Public Expenditures on Outdoor Recreation in the Coastal Areas of the USA

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Introduction

A nationwide study of public expenditures on outdoor recreation in coastal areas has been performed by the Strategic Assessment Banch (SAB) of the Ocean Assessments Division, Office of Oceanography and Marine Assessment, National Ocean Service, National Oceanic and Atmospheric Administration (NOAA). [1] The data collection program and analysis discussed below are part of NOAA's efforts to estimate the economic value of the recreation services provided by coastal and oceanic areas throughout the USA. Knowledge of the recreation value of the nation's coastal and oceanic areas will enhance the capability for including recreation activities in "strategic" and "tactical" assessments of policies and management strategies that affect the services provided by these multiple-use areas. NOAA's strategic assessments are done on a broad regional or national basis. They attempt to identify existing or potential conflicts in the use of coastal and oceanic resources and are designed to complement not replace more detailed tactical analyses. (See Ehler and Basta, 1984 for a more complete description of NOAA's Strategic Assessments Program.)

The coastal and oceanic areas of the USA provide a variety of recreational goods and services that directly affect the quality of our lives. As Secretary of the Interior, Donald Hodel, recently stated, "(recreation)... is a vital component of our life-styles and lives." The data presented below clearly indicate that considerable tax dollars are spent annually to support marine-dependent outdoor recreation in the USA. However, little is known about the actual value of marine recreation to our society and the impacts recreation activity has on the Nation's local and regional economies. As a result, decision makers are unable to determine whether more or less marine recreation resources and facilities should be provided to the American public. Furthermore, it is important that public policy decisions that affect the quantity, quality and distribution of marine - dependent outdoor recreation be based on comprehensive assessments of the total costs and benefits to the nation. The data base described below represents a first step towards providing the types of information that will be required for conducting such benefit-cost analyses in the future.

Section II of this paper briefly describes the public expenditure data base and the scope of the analysis performed. Section III compares the differences in public expenditures for recreation between coastal and noncoastal counties and extends this comparison to a regional level of detail. Section IV contains a ranking of the top twenty counties in the coastal zone in terms of total, per capita, and per square mile expenditures for recreation. Section V reviews the trends (1972-1982) in public spending for recreation and the changes that have occurred in the shares of spending by level of government and region. Section VI describes some possible uses and limitations of the public expenditure data base. We conclude in section VII with a discussion of current and planned NOAA research projects on the supply and demand for marine recreation.

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[1]For purposes of this assessment, "coastal areas" are defined as the 328 coastal counties of the USA (excluding the Great Lakes) that are influenced by tidal waters.

The Data Base

The data were obtained from published and unpublished reports and records of the United States Department of Commerce, Bureau of the Census. The data base covers 1,339 coastal and noncoastal counties and special district cities in twenty-two coastal states and the District of Columbia. Within each county or special district city, the data are organized by level of government: local, state, and federal for fiscal years 1972, 1977, and 1982. Estimated expenditures include direct annual operating and capital outlays for outdoor recreation at each level of government.

Data collection programs of the U.S. Census Bureau are not designed specifically for obtaining information on public spending for recreation. However, the Census Bureau classifies spending in two categories that can be considered related to recreation. Spending in the first category, "*Parks and Recreation*," can be considered entirely for recreational purposes. However, only a portion of the spending in this category will be for "outdoor" recreation and that portion will vary by county. We included the entire category since no information exists that would allow us to separate non-outdoor recreation from the total.

The second Census Bureau category related to recreation is "*Natural Resources*." This includes four sub-categories: *agriculture, fish and game, forestry*, and *natural resources not elsewhere classified*. The *agriculture* sub-category is not related to recreational activities and is therefore not counted. *Natural resources not elsewhere classified* contains spending for the development of water resources for recreation, but most of this category is for irrigation, drainage, flood control and soil conservation. Although water resources provide important recreational services, there was no way to determine what portion of this category is related solely to recreational activities. We therefore deleted the *natural resources not elsewhere classified* sub-category from the data base.

Expenditures in the *fish and game* category can be considered entirely for outdoor recreation, but expenditures in the *forestry* category cannot. However, since most public forest areas are available for outdoor recreation, we included the entire *forestry* sub-category in the data base on spending for outdoor recreation. This will overstate the spending for recreation and may offset some of the under-counting that resulted from eliminating the *not elsewhere classified* sub-category.

The data are organized by county and level of government and are partitioned into the Cenus Bureau's two spending categories: *parks and recreation* and *natural resources*. Several assumptions were required to accomplish the partitioning. They are described below by level of government. Since inter-governmental spending was not counted at any level of government, the estimated expenditures do not necessarily indicate the source of funds. However, the direct spending approach taken here has eliminated double counting to the extent possible.

