LOCAL GOVERNMENT SPENDING IN MARYLAND:

NEEDS AND PERFORMANCE

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EXECUTIVE SUMMARY

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Introduction

This report presents estimates of relative needs for the public services provided by the City of Baltimore and local governments in each of Maryland's 23 counties. The estimates are developed by calculating the cost of a "representative" level of public services, defined as the average provided by all local governments in the state.

Maryland is the first state with a relatively complex system of local government in which the representative-expenditure approach has been used to develop estimates of the relative costs of the public services for which local governments are responsible.

The cost estimates are independent of the actual policies of any individual government and of the collective policies of all the governments in any one county. Instead, the estimates relate the underlying economic and demographic factors that determine expenditure needs to the average--or representative--policies of all local governments in the State.

The calculation of representative expenditures for the local governments in each county (the cost of providing the representative level of public services) proceeds by identifying a "workload" measure for each major expenditure function. The

measure is intended to indicate the approximate scope of the service that must be provided--the relative "need" for the service--in each county. For example, the combination of two equally weighted factors in each county--the number of violent crimes reported and the expected number of arrests for violent crimes--is the workload measure for the expenditure function corrections.

The representative-expenditure approach defines a set of weights so that the workload factors can be combined into a single, overall measure of the relative costs of the entire range of services provided by each function of government (such as education, sanitation and waste removal, and police protection). A distinguishing aspect of the representative expenditure method is that it addresses the relative costs of public services on a highly disaggregated basis. This permits comparison of actual spending with the representative estimates function by function, enabling state and local officials to compare each major element of their budgets with the spending levels necessary to meet a defined standard of "need." This strategy is explicitly designed to promote informed discussion of public needs and actual budget policy. In all, 22 separate functions are examined.

Assumptions

Three important assumptions underlie the representative-expenditure estimates. The first is that all county and municipal governments in Maryland operate at comparable efficiency.

In other words, the real resource cost of producing a unit of a given service is the same in all counties.

Second, the estimates assume that the unit cost of producing different quantities of a service is constant: that there are no economies or diseconomies of scale in the production of the service. In other words, the assumption is that a small municipality can produce the service at the same average cost per unit as a large county government.

Finally, the estimates assume uniformity of input prices--that the prices of the goods and services local governments buy do not vary significantly within the State. This is, without question, the most troublesome assumption of the analysis.

Differences in the cost of land between urban and rural areas translate into major differences in the costs of many types of capital projects, and are responsible for substantial variation in the rent per square foot of office space. The cost of living is generally believed to be higher in urban than in rural areas, with attendant consequences for the salaries that must be paid to hire public employees of comparable quality.

This said, the reality is that no reliable estimates of differences in unit input costs among the counties in Maryland are available that might be used in this study. In an attempt to gauge the possible significance of the assumption of uniform unit-input costs, an illustrative analysis is performed using a 1981 index of relative education costs to adjust the estimates of representative expenditures.

Results

The estimates of representative expenditure are presented in Table 1. The estimates are shown as indices of their per capita values, with the statewide average equal to 100. For perspective, the percentage distribution of total outlays is shown in the first row and per capita average actual expenditures in the second.

The cost of providing the standard level of services is far and away the highest for Baltimore City, at 142 percent of the per capita statewide average. The standard level of services is least costly in Carroll County, where the per capita cost is 83 percent of the state average.

In addition, to Carroll, the per capita cost of the representative level of services is 90 percent or less of the State average in seven counties: Anne Arundel, Baltimore, Frederick, Harford, Howard, Montgomery, and Queen Anne's. Aside from Baltimore City, the cost of the representative level of services exceeds 110 percent of the state per capita average only in Garrett County.

Baltimore City's per capita needs for public expenditures are the highest in the State for every function except other public safety, other public works, elementary and secondary education, community colleges, and natural resources.

Montgomery County's per capita needs are below the statewide average for every function but fire, other public safety, sanitation, and other public works.

TABLE 1

INDEX OF PER CAPITA REPRESENTATIVE EXPENDITURES OF ALL LOCAL GOVERNMENTS IN MARYLAND, FISCAL YEAR 1988

County	Total	General Government	Public Safety				Public Works			Health and Hospitals	Social Services	Elem. & Second. Education
			Police	Fire	Corrections	Other	Highways	Sanitation	Other			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Scale:												
Percent	100.0%	6.4%	5.7%	3.5%	1.2%	1.2%	2.9%	6.4%	4.8%	4.0%	7.8%	37.4%
Per Capita	$1,638.44	$106.19	$93.45	$57.12	$18.97	$19.35	$47.33	$104.13	$79.22	$65.11	$128.40	$612.34
Total	100	100	100	100	100	100	100	100	100	100	100	100
Standard Dev.	19	0	25	47	35	9	49	26	9	67	76	10
Allegany	100	100	69	71	58	93	97	108	93	150	146	93
Anne Arundel	90	100	82	111	75	97	70	77	97	65	62	99
Baltimore City	142	100	149	185	168	110	201	133	110	240	259	113
Baltimore	89	100	104	119	107	100	98	114	100	61	57	85
Calvert	92	100	75	37	72	82	43	37	82	88	86	115
Caroline	102	100	78	58	73	88	115	59	88	147	143	107
Carroll	83	100	73	34	65	89	68	54	89	57	50	98
Cecil	93	100	79	45	75	87	46	60	87	96	91	107
Charles	98	100	87	28	86	88	51	53	88	82	79	126
Dorchester	105	100	89	39	85	96	153	34	96	168	165	97
Frederick	90	100	87	48	82	96	75	63	96	67	63	105
Garrett	112	100	75	39	64	97	164	55	97	180	177	117
Harford	89	100	82	35	78	88	65	59	88	76	73	105
Howard	86	100	82	89	73	100	63	86	100	37	31	99
Kent	95	100	71	50	59	95	77	97	95	149	145	85
Montgomery	88	100	79	101	66	106	80	113	106	45	41	95
Pr. George's	95	100	109	73	116	95	67	111	95	74	71	101
Queen Anne's	86	100	74	44	69	85	80	42	85	93	89	92
St. Mary's	101	100	90	30	90	90	50	51	90	113	107	123
Somerset	104	100	84	47	82	88	99	63	88	185	177	99
Talbot	92	100	85	47	74	106	112	79	106	119	110	86
Washington	95	100	75	58	63	99	117	82	99	114	113	94
Wicomico	101	100	101	112	101	103	127	74	103	128	125	97
Worcester	105	100	109	75	81	165	106	133	165	136	128	87

Source: Table E.13.

TABLE 1 (Continued)

INDEX OF PER CAPITA REPRESENTATIVE EXPENDITURES OF ALL LOCAL GOVERNMENTS IN MARYLAND, FISCAL YEAR 1988

County	Community Colleges	Recreation & Parks	Libraries	Natural Resources	Urban Development & Housing	Economic Development	Economic Opportunity	Debt Service: Principal	Debt Service: Interest	Intergovernmental	Miscellaneous
	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)
Percent	3.9%	2.5%	1.3%	0.1%	0.6%	1.0%	0.1%	3.1%	3.9%	0.1%	2.1%
Per Capita	$64.57	$40.82	$20.94	$1.71	$9.59	$15.81	$2.25	$51.10	$63.50	$2.38	$34.17
Total	100	100	100	100	100	100	100	100	100	100	100
Standard Dev.	6	70	0	185	78	39	78	0	0	0	19
Allegany	91	83	100	277	143	121	143	100	100	100	100
Anne Arundel	105	70	100	38	61	80	61	100	100	100	90
Baltimore City	99	257	100	0	265	183	265	100	100	100	142
Baltimore	95	67	100	32	56	78	56	100	100	100	89
Calvert	98	65	100	228	86	93	86	100	100	100	92
Caroline	91	80	100	660	139	120	139	100	100	100	102
Carroll	97	52	100	185	47	74	47	100	100	100	83
Cecil	98	66	100	246	89	94	89	100	100	100	93
Charles	107	63	100	239	78	89	78	100	100	100	98
Dorchester	87	88	100	977	161	130	161	100	100	100	105
Frederick	102	59	100	242	61	81	61	100	100	100	90
Garrett	93	94	100	1,264	173	137	173	100	100	100	112
Harford	102	62	100	118	72	86	72	100	100	100	89
Howard	102	52	100	64	30	65	30	100	100	100	86
Kent	92	81	100	857	142	121	142	100	100	100	95
Montgomery	94	66	100	25	41	70	41	100	100	100	88
Pr. George's	111	76	100	27	71	85	71	100	100	100	95
Queen Anne's	91	63	100	604	87	94	87	100	100	100	86
St. Mary's	111	70	100	253	103	102	103	100	100	100	101
Somerset	93	91	100	890	170	135	170	100	100	100	104
Talbot	83	71	100	497	105	103	105	100	100	100	92
Washington	100	75	100	193	113	106	113	100	100	100	95
Wicomico	97	77	100	263	123	112	123	100	100	100	101
Worcester	90	107	100	655	125	112	125	100	100	100	105

Source: Table E.13.

Perhaps the most interesting way to consider the estimates of representative expenditures is in conjunction with actual outlays in each county. Table 2 provides the ratios of actual to representative expenditures. A value in excess of 100 indicates that the actual outlays of the local governments in a county in FY 1988 exceed those necessary to provide the statewide average level of a service or of all services combined. Conversely, a value of less than 100 shows that the actual expenditures of the governments in a county are below the level necessary to provide the average level of the service delivered by all local jurisdictions in Maryland.

Table 2 shows that the total operating outlays of local governments range from 69 percent of representative expenditures in St. Mary's County to 142 percent in Worcester County. The actual outlays of local governments in St. Mary's County are below the average for every function but highways.

In the case of Montgomery County, actual outlays equal or exceed those needed to deliver average service levels for every function but general government, natural resources, economic development and opportunity, and miscellaneous.

Baltimore City spends substantially more for certain functions than the estimates of this study suggest it would have to spend to provide average levels of service. These functions are general government, police, corrections, other public safety, sanitation, social services, libraries, economic development, and principal payments on its securities.

TABLE 2

ACTUAL AS PERCENTAGE OF REPRESENTATIVE EXPENDITURES OF ALL LOCAL GOVERNMENTS IN MARYLAND, FISCAL YEAR 1988

County	Total	Genaral Govern-ment	Public Safety				Public Works			Health and Hospi-tals	Social Services	Elem. & Second. Educa-tion
			Police	Fire	Correc-tions	Other	High-ways	Sanita-tion	Other			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Scale:												
Percent	100.0%	6.4%	5.7%	3.5%	1.2%	1.2%	2.9%	6.4%	4.8%	4.0%	7.8%	37.4%
Per Capita	$1,638.44	$106.19	$93.45	$57.12	$18.97	$19.35	$47.33	$104.13	$79.22	$65.11	$128.40	$612.34
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Standard Dev.	16	39	32	24	38	43	71	27	75	56	29	14
Allagany	94	59	61	78	76	105	164	113	140	83	92	99
Anne Arundel	97	129	114	131	97	69	187	86	70	97	75	100
Baltimora City	95	164	136	97	120	181	47	109	80	75	119	79
Baltimora	92	50	85	85	44	91	54	63	0	239	76	100
Calvert	91	77	73	49	256	99	399	86	20	122	76	104
Carolina	83	88	51	72	180	17	144	71	55	74	62	98
Carroll	87	86	39	78	75	68	186	54	21	137	113	101
Cecil	80	69	42	29	161	168	284	69	53	72	74	93
Charles	87	53	80	131	120	44	87	101	60	113	88	87
Dorchester	81	61	74	65	44	45	224	56	40	61	65	102
Frederick	88	61	51	85	84	45	164	125	109	104	62	100
Garrett	85	58	25	61	62	30	305	87	30	66	55	102
Harford	87	68	69	66	98	59	232	93	42	73	124	94
Howard	119	110	99	93	117	121	119	108	121	151	135	120
Kent	97	99	63	84	206	39	224	45	86	128	49	118
Montgomery	132	100	131	122	127	102	131	109	177	132	145	126
Pr. Georga's	104	117	83	102	90	75	75	128	146	80	80	100
Queen Anne's	102	66	33	72	154	80	286	237	36	136	76	123
St. Mary's	69	45	40	47	75	92	151	73	38	70	77	88
Somerset	81	105	32	52	101	74	184	133	60	84	67	104
Talbot	115	65	77	88	132	73	159	79	544	86	57	104
Washington	82	49	62	74	121	47	75	67	208	79	61	97
Wicomico	84	51	45	66	77	44	148	77	99	71	66	101
Worcestar	142	135	171	190	289	76	271	157	328	92	52	125

Source: Tablas II.2 and III.1.

TABLE 2 (Continued)

ACTUAL AS PERCENTAGE OF REPRESENTATIVE EXPENDITURES OF ALL LOCAL GOVERNMENTS IN MARYLAND, FISCAL YEAR 1988

County	Community Colleges	Recreation & Parks	Libraries	Natural Resources	Urban Development & Housing	Economic Development	Economic Opportunity	Debt Service: Principal	Debt Service: Interest	Intergovernmental	Miscellaneous
	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)
Percent	3.9%	2.5%	1.3%	0.1%	0.6%	1.0%	0.1%	3.1%	3.9%	0.1%	2.1%
Per Capita	$64.57	$40.82	$20.94	$1.71	$9.59	$15.81	$2.25	$51.10	$63.50	$2.38	$34.17
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Standard Dev.	52	98	27	308	126	95	233	40	49	347	111
Allegany	179	36	41	40	112	91	20	54	76	16	49
Anne Arundel	90	61	93	0	11	10	0	91	95	0	9
Baltimore City	49	54	101	0	84	270	43	129	91	0	1
Baltimore	177	58	140	918	6	10	378	118	70	0	288
Calvert	0	101	65	72	112	43	0	52	44	0	167
Caroline	73	55	117	35	177	50	0	64	47	291	64
Carroll	45	38	99	69	135	127	500	45	42	616	119
Cecil	116	20	90	56	204	14	0	31	29	102	52
Charles	179	108	35	105	296	16	25	71	49	0	108
Dorchester	59	33	56	44	38	20	42	33	53	0	96
Frederick	81	73	38	44	228	20	871	80	52	101	5
Garrett	152	6	51	20	143	42	210	16	38	58	87
Harford	122	48	88	54	159	12	780	55	32	0	53
Howard	105	116	118	224	413	58	154	197	151	0	15
Kent	82	53	66	93	89	10	35	253	23	33	116
Montgomery	151	312	119	84	338	28	12	135	185	259	44
Pr. George's	61	206	98	152	40	19	6	66	134	0	250
Queen Anne's	81	176	50	77	78	212	0	11	26	53	49
St. Mary's	0	39	90	54	41	30	13	47	41	0	10
Somerset	0	25	38	14	157	34	0	11	24	53	66
Talbot	103	22	103	54	219	35	0	72	71	330	118
Washington	97	57	54	61	61	8	0	35	31	202	65
Wicomico	48	77	58	34	62	0	0	119	82	0	137
Worcester	38	32	58	25	174	96	0	87	124	3,796	151

Source: Tables II.2 and III.1.

At the same time, Baltimore City spends significantly less than the amount necessary to provide average services for highways, other public works, health and hospitals, elementary and secondary education, community colleges, recreation and parks, urban development and housing, and economic opportunity. Overall, Baltimore City's actual outlays are 95 percent of the level necessary to enable it to provide an average level of services.

CONTENTS

I. INTRODUCTION

Differences in local tax rates are a hallmark of a decentralized fiscal system such as that of the State of Maryland.[1] Indeed, the absence of such differences would be grounds for suspicion whether a state-local fiscal system were truly decentralized. Differences in tax rates translate into differences in the overall burdens of local taxes on individuals and families with similar incomes and wealth who elect to live in different localities. The variation in tax burdens, too, is evidence that decentralization is reality rather than appearance--that the system is responding to the diversity of voter preferences for public services.

Variation in tax rates and burdens is an attribute of a healthy decentralized fiscal system only if two key conditions

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[1]Government in Maryland is somewhat less decentralized than the average in all states of the nation. Localities spend 55 cents and the State government 45 cents of each dollar of final general expenditures by Maryland's public entities. In the nation as a whole, local governments spend 60 cents of every dollar. Localities collect 41 cents and the State 59 cents of every dollar of general revenues from Maryland sources (ignoring federal grants). The comparable figure for local governments nationwide is 45 cents. If the states are ranked by the share of direct spending accounted for by local governments, Maryland is 28th of the 50. Florida is the most decentralized state by this criterion. Its local governments are responsible for 69 percent of direct expenditures in the state. Hawaii is the most centralized state. Its four county governments account for only 23 percent of all direct state-local spending. [All data are from U.S. Bureau of the Census, Government Finances in 1987-1988, Series GF-88-5 (January 1990), Table 29.]

are satisfied, however. Both conditions underline the importance of the relationship between taxes paid and public services enjoyed in evaluating a fiscal system.

The first condition is that the burdens of a local government's taxes be roughly commensurate for all taxpayers with the benefits they receive from the services the government provides. In other words, a fundamental principle of equity for the fiscal system of a local government is that taxes paid be generally in balance with the benefits realized from the public services provided.[2]

The second condition is that the variation in tax burdens among localities be roughly commensurate with the variation in the levels of public services provided. If this commensurability does not prevail, two kinds of inequities are likely: (1) taxpayers with comparable incomes in different jurisdictions are saddled with disparate tax burdens to finance similar levels of public services, and (2) taxpayers similarly burdened by local taxes are enjoying different levels of services.

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[2]This condition, which essentially affirms the benefit principle of taxation as the touchstone of local government finance, is of relatively minor importance in the context of this report, whose focus is issues relating directly to the policies of the State government in Maryland. It is important to acknowledge the principle here, nonetheless, because serious efforts by local governments to redistribute income through their tax systems and spending programs prompt responses by taxpayers and program beneficiaries that tend to aggravate what are below referred to as fiscal disparities. To prevent local policymakers from worsening disparities, state governments may find it desirable to limit the authority of local officials to pursue policies whose inevitable consequences--despite their often admirable intentions--are to accentuate disparities in the state's fiscal system.

These inequities are the product of what are referred to as fiscal disparities, which are significant differences in the fiscal capacities of local governments. As discussed in detail below, fiscal capacity is the potential ability of a government to raise revenue from its own sources relative to the costs of its service responsibilities, with appropriate allowance for revenue the jurisdiction receives from other governments.

Fiscal disparities are the Achilles' heel of a decentralized fiscal system. The larger are such disparities, the stronger are pressures likely to be to compromise decentralization.[3] In particular, the inequities resulting from the disparities will be appealed to as reasons for shifting responsibility for public services to the state government in the

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[3]The advantages of decentralization--including responsiveness to the diversity of public preferences and promotion of accountability--should need no elaboration. See, for example, the recent affirmation of support for decentralization by the members of the Task Force on State-Local Relations, National Conference of State Legislatures, who put forward the "general principle" of

> . . . keeping responsibility at the lowest level of government unless there is an important reason to do otherwise.

[Recommendations of the Task Force on State-Local Relations (adopted by the NCSL Executive Committee on December 4, 1987), p. 9.]

interest either of service "adequacy" or tax equity.[4] Doing so, assuming that services delivered directly by the state government are provided uniformly throughout the state, guarantees the commensurability of taxes paid and service benefits received because state taxes are necessarily uniform everywhere in a state.

It follows that a fundamental concern in the design of the fiscal system of a state committed to substantial decentralization of the financing and delivery of public services must be the limitation of fiscal disparities among local governments to reasonable levels. A state-local fiscal system that does a reasonable job of satisfying this principle can be described as being in horizontal balance.[5]

The importance of horizontal balance is exemplified by the incorporation of standards closely resembling it in the

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[4]The shift may be complete, in the sense that the state government both finances and delivers a service--as elementary and secondary education is financed and delivered directly by the state government in Hawaii. Alternatively, the shift may be partial--the service may continue to be delivered by local authorities while the responsibility for financing it is increasingly assumed by the state (a major trend in recent decades). Some argue that there is very little difference between the two, and that the former may actually be preferable to the latter. The reasoning behind this view rests on the logic that "he who pays the piper calls the tune," and that the vitality and accountability of government are compromised by arrangements that separate operating from financing responsibility.

