of the state.

For this analysis, lodging receipts LQs were developed comparing first states in the Northeast and then counties in the Northeast to the Northeast as a region of the U.S. In developing the LQs, the broader economic measure to which the lodging sector is compared had to be chosen. The measure chosen was the total of receipts from all service sectors of the economy as represented by Bureau of the Census' Census of Selected Services. An alternative measure would have been the sum of receipts and sales for the service sector plus the retail trade sector.

The quantitative comparison between states and counties was facilitated by using shift-share analysis. This technique has been described in detail by Dunn (1960) and Ashby (1964). It has previously been applied to employment data, but is equally valid when used with sales or receipts. After examining lodging receipts for 1972 and 1977, the net relative change is calculated for states and counties in the Northeast. The large number of counties in the Northeast makes further aspects of shift-share analysis impractical. At the state level, however, further analysis is undertaken to gain indicators of the degree to which changes in lodging are attributable to regional growth, industrial mix or distribution of industries, and proportional share of total lodging receipts. These concepts are further explained in the analysis.

1972-1977 STATE LEVEL LODGING ANALYSIS

Location Quotients

From Table 1, it is apparent that the Northern New England states of Vermont, Maine, and New Hampshire are tourism-dependent states, compared to the remainder of the Northeast. The proportion of the total service receipts (lodging, personal, business, automotive, other repair, amusement/recreation, dental, legal, and engineering/architectural/surveying services) of these states derived from tourism range from 2.54 (New Hampshire) to 3.88 (Vermont) times that of the Northeast as a whole in 1977. West Virginia and the District of Columbia are also notably above the average for the Northeast. Connecticut, New York, and New Jersey, on the other hand, are least dependent on tourism on a relative basis.

The 1977/1972 LQs in Table 1 provide an indication of whether states have become more dependent or less dependent on lodging, on a relative basis, during the 1972 to 1977 period. New York and the District of Columbia have increased their relative dependence on tourism by approximately 10 percent, while at the other extreme, Maine, Vermont, Connecticut and Massachusetts have grown less dependent on tourism by approximately 12 to 14 percent. Again, these are relative measures. The fact that a state has become less dependent on lodging on a relative basis may simply mean that other sectors of the economy have expanded.

Table 1. Location Quotient of States for Lodging Receipts with Respect to the Entire Service Ecomony of the Northeast, 1972, 1977, and 1977/1972.

STATE	1977	1972	1977/1972
Connecticut	0.72	0.83	0.87
Delaware	1.13	1.08	1.04
District of Columbia	1.65	1.52	1.09
Maine	2.96	3.45	0.86
Maryland	0.85	0.81	1.04
Massachusetts	0.96	1.08	0.88
New Hampshire	2.54	3.14	0.81
New Jersey	0.86	1.02	0.84
New York	0.83	0.76	1.10
Pennsylvania	1.16	1.29	0.90
Rhode Island	0.93	0.97	0.96
Vermont	3.88	4.48	0.87
West Virginia	1.66	1.82	0.91

Derived from Census of Selected Services, U.S. Bureau of the Census, 1972 and Census of Service Industries, U.S. Bureau of the Census, 1977.

Shift-Share Analysis

To facilitate the shift-share analysis, 1977 receipts were converted to 1972 constant dollars. Since inflation rates differ for various economic sectors and in various sections of the United States, an approximation of inflation for the lodging sector in the Northeast was obtained by maintaining a constant ratio of dollar receipts per lodging employee for the two years under comparison. This resulted in a 5-year inflation estimate of 40.4 percent, compared to the national estimate of 43.7 percent for the same period.

To a large degree, the absolute magnitude of the lodging industry in the Northeastern states is a reflection of the size of those states. New York, Pennsylvania, New Jersey, and Massachusetts were the leading states in total lodging receipts in both 1972 and 1977. From Table 2, Column 8, it is apparent, however, that the greatest relative growth in lodging occurred elsewhere. The southern portion of the region (Delaware, Maryland, West Virginia, and the District of Columbia) experienced real growth in excess of 20 percent from 1972 to 1977. Maine's percentage growth of 12.6 percent was above the regional average of 6.7 percent, but New Hampshire and Vermont experienced real growth of less than three percent. Real growth in lodging was positive in every state in the Northeast from 1972 to 1977, but was least in New York and New Jersey, where it was less than one percent.