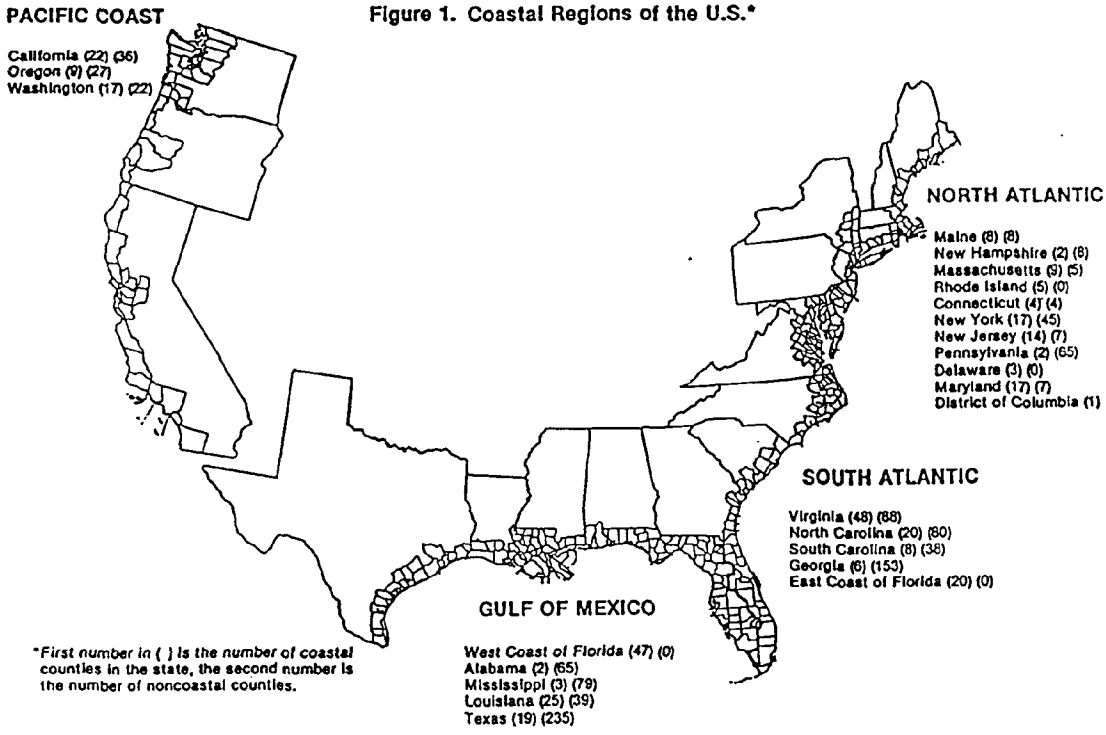
For local agencies, all *parks and recreation* expenditures and a portion of those for *natural resources* are counted. After choosing a sample of counties, we determined that approximately five percent of the *natural resources* category was recreationally related. For convenience, we used this five percent figure for all 1,339 counties. This assumption admittedly weakens inferences that can be made concerning the spatial distribution of spending. However, the *natural resources* component of total local spending is only **five percent**. Furthermore, local governments generally do not undertake the management of forests and fish and game areas. This assumption then is not expected to affect greatly inferences concerning the relative distribution of spending by county or region.

For state agencies, all of the *parks and recreation* expenditures were included as were all of the *fish and game and forestry* sub-categories of the *natural resources* category. Spending made by state agencies is not available by county. We allocated total state spending for the two categories mentioned above by county on the basis of population. This is a crucial assumption. It weakens the inferences that can be made concerning the spatial distributions of total public recreation spending and their spatial distribution by level of government. However, it was felt that this allocation method was adequate for the purposes of the analyses undertaken here. Other more complex allocation formulae can be developed as applications for the data warrant.

The *parks and recreation* and *natural resources* categories were also used for estimating federal expenditures. However, the decision as to which sub-categories to include was more complex than for local and state levels. A complete list of the sub-categories included can be found in the paper entitled "Public Expenditures on Recreation in Coastal Counties: Data Definitions and Source" (Meade *et al.*, 1985). In order to distribute federal spending by county, we referred to the "Geographical Distribution of Federal Funds, A report on the Federal Government's Impact by State, County and Large City," (Office of the Controller, U.S. Community Services Administration 1972, 1977, and 1980).

For descriptive purposes, several levels of data aggregation are used in the data base. First, the *parks and recreation* and *natural resources* categories are aggregated to form an estimate of total outdoor recreation expenditures. Second, spending by level of government (e.g., local, state and federal) is presented. Third, the USA is divided into four regions: North Atlantic, South Atlantic, Gulf of Mexico, and Pacific. Figure 1 shows the coastal states or portions of those states included in each region. Finally, all counties are classified as either coastal or noncoastal. Counties were designated as coastal if they border a body of water under tidal influences. Florida was an exception with all its counties being designated as coastal since nearly all of them border on or are influenced by marine and estuarine waters.

Figure 1. Coastal Regions of the U.S.*



Comparing Coastal and Noncoastal Counties

Of the 1,339 coastal and noncoastal counties and special district cities in the twenty-two coastal states and the District of Columbia, slightly more than 25 percent, or 328, are coastal counties. Coastal counties make up about 21 percent of the total land area and approximately 56 percent of the population of coastal states. In FY 1982, approximately $7.2 billion in public funds were spent for outdoor recreation in the 1,339 counties. Of this $7.2 billion, approximately $4.5 billion were spent in coastal counties (62 percent). Among coastal areas, $1.9 billion (42 percent) were spent in the Pacific Coast region. At least some of the differences in total spending can be explained by population.

Spending per Capita

To assess the relative differences in public outdoor recreation expenditures between counties, the data were normalized on a per capita basis. While per capita spending can indicate the relative intensity of public spending, the distributional question of who receives the benefits cannot be addressed at this level of analysis.

In FY 1982, an average of about $57 per person in public funds was spent for recreation in the coastal counties of the USA. This compares with about $43 per person in noncoastal counties of the coastal states, or about a 30 percent differential. The average per capita spending of all 1,339 counties is about $51 (Table 1). Coastal counties have higher levels of per capita spending in all regions except the Pacific Coast.[2]

Among the four coastal regions, the Pacific Coast ranked the highest with spending of approximately $80 per person. The South Atlantic ranked second with nearly $51 per capita, followed by the North Atlantic with about $47 per capita. The Gulf of Mexico ranked fourth with about $44 per person.