[5]The concept of horizontal balance as it applies to a state's fiscal system is explored at some length in Robert W. Rafuse, Jr., et al., Intergovernmental Fiscal Relations in Hawaii: Final Report, prepared for the Tax Review Commission, State of Hawaii (Advisory Commission on Intergovernmental Relations, December 1989), pp. 180-230.

basic law of two of the great federal nations of the world. The constitution of Canada obligates the federal government to ensure that

> . . . provincial governments have sufficient revenues to provide reasonably comparable levels of public services at reasonably comparable levels of taxation.[6]

The national government of Australia is required to ensure that every state in the Commonwealth is able

> . . . to provide, without imposing taxes and charges at levels appreciably different from the levels of taxes and charges imposed by the other States, government services at standards not appreciably different from the standards of the government services provided by the other States.[7]

It goes without saying that recognition of the importance of fiscal disparities and commitments to their mitigation do not mean much unless credible measures of the disparities are available for consideration by state policymakers in addressing the two key questions:

(1) Do fiscal disparities among our local governments exceed "reasonable" levels?[8]

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[6]Subsection 2, Section 36 of Part III of the Constitution Act, 1982, quoted by Thomas J. Courchene, Equalization Payments: Past, Present and Future, Federal-Provincial Relations Series, Special Research Report (Ontario Economic Council, 1984), p. 3.

[7]Commonwealth Grants Commission, Report on State Tax Sharing Entitlements, 1981: Main Report (Canberra: Australian Government Publishing Services, 1981), p. 18.

[8]The definitions of such terms as "reasonably comparable" and "appreciably different" clearly involve value judgments that can only ultimately be made by a state's legislature and governor.

(2) If the answer to the first question is "yes," how can we design a policy to bring our fiscal system into a condition of reasonable horizontal balance?

This report is intended to contribute to the capacity for measurement of fiscal disparities in Maryland so that the State's policymakers have the information they need to deal with these issues.

The Measurement of Fiscal Capacity

As noted earlier, fiscal capacity is the potential ability of a government to raise revenue from its own sources relative to the costs of its service responsibilities, allowing for the revenue the jurisdiction receives from other governments. Fiscal disparities exist when the fiscal capacities of local governments differ significantly. Because fiscal capacity relates to the relative potential rather than the actual behavior of local governments, an essential characteristic of measures of revenue-raising ability and service costs is that they abstract from the actual taxes and services enacted by any particular government.

Revenue-Raising Ability

The revenue-raising potential of a local government depends on the health of its underlying economy: on the income of its residents, the value of the real property located within its boundaries, and other potentially taxable economic stocks and flows.

Until recently, discussions of fiscal capacity focused primarily on the revenue-raising side of the equation. The involvement of the Advisory Commission on Intergovernmental Relations in research on the measurement of revenue-raising ability dates to 1962, and has been updated and refined since.[9] The Representative Tax System (RTS) and, later, the more comprehensive Representative Revenue System were developed to improve on personal income as a measure of the revenue-raising abilities of state and local governments.

The RTS is designed to generate estimates of the relative amount of revenue each government would collect if it used a "representative" tax system--that is, a uniform set of taxes and tax rates typical of those actually in use by:

-- all state and local governments in the nation, when comparisons among the states are desired; and by

-- all local governments in a single state, when the issue is the relative revenue-raising abilities of those governments.[10]

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[9]The Commission's first report on the measurement of differences in revenue-raising ability among the states, prepared by Alice M. Rivlin and Selma J. Mushkin, is Measures of State and Local Fiscal Capacity and Tax Effort, Report No. M-16 (1962). The most recent ACIR analysis is 1986 State Fiscal Capacity and Effort, Report No. M-165 (January 1989). New estimates comparing the revenue-raising abilities of the states in 1988 will be published later this year.

[10]Comparisons of the finances or fiscal capacities of individual local governments in different states are rarely meaningful because of the important differences among the states in the institutional frameworks within which local governments operate.

The resulting estimates of tax capacity indicate a government's potential to raise revenue, without regard to whether and at what rate the government actually uses any particular tax. Given these estimates, a jurisdiction's tax effort can be computed by comparing its actual collections with the potential revenue yield of the RTS.[11] Differences in the revenue-raising abilities of local governments in Maryland are explored in a paper prepared for the Commission on State Taxes and Tax Structure by Philip M. Dearborn.[12]

Public-Service Costs

The relative costs of the service responsibilities of a local government, commonly referred to as "needs," are best measured by reference to the cost of a standard level of public services. These costs depend on two general classes of factors:

-- The prices of the inputs used to produce the services, such as the wages and salaries of public employees, gasoline, and computer diskettes.
-- Factors that determine the scope of the services that must be provided, such as the number of school-age

[11]Estimates of the tax capacity and effort of Maryland's local governments have been prepared since 1983 by the Department of Fiscal Services using methods adapted from those developed by ACIR. The most recent of the Department's reports on these estimates is Analysis of the Tax Capacity and Effort of Local Governments in Maryland (January 1990).

[12]"Revenue Disparities, The Piggyback Tax, and Tax Effort" (April 1990).

children to be educated and the mileage of roads that must be maintained.

This report presents estimates of relative needs for the public services provided by the City of Baltimore and local governments in each of Maryland's 23 counties.[13] The estimates are developed by calculating the cost of a "representative" level of public services, defined as the average provided by all local governments in the State.

The Representative Expenditure Approach

To date, the RTS capacity estimates have been expressed (as have those produced by other methods of estimating revenue-raising ability) on a per capita basis, and referred to as a measure of fiscal capacity. In so doing, resident population has served as an implicit indicator of the relative costs of public-service responsibilities. Just as the RTS was developed to improve on personal income as a measure of revenue-raising ability, the representative-expenditure approach is intended to improve upon population as an indicator of relative public-

[13]In the remainder of this report, general references to "counties" or to governments in the counties of Maryland should be understood to include the City of Baltimore.

service needs in measuring the fiscal capacities of state and local governments.[14]

The representative-expenditure approach is similar to that of the RTS. In the present study, representative expenditures are estimates of what it would cost the local governments (collectively) in each county in Maryland to provide a standard set and level of public services, regardless of whether and at what level those services may actually be delivered by local governments in a particular county.

The standard, or representative, service level is the actual, statewide average in Maryland for each public service for which local governments are responsible under State law or local authorities elect, on average as a group, to provide under local law. The choice of statewide-average actual policy as the reference is the distinguishing characteristic of the representative approach. It offers the prospect of meaningful comparisons of the representative estimates with actual spending levels. It also avoids the disputes that would invariably

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[14]The representative-expenditure method was first presented by Robert W. Rafuse, Jr. in "A Representative-Expenditure Approach to the Measurement of the Cost of the Service Responsibilities of States," in Rafuse (editor), Federal-State-Local Fiscal Relations: Technical Papers, Vol. I (Office of State and Local Finance, U.S. Department of the Treasury, 1986), pp. 133-86. Important precursors of the approach were analyses of state-local spending by Robert D. Reischauer in 1974 and Harold A. Hovey in 1985. The approach has since been refined in Rafuse, Representative Expenditures: Addressing the Neglected Dimension of Fiscal Capacity (Advisory Commission on Intergovernmental Relations), forthcoming in 1990. It has been applied in the measurement of local fiscal capacity in Rafuse, et al., Fiscal Relations in Hawaii, op.cit.

arise if an effort were made to base the analysis on a set of normative standards, that is, levels of services that local governments ought to provide in order to meet some absolute conception of "need."

The estimates of representative expenditures are independent of the actual policies of any individual government or of the collective policies of all the governments in any one county. The estimates, instead, relate the underlying economic and demographic factors that determine expenditure needs to the average--or representative--policies of all local governments in the State.

The calculation of representative expenditures for the local governments in each county (the cost in each county of providing the representative level of public services) proceeds by identifying a "workload" measure for each major expenditure function. The measure is intended to indicate the approximate scope of the service that must be provided--the relative "need" for the service--in each county.

For example, the number of county residents living in households with incomes below the poverty line is the workload measure for the expenditure function economic opportunity. The size of this population in each county is directly related to the need for the services included in this function. The percentage distribution of the workload measure among the counties is applied to the statewide total of actual local expenditures for the function to obtain estimates of the outlays that would

be necessary to provide the representative level of service in each county.

The perception that resident population is a poor indicator of relative needs for many public services is not unique to the representative-expenditure approach. References to the larger welfare population or higher crime rate of one area compared with another are the stock in trade of editorial writers. The distinguishing feature of the representative-expenditure approach is that it offers an intellectual framework for organizing masses of information about the multiplicity of factors that influence the relative costs of providing various public services in different areas.

In particular, the representative-expenditure approach defines a set of weights so that the workload factors can be combined into a single, overall measure of the relative costs of the entire range of services provided by governments, whether the comparison is of state and local governments throughout the nation or of local governments in a single state or region. The weights are relative actual expenditures by governments in the region, state, or nation--depending on the scope of the study.

Finally, a distinguishing aspect of the representative-expenditure method is that it addresses the relative costs of public services on a highly disaggregated basis. This permits comparison of actual spending with the representative estimates function by function, enabling state and local officials to

compare each major element of their budgets with the spending levels necessary to meet a defined standard of "need." This strategy is explicitly designed to promote informed discussion of public needs and actual budget policy.[15]

The workload measure used for each category of expenditures is summarized in Exhibit I.1. A detailed discussion of each function, the reasoning behind the choice of its workload

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[15]An alternative to the representative-expenditure method is an approach that estimates the relative costs of public services by regression analysis. Such analysis can contribute to understanding of the determinants of public costs--in fact, the technique is used in the analysis of the fire function in the present report. As actually executed as an overall strategy for research, however, the regression approach has involved highly aggregated analysis to identify so-called environmental factors (as distinguished from "demand" variables that reflect voter preferences for public services from which the analysis must abstract) that determine relative needs for three or four general categories of public services. The most notable example of the approach is the work of Helen F. Ladd and John Yinger, recently summarized in their America's Ailing Cities: Fiscal Health and the Design of Urban Policy (The Johns Hopkins University Press, 1989).

The analysis by Ladd and Yinger of public-service costs in 86 U.S. cities during the years 1972-82 aggregates the functions performed by these municipal governments into three categories: police, fire, and "general." The last comprehends all other functions, from highways to elementary education. The regressions run by Ladd and Yinger include many of the variables used in the workload measures developed in the present report. The extraordinary level of aggregation, however, makes it virtually impossible to interpret the results. In an important sense, the approach constitutes a proverbial "black box," whose operation obscures rather than illuminates public discussion and debate on government expenditures.

A very useful comparison of the representative-expenditure and regression approaches appears in a recent paper by Jerry C. Fastrup, "Estimating the Cost of Local Public Services" (U.S. General Accounting Office, February 25, 1990), processed.

EXHIBIT I.1

WORKLOAD MEASURES USED TO ESTIMATE REPRESENTATIVE EXPENDITURES FOR LOCAL GOVERNMENTS IN THE STATE OF MARYLAND

1. General Government. Resident population.

2. Police. A combination of three, equally weighted variables: (a) R+V+E population, (b) the number of violent crimes reported, and (c) the expected number of arrests for violent crimes.

3. Fire. R+V+E population adjusted for the portion of the representative level of service provided by volunteers.

4. Corrections. A combination of two, equally weighted variables: (a) the number of violent crimes reported, and (b) the expected number of arrests for violent crimes.

5. Other Public Safety. R+V+E population.

6. Highways. A combination of two variables: (a) total vehicle miles traveled, and (b) lane miles of locally maintained roads and bridges; weighted 0.825 and 0.175, respectively.

7. Sanitation. A combination of two variables: (a) resident population, and (b) the R+V+E population served by local sewage treatment plants; weighted 0.333 and 0.667.

8. Other Public Works. R+V+E population.

9. Health and Hospitals. A combination of two variables: (a) R+V+E population, and (b) the population living in households with incomes below 125 percent of poverty; weighted 0.06 and 0.94.

10. Social Services. A combination of two variables: (a) the population living in poverty, and (b) the population living in households with incomes below 125 percent of the poverty line; weighted 0.667 and 0.333.

11. Elementary and Secondary Education. A combination of three variables: (a) the elementary (5-14) school-age population, (b) the secondary (15-17) school-age population, and (3) the number of children under the age of 18 living in poverty; weighted 0.6, 1.0, and 0.25.

12. Community Colleges. The total number of course hours expected on the basis of statewide enrollment propensities by age group.

EXHIBIT I.1: WORKLOAD MEASURES FOR MARYLAND (Continued)

13. Recreation and Parks. A combination of three, equally weighted variables: (a) R+V population, (b) density-adjusted R+V population, and (c) the population living in poverty.

14. Libraries. Resident population.

15. Natural Resources. Acres of undeveloped land used for agriculture and mining, forests, wetlands, and barren land.

16. Urban Development and Housing. Population living in poverty.

17. Economic Development. A combination of two, equally weighted variables: (a) resident population, and (b) population living in poverty.

18. Economic Opportunity. Population living in poverty.

19. Debt Service: Principal. Resident population.

20. Debt Service: Interest. Resident population.

21. Intergovernment Payments. Resident population.

22. Miscellaneous. Representative expenditures of a county's governments for all other functions.

Note:

R+V population is the total number of residents of a county plus the average daily number of visitors, defined as persons who live more than 30 miles outside the county.

R+V+E population is R+V population plus total employment in the county.

measure, and the sources of the data used in the estimates appears in Appendix A.

The Key Assumptions of the Approach

Three important assumptions underlie the representative-expenditure estimates. The first is that all county and municipal governments in Maryland operate at comparable efficiency. In other words, the real resource cost of producing a unit of a given service is the same in all counties. The implication of this assumption is that inferences about operating efficiency should not be drawn from the relationship between actual spending in a county for a function and the estimate of representative expenditures.

Second, the estimates assume that the unit cost of producing different quantities of a service is constant: that there are no economies or diseconomies of scale in the production of the service. In other words, the assumption is that a small municipality can produce the service at the same average cost per unit as a large county government.

The literature on this issue is extensive but, on the whole, remarkably inconclusive. There is agreement that economies of scale prevail in some aspects of the production of public services--a notable example is police communications. There is little or no agreement on whether a school district with 10,000 pupils can provide a given quality of education services at lower cost per pupil than a district with 2,000,

though most authorities would probably agree that both can produce at lower cost than a district with 100 pupils.[16]

Finally, the estimates assume uniformity of input prices --that the prices of the goods and services local governments buy do not vary significantly within the State. This is, without question, the most troublesome assumption of the analysis.

Differences in the cost of land between urban and rural areas translate into major differences in the costs of many types of capital projects, and are responsible for substantial variation in the rent per square foot of office space. The cost of living is generally believed to be higher in urban than in rural areas, with attendant consequences for the salaries that must be paid to hire public employees of comparable quality.

Surprisingly little empirical work has been undertaken in this area. The only recent effort by a state government to estimate differences in costs among localities is a study by Minnesota's Legislative Auditor.[17] The essential findings of this study are worth noting, because they are probably similar

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[16]No school districts in Maryland are anywhere near this small, of course. In Nebraska, however, 65 percent of the districts are reported to have fewer than 100 pupils [Kerri Ratcliffe, Bruce Riddle, and John Yinger; The Fiscal Condition of School Districts in Nebraska: Is Small Beautiful? (Nebraska Comprehensive Tax Study, Staff Paper No. 15, May 1988), p. ix].

[17]Program Evaluation Division, Office of the Legislative Auditor, State of Minnesota, Statewide Cost of Living Differences (January 1989).

to the results that would be produced by such a study in Maryland:

-- The cost of living in outstate Minnesota is about 11 percent lower than in the Twin Cities metro area.

-- Non-shelter costs do not vary much across the state.

-- Higher commodity and utility costs outstate are offset by lower service costs.[18]

Nearly a decade ago, Maryland's Department of Fiscal Services commissioned development of an index of the relative cost of elementary and secondary education in each county.[19] With the pupil-weighted statewide average set at 100, the values of the estimated index range from 79 in Garrett and Somerset counties to 110 in Montgomery.

Comparing an unweighted average of the index values for Baltimore City and the then-four metropolitan counties (Anne Arundel, Baltimore, Montgomery, and Prince George's) with the average for the other 19 counties reveals education costs roughly 15 percent lower in "outstate" Maryland than in the Baltimore-suburban Washington-Annapolis mega-metropolitan region. Although this result is not greatly at variance with the relationship estimated in Minnesota, the exceptional pace of growth in metropolitan Maryland probably means that the 1981 study's estimate, based on data from the 1970's, understates

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[18] Ibid., pp. x and xi.

[19] Alvin S. Rosenthal, Jay H. Moskowitz, and Stephen M. Barro, Developing a Maryland Cost of Education Index: Final Report (AUI Policy Research, July 1981).

the unit-cost disparity that a similar analysis would produce today.

This said, the reality is that no reliable estimates of differences in unit input costs among the counties in Maryland are available that might be used in this study. Because of the potential importance of variability in these costs, however, a special sensitivity analysis of the representative expenditure estimates is performed in Chapter III using the 1981 index of education costs discussed above. The results of this analysis can only be regarded as illustrative, given the age of the unit-cost index, but the magnitude of the adjustment suggests the desirability of assigning high priority to the development of a current measure of the differences in input costs among the counties in Maryland.

The analysis of representative expenditures is static, providing estimates for a particular time period. This analysis considers the fiscal year that ended on June 30, 1988--the most recent year for which actual fiscal data are available. Thus, throughout this report all references are to fiscal year 1988, unless otherwise noted. The usual caveats apply when interpreting the significance of the results of a static analysis: the results necessarily relate to a single year within longer-term economic and business cycles; they may be distorted by one-time developments in that year; and they do not reflect policy changes since 1988.

Challenges in Calculating Maryland Representative Expenditures

Maryland is the first state with a relatively complex system of local government in which the representative expenditure approach has been used to develop estimates of the relative costs of the public services for which local governments are responsible. The approach was applied in 1989 to develop estimates of the fiscal capacities of the four county governments--the only local authorities--in Hawaii.

Each analysis presents unique challenges, as governmental structures and programs vary from state to state, as well as among local areas. Furthermore, the availability and quality of data relevant to the analysis varies among the states. The analysis of local representative expenditures must accommodate these constraints.

The data on local government expenditures used in this analysis are those published by the Maryland Department of Fiscal Services.[20] The data are compiled from a report required to be submitted to the Department each year by every local government. However, much of the detail available in a locality's annual financial report is not included in the "uniform financial report" that must be transmitted to the Department. Moreover, all of the detail required in that report is not

[20]Division of Fiscal Research, Department of Fiscal Services, Maryland General Assembly, State of Maryland, Local Government Finances in Maryland for the Fiscal Year Ended June 30, 1988 (March 31, 1989).

compiled and published in the report on local government finances.

Thus, for example, the proportion of expenditures made up by major subportions of a category (for example, the various programs that make up the category of health expenditures) is not available without consulting the individual financial reports or officials of the 23 county governments, the City of Baltimore, and the roughly 175 other cities, special districts, towns, villages, and special taxing areas in the State.

The workload measures used in the analysis are also constrained by the availability and quality of economic, demographic, and program data. The default workload measure is resident population. That is, whenever theoretical considerations or data do not suggest or permit a variable or combination of variables that better represent relative need for a particular public service, population is used as the workload measure.

In other cases, second-best available data must be substituted for data that ideally would be used. For example, the school-age population variable in the workload measure for elementary and secondary education would ideally be divided into two groups corresponding to the usual ages of children attending elementary and secondary schools, respectively: kids aged 5-13 and those aged 14-17. The segmentation is desirable so that different weights can be assigned to each age group reflecting the typical differential in the average cost per pupil of elementary and secondary education.

Unfortunately, current population data at the county level in Maryland are available only for the age groups 5-14 and 15-17. Thus, while the workload measure for elementary and secondary education does not satisfy the theoretical considerations as precisely as would be desirable, it is nevertheless close enough to be a significant improvement over total resident population.

The estimates of actual expenditures by all local governments in each county used in this report do not include capital outlays. Capital spending is excluded because of its huge variability from year to year for individual functions and individual governments.

Inclusion of capital outlays in the analysis would have little consequence for the estimates of representative expenditures. For all local governments in the State as a group, the ratio of capital to operating expenditures for a given function probably does not fluctuate that much from year to year. For purposes of examining relationships between actual levels of spending and the representative estimates from county to county, however, the results would be seriously distorted if capital outlays were not disregarded.

The rationale for focusing on operating expenditures, and the methods used to exclude capital, are discussed in detail in Appendix A.

Overview of the Remainder of This Report

Chapter II reviews the patterns of actual spending by local governments in each of the counties of the State. Chapter III presents the estimates of representative expenditures and examines the relationships between actual outlays and the estimates of needs.

Appendix A discusses in detail each expenditure function and the workload measures used in estimating representative expenditures, and identifies the specific sources of the data used in the analysis. Appendix B provides a set of tables showing the data underlying the estimates and the details of key instrumental calculations.