Columns (3), (4), and (5) of Table 2 allow further perspectives of the growth in the lodging sector from 1972 to 1977. From 1972 to 1977, in constant dollars, the Northeast retail economy declined by 2.34 percent in the level of sales and receipts. Column 3 indicates the change in lodging receipts each state would have experienced had lodging receipts grown (in this case, declined) as the rest of the economy. Lodging thus was one of the growth industries during this five year period of slight recession.

The industrial mix component (Column 4 of Table 2) is a measure of the mix and growth of the lodging industry in the region compared to other industries in the regional economy. It is calculated by multiplying 1972 receipts of each state by the difference in percentage change of the lodging industry and the entire retail economy of the Northeast from 1972 to 1977. Since the lodging sector of the Northeast increased by 6.7 percent and the regional economy declined by 2.3 percent, each state's 1972 lodging receipts totals are multiplied by the factor 9.0 percent, yielding a positive industrial mix for each state. Column 9 of Table 2 proportions the lodging industry mix among the states.

The state shares component (Column 5 of Table 2) is sometimes referred to as the

Table 2. Shift-Share Analysis for Lodging Receipts in the Northeastern United States, 1972 to 1977.

State	1977 Receipts	1972 Receipts	Changes Related to: Regional Growth	Industrial mix	State Shares	Total Change	Net Relative Change
	(Measured in Millions of 1972 Constant Dollars)						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Connecticut	87.8	81.1	-1.9	7.3	1.3	6.7	8.6
Delaware	23.9	19.4	-0.5	1.8	3.2	4.4	4.9
District of Columbia	158.1	123.2	-2.9	11.1	26.7	34.9	37.8
Maine	81.2	72.1	-1.7	6.5	4.2	9.1	10.7
Maryland	147.8	121.9	-2.9	11.0	17.8	25.9	28.7
Massachusetts	249.8	236.8	-5.5	21.3	-2.8	13.0	18.5
New Hampshire	72.2	70.3	-1.6	6.3	-2.8	1.9	3.6
New Jersey	278.3	277.6	-6.5	25.0	-17.8	0.8	7.2
New York	922.3	918.2	-21.5	82.8	-57.1	4.1	25.6
Pennsylvania	507.3	456.9	-10.7	41.1	20.0	50.5	61.1
Rhode Island	25.7	23.2	-0.5	2.1	1.0	2.5	3.1
Vermont	60.3	59.0	-1.4	5.3	-2.6	1.3	2.7
West Virginia	70.9	58.0	-1.4	5.2	9.0	12.9	14.3
Northeast Region	2,685.6	2,518.7	-58.9	226.9	0	168.0	226.9

Percentage Changes, 1972 to 1977

	Percent Real Change	Percent Industrial Shift	Percent State Share Shift
	(8)	(9)	(10)
Connecticut	8.2	3.2	1.5
Delaware	22.9	0.8	3.8
District of Columbia	28.4	4.9	32.2
Maine	12.6	2.9	5.1
Maryland	21.2	4.8	21.4
Massachusetts	5.5	9.4	-3.4
New Hampshire	2.7	2.8	-3.3
New Jersey	0.3	11.0	-21.4
New York	0.5	36.5	-68.7
Pennsylvania	11.0	18.1	24.0
Rhode Island	10.9	0.9	1.2
Vermont	2.3	2.3	-3.1
West Virginia	22.3	2.3	10.9
Northeast Region	6.7	(99.9)	(100.1)(-99.9)

regional component (in national research) or the proportionality component. It is a measure of the degree to which each state has increased or decreased its "share" of regional lodging receipts. It is calculated by multiplying each state's 1972 lodging receipts totals by the difference in percentage change of the state's increase and the region's increase in lodging receipts from 1972 to 1977. In constant dollars the District of Columbia, Pennsylvania, and Maryland were the big gainers, while New York was the big loser. These state shifts are shown as a percentage of total positive and negative shift in Column 10 of Table 2. Three-fourths of all positive state shifts were accounted for by the three gaining states cited above, while 86 percent of the negative shifts were absorbed by New York and New Jersey.