Table 1. Public Recreation Expenditures by Region 1972, 1977 and 1982*

Year/County	Region									
	North Atlantic		South Atlantic		Gulf		Pacific		Total	
	Per Capita $	Per Sq.Mi. $ 10^3	Per Capita $	Per Sq.Mi. $ 10^3	Per Capita $	Per Sq.Mi. $ 10^3	Per Capita $	Per Sq.Mi. $ 10^3	Per Capita $	Per Sq.Mi. $ 10^3
1972										
Coastal (328)**	58.6	52.6	46.9	8.5	36.3	4.5	74.7	20.3	59.0	18.1
Noncoastal (1,011)	36.6	6.1	34.5	3.1	36.3	1.5	112.1	2.5	43.5	2.7
All Counties (1,339)	50.0	16.5	39.4	4.4	36.3	2.0	82.6	6.7	52.2	5.9
1977										
Coastal (328)	56.4	49.8	75.2	15.2	55.6	7.7	87.4	25.1	67.8	21.7
Noncoastal (1,011)	34.7	5.8	39.4	3.7	36.6	1.6	154.0	3.9	49.1	3.2
All Counties (1,339)	47.8	15.7	53.9	6.5	43.9	2.6	102.2	9.0	59.6	7.0
1982										
Coastal (328)	46.5	40.7	50.8	12.1	43.8	7.2	80.2	25.7	56.9	19.5
Noncoastal (1,011)	30.7	5.2	36.4	3.8	33.0	1.6	118.1	3.5	42.8	3.0
All Counties (1,339)	40.2	13.2	42.5	5.8	37.3	2.6	88.6	6.8	50.7	6.5

*Weighted averages for counties within a region, indexed to 1982 dollars.
**Number in parentheses is number of counties.

[2]When only parks and recreation spending is considered, coastal counties have, on average, higher levels of per capita spending in all regions. And while the absolute ranks do not change, the difference in magnitude between the Pacific and South Atlantic regions is reduced from 3.5 to 1 to 1.3 to 1.

Spending per Square Mile

Another way to normalize the data is on a per square mile basis (Table I). In FY 1982, an average of about $19,500 per square mile was spent by public agencies for outdoor recreation in coastal counties. This compares with only about $3,000 in noncoastal counties. This large difference is a reflection of two basic facts: 1) on average, coastal county populations are greater; and 2) average land area is smaller in coastal counties. The average land area for coastal counties is approximately 710 square miles compared to approximately 877 square miles in noncoastal counties. In FY 1982 coastal counties had, on average, 343 persons per square mile, while noncoastal counties had only 71 persons per square mile (Table 2).

Table I indicates that when expenditures are aggregated at the regional level, coastal counties are not always ranked above noncoastal counties. On average, per capita spending in

Table 2. Average County Land Areas, Population and Population Densities for Coastal States by Region: 1972, 1977 and 1982 *

			Region				
			North Atlantic	South Atlantic	Gulf	Pacific	Total
Year	Land Area:	Coastal	452	475	768	1,576	710
		Noncoastal	861	413	878	2,863	877
1972	Population:	Coastal	406,340	85,621	94,815	427,394	219,705
		Noncoastal	143,025	36,801	36,581	64,693	54,710
	Population Density:	Coastal	899	187	123	271	310
		Noncoastal	166	89	42	23	62
1977	Population:	Coastal	398,988	92,774	106,090	452,969	225,896
		Noncoastal	144,354	38,982	38,696	73,055	57,258
	Population Density:	Coastal	883	203	138	287	318
		Noncoastal	168	94	44	26	65
1982	Population:	Coastal	395,806	109,155	125,997	504,344	243,528
		Noncoastal	146,358	42,815	44,056	86,661	62,275
	Population Density:	Coastal	876	239	164	320	343
		Noncoastal	170	104	50	30	71

* Land area is in square miles; population in number of persons; and population density in persons per square mile.

coastal counties is higher than in noncoastal counties in the North Atlantic, South Atlantic, and Gulf of Mexico regions; however, noncoastal counties of the Pacific region have higher per capita spending levels. Table I shows that on a square mile basis coastal counties have, on average, higher levels of spending for all regions. The difference in per capita and per square

mile expenditure rankings in the Pacific region may be explained by the following: 1) coastal counties are more densely populated; 2) noncoastal counties are on average, larger in size; and 3) land use in noncoastal counties of the Pacific region is dominated by large state and federal parks and forests that are available for recreation. [3]

One conclusion that can be drawn is that recent public policy has favored the provision of outdoor recreation in coastal counties. A reason for this may be that the coastal zone contains relatively more common property resources for outdoor recreation than noncoastal areas. An additional reason may be the fact that coastal counties border on vast common property marine resources and therefore receive additional public funds to support access.

Spending by Level of Government

Additional insight into regional differences can be gained by examining the shares of spending by level of government. Table 3 shows the shares of spending by region and level of government for coastal and noncoastal counties for fiscal years 1972, 1977, and 1982.

In FY 1982, coastal counties along the Pacific and the North Atlantic coasts were very similar with respect to the shares of spending by level of government. Coastal counties in both regions depend on state and federal spending to a much greater extent than coastal counties in the Gulf of Mexico and South Atlantic. The South Atlantic region is particularly noteworthy in that almost 75 percent of total public spending for recreation was carried out by local governmental agencies. For coastal counties, the rankings by level of government are consistent across all regions. Local governments rank first, states second, and the federal government third. Local governments accounted for approximately 59 percent of total public spending for recreation in coastal counties in FY 1982. State governments accounted for approximately 25 percent, with the federal government accounting for the remaining 16 percent. These regional differences may have important policy implications. For example, changes in federal policy on coastal outdoor recreation would affect the Pacific and North Atlantic regions most.

In noncoastal counties approximately 43 percent of total recreation spending was by local governments, and between 28 and 29 percent by both state and federal governments. Noncoastal counties rely more heavily upon state and federal spending for outdoor recreation than coastal counties.

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[3] If the *natural resources* category, which is dominated by forestry expenditures, is removed, coastal counties have higher per capita expenditures in every region. This inclusion, therefore, of forestry expenditures could bias results in comparisons of counties or regions.