II. AN OVERVIEW OF PUBLIC SPENDING IN MARYLAND

The estimates of representative expenditures presented in this report are best appreciated in the context of a general understanding of the basic dimensions of current spending by the entire state and local government sector in Maryland. This chapter provides the necessary background information on the overall government outlays in the State by major function as they compare with averages for all state and local governments in the nation.

Some of the principal characteristics of the division of responsibility between the State government and local authorities for delivery of the most important categories of public services are also explored. Finally, this chapter looks at relative levels of actual spending in 22 functional areas by all local governments in each county. The county-by-county information is the basis for comparisons in Chapter III of actual outlays with the estimates of representative expenditures. The particular focus--as throughout this report--is on the total spending of all local governments in each county.

State and Local Spending in Maryland and the Nation

It is instructive to begin by comparing overall public expenditures in Maryland with those of states and local governments throughout the nation. Table II.1 looks at the major categories of spending separately for the State government and

TABLE II.1

DIRECT GENERAL EXPENDITURES BY STATE AND LOCAL GOVERNMENTS IN MARYLAND RELATIVE TO U.S. AVERAGES, PER CAPITA AND RELATIVE TO PERSONAL INCOME, FISCAL YEAR 1987

Function	Total	State	Local
	(1)	(2)	(3)
	Per Capita		
1. Total	103.4%	116.7%	94.5%
Education			
2. Primary & Secondary	99.5	357.7	97.3
3. Higher	105.2	95.9	152.7
4. Public Welfare	95.4	122.0	6.3
5. Health & Hospitals	48.7	74.5	25.4
6. Highways	132.0	143.0	115.1
7. Police & Corrections	119.0	149.6	101.9
8. Environment & Housing	123.1	129.5	121.4
9. Interest on General Debt	105.2	101.2	108.4
10. Governmental Administration	107.1	127.6	94.0
11. All Other	115.1	122.8	109.1
12. Exhibit: Intergovernmental Flows	-	78.3	50.3
	As Percentage of Resident Personal Income		
13. Total	87.5%	98.8%	79.9%
Education			
14. Primary & Secondary	84.1	297.1	82.3
15. Higher	88.9	81.1	129.1
16. Public Welfare	80.7	103.3	5.3
17. Health & Hospitals	41.2	63.0	21.5
18. Highways	111.7	121.0	97.4
19. Police & Corrections	100.7	126.5	86.3
20. Environment & Housing	104.2	109.7	102.8
21. Interest on General Debt	89.0	85.6	91.6
22. Governmental Administration	90.7	108.1	79.4
23. All Other	97.4	104.0	92.3
24. Exhibit: Intergovernmental Flows	-	66.3	42.5

Sources: U.S. Bureau of the Census, Government Finances in 1987-1988, Series GF-88-5 (January 1990), Table 29; U.S. Bureau of the Census, Current Population Reports, Series P-25, No. 1044, State Population and Household Estimates, with Age, Sex, and Components of Change: 1981-88 (August 1989), pp. 20 and 43; Survey of Current Business (August 1989), p. 34.

for local governments as a group. Expenditures are considered on a per capita basis and as a proportion of personal income.[1]

In each case, the ratios are expressed as percentages of the corresponding averages for all state and local governments in the country. For example, expenditures for elementary and secondary education in Maryland (in FY 1988) total $687 per resident of the State. Outlays for this function by all state and local governments in the nation average $690 per capita. Hence Maryland's spending is 99.5 percent of the national average (see line 2, column 1, of Table II.1).

Outlays are assigned to the entity--State or local government--that makes the final expenditure to employees, contractors, or program beneficiaries. In other words, payments by state governments to localities are not counted as expenditures of the states. Such intergovernmental transfers are treated as revenues of local governments, and are counted as expenditures only when they are spent by those jurisdictions.[2]

In order to compare consistently defined functions, data compiled by the Governments Division of the U.S. Bureau of the Census are used in Table II.1. The Census definitions of functions differ in certain respects from those in the accounts

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[1]The "per capita" calculations refer to the resident population of Maryland and of the U.S. as a whole. The personal-income calculations refer to the total personal income received by Maryland residents from all sources (and to that of residents of the U.S.), and not to income earned in the State.

[2]The "exhibit" lines (12 and 24) in the two panels of Table II.1 show relative state payments to local governments and local payments to state governments in columns 2 and 3, respectively.

compiled by the Maryland Department of Fiscal Services, which are used in the rest of this report. The differences do not compromise the basic perspective on the public sector of Maryland provided by the table.

On a per capita basis, total public outlays in Maryland are 3 percent higher than the national average (see column 1, line 1). Direct spending by the State government is 17 percent higher in Maryland, however, while the total outlays of all local governments per resident are less than 95 percent of the national average.

Table II.1 highlights the special attributes of the division of service responsibilities between the State and local governments in Maryland. For example, local governments spend 53 percent more per resident for higher education than the national average, reflecting the unusual role of the counties in administering the State's community college system. At the same time, per capita local outlays for primary and secondary education are only 97 percent of the national average.

The financing and administration of public welfare has been increasingly handled by state governments in recent decades, but the State government plays a much more important role in Maryland in delivering this service than in the nation as a whole (State spending is 122 percent of the national per capita average, local only 6 percent). The State spends much more (128 percent) per capita than do state governments nationwide

for general administration, while Maryland's localities spend significantly less (only 94 percent of the U.S. average).[3]

The relatively high share of spending in Maryland that is done directly by the State government is consistent with the much-lower-than-average outlays of the State for assistance to local governments (well under 80 percent of the U.S. per capita average)--line 12, column 2.

When public expenditures are viewed in relation to personal income, as in the bottom panel of Table II.1, Maryland is revealed to be a relatively low-spending state. Overall, outlays by all governments in the State are less than 88 percent of the national average as a proportion of the personal income of Maryland's residents. Spending by the State government is just below the national average, but expenditures by local governments are less than 80 percent of their level in the nation as a whole.

The general relationship between the ratios in the top and bottom panels of Table II.1 is worth noting. Every ratio in the bottom panel is slightly less than 85 percent of its counterpart in the top panel. The reason is that the personal income of the typical Maryland resident is 18 percent above the U.S. average. Hence, per capita spending in Maryland that equals the national average is only 85 percent of the average ratio to personal income.

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[3]In the Census accounts, this function includes expenditures for financial administration, judicial and legal, general public buildings, and other governmental administration.

Actual Operating Expenditures of Local Governments in Maryland

Table II.2 summarizes the actual operating expenditures of all local governments in Maryland in fiscal year 1988 by function and by county. The data are those compiled by the Maryland Department of Fiscal Services. The data are expressed on a per capita basis and the per capita ratios are indexed to the statewide average level of spending for each function. Display of the information in this form focuses attention on the variability of spending among the counties, function by function, abstracting from the way the level of outlays for one function compares with that for another.

Notwithstanding this focus of Table II.2, it is important to maintain perspective on the relative importance of the functions. This perspective is provided by the first two lines of the table, which show the percentage distribution of total outlays among the categories and the statewide average level of per capita expenditures for each function. Tables displaying the data underlying Table II.2 appear in Appendix B.

The range in total expenditures is large--from 70 percent of the per capita State average in St. Mary's County to 149 percent in Worcester County. The ranges are, as would be expected, larger for individual functions than for total spending. On the high side, for example, Baltimore City spends more than twice the State average for police and corrections, more than three times the average for social services, and nearly five times the average for economic development. The City's

TABLE II.2

INDEX OF PER CAPITA ACTUAL OPERATING OUTLAYS OF ALL LOCAL GOVERNMENTS IN MARYLAND, FISCAL YEAR 1988

County	Total	General Government	Public Safety				Public Works			Health and Hospitals	Social Services	Elem. & Second. Education
			Police	Fire	Corrections	Other	Highways	Sanitation	Other			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Scale:												
Percent	100.0%	6.4%	5.7%	3.5%	1.2%	1.2%	2.9%	6.4%	4.8%	4.0%	7.8%	37.4%
Per Capita	$1,638.44	$106.19	$93.45	$57.12	$18.97	$19.35	$47.33	$104.13	$79.22	$65.11	$128.40	$612.34
Total	100	100	100	100	100	100	100	100	100	100	100	100
Standard Dev.	20	39	51	51	52	49	58	40	84	47	94	12
Allegany	94	59	42	56	44	97	158	122	130	124	135	93
Anne Arundel	87	129	94	145	72	67	131	66	69	63	46	99
Baltimore City	134	164	203	179	201	199	94	145	88	179	309	89
Baltimore	82	50	88	101	46	90	53	71	0	146	43	85
Calvert	84	77	55	18	183	81	170	32	17	107	66	119
Caroline	84	88	40	42	132	15	166	42	48	109	89	104
Carroll	72	86	28	26	48	60	126	30	19	79	56	99
Cecil	74	69	33	13	121	146	132	42	46	69	67	99
Charles	86	53	70	37	102	39	45	53	53	93	70	110
Dorchester	85	61	66	25	37	43	343	47	39	102	107	99
Frederick	79	61	44	41	69	43	124	79	105	70	39	106
Garrett	96	58	18	23	39	29	502	48	29	120	98	119
Harford	78	68	56	23	77	52	151	55	38	55	91	99
Howard	102	110	81	83	85	121	75	93	121	55	42	120
Kent	93	99	45	42	122	37	173	43	82	191	71	100
Montgomery	116	100	104	123	84	109	105	123	187	60	59	119
Pr. George's	100	117	90	74	104	71	50	142	139	59	57	101
Queen Anne's	87	66	24	32	106	68	228	100	31	127	68	113
St. Mary's	70	45	36	14	68	83	76	37	34	79	83	109
Somerset	84	105	27	24	82	66	181	83	53	156	119	103
Talbot	106	65	65	41	98	78	179	63	579	102	63	89
Washington	78	49	47	42	76	47	87	55	205	89	70	91
Wicomico	85	51	45	74	78	45	189	57	101	91	83	98
Worcester	149	135	186	142	233	126	287	209	540	124	67	109

Source: Table E.10.

TABLE II.2 (Continued)

INDEX OF PER CAPITA ACTUAL OPERATING OUTLAYS OF ALL LOCAL GOVERNMENTS IN MARYLAND, FISCAL YEAR 1988

County	Community Colleges	Recreation & Parks	Libraries	Natural Resources	Urban Development & Housing	Economic Development	Economic Opportunity	Debt Service		Intergovernmental	Miscellaneous
								Principal	Interest		
	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)
Percent	3.9%	2.5%	1.3%	0.1%	0.6%	1.0%	0.1%	3.1%	3.9%	0.1%	2.1%
Per Capita	$64.57	$40.82	$20.94	$1.71	$9.59	$15.81	$2.25	$51.10	$63.50	$2.38	$34.17
Total	100	100	100	100	100	100	100	100	100	100	100
Standard Dev.	48	67	27	121	83	176	147	40	49	347	103
Allegany	162	30	41	111	159	110	28	54	76	16	49
Anne Arundel	94	43	93	0	7	8	0	91	95	0	9
Baltimore City	48	139	101	0	222	494	115	129	91	0	1
Baltimore	169	39	140	297	3	8	212	118	70	0	257
Calvert	0	66	65	163	96	40	0	52	44	0	154
Caroline	66	45	117	230	246	60	0	64	47	291	66
Carroll	44	20	99	128	64	93	235	45	42	616	98
Cecil	114	13	90	138	181	14	0	31	29	102	48
Charles	191	68	35	250	230	15	19	71	49	0	106
Dorchester	51	29	56	433	61	26	68	93	53	0	100
Frederick	82	43	38	107	140	16	533	80	52	101	5
Garrett	141	5	51	250	248	57	364	16	38	58	98
Harford	125	30	88	64	115	10	563	55	32	0	47
Howard	107	61	118	143	125	38	47	197	151	0	13
Kent	76	43	66	800	126	12	49	253	23	33	110
Montgomery	142	207	119	21	137	19	5	135	185	259	39
Pr. George's	68	158	98	41	28	16	4	66	134	0	239
Queen Anne's	73	111	50	464	68	199	0	11	26	53	42
St. Mary's	0	27	90	138	42	31	14	47	41	0	11
Somerset	0	23	38	129	267	45	0	11	24	53	69
Talbot	86	16	103	270	231	36	0	72	71	330	108
Washington	97	43	54	118	69	8	0	35	31	202	62
Wicomico	46	60	58	89	77	0	0	119	82	0	139
Worcester	34	34	58	167	218	108	0	87	124	3,795	159

Source: Table E.10.

expenditures for corrections, however, are not as high as those of Worcester County (at 233 percent of the State average).

Montgomery County spends more than twice the State average for parks and recreation, but no county compares with Kent County's outlays for natural resources, at eight times the State average. Garrett County's expenditures for highways, at more than five times the per capita average, are understandable given the County's sparse population and high road mileage.

On the low side, no outlays by local governments are recorded for a few functions in a handful of counties. No expenditures for community colleges are recorded for the three counties--Calvert, St. Mary's, and Somerset--that do not have such institutions, for example.[4] No outlays for the economic-opportunity function are recorded in 10 counties. Expenditures by local governments in Garrett County for parks and recreation are 5 percent of the statewide average. Spending for general government is short of half the average in St. Mary's and Washington counties.

The least variability in per capita spending among the counties is apparent in elementary and secondary education. The range in outlays is from 85 percent of the State average in Baltimore County to 119 percent in Calvert County.

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[4]As explained in Appendix A, two of the three counties actually do have spending for community colleges in connection with their residents' attendance at such institutions in other counties. The information needed to break these outlays out of the published totals for "education" has been received, but too late to incorporate it in this draft.

The relatively low variability in education spending is readily apparent in the population-weighted standard deviation for that function (12), which appears in the fourth line of Table II.2.[5] Setting aside intergovernmental payments--a category whose composition is virtually impossible to interpret (see the discussion of this function in Appendix A)--the largest standard deviation appears for economic development (176). This result is substantially attributable to the very high level of spending for the function by Baltimore City, whose population exceeds that of any county. After education, the least variability in spending is for libraries, with a standard deviation of 27, more than twice that for education.

The standard deviation for total outlays is a bit more than 20, reflecting the relatively modest variability in the functions with the highest spending levels (elementary and secondary education in particular) and the offsetting nature of the patterns of expenditures for many functions among the counties.

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[5]The standard deviation of a set of data is the square root of the mean of the squared differences between the individual observations and their mean. It indicates the average variability of the data about the mean. The larger is the standard deviation, the larger is the dispersion in the data. If the distribution of the observations resembles a normal curve, roughly two-thirds of the observations (16 counties) lie within one standard deviation above and below the mean. Weighting the county values by population in calculating the standard deviation dampens the influence of the extreme values of some of the smaller counties and gives more prominence to the values of the counties where the bulk of the population of Maryland resides.

III. ESTIMATES OF REPRESENTATIVE EXPENDITURES

The basic results of the study are presented in this chapter. As discussed in Chapter I, representative expenditures are the outlays the local governments in a county would have to make in order to provide the statewide average (representative) level of public services. The level of representative outlays in a county compared with those of other counties for a function can be interpreted as a measure of the county's relative public-service needs for that function. Estimates are presented of representative expenditures for each county for all of the 22 functions for which data are published by the Maryland Department of Fiscal Services.

The methods used to arrive at the estimates are outlined in the first chapter of this report and discussed in detail in Appendix A.

The estimates of representative expenditures are presented in Table III.1. As in the analysis of actual outlays in Chapter II, the estimates are presented as indices of per capita values, with the statewide average equal to 100. For perspective, the percentage distribution of total outlays is shown in the first row and per capita average expenditures in the second. The standard deviation of the county estimates for each function appears in the fourth row of the table.

The standard deviation in the estimates of total representative expenditures is slightly smaller than that in actual

TABLE III.1

INDEX OF PER CAPITA REPRESENTATIVE EXPENDITURES OF ALL LOCAL GOVERNMENTS IN MARYLAND, FISCAL YEAR 1988

County	Total	General Government	Public Safety				Public Works			Health and Hospitals	Social Services	Elem. & Second. Education
			Police	Fire	Corrections	Other	Highways	Sanitation	Other			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Scale:												
Percent	100.0%	6.4%	5.7%	3.5%	1.2%	1.2%	2.9%	6.4%	4.8%	4.0%	7.8%	37.4%
Per Capita	$1,638.44	$106.19	$93.45	$57.12	$18.97	$19.35	$47.33	$104.13	$79.22	$65.11	$128.40	$612.34
Total	100	100	100	100	100	100	100	100	100	100	100	100
Standard Dev.	19	0	25	47	35	9	49	26	9	67	76	10
Allegany	100	100	69	71	58	93	97	108	93	150	146	93
Anne Arundel	90	100	82	111	75	97	70	77	97	65	62	99
Baltimore City	142	100	149	185	168	110	201	133	110	240	259	113
Baltimore	89	100	104	119	107	100	98	114	100	61	57	85
Calvert	92	100	75	37	72	82	43	37	82	88	86	115
Caroline	102	100	78	58	73	88	115	59	88	147	143	107
Carroll	83	100	73	34	65	89	68	54	89	57	50	98
Cecil	93	100	79	45	75	87	46	60	87	96	91	107
Charles	98	100	87	28	86	88	51	53	88	82	79	126
Dorchester	105	100	89	39	85	96	153	84	96	168	165	97
Frederick	90	100	87	48	82	96	75	63	96	67	63	105
Garrett	112	100	75	39	64	97	164	55	97	180	177	117
Harford	89	100	82	35	78	88	65	59	88	76	73	105
Howard	86	100	82	89	73	100	63	86	100	37	31	99
Kent	95	100	71	50	59	95	77	97	95	149	145	85
Montgomery	88	100	79	101	66	106	80	113	106	45	41	95
Pr. George's	95	100	109	73	116	95	67	111	95	74	71	101
Queen Anne's	86	100	74	44	69	85	80	42	85	93	89	92
St. Mary's	101	100	90	30	90	90	50	51	90	113	107	123
Somerset	104	100	84	47	82	88	99	63	88	185	177	99
Talbot	92	100	85	47	74	106	112	79	106	119	110	86
Washington	95	100	75	58	63	99	117	82	99	114	113	94
Wicomico	101	100	101	112	101	103	127	74	103	128	125	97
Worcester	105	100	109	75	81	165	106	133	165	136	128	87

Source: Table E.13.

TABLE III.1 (Continued)

INDEX OF PER CAPITA REPRESENTATIVE EXPENDITURES OF ALL LOCAL GOVERNMENTS IN MARYLAND, FISCAL YEAR 1988

County	Community Colleges	Recreation & Parks	Libraries	Natural Resources	Urban Development & Housing	Economic Development	Economic Opportunity	Debt Service: Principal	Debt Service: Interest	Intergovernmental	Miscellaneous
	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)
Percent	3.9%	2.5%	1.3%	0.1%	0.6%	1.0%	0.1%	3.1%	3.9%	0.1%	2.1%
Per Capita	$64.57	$40.82	$20.94	$1.71	$9.59	$15.81	$2.25	$51.10	$63.50	$2.38	$34.17
Total	100	100	100	100	100	100	100	100	100	100	100
Standard Dev.	6	70	0	185	78	39	78	0	0	0	19
Allegany	91	83	100	277	143	121	143	100	100	100	100
Anne Arundel	105	70	100	38	61	80	61	100	100	100	90
Baltimore City	99	257	100	0	265	183	265	100	100	100	142
Baltimore	95	67	100	32	56	78	56	100	100	100	89
Calvert	98	65	100	228	86	93	86	100	100	100	92
Caroline	91	80	100	660	139	120	139	100	100	100	102
Carroll	97	52	100	185	47	74	47	100	100	100	83
Cecil	98	66	100	246	89	94	89	100	100	100	93
Charles	107	63	100	239	78	89	78	100	100	100	98
Dorchester	87	88	100	977	161	130	161	100	100	100	105
Frederick	102	59	100	242	61	81	61	100	100	100	90
Garrett	93	94	100	1,264	173	137	173	100	100	100	112
Harford	102	62	100	118	72	86	72	100	100	100	89
Howard	102	52	100	64	30	65	30	100	100	100	86
Kent	92	81	100	857	142	121	142	100	100	100	95
Montgomery	94	66	100	25	41	70	41	100	100	100	88
Pr. George's	111	76	100	27	71	85	71	100	100	100	95
Queen Anne's	91	63	100	604	87	94	87	100	100	100	86
St. Mary's	111	70	100	253	103	102	103	100	100	100	101
Somerset	93	91	100	890	170	135	170	100	100	100	104
Talbot	83	71	100	497	105	103	105	100	100	100	92
Washington	100	75	100	193	113	106	113	100	100	100	95
Wicomico	97	77	100	263	123	112	123	100	100	100	101
Worcester	90	107	100	655	125	112	125	100	100	100	105

Source: Table E.13.

outlays (19 and 20, respectively). The range in the index for total expenditures is slightly smaller than that in actual outlays.