The total change in lodging receipts from 1972 to 1977 (the sum of Columns 4 and 5) is shown in Column 6 of Table 2. This is also simply the difference between 1972 and 1977 lodging receipts, in constant dollars. Again, all states experienced positive growth, ranging from $0.8 million in New Jersey to $50.5 million in Pennsylvania (in 1972 constant dollars).

The net relative change (Column 7 of Table 2) is the difference between the total change and the regional growth (Columns 3, 4, and 5). Since the regional growth of the Northeast economy was negative from 1972 to 1977, net relative change data exceed total change data in magnitude.

1972-77 COUNTY LEVEL ANAYLSIS

Based on county-level data from the 1972 and 1977 Census of Selected Services, location quotients (LQs) were calculated as previously explained for lodging receipts, comparing the proportion of counties' lodging receipts vs. total ~~service sector receipts~~ to ~~that~~ of ~~the~~ Northeast region. These data were then mapped.

It should be pointed out that while LQs revolve around an index base of 1.0, an average of all county lodging receipts LQs is considerably above 1.0 (it was 2.39 in 1977). This is true for several reasons. First, the lower bound on an LQ is 0, while there is no mathematically dictated upper bound. Secondly, the large cities of the Northeast, which control a large proportion of the total regional economy, consistently have LQs of considerably less than 1.0, which increases the LQs of counties with smaller economies. Finally, the counties for which lodging data are not available are primarily those which do not have a developed tourist economy; thus the average for counties having available LQs is increased somewhat.

Approximately 30 counties in the Northeast had LQs of greater than 5.0. Many of these counties are in areas of the Northeast traditionally known to be tourism areas - coastal areas of Maine, the White Mountains of New Hampshire, the Adirondacks and Catskills of New York, Cape Cod, Nantucket, and Martha's Vineyard in Massachusetts, Cape May in New Jersey, the southern Maryland coast, the Pocono Mountains of Pennsylvania, and the Allegheny Mountains of West Virginia. Scattered counties elsewhere in Pennsylvania and Vermont also have lodging receipts LQs of greater than 5.0 (Figure 1).

If we examine counties in the Northeast with lodging LQs of greater than 2.0, the dependence of the northern portion of the region on tourism becomes obvious. Virtually all of Northern New England and Northern New York fall within this grouping. Numerous counties appear in the rest of the region as well, particularly in the lightly populated coastal areas.

Figure 2 shows the 1977/72 LQs for the Northeast. Scattered counties which had high 1977 LQs increased their relative dependence on tourism from 1972 to 1977. A number of other rural counties showed a relative increase in the lodging sector as a proportion of total services of 10 percent or more.

Indications of absolute change in lodging receipts in constant dollars from 1972 to 1977 can be obtained from Figure 3. Receipts in many traditional tourist areas increased by better than 10 percent, some by more than 25 percent. Lodging receipts also increased by greater than 10 percent in some nontraditional areas, such as the Buffalo, New York area. Lodging receipts declined in real dollars, however, for many Northeastern counties from 1972 to 1977. A disproportionate share of these counties are located in Massachusetts, but ~~these counties are interspersed throughout~~ the entire region.

SUMMARY

One of the great frustrations of tourism analysts has been the lack of availability of trend data. This problem still exists, although the Census of Selected Services' measure of annual lodging receipts is an important indicator of tourism at the state and county level. This data source would be greatly improved if the 1982 survey avoided the disclosure problems that resulted in so much missing data at the county level in 1972 and 1977. There are very few counties in the Northeast which have so few lodging facilities that lodging summary statistics at the county level would provide implications as to the size of a particular firm.

This study has been largely devoted to evaluating secondary data sources and methods for analyzing secondary tourism data. The delineation of states and counties in the Northeast which are highly dependent on tourism, or which have experienced changes in the levels of tourism receipts, and the quantification of those parameters have provided an initial step in improving our understanding of tourism in the Northeast. Further analysis is needed to explain the tourism patterns described in this study. A new Northeastern regional project has been proposed to State Experiment Station directors which, if funded, would continue this analysis.