Table 3. Expenditures on Recreation by Level of Government in Coastal and Noncoastal Counties*

Year	Region	Local		State		Federal		Total
		$10^6	%	$10^6	%	$10^6	%	$10^6
1972	Coastal							
	N. Atlantic	1,395	72	292	15	264	13	1,951
	S. Atlantic	230	57	83	21	88	22	402
	Gulf	182	56	82	25	63	19	327
	Pacific	925	60	283	18	325	21	1,533
	TOTAL	2,732	65	740	17	740	17	4,213
	Noncoastal							
	N. Atlantic	426	55	222	29	132	17	780
	S. Atlantic	169	37	144	32	142	31	455
	Gulf	291	52	139	25	125	23	555
	Pacific	150	24	101	16	365	59	616
	Total	1,036	43	606	25	765	32	2,406
	Total							
	N. Atlantic	1,821	67	514	19	396	14	2,731
	S. Atlantic	399	46	228	27	231	27	857
	Gulf	473	54	221	25	188	21	883
	Pacific	1,075	50	384	18	690	32	2,150
	Total	3,768	57	1,347	20	1,505	23	6,621
1977	Coastal							
	N. Atlantic	1,045	57	509	28	290	16	1,844
	S. Atlantic	326	45	172	24	221	31	718
	Gulf	265	47	158	28	137	24	560
	Pacific	1,085	57	417	22	399	21	1,901
	TOTAL	2,271	54	1,256	25	1,047	21	5,023
	Noncoastal							
	N. Atlantic	413	55	279	37	53	7	745
	S. Atlantic	217	39	184	33	149	27	551
	Gulf	306	52	183	31	102	17	591
	Pacific	189	20	138	14	630	66	956
	Total	1,125	40	784	27	935	33	2,844
	Total							
	N. Atlantic	1,478	56	787	30	344	13	2,590
	S. Atlantic	543	43	356	28	370	29	1,269
	Gulf	571	50	341	30	239	21	1,152
	Pacific	1,273	45	555	19	1,029	36	2,857
	Total	3,846	49	2,039	26	1,982	25	7,867
1982	Coastal							
	N. Atlantic	837	55	403	27	270	18	1,509
	S. Atlantic	426	75	100	17	45	8	571
	Gulf	327	62	127	24	71	14	525
	Pacific	1,090	56	511	26	341	18	1,941
	TOTAL	2,679	59	1,140	25	727	16	4,547
	Noncoastal							
	N. Atlantic	372	55	244	36	54	8	671
	S. Atlantic	217	39	185	33	158	28	560
	Gulf	366	60	160	26	81	13	607
	Pacific	193	23	179	21	482	56	855
	Total	1,148	43	768	29	776	29	2,692
	Total							
	N. Atlantic	1,209	55	647	30	324	15	2,180
	S. Atlantic	643	57	284	25	204	18	1,131
	Gulf	692	61	287	25	152	13	1,132
	Pacific	1,283	46	690	25	823	29	2,796
	Total	3,827	53	1,908	26	1,503	21	7,239

*Expenditures and percents may not add due to rounding. Expenditures are indexed to millions of 1982 dollars.

Coastal Counties with the Highest Expenditures

Tables 4, 5 and 6 show the rankings of the top twenty coastal counties in terms of total, per capita, and per square mile expenditures for recreation, respectively. Counties are listed in order of their 1982 rankings. Only four counties in 1982 rank among the top twenty with respect to both total and per capita expenditures. They are King, WA, the District of Columbia, Multnomah, OR, and San Francisco, CA. Three of these rank in the top twenty for all three measures. King County, WA, drops to 36th in the per square mile rankings.

From a broad national or regional perspective, total expenditures by county can be used to assess the spatial distribution of public spending for recreation. By combining data on public and private spending for outdoor recreation with data on spending in other industries, it should be possible to assess the relative importance of outdoor recreation in local or regional economies. Although expenditure data alone has limitations for identifying explicitly the demand for or value of coastal resources, it is a good starting point for strategic assessments aimed at identifying conflicts in the use of resources.

Table 4 shows the rankings for total expenditures in the top twenty coastal counties. As expected, total expenditures are strongly related to population. The Spearman Rank Correlation Coefficient [4] between population and total expenditures was .92 in 1982. The rankings reflect more than just large resident populations, however. Three counties in Florida (Dade, Broward and Palm Beach) have moderately high resident populations, but are also counties with large amounts of tourism. Local public agencies often provide services to tourists in order to stimulate their economies. In Florida, for example, local agencies spend considerable sums maintaining beaches since tourism is the number one industry in Florida (Florida Department of Natural Resources, 1982).

Table 4. Ranking of the Top 20 Coastal Counties Total Expenditures: 1972, 1977 and 1982*

County/State	1972		1977		1982	
	$	Rank	$	Rank	$	Rank
Los Angeles, CA	426	1	467	1	522	1
King, WA	130	5	157	3	175	2
District of Columbia	161	4	215	2	172	3
Multnomah, OR	98	10	109	12	170	4
Dade, FL	81	14	153	4	155	5
Orange, CA	102	8	128	7	136	6
San Diego, CA	101	9	111	10	120	7
San Francisco, CA	89	12	109	13	101	8
Nassau, NY	171	3	135	6	99	9
Kings, NY	111	7	106	14	91	10
Philadelphia, PA	127	6	111	9	90	11
Santa Clara, CA	67	16	90	15	88	12
Harris, TX	45	23	61	22	80	13
Queens, NY	83	13	82	16	78	14
Palm Beach, FL	21	46	35	38	69	15
New York, NY	68	15	65	20	65	16
Middlesex, MA	42	24	51	28	65	17
Alameda, CA	92	11	110	11	61	18
Broward, FL	31	30	47	31	59	19
Suffolk, NY	53	20	78	17	57	20

* Expenditures are in Millions of 1982 dollars.