The cost of providing the standard level of services is far and away the highest for Baltimore City, at 142 percent of the per capita statewide average. The standard level of services is least costly in Carroll County, where the per capita cost is 83 percent of the State average.

In addition to Carroll, the per capita cost of the representative level of services is 90 percent or less of the State average in seven counties: Anne Arundel, Baltimore, Frederick, Harford, Howard, Montgomery, and Queen Anne's. In addition to Baltimore City, the cost of the representative level of services exceeds 110 percent of the statewide per capita average only in Garrett County.

With the exception of natural resources, a minor and highly unusual function, the ranges in the estimates of representative expenditures for individual functions are virtually all smaller than the ranges in actual outlays.

The four functions for which total resident population is the workload measure--general government, debt service (principal and interest), and intergovernmental--show no variability. The per capita amounts are, by definition, identical for all the counties. The following observations disregard these four functions.

Baltimore City's per capita needs for public expenditures are the highest in the State for every function except other

public safety, other public works, elementary and secondary education, community colleges, and natural resources.

Montgomery County's per capita needs are below the statewide average for every function but fire, other public safety, sanitation, and other public works.

Actual Spending Compared with Needs

Perhaps the most interesting way to consider the estimates of representative expenditures is in conjunction with actual outlays in each county. Table III.2 provides the necessary ratios of actual to representative expenditures. A value in excess of 100 indicates that the actual outlays of the local governments in a county in FY 1988 exceed those necessary to provide the statewide average level of a service or all services combined. Conversely, a value of less than 100 shows that the actual expenditures of the governments in a county are below the level necessary to provide the average level of the service delivered by all local jurisdictions in Maryland.

Table III.2 shows that the total operating outlays of local governments range from 69 percent of representative expenditures in St. Mary's County to 142 percent in Worcester County. The actual outlays of local governments in St. Mary's County are lower than the amounts that would buy average services for every function but highways--for that function, actual spending is 51 percent higher than the County's representative expenditures.

TABLE III.2

ACTUAL AS PERCENTAGE OF REPRESENTATIVE EXPENDITURES OF ALL LOCAL GOVERNMENTS IN MARYLAND, FISCAL YEAR 1988

County	Total	General Government	Public Safety				Public Works			Health and Hospitals	Social Services	Elem. & Second. Education
			Police	Fire	Corrections	Other	Highways	Sanitation	Other			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Scale:												
Percent	100.0%	6.4%	5.7%	3.5%	1.2%	1.2%	2.9%	6.4%	4.8%	4.0%	7.8%	37.4%
Per Capita	$1,638.44	$106.19	$93.45	$57.12	$18.97	$19.35	$47.33	$104.13	$79.22	$65.11	$128.40	$612.34
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Standard Dev.	16	39	32	24	38	43	71	27	75	56	29	14
Allegany	94	59	61	78	76	105	164	113	140	83	92	99
Anne Arundel	97	129	114	131	97	69	187	86	70	97	75	100
Baltimore City	95	164	136	97	120	181	47	109	80	75	119	79
Baltimore	92	50	85	85	44	91	54	63	0	239	76	100
Calvert	91	77	73	49	256	99	399	86	20	122	76	104
Caroline	83	88	51	72	180	17	144	71	55	74	62	98
Carroll	87	86	39	78	75	68	186	54	21	137	113	101
Cecil	80	69	42	29	161	168	284	69	53	72	74	93
Charles	87	53	80	131	120	44	87	101	60	113	88	87
Dorchester	81	61	74	65	44	45	224	56	40	61	65	102
Frederick	88	61	51	85	84	45	164	125	109	104	62	100
Garrett	85	58	25	61	62	30	305	87	30	66	55	102
Harford	87	68	69	66	98	59	232	93	42	73	124	94
Howard	119	110	99	93	117	121	119	108	121	151	135	120
Kent	97	99	63	84	206	39	224	45	86	128	49	118
Montgomery	132	100	131	122	127	102	131	109	177	132	145	126
Pr. George's	104	117	83	102	90	75	75	128	146	80	80	100
Queen Anne's	102	66	33	72	154	80	286	237	36	136	76	123
St. Mary's	69	45	40	47	75	92	151	73	38	70	77	88
Somerset	81	105	32	52	101	74	184	133	60	84	67	104
Talbot	115	65	77	88	132	73	159	79	544	86	57	104
Washington	82	49	62	74	121	47	75	67	208	79	61	97
Wicomico	84	51	45	66	77	44	148	77	99	71	66	101
Worcester	142	135	171	190	289	76	271	157	328	92	52	125

Source: Tables II.2 and III.1.

TABLE III.2 (Continued)

ACTUAL AS PERCENTAGE OF REPRESENTATIVE EXPENDITURES OF ALL LOCAL GOVERNMENTS IN MARYLAND, FISCAL YEAR 1988

County	Community Colleges	Recreation & Parks	Libraries	Natural Resources	Urban Development & Housing	Economic Development	Economic Opportunity	Debt Service: Principal	Debt Service: Interest	Intergovernmental	Miscellaneous
	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)
Percent	3.9%	2.5%	1.3%	0.1%	0.6%	1.0%	0.1%	3.1%	3.9%	0.1%	2.1%
Per Capita	$64.57	$40.82	$20.94	$1.71	$9.59	$15.81	$2.25	$51.10	$63.50	$2.38	$34.17
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Standard Dev.	52	98	27	308	126	95	233	40	49	347	111
Allegany	179	36	41	40	112	91	20	54	76	16	49
Anne Arundel	90	61	93	0	11	10	0	91	95	0	9
Baltimore City	49	54	101	0	84	270	43	129	91	0	1
Baltimore	177	58	140	918	6	10	378	118	70	0	288
Calvert	0	101	65	72	112	43	0	52	44	0	167
Caroline	73	55	117	35	177	50	0	64	47	291	64
Carroll	45	38	99	69	135	127	500	45	42	616	119
Cecil	116	20	90	56	204	14	0	31	29	102	52
Charles	179	108	35	105	296	16	25	71	49	0	108
Dorchester	59	33	56	44	38	20	42	93	53	0	96
Frederick	81	73	38	44	228	20	871	80	52	101	5
Garrett	152	6	51	20	143	42	210	16	38	58	87
Harford	122	48	88	54	159	12	780	55	32	0	53
Howard	105	116	118	224	413	58	154	197	151	0	15
Kent	82	53	66	93	89	10	35	253	23	33	116
Montgomery	151	312	119	84	338	28	12	135	185	259	44
Pr. George's	61	206	98	152	40	19	6	66	134	0	250
Queen Anne's	81	176	50	77	78	212	0	11	26	53	49
St. Mary's	0	39	90	54	41	30	13	47	41	0	10
Somerset	0	25	38	14	157	34	0	11	24	53	66
Talbot	103	22	103	54	219	35	0	72	71	330	118
Washington	97	57	54	61	61	8	0	35	31	202	65
Wicomico	48	77	58	34	62	0	0	119	82	0	137
Worcester	38	32	58	25	174	96	0	87	124	3,796	151

Source: Tables II.2 and III.1.

In the case of Montgomery County, actual outlays equal or exceed those needed to deliver average service levels for every function but general government, natural resources, economic development and opportunity, and miscellaneous.

Baltimore City spends substantially more for certain functions than the estimates of this study suggest it would have to spend to provide average levels of service. These functions are general government, police, corrections, other public safety, sanitation, social services, libraries, economic development, and principal payments on its securities. At the same time, the City spends significantly less than the amount necessary to provide average services for highways, other public works, health and hospitals, elementary and secondary education, community colleges, recreation and parks, urban development and housing, and economic opportunity. Overall, Baltimore City's actual outlays are 95 percent of the level necessary to enable it to provide an average level of services.

Differences in Unit Input Costs: A Sensitivity Analysis

The index of representative expenditures presented in column 1 of Table III.1 measures the relative per capita cost in each of Maryland's 24 counties of the statewide average level of public services. As mentioned in Chapter I, an important weakness of the index is that it assumes that the purchasing power of a dollar of public expenditures is approximately the same everywhere in the State.

The prices local governments pay for the goods and services they buy to produce public services depend on many factors that are known to differ around the State. Because of variations in such factors as property values, transportation costs, climate, and the cost of living, a dollar of outlays by local governments in Montgomery County does not buy as many goods or services as a dollar of spending in Garrett County. These differences in the unit costs of goods and services translate into requirements for different levels of expenditures to provide a given level of a public service.

Unfortunately, an appropriate index of the variation in unit input costs among Maryland's counties is not available. An idea of the importance of unit-cost variation can be gained, however, from an illustrative analysis using the most recent index of public-service unit costs estimated for Maryland.

This index measures the cost in each county of a standard set of educational resources relative to its average cost statewide. The index was developed in 1981 by AUI Policy Research using data from the 1970's, especially from the 1970 Census of Population, so it is far too out of date to be considered for incorporation in any State policy. As noted in Chapter I, however, the general magnitude of the cost differences is similar to that estimated by a recent study in Minnesota, so the index probably provides a rough sense of the differences that adjustment for unit cost variability would make in the index of representative expenditures.

The index of unit input costs is shown in column 2 of Table III.3. It suggests that unit costs vary from 79 percent of the statewide average in Garrett and Somerset counties to 110 percent in Montgomery County. The index of representative expenditures from Table III.1 appears in the first column of Table III.3, with the counties arrayed in order of their index values, from Baltimore City at 142 to Carroll County at 83.

The third column of Table III.3 shows the effect of adjusting the estimates of representative expenditures for the variation in unit input costs.[1] Because Baltimore City's unit costs are slightly higher than the statewide average, its adjusted per capita cost of providing the representative level of public services is 45 percent higher than the average rather than 42 percent higher, as the unadjusted index in column 1 suggests.

The effect of the adjustment is most striking in the case of Montgomery County, whose index of representative expenditures jumps from 88 to 97 when account is taken of the County's unit costs, which the AUI index suggests are 10 percent higher than the statewide average. At the same time, Garrett County's index drops from 112, unadjusted, to 89, when allowance is made for its unit costs at more than 20 percent below the average.

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[1]Column 3 is calculated by multiplying a county's representative index in column 1 by its unit-cost index in column 2 and dividing by 100.

TABLE III.3

ILLUSTRATIVE ADJUSTMENT OF REPRESENTATIVE EXPENDITURE INDEX FOR DIFFERENCES IN UNIT INPUT COSTS, COUNTIES RANKED HIGH TO LOW BEFORE AND AFTER ADJUSTMENT, FISCAL YEAR 1988

Unadjusted for Differences in Unit Input Costs		Adjusted for Differences in Unit Input Costs		
County	RE Index	County	Illustrative Unit Cost Index	Adjusted RE Index
	(1)		(2)	(3)
Total	100	Total	100	100
Baltimore City	142	Baltimore City	102	145
Garrett	112	Prince George's	106	101
Worcester	105	Montgomery	110	97
Dorchester	105	Worcester	92	97
Somerset	104	Dorchester	88	92
Caroline	102	Anne Arundel	101	91
Wicomico	101	Charles	93	91
St. Mary's	101	Baltimore	102	91
Allegany	100	St. Mary's	89	90
Charles	98	Garrett	79	89
Prince George's	95	Wicomico	86	87
Kent	95	Allegany	87	87
Washington	95	Washington	90	85
Cecil	93	Calvert	92	85
Calvert	92	Talbot	92	84
Talbot	92	Howard	98	84
Anne Arundel	90	Kent	88	84
Frederick	90	Harford	93	83
Harford	89	Frederick	92	83
Baltimore	89	Somerset	79	82
Montgomery	88	Caroline	80	82
Howard	86	Cecil	87	81
Queen Anne's	86	Queen Anne's	86	74
Carroll	83	Carroll	84	69

Sources: Table III.1; Alvin S. Rosenthal, Jay H. Moskowitz, and Stephen M. Barro, Developing a Maryland Cost of Education Index, a report prepared for the Maryland Department of Fiscal Services (AUI Policy Research, 1981), p. 8.

APPENDIX A

THE CALCULATION OF REPRESENTATIVE EXPENDITURES

This appendix describes each expenditure function considered in this study and its relative importance in the budgets of local governments in Maryland. The workload measures used in estimating representative expenditures in each county are explained, as are some of the options considered but not used. The sources of the data employed in the analysis are identified.

The objective of this appendix is to provide sufficient information to enable the interested reader to understand precisely what factors drive the estimates of representative expenditures, and even to replicate them--or some variation in the choice of factors or their weighting in a workload measure --should that be thought appropriate.

Appendix B provides a set of tables showing the data used in the analysis and the major instrumental calculations in the estimation process. These include the dollar amounts of actual outlays and the estimates of representative expenditures and the per capita values underlying the indices discussed in Chapter III.

The discussion begins with an explanation of the reason capital outlays are excluded from the analysis. This is followed by a review of the three major population concepts used in estimating representative expenditures and a discussion of

an effort to extrapolate 1979 data on the number of children living in poverty. Then each expenditure function is discussed in the order it appears in the tables in this report.

Note on the Treatment of Capital Outlays

The estimates of actual expenditures by all local governments in each county used in this report are the sum of the spending reported by the Department of Fiscal Services in the "total" column of Table II.II for each county government and in the "total operations" column of Table III.II for each municipality, adjusted to exclude capital outlays.[1]

The estimates of capital outlays appear in the column headed "government operations - capital" for each county and municipal government. The Department of Fiscal Services advises that the only capital outlays included in the spending totals are those displayed in this column. In other words, the capital outlays shown in the line "memo: capital outlay" are not included in the tabulations of expenditures by function.

The capital outlays appearing on the line "transfers to boards" are attributed to functions, from which they are excluded, on the basis of information in Table II.VI, which shows the disposition of each county's transfers for capital among its board of education, board of trustees for community colleges, and library board.

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[1]The references are to tables appearing in Division of Fiscal Research, Maryland Department of Fiscal Services, Local Government Finances in Maryland for the Fiscal Year Ended June 30, 1988 (March 1989).

Capital outlays are excluded from the analysis because of the huge variability from year to year in such spending for individual functions and by individual governments. Inclusion of capital outlays in the analysis would have little consequence for the estimates of representative expenditures. The reason is that, for all local governments in the State as a group, the ratio of capital to operating expenditures for a given function probably does not fluctuate very much from year to year, and is probably fairly uniform across functions.

For purposes of examining relationships between actual levels of spending and the representative estimates from county to county, however, the results would be seriously distorted if capital outlays were not disregarded. For example:

-- In FY 1987, Anne Arundel County's capital outlays for recreation and parks totaled $2.5 million, nearly 30 percent of its total spending--$8.6 million--for the function. In FY 1988, Anne Arundel's total expenditures for recreation and parks more than doubled, to $19.0 million. The County's capital spending soared to $12.5 million, however, 66 percent of total outlays for the function. Operating expenditures for recreation and parks rose from $6.0 million to $6.4 million--7.3 percent.

-- In FY 1987, Somerset County's outlays for corrections totaled $1.9 million. In FY 1988, the total plunged to $0.3 million. Capital outlays are the villain. In the first year, capital spending was $1.6 million;

in the second, less than $10,000. Somerset's operating expenditures increased 7.3 percent, however.

-- Baltimore City's total expenditures for corrections increased almost 44 percent in FY 1988--from $25 million in FY 1987 to almost $36 million. The rise in operating outlays was less than 25 percent, however, because the City's capital spending for corrections jumped from $1.8 million in FY 1987 to $7.1 million in FY 1988.

-- In FY 1988, total spending for economic development by Queen Anne's County was $12.4 million, four times more than the $3.1 million spent the year before. Almost 95 percent of the increase was attributable to capital outlays, however, which soared from $2.6 million in FY 1987 to $11.4 million. The County's operating expenditures rose from $507,922 to $985,860--still a very large increase, but hardly the performance suggested by the data on total spending.

Population Concepts

Table A.1 displays the three population concepts incorporated in workload measures used in this report. The concepts and their individual components are shown as percentage distributions of their respective statewide totals to focus attention on their relative values in each county, the key concern when considering their use in workload measures. The first line of the table, designated "scale," shows an index of

TABLE A.1

COMPARISON OF POPULATION CONCEPTS USED IN THE ESTIMATION OF REPRESENTATIVE EXPENDITURES FOR MARYLAND COUNTIES, PERCENTAGE DISTRIBUTIONS

County	Resident Population 1/1/88 (R)	1988 Visitors (V)	FY 1988 Employ-ment (E)	R+V	R+V+E
	(1)	(2)	(3)	(4)	(5)
Scale	100.0	3.0	43.6	103.0	146.6
Total	100.00%	100.00%	100.00%	100.00%	100.00%
Allegany	1.64	.62	1.32	1.61	1.53
Anne Arundel	9.03	19.27	7.56	9.35	8.82
Baltimore City	16.42	10.31	22.32	16.28	18.07
Baltimore	14.92	4.29	15.46	14.65	14.89
Calvert	1.02	1.20	.41	1.02	.84
Caroline	.55	.23	.35	.54	.48
Carroll	2.55	.78	1.71	2.50	2.27
Cecil	1.54	2.01	.84	1.56	1.34
Charles	2.03	3.08	1.16	2.07	1.80
Dorchester	.66	.51	.58	.66	.64
Frederick	3.00	8.00	2.26	3.15	2.89
Garrett	.58	1.89	.43	.62	.57
Harford	3.63	1.74	2.35	3.58	3.22
Howard	3.46	2.31	3.56	3.44	3.47
Kent	.37	.32	.32	.37	.35
Montgomery	15.11	7.73	18.76	14.93	16.07
Prince George's	15.14	4.39	13.23	14.86	14.38
Queen Anne's	.68	.33	.36	.68	.58
St. Mary's	1.50	1.43	1.00	1.51	1.36
Somerset	.42	.34	.26	.42	.37
Talbot	.61	.97	.71	.62	.65
Washington	2.55	2.71	2.43	2.56	2.53
Wicomico	1.55	1.81	1.67	1.56	1.60
Worcester	.80	23.73	.96	1.47	1.32

Note: Visitors is the average daily number in calendar year 1988; employment is the average for the quarters 1987-III through 1988-II, which coincide with FY 1988.

Sources: Resident population is from the U.S. Bureau of the Census. Visitors and employment are from the Maryland Department of Economic and Employment Development (see text footnotes for specifics).

the relative magnitudes of the statewide totals for the five measures, with resident population set equal to 100.

Resident population is the total number of people of all ages living in a county on a specific date--in column 1 of Table A.1, January 1, 1988. The population on this date is used because it is the midpoint of the fiscal year of Maryland's local governments that ended on June 30, 1988--the focus of this study. The estimates for January 1, 1988, are averages of the official estimates by the U.S. Bureau of the Census for July 1, 1987 and July 1, 1988.[2]

The visitor estimates underlying column 2 of Table A.1 are the average numbers of visitors present in each county on the typical day in 1988. Theoretically, a visitor is a nonresident who is present in a county for any reason other than merely passing through to another destination. Visitors are of two types: day visitors, who spend time in a county but do not stay overnight; and overnight visitors, whose stay in a county extends to at least two consecutive days.

The estimates of visitors are derived from information on the total number of day and overnight visitors in each county in 1988 and the average length of the typical overnight visi-

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[2]U.S. Bureau of the Census, Current Population Reports, Series P-26, No. 88-A, County Population Estimates: July 1, 1988, 1987, and 1986 (August 1989), p. 18.

tor's stay (statewide).[3] The average number of visitors present each day is calculated in two steps. First, a county's total numbers of day and overnight visitors are multiplied by the statewide average days of stay--1 for day visitors and 2.5 for overnight visitors. Second, the resulting estimates of visitor days are summed and divided by 365 to arrive at the average number of visitors present in the county each day of the year.

An important characteristic of these data is that they include very few commuters because a visitor is defined by the Maryland Department of Economic and Employment Development as a person who lives at least 30 miles outside a county. The exclusion of commuters is not surprising because this is, presumably, the purpose of the 30-mile criterion--to limit the count to persons who do not regularly visit a location in Maryland for the purpose of employment (that is, commute to work).

From the perspective of most of the workload measures developed for purposes of this study, it is difficult to see any difference between the visitor who drives down for the day from Harrisburg to tour the battlefield at Antietam and the commuter who lives in Frederick and works at the National Institute of Standards and Technology in Gaithersburg (who would not be counted as a visitor because Frederick is less than 30 miles from Montgomery County). Is the commuter from

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[3]The visitor estimates are from Dr. Massoud Ahmadi, an economist with the Maryland Department of Economic and Employment Development.

Frederick different in any important respect from the NIST employee who commutes from Hagerstown (more than 30 miles from Montgomery County)?