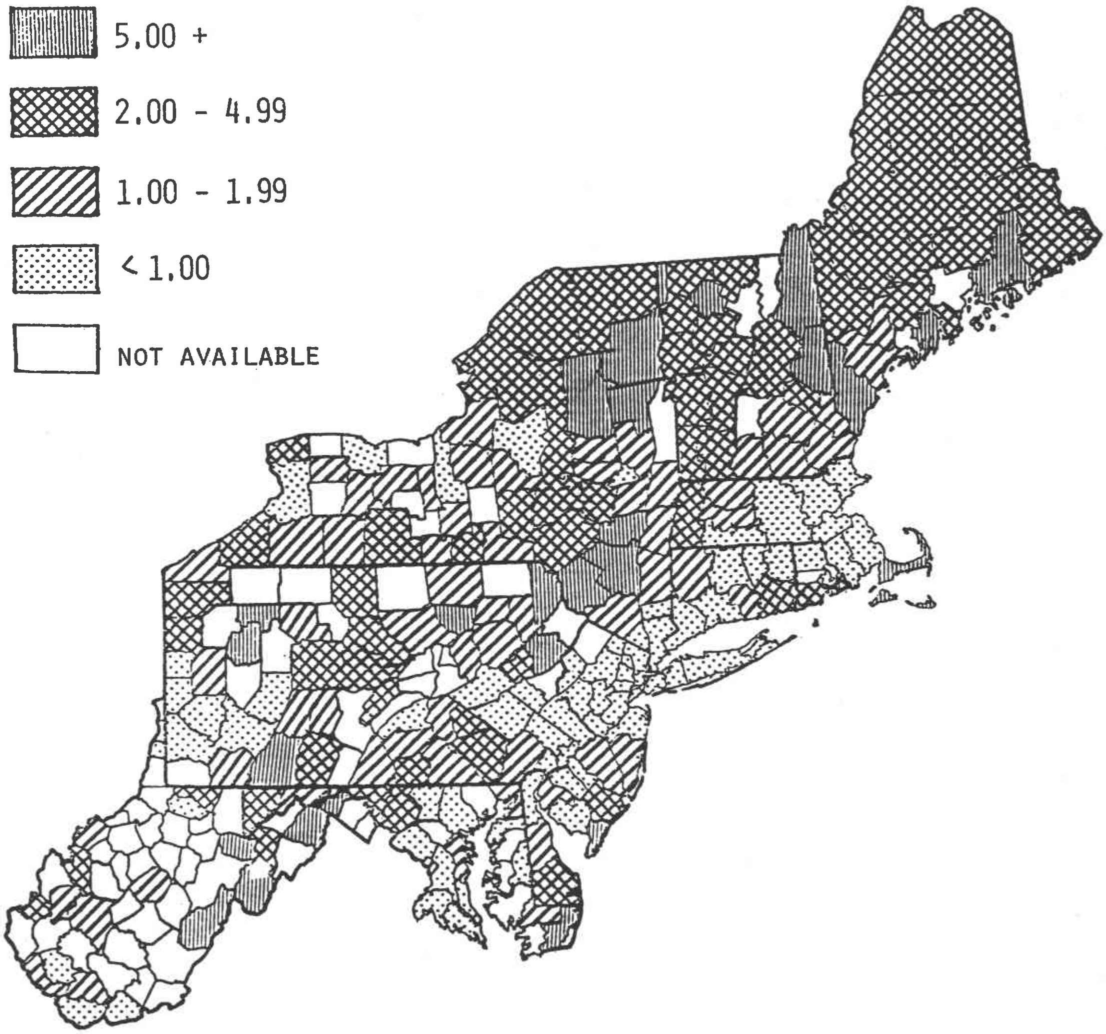

FIG. 1. 1977 LOCATION QUOTIENTS FOR LODGING RECEIPTS FOR COUNTIES IN THE NORTHEAST.