[4]The Spearman Rank Correlation Coefficient or Spearman's Rho is a nonparametric measure that is calculated as the correlation of the ranks of the data (see Noether, 1967).

Table 5 shows the ranking of the top twenty coastal counties in terms of per capita spending. Note that Pacific Coast counties dominate the top twenty. These counties are characterized by a large proportion of their land use budgets devoted to state and federal parks. Demand for these types of parks are derived primarily from out-of-county visitors, so high per capita expenditures may reflect the existence of unique recreational resources (U.S. Department of the Interior, 1979a). Our conclusions must be tempered, however, by the fact that total state expenditures were allocated to individual counties on the basis of population.

Table 6 shows the top twenty coastal counties ranked on the basis of expenditures per square mile. The top twenty are dominated by the densely populated counties of the North Atlantic Region. Thus, a relatively high ranking in expenditures per square mile seems to indicate merely that a county is densely populated. The Spearman Rank Correlation Coefficient between population density and expenditures per square mile was .90 in 1982, for example.

Table 5. Ranking of the Top 20 Coastal Counties Per Capita Expenditures: 1972, 1977 and 1982

County/State	1972 $	1972 Rank	1977 $	1977 Rank	1982 $	1982 Rank
Jefferson, WA	789.3	2	419.2	6	668.2	1
Clallam, WA	94.9	40	321.5	11	439.7	2
Mason, WA	159.0	17	248.9	14	410.0	3
Multnomah, OR	175.0	14	207.0	19	299.9	4
Leon, FL	96.2	38	114.7	32	277.8	5
District of Columbia	216.2	8	313.2	12	272.0	6
Dare, NC	428.9	4	355.0	10	270.3	7
Collier, FL	31.9	159	1670.2	1	207.2	8
York, VA	95.8	39	238.0	15	187.5	9
Lincoln, OR	97.8	36	201.0	20	182.1	10
Plaquemines, LA	135.4	21	140.7	26	181.5	11
Gray's Harbor, WA	105.2	31	429.1	5	171.3	12
Liberty, FL	200.2	10	234.0	16	161.6	13
Tillamook, OR	119.3	27	224.3	18	149.3	14
San Francisco, CA	128.8	23	165.8	22	146.6	15
Lane, OR	127.1	24	227.3	17	144.4	16
Skagit, WA	91.5	43	120.9	30	135.0	17
King, WA	114.6	29	135.3	28	133.6	18
W. Baton Rouge, La	31.1	164	63.3	81	132.3	19
Refugio, TX	94.2	41	59.9	96	126.6	20

*Expenditures are indexed to 1982 dollars.

Table 6. Ranking of the Top 20 Coastal Counties Expenditures Per Square Mile: 1972, 1977 and 1982*

County/State	1972 10^3	1972 Rank	1977 10^3	1977 Rank	1982 10^3	1982 Rank
New York, NY	3,097	2	2,959	3	2,974	1
District of Columbia	2,557	3	3,406	2	2,724	2
San Francisco, CA	1,934	4	2,359	4	2,204	3
Kings, NY	1,587	5	1,510	5	1,295	4
Bronx, NY	1,471	6	1,309	6	1,090	5
Queens, NY	772	10	758	9	726	6
Philadelphia, PA	936	8	819	8	662	7
Suffolk, MA	894	9	858	7	559	8
Baltimore City, MD	4,052	1	729	10	533	9
Arlington, VA	1,217	7	5,792	1	473	10
Hudson, NY	417	13	660	11	424	11
Multnomah, OR	227	18	254	20	394	12
Alexandria, VA	362	15	356	15	363	13
Nassau, NY	596	11	472	13	345	14
Falls Church, VA	268	17	348	16	335	15
Essex, NY	382	14	539	12	324	16
Norfolk, VA	491	12	335	18	314	17
Fredricksburg, VA	73	35	450	14	308	18
Richmond, NY	211	19	235	22	240	19
Union, NJ	206	22	345	17	220	20

*Expenditures are indexed to 1982 dollars.

Trends in Public Expenditures for Recreation

Figure 2 shows the trends in total public recreation spending for all 1,339 coastal state counties during the 1972-1982 period. Also shown are the trends in local, state and federal government expenditures. Total expenditures were approximately $6.6 billion in FY 1972. They rose to approximately $7.9 billion in FY 1977 and then fell to $7.2 billion in FY 1982. Note that prior year figures are indexed to 1982 dollars. Total expenditures increased nearly 19 percent from 1972 to 1977, but declined approximately 8 percent from 1977 to 1982. The main sources of these declines were changes in the levels of state and federal government spending. Total local government outlays remained fairly constant over the entire 1972-1982 period.