An attempt to come to grips with this question leads to consideration of total employment in a county as another component of the options for population concepts for use in workload measures. Column 3 of Table A.1 shows the percentage distribution among Maryland's counties of total employment in the State.[4]

The source of the employment data is the quarterly contribution reports private employers and the State and local governments are required to file by Maryland's unemployment insurance law.[5] Estimates of employment by the Federal government are drawn from special reports that must be filed by all federal installations. Although the estimates do not include a

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[4]Slightly less than 2 percent of total employment in the State estimated by the Maryland Department of Economic and Employment Development is reported as "nondistributable," that is, employment of "sales and other personnel with no permanent place of work as well as employment of those employers with no established place of business in the state." [Office of Labor Market Analysis and Information, Maryland Department of Economic and Employment Development, Employment and Payolls Covered by the Unemployment Insurance Law of Maryland, Annual Average 1988 (no date), p. 25.] The nondistributable employment is not taken into consideration in Table A.1.

[5]The data are provided by Mr. Dale Ziegler, Deputy Administrator, Division of Employment and Training, Maryland Department of Economic and Employment Development; and by Ms. Mary J. Yeisley, Supervisor, Office of Labor Market Analysis and Information, Maryland Department of Economic and Employment Development. The data are published in Office of Labor Market Analysis and Information, Maryland Department of Economic and Employment Development, Employment and Payrolls Covered by the Unemployment Insurance Law of Maryland (1987 and 1988), p. 7.

number of types of employment, reported employment is estimated to account for 98 percent of all wages and salaries paid in the State. The exclusions are

> . . . agricultural labor with quarterly payrolls of less than $20,000 and fewer than 10 employees; domestic service with quarterly payrolls of less than $1,000; religious organizations with employment in other than nonprofit schools; the self-employed; services for relatives; and railroad workers.[6]

The three population concepts used in the workload measures discussed in this appendix are shown in columns 1, 4, and 5 of Table A.1:

-- resident population;

-- residents plus visitors (column 4, designated as R+V population in this appendix); and

-- residents plus visitors plus employment (column 5, hereafter referred to as R+V+E population).

The rationale for the choice of the concept in each workload measure is discussed in context below.

A general caution about the R+V+E measure deserves mention before turning to the workloads. As noted above, the visitor concept--as measured by Maryland's Department of Economic and Employment Development--includes, at least theoretically, persons employed in a county who commute from residences located at least 30 miles beyond the boundaries of the county. It is not clear whether the survey and other methods used by the Department to develop the visitor estimates actually cap-

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[6] Ibid., p. iii.

ture many of these commuters, especially since the estimates apparently are intended to exclude them. In any event, to the probably minimal degree that the visitor estimates include these commuters, they are double counted in the R+V+E measure. They are certainly counted in the employment data (unless they are in one of the excluded categories, which is unlikely).

Note on the Data Available on the Poverty Population

One of the most worrisome problems with the data used in this study is that the most recent information on the population living in, or close to, poverty in Maryland's counties is from the 1980 Census. (Strictly speaking, the poverty population of a county is the number of persons living in the county on April 1, 1980, whose total household income in 1979 was below the poverty line.) In one form or another, the poor or near-poor population is an important factor in the workloads for seven functions.

In view of the age of these data, an effort was made to determine whether some method might be identified to extrapolate the 1979-80 data to a year more correspondent with the timing of the other available data. The only promising possibility is use of information on the number of children reported to be receiving payments under Aid to Families with Dependent Children. This program is administered by the Maryland Department of Human Resources rather than by local agencies, as in many other states. As a consequence, the likelihood seemed high that administrative practices are reasonably uniform

across the counties and that consistently reported program-beneficiary data would be available.

The hope was that the relationship between the 1980 Census count of the under-18 poverty population and the average number of children receiving AFDC in 1979 would be good enough to warrant use of 1988 AFDC information to extrapolate the under-18 poverty population. Table A.2 summarizes the available information. The poverty population and AFDC recipients in 1979 are clearly strongly correlated (the R^2 is 0.989).

Unfortunately, close inspection of the the ratio of AFDC children to the poverty population under age 18 in column 3 reveals a major anomaly and a degree of variation in the ratio among the counties that cast serious doubt on the presumption of uniform administration of the program. The anomaly is that 21,200 (32 percent) more children are reported to have received AFDC benefits in Baltimore City in the average month of 1979 than the Census reports as living in the City's poor households in that year. In the counties, the percentage of the poverty population under age 18 receiving AFDC varied widely, from 33 percent in Washington to 91 percent in Prince George's.

An explanation for this variation was sought from Mr. Richard E. Larson, Assistant Director of the Division of AFDC Policy, Maryland Department of Human Resources. Mr. Larson suggests that in 1979 several provisions of the law allowed a family to be eligible for AFDC with an income above the poverty level. These provisions include the absence of standardization in the exclusion of certain expenses from countable income, and

TABLE A.2

POVERTY POPULATION UNDER 18 AND CHILDREN RECEIVING AFDC ASSISTANCE IN MARYLAND, BY COUNTY, 1979 AND 1988

County	1979 Poverty Pop<18	1979 AFDC Children	1979 (2) % of (1)	1988 AFDC Children	% Dist. PovPop<18 1979	% Dist. PovPop<18 1988
	1)	(2)	(3)	(4)	(5)	(6)
Total	143,012	140,408	98%	116,184	100.0%	100.0%
Allegany	3,049	1,535	50	2,549	2.1	4.0
Anne Arundel	8,426	6,505	77	4,849	5.9	5.0
Baltimore City	67,178	88,404	132	68,184	47.0	40.9
Baltimore	10,099	6,086	60	7,073	7.1	9.3
Calvert	1,416	1,179	83	758	1.0	.7
Caroline	921	669	73	554	.6	.6
Carroll	1,517	781	51	742	1.1	1.1
Cecil	1,811	1,367	75	1,077	1.3	1.1
Charles	2,630	1,894	72	1,686	1.8	1.8
Dorchester	1,418	1,121	79	976	1.0	1.0
Frederick	2,274	975	43	1,171	1.6	2.2
Garrett	1,363	534	39	722	1.0	1.5
Harford	4,028	3,130	78	1,854	2.8	1.9
Howard	1,424	555	39	685	1.0	1.4
Kent	554	319	58	251	.4	.3
Montgomery	7,388	5,328	72	5,075	5.2	5.6
Prince George's	14,807	13,499	91	10,665	10.4	9.2
Queen Anne's	783	506	65	459	.5	.6
St. Mary's	2,453	1,465	60	1,172	1.7	1.5
Somerset	949	527	55	617	.7	.9
Talbot	780	401	51	386	.5	.6
Washington	3,854	1,253	33	2,386	2.7	5.8
Wicomico	2,594	1,868	72	1,670	1.8	1.8
Worcester	1,296	509	39	623	.9	1.3

Sources: U.S. Bureau of the Census, 1980 Census of Population: Characteristics of the Population, Volume 1, Chapter C, General Social and Economic Characteristics, Part 1, Maryland, PC80-1-C22 (1983), Table 181; Income Maintenance Administration, Maryland Department of Human Resources, Annualized Statistical Report for fiscal years 1979 and 1988; and see text.

the disregard of the contributions of stepparents toward the cost of a child's care. In addition, the Census almost certainly undercounted the poverty population more seriously in Baltimore City than elsewhere in the State. The program factors affected every county in Maryland to some degree, but it is apparent from the data that they disproportionately influenced the 1979 data for Baltimore City.

The Omnibus Budget Reconciliation Act of 1981 (OBRA) and subsequent changes in federal law significantly altered program eligibility requirements, reducing the number of individuals qualified for AFDC. According to Mr. Larson, OBRA and more recent changes in AFDC policy have drastically skewed the relationship between AFDC and poverty in different socio-economic settings.

In the entire State, the number of children receiving AFDC declined by more than 17 percent between 1979 and 1988. The number dropped nearly 23 percent in Baltimore City, however, and by less than 8 percent in the rest of Maryland.

Given the apparent futility of the search for a good method of updating the 1979 poverty estimates, Mr. Larson and Mr. Herb Roe, Assistant Director of the Information Management Services Division of Baltimore City's Department of Social Services, both advise that the 1979 data provide the best measure of poverty at the county level in Maryland until the 1990 Census results are available.

For purposes of the workload measures using the poverty population under the age of 18, the 1979 data are used in this

study. The percentage distribution of these data among the counties is shown in column 5 of Table A.2.

The distribution resulting when the 1979 poverty population of each county is extrapolated at the same rate as the change in the county's children receiving AFDC is displayed in column 6. If this distribution were used in the workload measures rather than the 1979 data, the major share loser would be Baltimore City, although Anne Arundel, Harford, and Prince George's counties would also lose significantly. The major share gainers would be Allegany, Baltimore, Frederick, Howard, Montgomery, Washington, and Worcester.

The Expenditure Functions and Workload Measures

This subsection outlines the types of governmental activities included in each function, defines the workload measure used to estimate representative expenditures for the function, and identifies the specific sources of the data used to prepare the estimates.

1. General Government

This function, which accounts for 6.5 percent of total local operating expenditures, includes spending for legislative, judicial, and chief executive offices; the board of elections; and staff operations, including financial administration, legal counsel, personnel administration, planning and zoning, and general services. These outlays are, for the most part, overhead costs whose magnitude depends on the overall size of the community served, which is best measured by the

number of residents. Hence resident population on January 1, 1988, is the workload for this function.

2. Police

The workload measure for this function (5.7 percent of local expenditures) is a combination of three, equally weighted variables: (1) R+V+E population; (2) the number of violent crimes reported;[7] and (3) the expected number of arrests for violent crimes, given the age distribution of the resident population in each county. The workload measure for each county is the mean of its percentage shares of the three variables. Each of the factors reflects considerations that contribute to the relative need for police services.

The need for many police services has little to do with crime. These services include traffic control, accident investigation, and enforcement of local safety and parking ordinances. The need for such services depends on the size of a county, best measured by total resident population, but it also depends on the number of visitors present on the typical day and on the number of people regularly employed in the county.

Most of those employed in a county are, of course, residents of that county. Adding total employment to the resident population clearly double counts resident employees. Nonetheless, people rarely work at--or in the same neighborhood as--their residences. If the number of people present is an appro-

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[7]Data are from the Criminal Justice Information System Central Repository, Uniform Crime Reports: Crime in Maryland, 1988 (1989), pp. 80-111.

priate indicator of the need for police services at the place of work, it is hard to see a rationale for assigning a lower weight to the resident worker than to the commuter. At the same time, police services must be maintained during the day in the residential areas of a county, even as absent resident-workers are generating needs for police services at their places of employment. Thus the double counting of resident employees is not as serious a problem as it might at first appear.

In any event, the only available data that might be used to distinguish between residents and commuters in local employment are from the 1980 Census, and commutation and employment patterns have changed enormously in Maryland in the past decade. An effort to use the 1980 data to develop estimates of resident and nonresident employees in each county--including consideration of commutation patterns involving the neighboring District of Columbia and states of Delaware, Pennsylvania, Virginia, and West Virginia--would also be too expensive and time-consuming to justify its undertaking for purposes of the present study.

The rate of crime in a jurisdiction is also an indicator of the need for police services, particularly for patrol and investigation. The variable representing this aspect of need is the number of violent crimes--defined as murder, forcible rape, robbery, and aggravated assault.

Violent crimes are used as a proxy for total crimes because--of all offenses--they are most likely to be reported

on a consistent basis by all jurisdictions. Therefore, the data on violent crimes are likely to provide a more accurate measure of the relative incidence of crime among the counties than data on total crimes. The number of violent crimes in every Maryland county is large enough to justify a presumption of reasonable stability from one year to the next and to diminish the consequence of reporting problems.

The age distribution of the resident population of an area is another important factor in the need for police services.[8] Arrest rates, for example, vary dramatically among age groups. (The arrest rate is defined here as the number of arrests for violent crimes per 100,000 resident population.) As shown in Table A.3, the range in Maryland is from fewer than 20 arrests per 100,000 children under 10 years of age and adults over 65 to approximately 700 per 100,000 for the age group 15-24.

Table A.3 also displays the comparable arrest rates for the nation as a whole. The overall Maryland rate is 35 percent

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[8]An argument could be made that the age distribution of visitors and those employed in an area should also be taken into consideration. For example, the age mix of visitors to Ocean City (Worcester County) is probably substantially different from that of visitors to Montgomery County. The need for police services as a consequence of the (probably) younger age mix of visitors to Ocean City considerably exceeds that associated with the (probably) older mix in the latter instance. Similarly, the average age of employees in Ocean City is probably significantly younger than that of employees in, say, Baltimore City, with attendant implications for the need for police services. Unfortunately, reliable estimates of the age mix of visitors and employment in all the counties are not available.

TABLE A.3

ARREST RATES FOR VIOLENT CRIMES PER 100,000 RESIDENT POPULATION, MARYLAND AND U.S., 1987

Age	Maryland	U.S.	Maryland as Percent of U.S.
	(1)	(2)	(3)
Total	262.7	193.9	135%
Under 10	11.4	3.7	310
10-14	248.0	115.3	215
15-19	708.6	507.6	140
20-24	693.9	529.3	131
25-34	453.1	366.3	124
35-44	206.2	182.9	113
45-54	94.9	86.0	110
55-64	35.4	34.5	103
Over 65	17.3	10.5	165

Sources: Federal Bureau of Investigation, U.S. Department of Justice, 1987 Uniform Crime Reports: Crime in the United States (July 1988), pp. 174 and 175; Maryland Department of Public Safety and Correctional Services, 1987 Uniform Crime Reports: Crime in Maryland (no date), pp. 132 and 133; U.S. Bureau of the Census, Current Population Reports, Series P-25, No. 1022, U.S. Population Estimates, by Age, Sex, and Race: 1980 to 1987 (March 1988), pp. 11 and 12.

higher than the national rate (see column 3, which compares the two rates). Strikingly, the ratios of Maryland's arrest rates to the comparable U.S. rates decline steadily from a high of 310 percent for the under-10 age bracket to 103 percent for age 55-64. Then, curiously, the Maryland rate jumps to 165 percent of the U.S. rate for those over 65. It is interesting to speculate about the attributes of the reporting or criminal justice systems in Maryland that may account for this pattern.

In any event, it is clear that the age mix of a county's population is an important factor in the incidence of crime and other behavior that requires police intervention. The effect of a population's age distribution on the need for police services is captured by including in the workload measure an estimate of the expected number of arrests.[9] This factor is intended to represent the higher workload for police in counties with age distributions especially high in the groups for which the likelihood of activity calling for the attention of the police--as indicated by arrest rates--is highest.

A variable reflecting population density was considered as a means of adjusting the relative need for police protection between rural and urban areas. Such a variable is not included because it is not clear whether, on balance, density affects the cost of a given level of police services in a degree not already allowed for in the workload measure.

In thinly populated areas, for example, responses to calls for service involve long travel times and, as a consequence, high average cost per response. In more densely populated areas, travel times are short so the officer-time cost of

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[9]The expected number of arrests in a county is calculated separately for each age group. A county's population in an age group is multiplied by the statewide arrest-propensity (arrests per 100,000) for that group. The resulting estimates of arrests by age group are summed to yield the total number of expected arrests in a county. The source of the data on arrests for violent crimes by age group in 1987, statewide, is shown in Table A.3. The county populations by age group are unpublished estimates of resident population on July 1, 1987, provided by Ms. Estelle Apelberg of the Maryland Department of Health and Mental Hygiene.

responding to a call is low. On the other hand, crime rates tend to rise with the density of population, increasing the number of calls. Since crime and arrest rates are already in the workload measure, it is not at all clear what additional dimension of need would be captured by a population-density factor.

3. Fire

In addition to the activities commonly associated with a fire department, the fire function includes rescue and emergency-medical services. Overall, the function accounts for 3.5 percent of the operating expenditures of local governments in Maryland. The services are delivered by a mix of career and volunteer personnel. Local governments throughout the State have career fire personnel, but only Baltimore City has an entirely career service. Of the 23 counties, local governments in 16 rely largely on volunteers, while localities in 7 have substantial numbers of career personnel.

This organization of the production of fire, rescue, and emergency-medical services (hereafter referred to only as "fire") presents a challenge for the measurement of the need for public spending. The contributions of volunteers clearly reduce the need for the expenditure of public funds to produce a given quantity and quality of services. As the level of volunteer involvement increases, the public outlays required for a given level of services decreases.

Therefore, the need for fire services cannot be equated with the public expenditures required to ensure the availability of those services in each county. In other words, representative expenditures for the fire function cannot be estimated by the standard approach of identifying a workload measure and using it to apportion the actual, statewide total of outlays on the service among the counties. Estimates of representative expenditures for fire must take explicit account of the actual contributions of volunteer personnel in each county. A key assumption is that, in the short run at least, volunteer activity would not change if public funding were modified to reflect statewide averages.

Three steps are necessary for the analysis. The first is to define a workload measure that reflects the relative need for fire services among the counties. The second is to determine the approximate amount of services actually provided by volunteers in each county. The third step is to combine the two sets of results to arrive at the desired estimates of representative expenditures: the public outlays necessary to finance the needed services, that is, the cost of the fire services needed but not delivered by volunteers.

The Workload Measure. The need for fire services is determined not only by the number of residents of a county, but also by the number of visitors present and total employment, as in the case of the police function. In other words, fire protection is provided to commercial, industrial, and tourist

areas as well as to residential neighborhoods and stores where residents shop. Therefore, the workload measure for fire is R+V+E population.

Several other variables were considered as possible factors in the relative need for fire services. The total number of calls (career as well as volunteer) and the dollar value of fire losses were the two main options. Both were excluded from consideration because of the lack of uniformity in reporting among the counties. If accurate data were available, they might be useful to refine the workload measure of the relative need for fire services.

Evaluating the Contributions of Volunteers. A moment's reflection suggests the futility of an effort to establish the extent of services provided by volunteer personnel by direct reference to such information as the number of participating volunteers or the number of calls responded to. Given the records compiled by entities with an interest in volunteer companies in Maryland contacted in the course of this study--including the Maryland State Firemen's Association and the State Fire Marshal--it is not feasible to arrive at any kind of common denominator, such as full-time-equivalent personnel, for volunteers. Similarly, the available data on such variables as calls of various types (fire, rescue, medical crisis) are insufficiently complete or reliable to permit any kind of direct measure of volunteer activity across counties to be defined and estimated.

Therefore, an indirect approach is used. First, data are compiled on the number of full-time-equivalent (FTE) career fire personnel in each county.[10] As noted earlier, Baltimore City is the only major jurisdiction in Maryland with an entirely career staff. Therefore, the ratio of the City's FTE fire personnel to its total R+V+E population is taken as the staffing required for fully career (publicly financed) delivery of a standard level of fire services throughout the State.

This approach assumes that the number of career personnel is a reasonable proxy for all of the physical resources needed to produce fire services, and that the efficiency with which the services are produced in Baltimore City is roughly comparable with what could be achieved elsewhere in the State. Note that this approach abstracts from the budgetary cost of the inputs used to produce fire services. For example, land for fire stations in Baltimore City may be more expensive than it is in rural counties, and personnel policies in the City may result in higher wages for fire personnel than would be paid elsewhere in the State.

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[10]The information, collected for purposes of this study, is from the personnel office, fire marshal, or emergency operations center in each county. The personnel are defined as those whose work is related to fire protection--including inspection, suppression, enforcement, protection, communications (such as dispatchers and 911 service), and investigation --and emergency medical services. Most of the information is from cognizant offices of county governments. In a few cases, when the information is not otherwise available, it is collected directly from municipal officials.

Given the actual number of career personnel in each county, a rough estimate of the relative importance of the contribution of volunteer personnel is given by an index of career employment (ICE). The index is arrived at by calculating each county's ratio of career personnel to its R+V+E population. A county's ICE is then given by dividing its ratio by Baltimore City's (and multiplying by 100 to convert the percentage to an index number). Baltimore City's ICE obviously is 100; those of the 23 counties are all less than 100.

If the overall level of fire protection actually available in each county is roughly equivalent throughout the State, the portion of fire services delivered by volunteers is the inverse of a county's index of career employment--that is, 100 minus the county's ICE. For example, Carrol County's R+V+E population is 152,075. Local governments in the County have 24 FTE career fire personnel: 0.16 career personnel per 1,000 population. Baltimore City has 1.75 career personnel per 1,000 population, so Carroll County's ICE is 9.1, that is, (0.16/1.75)*100. It follows that slightly less than 91 percent of fire protection services in Carroll County is produced by volunteers.