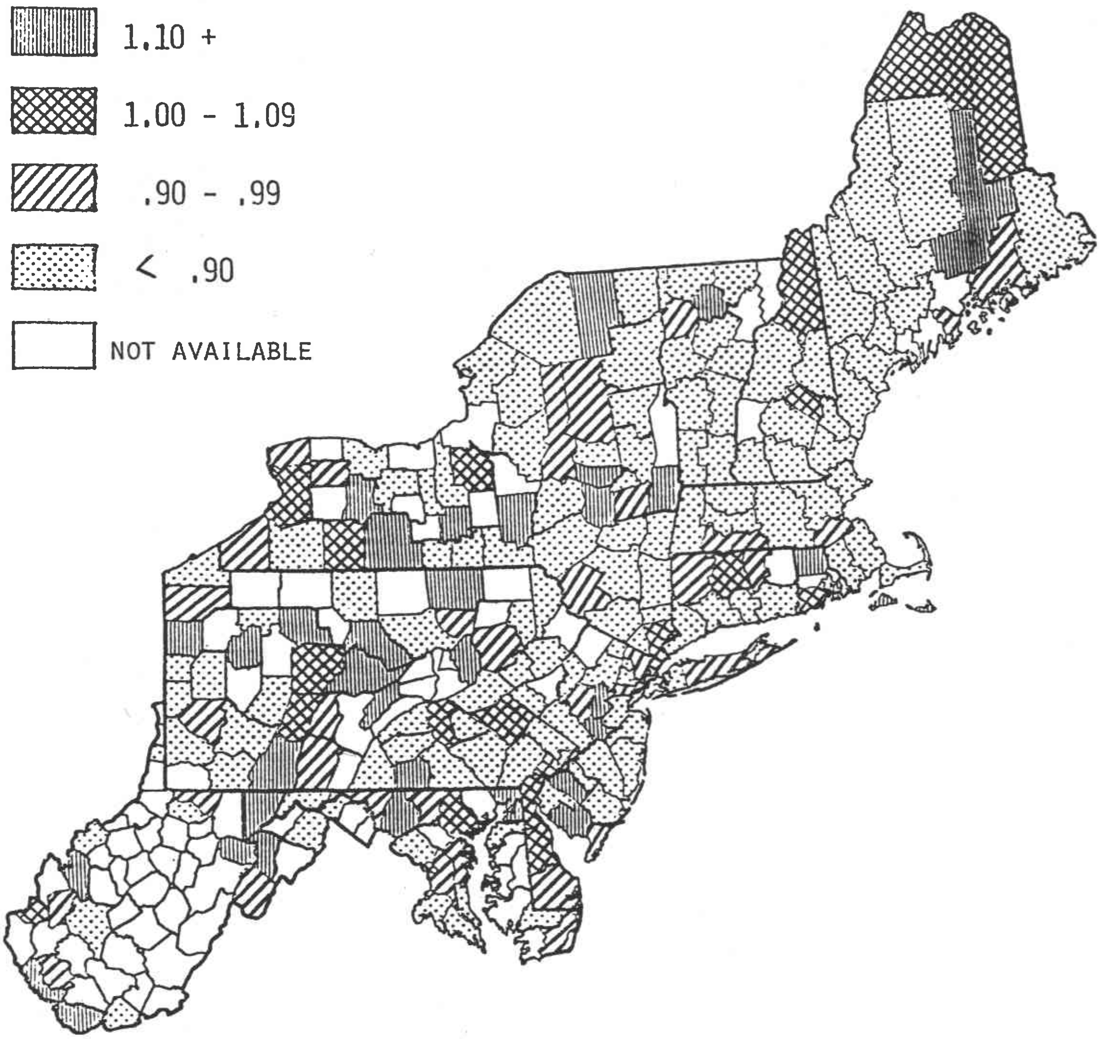

FIG. 2. 1977/1972 LOCATION QUOTIENTS FOR LODGING RECEIPTS FOR COUNTIES IN THE NORTHEAST.