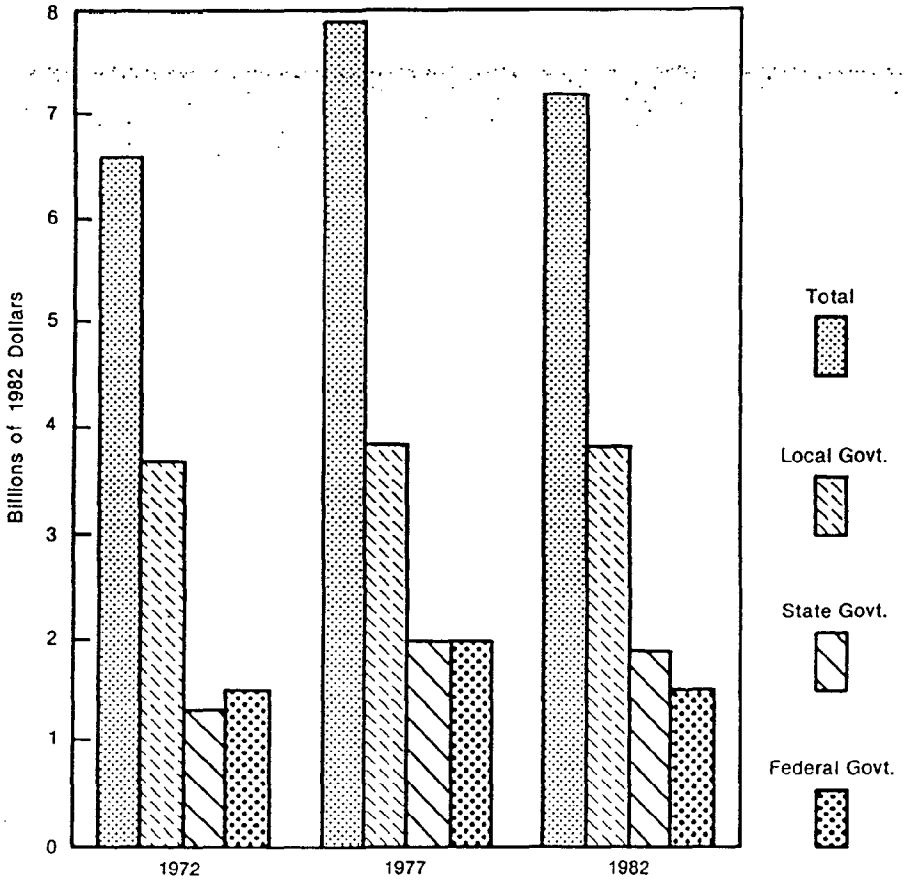

Figure 2. Trends In Public Recreation Expenditures in Coastal States.

For coastal counties, total expenditures were approximately $4.2 billion in FY 1972. They rose to approximately $5 billion in FY 1977 and fell to $4.5 billion in FY 1982. Total expenditures increased approximately 19 percent from 1972 to 1977, then declined some ten percent from 1977 to 1982. **When compared to noncoastal counties, total outdoor recreation expenditures in coastal counties grew at a slightly faster pace over the 1972-1977 period and declined at a much faster pace over the 1977-1982 period.**

Although total annual outdoor recreational expenditures have increased slightly over the ten-year period, coastal counties have had their share reduced from approximately 64 percent of the total in FY 1972, to 63 percent in FY 1982. This decline is consistent with the reduction in the proportion of coastal state residents living in coastal counties. The proportion of coastal state residents living in coastal counties was 56 percent in 1972 and 55 percent in 1982 (see Table 7).

Table 7. Coastal Shares of Population and Total Public Expenditures for Recreation: 1972-1982

Year	Percent Shares Coastal Counties	
	Population	Expenditures
1972	56.35	63.63
1977	56.14	63.85
1982	55.92	62.81

Table 8 shows the growth rates for population and total and local public recreational expenditures. As discussed above, total public expenditures for recreation increased approximately 19 percent over the 1972-1977 period, then declined approximately 10 percent over the 1977-1982 period in coastal counties. **However, local expenditures for recreation actually declined approximately 0.5 percent over the 1972-1977 period and 1.5 percent over the 1977-1982 period.** Thus, most of the variation in public spending for outdoor marine recreation was the result of changes in state and federal spending. Since state spending was allocated on the basis of population, comparisons across regions may be misleading if the assumption regarding the distribution of state spending is inaccurate.

Table 8. Growth Rates in Population and Total and Local Expenditures for Recreation - Coastal and Noncoastal Counties

Period	County	Percent Growth		
		Population	Total Expenditures	Local Expenditures
72-77	Coastal	3.77	19.24	-0.42
	Noncoastal	4.66	18.11	8.60
77-82	Coastal	7.80	-9.50	-1.52
	Noncoastal	8.76	-5.33	2.03

Trends in Spending by Level of Government

State and federal agencies expanded their roles in the provision of public recreation over the 1972-1977 period. Table 3 shows the spending by level of government for fiscal years 1972, 1977, and 1982. In FY 1972, local government agencies in the 1,339 counties accounted for approximately 57 percent of total public spending for outdoor recreation in the coastal

states. State governments accounted for approximately 20 percent and the federal government accounted for approximately 23 percent. Local agencies decreased their share to approximately 49 percent in FY 1977, with the state and federal governments increasing their shares to approximately 26 and 25 percents, respectively.

During the 1977-1982 period, the trend of shifting the proportion of public recreational expenditures from local to state and federal agencies was reversed. In FY 1982, local agencies increased their share to approximately 53 percent. State agencies continued to increase their share slightly. However, federal agencies reduced their share to approximately 21 percent. Federal government expenditures for recreation decreased 24 percent over the 1977-1982 period. **Coastal counties were disproportionally affected by this change in federal policy since almost 67 percent of this reduction was made in coastal counties.**

Among coastal counties there is a significant difference in the trends in spending by levels of government across the four regions. Local agencies have steadily reduced their share in the North Atlantic and Pacific Coast regions over the 1972-1982 period. In the South Atlantic and Gulf of Mexico regions, local agencies reduced their shares from 1972 to 1977, but then increased their shares from 1977 to 1982. **As a result, the South Atlantic and Gulf of Mexico regions have become much less dependent on direct state and federal expenditures for recreation.** For all regions except the Pacific Coast, total expenditures declined from 1977 to 1982. The declines were largely due to changes in state and federal spending policies, with the federal government responsible for the largest portion. Although local agencies increased their spending levels from 1977 to 1982 in the South Atlantic, Gulf and Pacific regions, it was not enough to offset the declines as a result of state and federal government cutbacks.

Trends in per Capita Spending

Figure 3 shows that the trends in per capita public spending for outdoor marine recreation are very similar to the trends in total spending. Per capita spending increased from 1972 to 1977, and then declined by 1982 to below 1972 levels. For all 1,339 counties, per capita spending was approximately $52 in FY 1972, $60 in FY 1977 and about $51 in FY 1982. For coastal counties, per capita spending was approximately $59 in FY 1972, $68 in FY 1977 and about $57 in FY 1982 (Table I).