Estimating Representative Expenditures. The question now is how the estimated ICE's can be used to produce for each county an estimate of the public cost of the fire services that are not delivered by volunteers. The desired estimate of rep-

resentative expenditures for county i is defined by the expression:

$$RE_i = (R+V+E)_i * EPC_i \qquad (1)$$

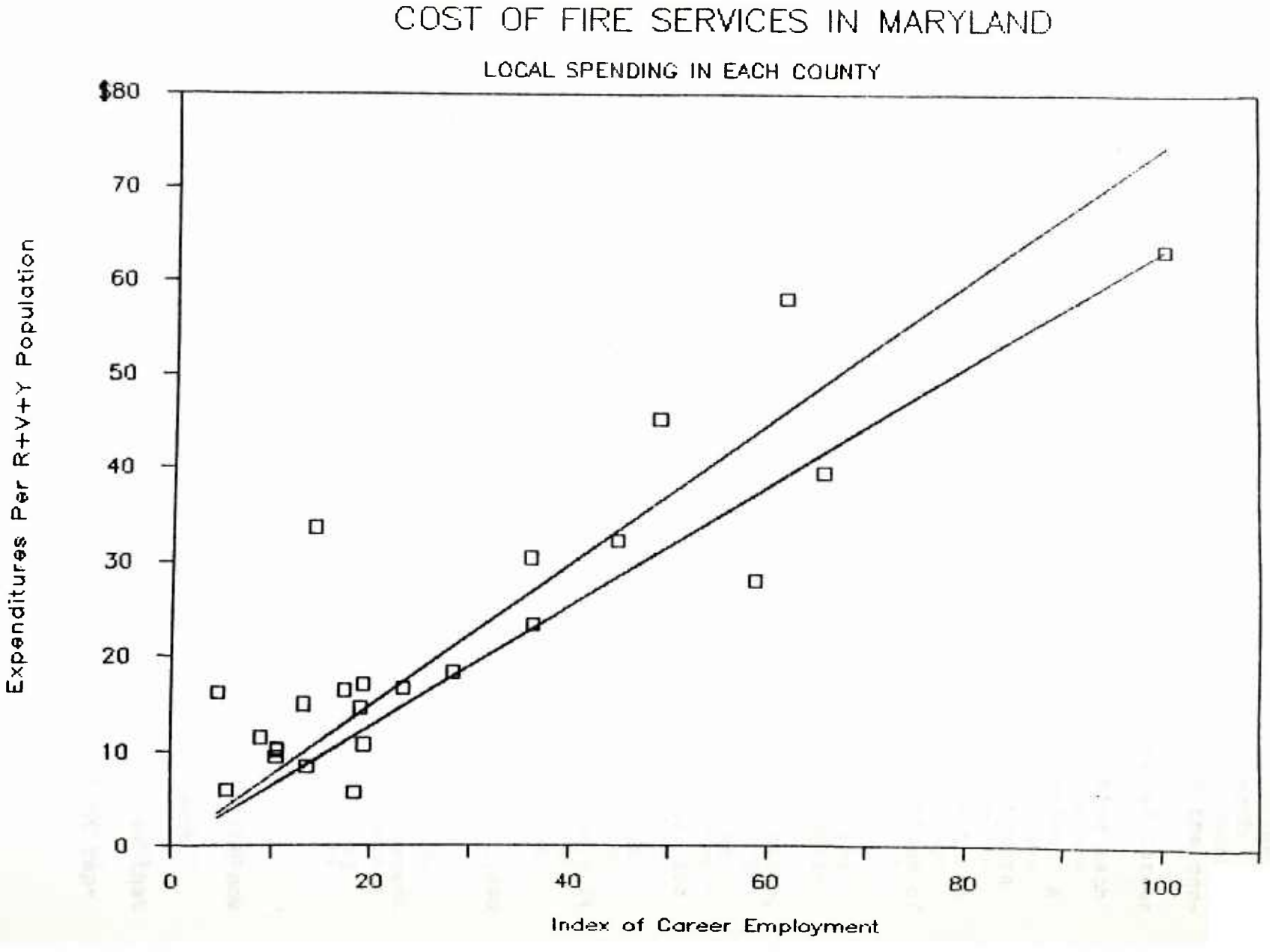
where RE_i is the estimate of representative expenditures for fire services of the ith county, $(R+V+E)_i$ is the workload measure (the R+V+E population) of county i, and EPC_i is the average government outlays for fire services per R+V+E population of county i. What is needed is an estimate of EPC_i, and several approaches are possible.

One option is to identify an estimate of the average cost per workload unit of fire services delivered entirely by career personnel. This cost, multiplied by a county's ICE (divided by 100), is an estimate of the cost per workload unit in the county of the fire services not delivered by volunteers, that is, EPC_i. Algebraically,

$$EPC_i = K * ICE_i \qquad (2)$$

where K is the cost per workload unit of fire services delivered entirely by career personnel and ICE_i is county i's index of career employment.

The question is what value should be used for K? An obvious candidate is the average cost of the fire services provided by Baltimore City, whose actual operating expenditure for the function is $63.31 per R+V+E population. Figure A.1 displays the resulting estimates against a scatter of points show-


COST OF FIRE SERVICES IN MARYLAND
LOCAL SPENDING IN EACH COUNTY
Expenditures Per R+V+Y Population
$80
70
60
50
40
30
20
10
0
0
20
40
60
80
100
Index of Career Employment

ing each county's actual outlays per R+V+E population plotted against its ICE.

The lower of the two lines in the figure plots the estimated outlays per R+V+E population that result when Baltimore City's actual average is taken as the base (K). Note that the line begins at the City's point in the upper right corner. If the line were extended to the left, it would intersect the origin. The general equation of the line is $EPC_i = a + K * ICE_i$ and, in this instance, the value of the vertical intercept, a, is zero (as it is, implicitly, in equation 2, above).

The problem with this approach is that the estimates of representative expenditures yielded by the values of EPC indicated by the lower line in Figure A.1 sum to only 85 percent of total actual outlays for fire by all local governments in Maryland. If the estimates are scaled to the total of actual outlays, the estimated EPC of every county is increased by somewhat more than 17 percent.

In other words, the line pivots upward to the position of the upper line in Figure A.1, with the vertical intercept remaining at the origin (a 17 percent increase in zero remains zero). The effect on the estimate for Baltimore City is the most dramatic, of course: when its scaled EPC is multiplied by its R+V+E population, the estimate of the City's representative expenditure for fire becomes $90.2 million, more than $13 million higher than its actual outlays.

This result clearly is unacceptable because it contradicts the premise of the approach--that Baltimore City's actual

spending per R+V+E population is an appropriate estimate of the value of K. The problem is that the approach misrepresents a fundamental aspect of local government outlays for fire protection in Maryland.

That is, expenditures per R+V+E population (EPC) do vary directly with the relative level of career employment (or inversely with volunteer activity), as the approach stipulates. However, local outlays in areas with significant volunteer activity also take the form of direct subsidies to volunteer companies, and those payments are neither directly nor inversely related to career employment.

Conceptually, this means that, even if a county had no career fire personnel, its expenditures for the function would not be zero, which is what the formulation of equation 2 implies. In other words, the vertical intercept of the line representing the relationship between ICE_i and EPC_i should be at some level exceeding zero.

This hypothesis can be tested by estimating the relationship between ICE_i and EPC_i by least squares regression using the values of the two ratios for all the counties. The estimated regression equation is[11]

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[11]The t-statistic associated with the estimated coefficient of ICE (the estimate divided by its standard error) is 37, indicating that the estimated relationship is highly significant statistically. The coefficient of determination (R^2) is 0.83, which means that 83 percent of the variation among the counties in outlays for fire protection per R+V+E population is explained by the index of career employment. The county observations in the regression are weighted by R+V+E population.

$$EPC_i = 9.67 + 0.56 * ICE_i$$

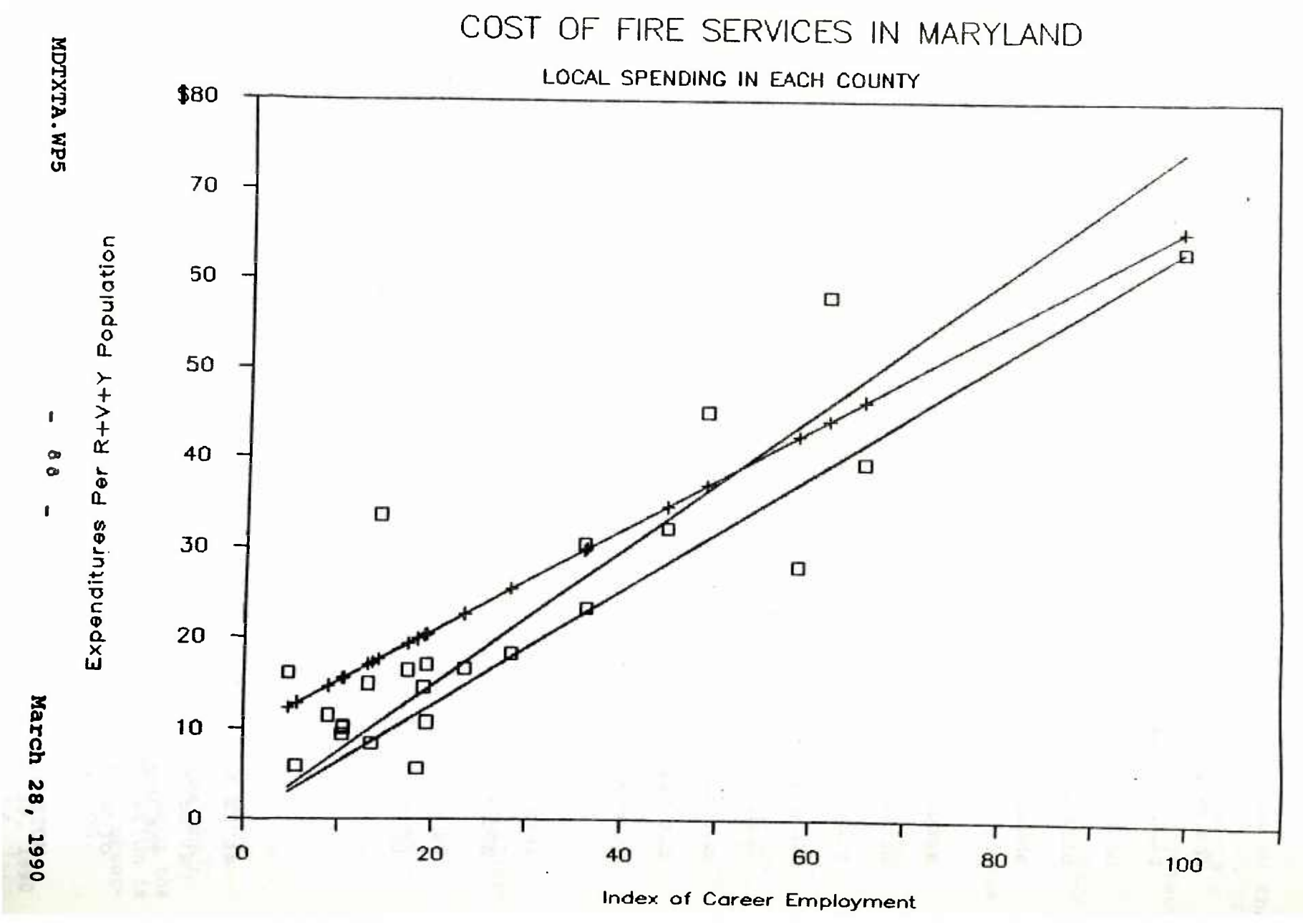
The equation indicates that the expenditure per R+V+E population of county i is $9.67 plus $0.56 for each point in the county's index of career employment. The regression line is plotted in Figure A.2 along with all the information previously shown in Figure A.1.

Note that the regression line passes slightly above the actual observation for Baltimore City. This suggests that the actual average cost (per R+V+E population) of the career service in Baltimore City is a bit lower than the average cost throughout the State, controlling for differences in ICE's. Such a relationship would be consistent with the existence of modest economies of scale in career delivery of fire services, but the existence of such economies cannot be verified from the information examined here.

The estimates of representative expenditures for fire services presented in this report rely on the estimate of the EPC for each county yielded by the regression. As expressed in equation 1, that estimate multiplied by a county's R+V+E population is the county's representative expenditure for fire.

4. Corrections

The corrections function (1.2 percent of total expenditures) includes outlays for county-operated adult institutions and support for juvenile delinquents in other institutions. The workload measure for corrections consists of (1) the number of violent crimes reported, and (2) the expected number of


COST OF FIRE SERVICES IN MARYLAND
LOCAL SPENDING IN EACH COUNTY
Expenditures Per R+V+Y Population
$80
70
50
50
40
30
20
10
0
0
20
40
60
80
100
Index of Career Employment

arrests for violent crime (see the discussion of these variables in connection with the police function). The variables are weighted equally. The corrections workload is the same as that for police protection, without the R+V+E population variable.

Since the incidence of serious crimes reflects the need for correctional facilities, and the number of violent crimes is a proxy for total crime in a county, total violent crimes is an appropriate workload indicator. The arrest variable is included to take account of the varying propensities of persons at different ages to be arrested for crimes and the substantial variation in the age distribution among the counties. Although minors committing crimes are not sent to county jails, they go to juvenile facilities that are partially funded by local governments.

5. Other Public Safety

This function accounts for 1.2 percent of local operating outlays. It includes building, plumbing, electrical, and gas inspections as well as civil defense and traffic engineering. The workload measure is R+V+E population because the need for most of these services depends on the number of places of employment and transient accomodations as well as residences.

6. Highways

Most outlays for this function, which accounts for 2.9 percent of local operating expenditures, are for maintenance of streets and roads. (Capital outlays for construction,

55 percent of all spending by local governments for this function in Maryland, are not included in the analysis.) The workload measure for this function is the sum of weighted percentage distributions of: (1) vehicle miles traveled in 1988 on locally maintained roads, and (2) lane miles of locally maintained roads and bridges.[12]

Both these variables are related to the maintenance expenditures required by the deterioration of highways as a result of traffic and the passage of time. Deterioration attributable to traffic is represented by vehicle miles traveled. The cost of highway maintainance resulting from deteri-

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[12]Information on lane miles of and vehicle miles traveled on locally maintained roads in 1988 is provided by Mr. George F. Sims and Mr. Michael Baxter of the Highway Information Services Division, Maryland Department of Transportation. According to Mr. John T. Neukam, Chief of the Bureau of Highway Statistics, MDOT, the estimates of locally maintained lane miles do not include alleys. Mr. Baxter was unable to provide information on lane miles of alleys in all areas of the State except Baltimore City. Mr. Frank Murphy of Baltimore City's Traffic Division was unsuccessful in his efforts to locate information on lane miles of alleys in the City. Mr. Neukam advises that the unavailability of data on alleys should not significantly impair the reliability of the analysis because most costs of alley maintenance are paid by the owners of abutting property (the usual practice with sidewalk maintenance).

Nonetheless, the consequence of the unavailability of data on alleys is that Baltimore City's share of the statewide total of locally maintained roads probably is somewhat understated. Therefore, the estimates of representative expenditures for highways are slightly understated for Baltimore City and correspondingly overstated for all other localities in the State.

The number of lane miles of bridges in a county is calculated by dividing the square footage of bridge deck area (provided by Mr. Chris Barth of MDOT) by the number of square feet in a lane mile (63,360--that is, 5,280 times the statewide average lane width of 12 feet).

oration caused by weather is approximated by the stock of locally maintained roads and bridges. Vehicle miles traveled and lane miles are weighted 0.825 and 0.175, respectively, in rough proportion to their contribution to highway deterioration.[13]

Information provided by State officials indicates that the maintenance of a lane mile of State bridges costs an additional amount equal to roughly 20 times the average cost of routine maintenance of a lane mile of State roads (bridges are included in road mileage). Comparable estimates are not available for locally maintained roads and bridges, but it seems likely that a comparable cost-relationship applies.

Therefore, in order to account for the disproportionate cost of maintaining bridges, the State ratio is used. That is, the lane mileage of locally maintained bridges in each county is multiplied by a factor of 20. The result is added to the number of lane miles of locally maintained roads in each county to produce an adjusted total of workload lane miles.

The climate in Maryland varies from the harsh winters and cool summers of Garrett County in the northwest to the temperate winters and hot summers of the Eastern Shore. For present purposes, this climatic variation is important because the cost

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[13]For further discussion of this issue, see U.S. General Accounting Office, Highway Funding: Federal Distribution Formulas Should be Changed, Report No. GAO/RCED-86-114 (1986), p. 67; discussed in Robert W. Rafuse, Jr., Representative Expenditures: Addressing the Neglected Dimension of Fiscal Capacity (draft of May 18, 1989), p. 32.

of snow removal (per lane mile) and the damage to highways and bridges from frequent applications of salt and other snow- and ice-melting agents are higher in Maryland's northern and mountain counties than in those whose weather is tempered by the Bay and the Atlantic. Unfortunately, a reliable variable could not be identified to account for this source of variation in highway operating and maintenance costs. Suggestions would be welcome.

The measure of vehicle miles traveled would be improved by an adjustment reflecting the rapid rate at which damage to pavement increases with the weight of a vehicle. Regrettably, the data necessary to carry out this refinement are not currently available.

Other options considered as measures of the relative need for highway expenditures are fuel consumption and a breakdown of local lane miles between urban and suburban. It is difficult to see what a distinction between urban and suburban lane miles would accomplish apart from reflecting higher traffic volumes in urban areas. Such an adjustment would be superfluous because the vehicle-miles variable already accounts for the differences in traffic volume.

Fuel consumption would be a much better indicator of pavement damage due to traffic than traffic volume alone, as it would reflect the weight as well as the number of vehicles. However, the concept is infeasible to implement as a variable. Data on motor fuel sales by county are available, but estimates of fuel consumption are not. As an indicator of fuel consump-

tion, fuel purchased is problematic because motor fuel is often purchased in one county (or state) and consumed in another.

7. Sanitation & Waste Removal

The principal activities encompassed by this function (6.4 percent of local operating expenditures) are sewerage and solid waste collection and disposal. The workload measure is a weighted combination of (1) resident population, and (2) the population served by municipal and county-run sewage treatment plants.[14] The weights are 0.333 and 0.667 because total actual outlays by local governments for solid waste are approximately half those for sewerage.

The use of resident population as the indicator of need for solid waste services assumes that the trash generated at and by business, including the visitor industry, is largely disposed of by private haulers. The validity of this procedure also rests on the premise that the tipping fees private firms are charged for any use they may make of public disposal facilities--landfills, incinerators--are adequate to ensure that the firms are not publicly subsidized.

The amount of solid waste generated in each county was considered as an alternative to resident population. However, reliable and uniform data for all 24 counties on total tons of solid waste generated and a breakout of the portion handled by

[14]Information on gallons of sewage generated and the percentage of total sewage treated by local plants in 1988 is provided by Mr. Gary Kelman of the Maryland Department of the Environment.

private firms are unavailable. In any event, the influence of local policy on the volume of waste disposed of by public authorities would preclude use of such a measure even if good data were available.

8. Other Public Works

This category, 4.8 percent of local operating expenditures, includes outlays for water, gas, and electric utilities and airport and transit services. The need for these services varies with the extent of publicly owned utilities and public infrastructure development in a community. Since these services are needed for visitors and places of business as well as residents, R+V+E population is the workload measure.

9. Health and Hospitals

Services provided by local health departments (3.5 percent of local spending) can be divided into three general categories: community health; environmental health; and mental health, developmental disabilities, and addictions programs. The workload measure is the weighted sum of the percentage distributions of the R+V+E and poor/near-poor populations.

Environmental health services include the enforcement of standards for food processing and handling, sanitation, solid waste, air quality, and consumer product safety. The extent of these services required depends on the prevalence of regulated activities in the county, which can reasonably be represented by the resident population, the typical number of visitors present, and the level of employment in a county. Hence R+V+E

population is the indicator of need for these services. This variable is assigned a weight of 6 percent, the statewide average proportion of expenditures for the function devoted to environmental health services.[15]

The community-health, mental-health, development-disabilities, and addictions programs and facilities mostly serve low-income residents who lack insurance. The services include alcohol and drug abuse programs, mental health, family planning, adult day care, and communicable disease control. The measure of need for these services is the total population living in households with incomes below 125 percent of the poverty level.[16]

The higher income-threshold is used because people in households below and near the poverty line are the most frequent users of public health services.[17] A weight of 94 percent is assigned to this variable, reflecting the statewide

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[15]Specifically, 6 percent is the ratio of total environmental health expenditures of $19 million in FY 1988 to total health expenditures used in this study, approximately $298 million. The estimate of total outlays for environmental health is provided by Mr. William Miller of the Maryland Local Family Health Administration.