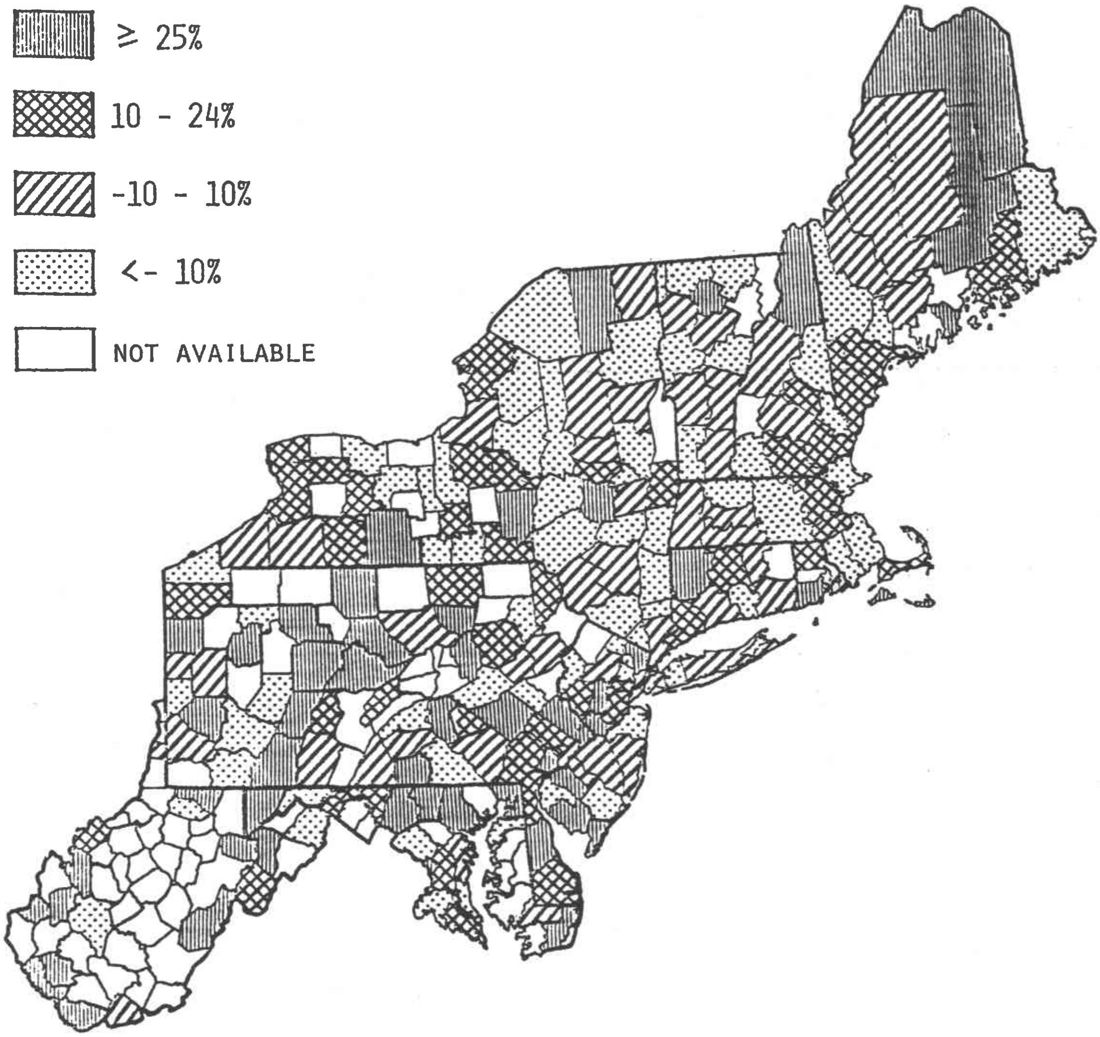

Fig. 3. Net Percentage Change in Lodging Receipts for Counties in the Northeast, 1972 to 1977.

LITERATURE CITED

Ashby, L.D., 1964. The Geographical Redistribution of Employment: An Examination of the Elements of Change, Survey of Current Business. U.S. Dept. of Commerce, Office of Business Economics, October, p. 13-20.

Brown, T.L., 1975. The 1973 Salmonid Run. New York's Salmon River Sport Fishery, Angler Activity, and Economic Impact. New York Sea Grant Institute publication NYSSG-RS-75-024. 26pp.

Dunn, E.S. Jr., 1960. A Statistical and Analytical Technique for Regional Analysis. Papers and Proceedings of the Regional Science Association, Vol. 6, 97-112.

Ellerbrock, M.J. and J.C. Hite, 1980. Factors Affecting Regional Employment in Tourism in the United States. Journal of Travel Research, Winter, 26-31.

Isard, W., 1976. Methods of Regional Analysis. The M.I.T. Press, Cambridge, Mass., Tenth Printing, 784pp.

Kahn, T.D., 1975. Estimating Tourist Industry Employment: The Primary Data Approach. Sixth Annual Travel Research Association Conference Proceedings, 167-174.

U.S. Bureau of the Census, 1972. Census of Selected Services. U.S. Government Printing Office.

U.S. Bureau of the Census, 1977. Census of Service Industries. U.S. Government Printing Office.