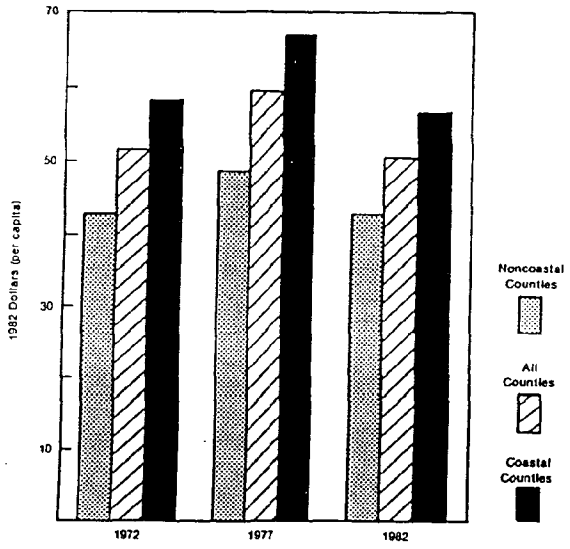

Figure 3. Trends in Per Capita Public Recreation Expenditures in U.S. Coastal States.

Table 9 shows a comparison of the rates of growth in spending per capita and per square mile for coastal and noncoastal counties. Per capita spending increased nearly 15 percent in coastal counties over the 1972-1977 period compared to only 13 percent in noncoastal counties. Over the 1977-1982 period, however, per capita spending declined to a greater extent in coastal counties--16 percent in coastal counties versus 13 percent in noncoastal counties.

Table 9. Percent Change in Public Recreation Expenditures by Region

Region/County	Percent Change			
	Expenditures per square mile		Expenditures per capita	
	1972-1977	1977-1982	1972-1977	1977-1982
NORTH ATLANTIC				
Coastal	5.47	-18.14	-4.28	17.48
Noncoastal	4.48	-10.05	-5.35	-11.28
Total	5.19	-15.81	-4.48	-7.58
SOUTH ATLANTIC				
Coastal	78.84	-20.45	60.26	-32.38
Noncoastal	20.94	1.64	14.19	-7.47
Total	48.08	-10.86	36.93	-21.12
GULF COAST				
Coastal	71.17	-6.35	53.00	-21.15
Noncoastal	6.47	2.65	0.63	-9.82
Total	30.47	-1.73	20.73	-15.07
PACIFIC COAST				
Coastal	23.98	2.10	16.99	-8.30
Noncoastal	55.08	-10.60	37.33	-24.64
Total	14.09	-14.98	23.68	-13.37
TOTAL				
Coastal	19.24	-9.50	14.92	-16.05
Noncoastal	18.11	-5.33	12.84	-12.95
Total	18.83	-7.99	14.09	-14.98

There are some notable differences in the growth rates of per capita spending between coastal and noncoastal counties among the four regions. Per capita spending declined in the North Atlantic region over both the 1972-1977 and 1977-1982 periods. Per capita spending in coastal counties grew at a faster rate over the 1972-1977 period in the South Atlantic and Gulf of Mexico regions, but grew faster in the noncoastal counties of the Pacific Coast region. The reductions in per capita spending experienced over the 1977-1982 period were much greater in coastal counties of the South Atlantic and Gulf of Mexico regions. However, per capita spending decreased nearly 25 percent in noncoastal counties in the Pacific Coast region compared to only about an 8 percent decrease in coastal counties.

Trends in Spending Per Square Mile

Public recreation spending per square mile follows the same trends as per capita spending (Table 1). For all counties, spending per square mile was $6,500 in FY 1982. For coastal counties, spending per squre mile was approximately $18,000 in FY 1972, $21,600 in FY 1977 and only about $19,500 in FY 1982.

Among the four regions there are several exceptions to the above patterns. Spending per square mile has increased for both the 1972-1977 and the 1977-1982 period in coastal counties of the Pacific Coast, and in noncoastal counties of the Gulf and the South Atlantic regions (Table 9). Average spending per square mile declined in both periods in the North Atlantic region in both coastal and noncoastal counties.

Summary of Trends

Total public spending for recreation, measured in 1982 dollars, increased in all regions except the North Atlantic over the 1972-1977 period. Not only did total spending increase faster than inflation over this period, it also increased faster than population. These increases were largely due to state and federal efforts as local agency spending remained fairly constant over the 1972-1977 period. Total and per capita spending increased much faster in coastal counties of the South Atlantic and Gulf of Mexico regions compared to noncoastal counties. Just the opposite is true for the Pacific Coast Region.

The 1977-1982 period was a period of overall decline in spending for public recreation as total spending declined in every region. Only the South Atlantic and Gulf of Mexico noncoastal counties and the Pacific Coast coastal counties showed some increases, but these increases were much lower than the increases of the 1972-1977 period. The reductions in total spending were largely the result of reductions in state and federal spending. Per capita spending declined in all regions in both coastal and noncoastal counties over the 1977-1982 period.

Uses and Limitations of the Public Expenditure Data Base

The public recreation expenditures data base described above represents a modest first step in understanding part of the value society places on the Nation's coastal areas for recreation. Although there are imperfections in the data available on public recreation expenditures, we believe they are fairly consistent over time and across regions. The totals discussed above therefore permit a reasonable basis for comparison of public recreation expenditures among different time periods and locations. It is important, however, to consider some of the limitations of this data.

Limitations

Public expenditures are at best a poor measure of recreational activity. Referring to Tables 3 and 10, there is no apparent relationship between total public expenditures and recreational activity. Usage at federal and state parks has continued to increase despite cuts in total spending by state and federal agencies.