[16]U.S. Bureau of the Census, 1980 Census of Population: Characteristics of the Population, Volume 1, Chapter C, General Social and Economic Characteristics, Part 1, Maryland, PC80-1-C22 (1983), Table 181.

[17]Information concerning specific aspects of health care programs is provided by Mr. Charles Macleod and Ms. Julia Irons of the Maryland Association of Counties. See also Maryland Association of Counties, Presentation Before the Governor's Commission on Health Care Policy and Financing (November 23, 1988).

average share of all health expenditures accounted for by these services.

10. Social Services

Expenditures for social services account for 7.8 percent of local operating outlays, and include funding for homeless shelters, day care, foster care, in-home aid services for the disabled, adoption, food programs, and energy-assistance programs. Outlays for the operation and maintenance of other county-operated charitable institutions are also recorded in this function. The population predominantly served by these programs and institutions lives in households with incomes below the poverty level. However, some of these services are geared to people living near the poverty level.[18]

Therefore, two variables are combined in the workload measure: (1) the population of households with incomes below the poverty level, and (2) the population of households with incomes below 125 percent of the poverty level. The percentage distributions of the two variables are weighted 0.667 and 0.333, reflecting the predominant targeting of these programs to the poor.

11. Elementary and Secondary Education

The workload measure for this function (37.4 percent of local operating expenditures) is a weighted average of the elementary (age 5-14) and secondary (age 15-17) school-age resi-

[18] Ibid.

dent populations,[19] with special allowance for the number of children living in households with incomes below the poverty line.[20]

The weights (1) adjust for the lower cost per pupil of elementary education, which is assumed to average 60 percent of the cost per pupil of secondary education; and (2) allow for the higher cost of the compensatory and remedial programs that pupils from poverty households tend to require more often than pupils from other households by assigning a weight of 1.25 to each child under 18 living in poverty.

Population data are used because enrollment and average-daily-attendance (ADA) data do not reflect the need for public education. Dropout rates, which are strongly influenced by local school policy, account for much of the difference between school-age population and enrollment. Use of enrollment data would imply that counties with depressed enrollments because of high dropout rates have lower costs for public edu-

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[19]The age groups 5-13 and 14-17 would more accurately reflect the actual ages of most children in the two levels of schools, but the data are not available.

[20]As discussed earlier in this appendix, the most recent available data on the poverty populations of the counties are for 1979, from the 1980 decennial census. This being the case, two options suggest themselves for using the 1979 data in conjunction with resident populations in 1987. The first is to assume that the number of children in poverty in 1987 is the same as it was in 1979 in each county. The second is to assume that the same proportion of children in each county is poor in both years. The first assumption is used on the reasoning that the relative incidence of poverty has almost certainly declined in counties whose populations have grown since 1979, while relative poverty is probably rising in counties that have experienced population stagnation or loss.

cation. Therefore, enrollment and ADA data are poor candidates for a workload measure.

Other variables considered for the measure are school-construction and student-transportation needs. Neither is used because both are influenced by local policy (and because outlays for construction are predominantly capital rather than operating).

A key issue is whether enrollment in private schools should be subtracted from total school-age population. Clearly, private schools diminish the number of children that must be served by the public system. Hence, subtracting private school enrollment might give a more accurate indication of need. For purposes of comparisons among the states, adjustment for enrollment in private schools seems advisable because the importance of private institutions varies significantly from state to state due to cultural and religious traditions.[21]

The principal argument against adjustment for private enrollment is that it may be as much or more a response to the quality of public programs as to religious or cultural tradition. Within the State of Maryland, it appears that the quality of public schools--when it is superior as well as when it is inferior--is a factor that affects private school enrollment in certain areas. To the extent this is the case, such private

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[21]For further discussion of this issue see Rafuse, Representative Expenditures, op. cit., pp. 21-4.

enrollment should not be subtracted from the school-age population.

This analysis does not adjust for enrollment in private schools because it has not been sufficiently established that family tradition, religion, ethnic background, or race outweigh the importance of the quality of the public schools in a family's decision to send a child to a public or private school. Comments or advice concerning the private school issue in Maryland would be welcome.

The population eligible for special education programs also has to be considered a possible variable for the workload measure. Children with disabilities need more personalized attention and care at higher cost than is incurred for pupils without disabilities. The available data on the actual number of handicapped children under the age of 21 relative to the resident population under the age of 20 (the closest possible match of age groups given the available data) are summarized in Table A.4.

Despite the Maryland Department of Education's attempt to instill uniformity into the reporting process, the number of handicapped individuals reported continues to be influenced by such aspects of school policy as the aggressiveness with which children with disabilities are sought out. Certain areas believed to offer superior programs for handicapped children are reported to attract families to locate in the areas in order to qualify for the programs. As this behavior clearly is a response to local policy, the analysis cannot rely on data

TABLE A.4

HANDICAPPED CHILDREN AGE 0-20 IN MARYLAND, AS PERCENTAGE OF POPULATION AGE 0-19, BY COUNTY, 1988
(State Average = 6.5 Percent)

County	Handicapped Percentage (1)	County	Handicapped Percentage (2)
Above Average		Below Average	
Dorchester	9.8%	Howard	6.4%
Caroline	9.1	St. Mary's	6.4
Garrett	8.7	Worcester	6.4
Somerset	8.7	Charles	6.3
Carroll	8.0	Baltimore	6.0
Baltimore City	7.7	Talbot	6.0
Washington	7.6	Montgomery	5.9
Cecil	7.3	Wicomico	5.9
Calvert	7.0	Kent	5.4
Anne Arundel	6.9	Prince George's	4.9
Frederick	6.9		
Allegany	6.7		
Harford	6.7		
Queen Anne's	6.5		

Sources: Division of Special Education, Maryland Department of Education, Special Services Information System Report 31A for December 1, 1988 (March 1989); and Ms. Estelle Apelberg, Maryland Department of Health and Mental Hygiene.

that reflect such responses. Whether the reporting problem is serious enough to preclude use of the data is not at all clear. Suggestions on the handling of this issue would be welcome.

To the extent that handicaps are related to poverty, allowance is already made in the analysis for the higher than average costs of educating children living in households with incomes below the poverty line. The implicit assumption of the analysis that the cost of educating such children is 25 percent

higher than the average for all children may not be adequate. The advice of readers on this issue would be appreciated.

In the absence of substantial information to the contrary, it seems reasonable to assume that the incidence of most handicaps among school-age children is approximately uniform throughout the State. As a result, allowance for the number of handicapped children would involve application of a statewide percentage to all 24 counties. As this would not affect the distribution of the school-age population among the counties, the workload measure would not be significantly different.

12. Community Colleges

The workload measure for this function, 3.9 percent of local outlays, is an estimate of the total expected number of course hours, derived by applying statewide average propensities to enroll in course-work in community colleges by age to the actual age distribution of the resident population of each county.

The age mix of students enrolled in courses in colleges and universities, part-time and full-time, has shifted substantially in recent decades. This underlines the importance of taking into account in a workload measure the enrollment propensities of all age groups, as well as each group's extent of involvement, as measured by course hours.

The workload measure is calculated by multiplying each age group's statewide propensity to enroll in community college on a full-time and part-time basis by the population in each

age group in each county. This yields an estimate of the number of potential full- and part-time enrollees in each county by age group.

The full-time student's more extensive use of community-college facilities is factored in by multiplying the estimates of the number of potential full- and part-time enrollees by age group in each county by the statewide average number of course hours taken by students in each age group.[22] Full-time students enroll in 2-4 times more credit hours than part-time students, depending on age (see Table A.5). Therefore, reference to the total number of course hours automatically provides for the appropriate weighting for the relative use of facilities by each age group. Total hours are then summed for all age groups in each county. The result is an estimate of the total expected number of course hours in each county.

Note: Expenditures for the functions elementary and secondary education and community colleges in this draft differ slightly from the amounts that will be used in the final report. Three counties do not have community colleges, and the colleges of some counties have more limited course offerings than others. In order to provide their residents with broader ranges of options than they are able to offer in their own colleges, some counties make payments to the community colleges

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[22]Information on statewide full-time and part-time enrollment and average credit hours in 1989 for each age group are provided by Mr. Daniel D. McConochie, Director of Research/ Planning, Maryland State Board for Community Colleges.

TABLE A.5

AVERAGE COURSE HOURS TAKEN BY STUDENTS IN MARYLAND COMMUNITY COLLEGES, BY AGE, 1989

Age Group	Full-Time	Part-Time
	(1)	(2)
Total	13.7	4.9
Under 15	14.3	4.1
15-19	13.8	6.6
20-29	13.5	5.3
30-39	13.3	4.5
40-49	13.4	4.1
50-59	13.1	3.6
60 and older	13.3	3.1

Source: Unpublished information provided by Mr. Daniel D. McConochie, Director of Research/ Planning, Maryland State Board for Community Colleges.

of other counties. Information on the amounts of these intergovernmental transfers for community colleges has been obtained from Ms. Elaine Ryan, Executive Vice President, Charles County Community College. Time has not permitted its incorporation in the estimates for this draft; therefore, the contracted funds are included in elementary and secondary education expenditures.

In the final report, actual outlays for Calvert County will be $219,945 for community colleges, rather than zero, and lower by the same amount for elementary and secondary education. The same adjustment will move $397,068 for St. Mary's County from elementary and secondary education to community colleges (shown as zero in the present draft). No adjustment

is necessary for Somerset, the only other county for which no outlays for community colleges are shown.

13. Recreation and Parks

The workload measure for this function (2.5 percent of local expenditures) consists of three equally weighted variables: (1) R+V population, (2) density-adjusted R+V population, and (3) the population living in households with incomes below the poverty line. The indicators are chosen because each reflects considerations that contribute to the relative need for recreation and parks.

R+V population is included because public recreation facilities, such as parks and beaches, are available to and used by visitors as well as residents. As a result, the need for expenditures for the operation and maintenance of these facilities is determined by the R+V population.

Density-adjusted R+V population is calculated by multiplying each county's R+V population by the ratio of its R+V population per square mile of land to the statewide average density.[23] This factor is included because, other things equal, the need for public parks and recreation facilities is inversely related to population density. According to the Maryland's Program Open Space, which sets standards for county

[23]The square miles of land in each county are from the Maryland Association of Counties, Inc., Fiscal Year 1988-89 County Budgets, Tax Rates and Selected Statistics (February 1989), p. 3.

acquisition of land for recreation purposes,[24] the need for recreation and parks per 1,000 residents depends on the existing supply of open land, parks, and recreation facilities, which tends to vary inversely with the density of a county.

Finally, the need for public expenditures for parks and recreation facilities depends inversely on the ability of residents to purchase access to such facilities in the market. In the extreme, the millionaire with private pool, tennis court, and health facilities who vacations in exotic foreign locations has little interest in public parks or recreation facilities except as such parks may contribute to the general quality of the environment.

At more modest but still comfortable income levels, families are likely to belong to a private country club or swimming pool, and to vacation at private resorts or national parks, though they may be occasional users of facilities provided by local governments. It is at the lower end of the income distribution that dependence on local public park and recreation facilities is greatest. To capture this special dimension of the need for public park and recreation services, the population living in households with incomes below the poverty level is included as the third variable in the workload measure.

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[24]Information provided by Mr. Chip Price, Program Open Space, Maryland Department of Natural Resources.

14. Libraries

These services, which account for 1.3 percent of local expenditures, are the responsibility in each county of a library board whose funding is largely in the form of grants from the State government and transfers ("contributions") from the county board. The need for public library facilities and programs depends on the overall size of a community, but visitors to and employees in a locality rarely use the services.[25] Therefore, resident population is the workload variable for this function.

15. Natural Resources

The two principal programs in this function (0.1 percent of local expenditures) are the Agriculture Extension Service and the Soil Conservation Service. The need for these programs varies directly with the amount of undeveloped land. Therefore, the workload measure is the total undeveloped acreage in a county used for agriculture and mining, together with the acreage of forests, wetlands, and barren land.[26]

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[25]There are, reportedly, cases near the borders of counties where significant numbers of the users of the library facilities of one county are residents of another. The use of public libraries in Baltimore County located near the City by residents of the City has been cited as such a case. It is difficult to see how this phenomenon could be accomodated in the analysis. Suggestions would be welcome.

[26]Maryland Department of State Planning, Maryland's Land: A Portrait of Changing Uses, 1973-1985 (December 1987), pp. 39-54.

16. Urban Development and Housing

This function accounts for only 0.6 percent of local expenditures. The workload measure is the resident population living in households with incomes below the poverty level. The need for the urban rehabilitation and public housing programs that are the major activities comprehended by this function clearly depends primarily on the size of a county's poverty population.

17. Economic Development

The outlays included in this function (1.0 percent of local expenditures) are intended to promote economic development and growth by providing financial assistance to private firms locating or expanding activities in certain areas and by acquiring and improving industrial sites. The need for spending on this function tends to depend on the extent of poverty as well as the overall size of a local area. Therefore, the workload measure is an equally weighted combination of poverty population and total resident population.

18. Economic Opportunity

Local operating outlays for this function account for only 0.1 percent of expenditures. The services included in the function are intended to alleviate poverty and its causes through job training and day care. The obvious choice for the workload measure is the population living in households with incomes below the poverty line.

19 and 20. Debt Service: Principal & Interest

Debt service accounts for 7.0 percent of local expenditures. The actual obligations of the local governments in a county for debt service are, by definition, a function of the borrowing policies of those governments in the past. The default workload--total resident population--is used for both of these functions to ensure policy neutrality.

21. Intergovernmental

This category, 0.1 percent of local expenditures, encompasses a very mixed bag of activities, making it difficult to characterize the function and to identify an appropriate workload measure. Review of the uniform financial reports of particular local governments suggests that the only consistency in reporting for the function involves contributions for local boards (education, community colleges, health departments).

However, most of the expenditures of these boards are netted out of the intergovernmental category and recorded in their appropriate function (for example, the outlays of boards of education are classified as education spending), leaving the intergovernmental category with a variety of miscellaneous expenditures that apparently reflect little uniformity in reporting by local governments in the various counties. As a result, the default variable resident population is used as the workload measure for this function.

22. Miscellaneous

This category accounts for 2.1 percent of local expenditures, including outlays for settlement claims against local governments, retirement and pension contributions, workers' compensation, and social security. The need for expenditures for this function depends on the overall magnitude of a government's needed expenditures for all other functions. Therefore, the workload measure is the total representative expenditures of a county's governments for all other functions.

APPENDIX B

BACKUP AND UNDERLYING DATA

TABLE E.12

REPRESENTATIVE EXPENDITURES OF ALL LOCAL GOVERNMENTS IN MARYLAND, BY FUNCTION, FY 1988

County	Total	General Government	Public Safety				Public Works		
			Police	Fire	Corrections	Other	Highways	Sanitation & Waste Removal	Other
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Total	**$7,502,401,758**	**$486,238,606**	**$427,919,949**	**$261,541,437**	**$86,880,659**	**$88,605,842**	**$216,738,848**	**$476,811,450**	**$362,750,918**
Allegany	123,047,177	7,996,018	4,876,704	3,071,980	822,351	1,351,970	3,439,646	8,490,105	5,534,945
Anne Arundel	613,779,023	43,994,028	31,821,368	26,222,255	5,861,725	7,810,729	13,780,256	33,002,981	31,977,003
Baltimore City	1,751,054,746	80,007,966	104,768,796	79,566,876	24,056,293	16,012,874	71,799,078	104,102,244	65,556,455
Baltimore	1,002,723,918	72,739,342	66,784,611	46,403,381	13,871,179	13,192,369	31,830,267	81,120,409	54,009,351
Calvert	70,515,601	4,953,708	3,276,925	977,439	633,130	744,172	940,647	1,813,314	3,046,626
Caroline	41,818,771	2,654,720	1,829,229	825,569	347,636	427,224	1,361,120	1,530,565	1,749,049
Carroll	158,032,181	12,413,473	7,934,577	2,241,346	1,432,549	2,006,857	3,756,084	6,604,315	8,216,042
Cecil	107,219,247	7,507,550	5,233,974	1,803,104	1,010,470	1,190,211	1,554,018	4,433,870	4,872,703
Charles	149,580,769	9,891,489	7,535,499	1,486,452	1,515,320	1,590,131	2,264,921	5,142,411	6,509,972
Dorchester	52,186,102	3,222,831	2,511,419	668,630	488,734	563,181	2,199,899	2,653,933	2,305,655
Frederick	203,336,740	14,611,582	11,189,550	3,762,588	2,153,897	2,557,436	4,906,968	9,017,935	10,470,102
Garrett	49,262,761	2,845,860	1,869,154	592,725	322,966	502,329	2,085,028	1,548,207	2,056,526
Harford	244,311,938	17,696,367	12,700,193	3,370,309	2,470,347	2,850,372	5,130,209	10,317,246	11,669,379
Howard	223,688,161	16,868,094	12,150,873	8,085,539	2,192,690	3,075,485	4,744,413	14,269,536	12,590,988
Kent	26,582,540	1,805,210	1,134,673	486,326	191,863	313,490	622,040	1,714,614	1,283,423
Montgomery	1,001,286,929	73,647,256	51,341,536	39,992,697	8,654,903	14,239,067	26,357,611	81,461,329	58,294,517
Prince George's	1,087,085,699	73,806,539	70,572,558	28,794,613	15,246,391	12,740,359	22,157,212	80,309,829	52,158,827
Queen Anne's	44,101,760	3,334,329	2,176,914	793,839	410,515	514,935	1,187,729	1,379,892	2,108,135
St. Mary's	114,705,645	7,332,338	5,793,908	1,168,539	1,176,108	1,200,177	1,640,713	3,680,031	4,913,507
Somerset	33,114,805	2,060,063	1,524,508	515,444	301,641	331,734	905,968	1,265,458	1,358,114
Talbot	41,647,735	2,946,740	2,203,574	739,703	390,841	571,614	1,475,992	2,295,370	2,340,178
Washington	181,743,332	12,445,330	8,209,901	3,851,303	1,403,318	2,237,490	6,471,322	10,056,430	9,160,247
Wicomico	118,546,691	7,571,263	6,760,964	4,559,102	1,365,673	1,414,225	4,295,764	5,523,384	5,789,814
Worcester	63,029,525	3,886,511	3,718,539	1,561,679	560,120	1,167,410	1,831,443	5,078,042	4,779,359

Sources: See text.

Worksheet Source: Range name MDREPX88 from WORKLOAD.WR1, cursor at A57.