Table 10. Trends in Usage at Federal and State Parks

Agency	Unit of Measurement	Year		
		1972	1977	1982
U.S. Forest Service	Millions of days	184	205	233
National Park Service	Millions of visitors	212	263	334
U.S. Corps of Engineers	Millions of days	328	424	480
Bureau of Reclamation	Millions of days	56	65	74*
Bureau of Land Managment	Family units	3,919	7,136	10,734
Bureau of Land Management	Millions of visits	52	144	91*
Bureau of Land Management	Millions of days	31	91	64*
State Parks	Millions of days	470**	601***	618*

* 1981
** 1970
*** 1978

Source: Statistics on Outdoor Recreation, Resources for the Future, Inc., 1984.

Total public expenditures do not fully reflect the annual social cost of providing recreational goods and services. The addition of operating and capital costs is a mis-specification of the total annual cost of supplying recreational goods and services. If data were available, the proper measure would include: I) operation and maintenance costs; 2) amortized capital improvement costs, and 3) the opportunity costs of land. Once these costs were identified, by activity, one could then use total annual costs as a proxy for recreation activity (see Gibbs, I98I). The need for identifying costs by activity becomes more important when making inferences about the relative extent of activity across spatial units, such as counties. This is because the relationships between total annual costs and usage vary according to activity and counties are probably not homogeneous with respect to their bundles of recreational activity.

Furthermore, the public expenditures data indicate that, on average, coastal counties are more important locations for publicly provided outdoor recreation activity. This conclusion may be influenced by our assumption that state expenditures are distributed on the basis of population, however. Since state expenditures make up approximately 25 percent of the total public investment in outdoor recreation, additional research should be conducted to test this assumption.

In section III, we presented rankings of counties in terms of total, per capita, and per square mile expenditures. Although these rankings did not change drastically from year to year, there were several anomalies. The aggregation of operating and capital outlays in the data may explain some of these anomalies. Capital outlays are likely to fluctuate greatly from year to year, making annual county comparisons questionable.

As mentioned above, the Census Bureau has not designed their data collection programs specifically for obtaining estimates of outdoor recreation spending. Several assumptions were required to construct the estimates of public spending for recreation presented in this report. For example, spending by state agencies included all expenditures in the *forestry* sub-category and none of the expenditures for water resource development---since they could not be separated from the *not elsewhere classified* sub-category. These assumptions may distort comparisons at the county or regional level of detail.

An Index of Relative Economic Importance

Public expenditures for recreation can represent a significant portion of total local governmental spending. The extent of local economic dependence on public expenditures for recreation may have important implications for assessing the impacts of national policies.

From a purely national policy perspective, net national benefits are usually the objective to be maximized. The size of the benefit measure is independent of who receives them. Local agencies, though, are concerned with maximizing local sales, employment, income and their local tax receipts. Thus, the possibility arises for conflicts between national and local objectives. Theoretically, the proper calculation of net national benefits, for a given policy change, should include the adjustment costs of relocating displaced capital and labor. These costs are usually ignored in empirical studies, because of the difficulty in quantifying them.

One simple measure that would be useful in the above context is the percent of total sales in a local economy attributable to public spending for recreation. However, if one is attempting to identify relative dependencies across counties, an index such as the location quotient (Li) first

proposed by Tiebout (1962) may be more appropriate. The location quotient indexes counties relative to the U.S. average. Below is the formula for the location quotient:

$$Li = \frac{\text{Total Public Spending for Recreation in County}}{\text{Total Spending in County}} \Big/ \frac{\text{Total Public Spending for Recreation in U.S.}}{\text{Total Spending in U.S.}}$$

Other measures could be substituted for spending, such as wages, personal income, or employment. The above index could also be calculated separately for local, state, and federal spending depending on the policy question. The index could be extended to cover both public and private expenditures for recreation, thus highlighting the relative importance of the recreation industry. We will consider development of such indices as the need arises at a future time.

Ongoing and Future Research

Many questions must be answered before a more rigorous evaluation of the public investment in outdoor recreation can be completed. A national assessment program has been designed (Meade and Leeworthy, 1986) that will attempt to fill many important gaps in our present level of understanding. The next step in the program, an inventory of all publicly owned or managed resource areas and facilities in coastal areas, is underway. The data base includes twenty different recreational facility types along with a time series on acreage, user days, operating and capital expenditures, staff and revenues for fiscal years 1972, 1977, 1982, and 1984. The data is being organized according to the managing agency for local governments and the recreation resource areas managed by state and federal agencies. The data will also be aggregated into county summary files. This information should make possible an evaluation of the following questions and assumptions used in constructing the public expenditure data base:

1. For local governments, does the allocation of five percent of the *natural resources* category for recreation seriously bias estimates and thus invalidate spatial comparisons at the county levels?

2. Is the decision rule of allocating state expenditures by population a serious departure from how expenditures are actually allocated?

3. Is the Geographical Distribution of Federal Funds report a reliable source for estimating the distribution of federal spending by county?

4. In assessing the time-series, are capital expenditures for land acquisition and park development the source of the 1982 decline in state and federal spending?

5. Is the inclusion of all the *natural resources* sub-category, *forestry*, and deletion of the sub-category, *not elsewhere classified*, a poor representation of recreational expenditures by state agencies?

Part of our overall assessment will include an evaluation of the various approaches to collecting information on public recreational expenditures. Furture efforts will assess whether the Census Bureau data can be used reliably or if more expensive primary data collection efforts are required for future updates. The inventory currently being compiled will also provide baseline estimates of the nature and distribution of publicly provided recreational facilities.

Information is also being compiled on the private provision of recreation facilities in coastal areas. A complete inventory of both public and private recreation facilities would greatly enhance our ability to analyze the supply of coastal recreational services. Baseline knowledge of this type is an important first step in the process of estimating the recreational value of coastal and oceanic resources. Such information is crucial in designing policies and management strategies that affect future allocations and uses of these increasingly important resources.

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