TABLE E.12

REPRESENTATIVE EXPENDITURES OF MD. LOCAL GOVTS., FY 1988

County	Economic Opportunity	Debt Service		Intergovernmental	Miscellaneous
		Principal	Interest		
	(19)	(20)	(21)	(22)	(23)
Total	$10,286,993	$233,975,055	$290,755,979	$10,872,859	$156,468,058
Allegany	241,867	3,847,635	4,781,377	178,800	2,566,239
Anne Arundel	566,985	21,169,658	26,307,098	983,757	12,800,808
Baltimore City	4,487,362	38,499,346	47,842,344	1,789,071	36,519,523
Baltimore	861,004	35,001,728	43,495,926	1,626,536	20,912,538
Calvert	89,683	2,383,694	2,962,168	110,771	1,470,654
Caroline	78,241	1,277,435	1,587,442	59,363	872,161
Carroll	123,578	5,973,288	7,422,882	277,580	3,295,876
Cecil	140,920	3,612,587	4,489,287	167,878	2,236,135
Charles	162,762	4,759,724	5,914,811	221,185	3,119,616
Dorchester	109,771	1,550,807	1,927,155	72,066	1,088,379
Frederick	189,359	7,031,004	8,737,284	326,732	4,240,737
Garrett	104,177	1,369,411	1,701,738	63,637	1,027,412
Harford	270,499	8,515,384	10,581,892	395,711	5,095,304
Howard	107,813	8,116,824	10,086,610	377,190	4,665,180
Kent	54,135	868,656	1,079,461	40,367	554,398
Montgomery	632,690	35,438,611	44,038,832	1,646,838	20,882,568
Prince George's	1,107,677	35,515,257	44,134,078	1,650,400	22,671,965
Queen Anne's	61,433	1,604,459	1,993,828	74,559	919,774
St. Mary's	160,194	3,528,276	4,384,516	163,960	2,392,270
Somerset	73,944	991,290	1,231,855	46,065	690,633
Talbot	65,705	1,417,953	1,762,061	65,893	868,593
Washington	297,172	5,988,617	7,441,931	278,292	3,790,390
Wicomico	197,420	3,643,245	4,527,386	169,302	2,472,378
Worcester	102,600	1,870,165	2,324,016	86,907	1,314,527

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TABLE E.12

REPRESENTATIVE EXPENDITURES OF ALL LOCAL GOVERNMENTS IN MARYLAND, BY FUNCTION, FY 1988

County	Health & Hospitals	Social Services	Education		Recreation & Parks	Libraries	Natural Resources	Urban Development & Housing	Economic Develop-ment
			Elementary & Secondary	Community Colleges					
	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
Total	$298,141,389	$587,923,858	$2,803,916,362	$295,685,325	$186,896,047	$95,870,367	$7,843,557	$43,891,816	$72,386,384
Allegany	7,343,868	14,159,699	42,976,187	4,408,898	2,547,281	1,576,554	356,913	1,031,983	1,446,157
Anne Arundel	17,577,444	32,791,377	250,553,480	28,036,321	11,885,934	8,674,185	272,912	2,419,171	5,269,546
Baltimore City	117,697,924	251,023,322	523,427,536	48,256,931	78,969,972	15,774,957	6,028	19,146,362	21,743,487
Baltimore	27,292,025	50,026,941	355,791,190	42,073,481	18,853,251	14,341,822	379,229	3,673,672	8,443,666
Calvert	2,660,473	5,172,360	32,853,488	2,957,379	1,243,102	976,709	182,239	382,654	684,266
Caroline	2,386,182	4,589,257	16,344,309	1,466,767	819,577	523,424	282,786	333,832	472,882
Carroll	4,360,197	7,473,765	69,965,564	7,349,669	2,480,690	2,447,531	370,255	527,275	1,358,738
Cecil	4,416,453	8,289,309	46,451,361	4,467,162	1,908,582	1,480,243	297,536	601,267	1,054,629
Charles	4,973,982	9,455,027	71,898,023	6,414,140	2,390,868	1,950,278	380,769	694,462	1,308,927
Dorchester	3,328,036	6,429,988	18,044,884	1,699,023	1,084,072	635,437	507,734	468,363	626,104
Frederick	6,047,078	11,082,141	88,682,267	9,018,887	3,298,285	2,880,926	570,190	807,945	1,753,845
Garrett	3,142,560	6,095,753	19,132,243	1,612,085	1,026,620	561,111	580,364	444,495	578,362
Harford	8,291,204	15,701,606	106,764,163	11,012,196	4,231,831	3,489,145	335,496	1,154,146	2,268,938
Howard	3,791,943	6,325,108	96,777,173	10,483,698	3,384,482	3,325,837	173,774	460,009	1,634,901
Kent	1,652,417	3,173,795	8,870,189	1,011,686	564,351	355,928	249,698	230,981	324,833
Montgomery	20,457,162	36,401,170	401,627,372	42,147,207	18,797,668	14,520,833	299,588	2,699,516	7,707,958
Prince George's	33,363,471	63,735,373	428,819,753	49,635,655	21,674,839	14,552,238	321,519	4,726,160	9,390,985
Queen Anne's	1,911,121	3,604,302	17,669,720	1,839,173	808,251	657,421	324,978	262,118	464,334
St. Mary's	5,088,032	9,491,796	52,108,823	4,959,493	1,984,518	1,445,698	299,844	683,504	1,109,400
Somerset	2,342,678	4,408,518	11,752,335	1,166,876	716,896	406,177	295,612	315,497	413,500
Talbot	2,156,062	3,930,265	14,574,196	1,494,096	800,551	581,001	236,499	280,345	450,513
Washington	8,682,403	17,078,136	67,106,691	7,583,566	3,578,910	2,453,812	387,694	1,267,954	1,971,924
Wicomico	5,948,747	11,481,959	42,188,006	4,472,127	2,251,368	1,492,806	321,261	842,337	1,258,159
Worcester	3,229,926	6,002,891	19,537,409	2,118,809	1,594,186	766,293	410,648	437,768	650,276

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TABLE E.13

PER CAPITA REPRESENTATIVE EXPENDITURES OF ALL LOCAL GOVERNMENTS IN MARYLAND, BY FUNCTION, FY 1988

County	Resident Population 1/1/88	Total	General Government	Public Safety				Public Works			Health and Hospitals	Social Services
				Police	Fire	Corrections	Other	Highways	Sanitation	Other		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Total	4,579,000	$1,638.44	$106.19	$93.45	$57.12	$18.97	$19.35	$47.33	$104.13	$79.22	$65.11	$128.40
Allegany	75,300	1,634.09	106.19	64.76	40.80	10.92	17.95	45.68	112.75	73.51	97.53	188.04
Anne Arundel	414,300	1,481.48	106.19	76.81	63.29	14.15	18.85	33.26	79.66	77.18	42.43	79.15
Baltimore City	753,450	2,324.05	106.19	139.05	105.60	31.93	21.25	95.29	138.17	87.01	156.21	333.17
Baltimore	685,000	1,463.83	106.19	97.50	67.74	20.25	19.26	46.47	118.42	78.85	39.84	73.03
Calvert	46,650	1,511.59	106.19	70.25	20.95	13.57	15.95	20.16	38.97	65.31	57.03	110.88
Caroline	25,000	1,672.75	106.19	73.17	33.02	13.91	17.09	54.45	61.22	69.96	95.45	183.57
Carroll	116,900	1,351.86	106.19	67.88	19.17	12.25	17.17	32.13	56.50	70.28	37.30	63.93
Cecil	70,700	1,516.54	106.19	74.03	25.50	14.29	16.84	21.98	62.71	68.92	62.47	117.25
Charles	93,150	1,605.81	106.19	80.90	15.96	16.27	17.07	24.32	55.21	69.89	53.40	101.50
Dorchester	30,350	1,719.48	106.19	82.75	22.03	16.10	18.56	72.48	87.44	75.97	109.66	211.86
Frederick	137,600	1,477.74	106.19	81.32	27.34	15.65	18.59	35.66	65.54	76.09	43.95	80.54
Garrett	26,800	1,838.16	106.19	69.75	22.12	12.05	18.74	77.80	57.77	76.74	117.26	227.45
Harford	166,650	1,466.02	106.19	76.21	20.22	14.82	17.10	30.78	61.91	70.02	49.75	94.22
Howard	158,850	1,408.17	106.19	76.49	50.90	13.80	19.36	29.87	89.83	79.26	23.87	39.82
Kent	17,000	1,563.68	106.19	66.75	28.61	11.29	18.44	36.59	100.86	75.50	97.20	186.69
Montgomery	693,550	1,443.71	106.19	74.03	57.66	12.48	20.53	38.00	117.46	84.05	29.50	52.49
Pr. George's	695,050	1,564.04	106.19	101.54	41.43	21.94	18.33	31.88	115.55	75.04	48.00	91.70
Queen Anne's	31,400	1,404.52	106.19	69.33	25.28	13.07	16.40	37.83	43.95	67.14	60.86	114.79
St. Mary's	69,050	1,661.20	106.19	83.91	16.92	17.03	17.38	23.76	53.30	71.16	73.69	137.46
Somerset	19,400	1,706.95	106.19	78.58	26.57	15.55	17.10	46.70	65.23	70.01	120.76	227.24
Talbot	27,750	1,500.82	106.19	79.41	26.66	14.08	20.60	53.19	82.72	84.33	77.70	141.63
Washington	117,200	1,550.71	106.19	70.05	32.86	11.97	19.09	55.22	85.81	78.16	74.08	145.72
Wicomico	71,300	1,662.65	106.19	94.82	63.94	19.15	19.84	60.25	77.47	81.20	83.43	161.04
Worcester	36,600	1,722.12	106.19	101.60	42.67	15.30	31.90	50.04	138.74	130.58	88.25	164.01

Sources: Table E.12 and U.S. Bureau of the Census, Current Population Reports, Series P-26, No. 88-A, County Population Estimates: July 1, 1988, 1987, and 1986 (August 1989), p. 18.

TABLE E.13

PER CAPITA REPRESENTATIVE EXPENDITURES OF LOCAL GOVERNMENTS IN MARYLAND, BY FUNCTION, FY 1988

County	Education		Recrea-tion & Parks	Librar-ies	Natural Re-sources	Urban Develop-ment & Housing	Economic Devel-opment	Economic Oppor-tunity	Debt Service		Inter-govern-mental	Miscel-laneous
	Elem. & Second.	Comm. Colleges							Prin-cipal	Inter-est		
	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)
Total	$612.34	$64.57	$40.82	$20.94	$1.71	$9.59	$15.81	$2.25	$51.10	$63.50	$2.38	$34.17
Allegany	570.73	58.55	33.83	20.94	4.74	13.71	19.21	3.21	51.10	63.50	2.38	34.08
Anne Arundel	604.76	67.67	28.69	20.94	0.66	5.84	12.72	1.37	51.10	63.50	2.38	30.90
Baltimore City	694.71	64.05	104.81	20.94	0.01	25.41	28.86	5.96	51.10	63.50	2.38	48.47
Baltimore	519.40	61.42	27.52	20.94	0.55	5.36	12.33	1.26	51.10	63.50	2.38	30.53
Calvert	704.26	63.40	26.65	20.94	3.91	8.20	14.67	1.92	51.10	63.50	2.38	31.53
Caroline	653.77	58.67	32.78	20.94	11.31	13.35	18.92	3.13	51.10	63.50	2.38	34.89
Carroll	598.51	62.87	21.22	20.94	3.17	4.51	11.62	1.06	51.10	63.50	2.38	28.19
Cecil	657.02	63.19	27.00	20.94	4.21	8.50	14.92	1.99	51.10	63.50	2.38	31.63
Charles	771.85	68.86	25.67	20.94	4.09	7.46	14.05	1.75	51.10	63.50	2.38	33.49
Dorchester	594.56	55.98	35.72	20.94	16.73	15.43	20.63	3.62	51.10	63.50	2.38	35.86
Frederick	644.49	65.54	23.97	20.94	4.14	5.87	12.75	1.38	51.10	63.50	2.38	30.82
Garrett	713.89	60.15	38.31	20.94	21.66	16.59	21.58	3.89	51.10	63.50	2.38	38.34
Harford	640.65	66.08	25.39	20.94	2.01	6.93	13.62	1.62	51.10	63.50	2.38	30.58
Howard	609.24	66.00	21.31	20.94	1.09	2.90	10.29	0.68	51.10	63.50	2.38	29.37
Kent	521.78	59.51	33.20	20.94	14.69	13.59	19.11	3.18	51.10	63.50	2.38	32.61
Montgomery	579.09	60.77	27.10	20.94	0.43	3.89	11.11	0.91	51.10	63.50	2.38	30.11
Pr. George's	616.96	71.41	31.19	20.94	0.46	6.80	13.51	1.59	51.10	63.50	2.38	32.62
Queen Anne's	562.73	58.57	25.74	20.94	10.35	8.35	14.79	1.96	51.10	63.50	2.38	29.29
St. Mary's	754.65	71.83	28.74	20.94	4.34	9.90	16.07	2.32	51.10	63.50	2.38	34.65
Somerset	605.79	60.15	36.95	20.94	15.24	16.26	21.31	3.81	51.10	63.50	2.38	35.60
Talbot	525.20	53.84	28.85	20.94	8.52	10.10	16.24	2.37	51.10	63.50	2.38	31.30
Washington	572.58	64.71	30.54	20.94	3.31	10.82	16.83	2.54	51.10	63.50	2.38	32.34
Wicomico	591.70	62.72	31.58	20.94	4.51	11.81	17.65	2.77	51.10	63.50	2.38	34.68
Worcester	533.81	57.89	43.56	20.94	11.22	11.96	17.77	2.80	51.10	63.50	2.38	35.92

TABLE E.17

DATA USED TO CALCULATE WORKLOADS FOR ESTIMATING REPRESENTATIVE EXPENDITURES FOR LOCAL GOVERNMENTS IN MARYLAND, BY COUNTY, 1988

County	Total Resident Population 7/1/87	7/1/88	1/1/88	Average Number of Visitors Per Day CY 1988	Average Total Employment FY 1988	Population Concepts R+V (3+4)	R+V+E (3+4+5)	Poverty Population, 1979 Total	Under 18	Population Under 125% of Poverty	Career Fire Personnel 1989
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Total	4,536,000	4,622,000	4,579,000	137,910	1,997,424	4,716,910	6,714,334	404,560	143,012	543,707	6,097
Allegany	75,400	75,200	75,300	850	26,299	76,150	102,449	9,512	3,049	13,718	65
Anne Arundel	411,000	417,600	414,300	26,580	150,998	440,880	591,878	22,298	8,426	31,042	640
Baltimore City	755,500	751,400	753,450	14,220	445,747	767,670	1,213,417	176,476	67,178	222,069	2,118
Baltimore	680,700	689,300	685,000	5,920	308,765	690,920	999,686	33,861	10,099	47,781	1,147
Calvert	45,300	48,000	46,650	1,660	8,082	48,310	56,392	3,527	1,416	4,870	14
Caroline	24,700	25,300	25,000	320	7,054	25,320	32,374	3,077	921	4,462	16
Carroll	115,100	118,700	116,900	1,070	34,105	117,970	152,075	4,860	1,517	7,673	24
Cecil	69,600	71,800	70,700	2,770	16,721	73,470	90,191	5,542	1,811	8,102	29
Charles	91,500	94,800	93,150	4,250	23,096	97,400	120,496	6,401	2,630	9,027	10
Dorchester	30,300	30,400	30,350	700	11,627	31,050	42,677	4,317	1,418	6,236	8
Frederick	135,500	139,700	137,600	11,030	45,166	148,630	193,796	7,447	2,274	10,730	59
Garrett	26,700	26,900	26,800	2,600	8,665	29,400	38,065	4,097	1,363	5,900	7
Harford	162,900	170,400	166,650	2,400	46,944	169,050	215,994	10,638	4,028	14,969	40
Howard	154,700	163,000	158,850	3,190	71,013	162,040	233,053	4,240	1,424	6,152	182
Kent	17,000	17,000	17,000	440	6,316	17,440	23,756	2,129	554	3,083	8
Montgomery	682,200	704,900	693,550	10,660	374,792	704,210	1,079,002	24,882	7,388	34,111	923
Prince George's	689,100	701,000	695,050	6,060	264,323	701,110	965,433	43,562	14,807	59,737	607
Queen Anne's	30,800	32,000	31,400	460	7,161	31,860	39,021	2,416	783	3,506	13
St. Mary's	67,800	70,300	69,050	1,970	19,927	71,020	90,947	6,300	2,453	9,401	9
Somerset	19,400	19,400	19,400	470	5,268	19,870	25,138	2,908	949	4,415	9
Talbot	27,500	28,000	27,750	1,340	14,226	29,090	43,316	2,584	780	3,959	10
Washington	116,600	117,800	117,200	3,740	48,612	120,940	169,552	11,687	3,854	15,968	69
Wicomico	70,600	72,000	71,300	2,490	33,377	73,790	107,167	7,764	2,594	10,987	69
Worcester	36,300	36,900	36,600	32,720	19,144	69,320	88,464	4,035	1,296	5,809	22

Sources: See Appendix A.

TABLE E.17 (Continued)

DATA USED TO CALCULATE WORKLOADS FOR ESTIMATING REPRESENTATIVE EXPENDITURES
FOR LOCAL GOVERNMENTS IN MARYLAND, BY COUNTY, 1988

	Resident Population by Age, July 1, 1987											
County	Total	Under 10	5-14	11-14	15-17	15-19	20-24	25-34	35-44	45-54	55-64	Over 65
	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)
Total	4,535,860	655,440	599,030	287,540	208,740	402,610	383,930	786,950	666,850	466,650	412,190	473,700
Allegany	74,710	8,730	8,890	4,410	3,160	6,820	5,550	9,340	9,280	8,400	9,010	13,170
Anne Arundel	412,620	58,370	54,480	26,710	19,170	37,730	37,400	74,880	63,390	45,720	35,760	32,660
Baltimore City	745,090	119,010	101,870	46,590	34,820	68,210	67,670	115,860	90,130	64,600	69,470	103,550
Baltimore	676,460	85,040	77,860	37,150	27,390	53,430	54,940	117,500	98,660	70,230	73,560	85,950
Calvert	46,230	7,360	7,070	3,370	2,480	4,380	3,210	8,070	7,420	5,080	3,630	3,710
Caroline	24,900	3,570	3,450	1,690	1,220	2,130	1,650	3,910	3,310	2,630	2,590	3,420
Carroll	115,670	16,470	15,400	7,520	5,450	10,520	8,380	19,780	19,150	12,500	9,710	11,640
Cecil	69,110	10,020	10,020	4,960	3,540	6,690	5,440	10,830	10,480	7,330	6,500	6,860
Charles	93,170	15,890	15,580	7,730	5,480	9,990	7,450	16,370	14,560	9,660	6,060	5,460
Dorchester	30,070	3,850	3,720	1,760	1,300	2,370	2,030	4,360	3,820	3,160	3,470	5,250
Frederick	136,900	20,410	19,420	9,450	6,880	13,010	10,810	24,050	21,580	14,260	10,890	12,440
Garrett	26,580	3,960	3,950	1,860	1,410	2,390	1,840	4,220	3,580	2,720	2,490	3,520
Harford	164,410	23,550	23,080	11,060	8,140	15,780	13,410	29,240	26,690	17,990	14,000	12,690
Howard	157,850	23,470	21,530	10,500	7,570	14,000	11,620	32,120	29,010	17,410	11,160	8,560
Kent	16,970	1,870	1,870	1,010	650	1,450	1,380	2,150	2,260	1,750	2,080	3,020
Montgomery	687,800	99,960	89,210	42,950	31,130	55,110	47,520	125,420	110,830	75,890	61,480	68,640
Prince George's	685,820	102,880	94,030	46,180	32,240	66,070	72,190	128,560	102,660	69,190	52,380	45,710
Queen Anne's	31,010	4,120	3,800	1,810	1,330	2,530	2,090	5,000	4,750	3,480	3,500	3,730
St. Mary's	69,880	12,000	11,150	5,240	3,920	7,280	6,620	12,860	9,240	6,600	4,830	5,210
Somerset	19,400	2,530	2,440	1,170	830	1,860	1,450	2,480	2,370	1,940	2,380	3,220
Talbot	27,600	3,440	3,090	1,420	1,090	2,030	1,700	3,980	3,480	2,960	3,320	5,270
Washington	116,250	14,700	14,150	6,770	5,000	10,040	10,930	18,880	15,430	12,020	12,190	15,290
Wicomico	70,750	9,620	8,880	4,300	3,110	6,260	5,800	11,380	9,760	7,210	7,260	9,160
Worcester	36,610	4,620	4,090	1,930	1,430	2,530	2,850	5,710	5,010	3,920	4,470	5,570

Sources: See Appendix A.

TABLE E.17 (Continued)

DATA USED TO CALCULATE WORKLOADS FOR ESTIMATING REPRESENTATIVE EXPENDITURES
FOR LOCAL GOVERNMENTS IN MARYLAND, BY COUNTY, 1988

County	Locally Maintained Roads and Bridges: Vehicle Miles Traveled	Lane Miles	Bridges: Square Feet	Bridges: Lane Miles	Percent of Population Served by Public Sewers	Violent Crimes 1987: Number	Violent Crimes 1987: Expected Arrests	Square Miles of Land	Acres of Undeveloped Resources 1985	Expected Course Hours in Community Colleges: Total	Part Time	Part Time
	(24)	(25)	(26)	(27)	(28)	(29)	(30)	(31)	(32)	(33)	(34)	(35)
Total	6,736,694,359	46,180	3,463,221	1,093	72.5%	37,411	11,917	9,844	5,614,434	774,228	393,869	380,358
Allegany	81,805,413	1,461	378,322	119	89.3	163	174	427	255,479	11,544	6,029	5,516
Anne Arundel	423,134,178	3,139	123,287	39	49.0	1,496	1,132	418	195,351	73,411	37,337	36,073
Baltimore City	2,563,614,047	4,486	608,802	192	100.0	14,763	1,897	80	4,315	126,357	66,413	59,944
Baltimore	1,052,686,240	4,822	80,574	25	89.3	6,593	1,705	598	271,453	110,166	54,426	55,739
Calvert	13,702,538	716	5,857	2	5.4	165	121	213	130,447	7,744	3,959	3,785
Caroline	18,155,848	1,035	191,330	60	31.9	112	60	321	202,419	3,841	1,953	1,887
Carroll	82,212,461	1,953	26,309	8	26.1	293	300	452	265,029	19,245	9,717	9,528
Cecil	21,098,310	1,183	178,883	56	34.2	306	180	360	212,977	11,697	6,082	5,615
Charles	48,243,072	1,212	49,885	16	24.7	489	260	452	272,555	16,795	8,877	7,917
Dorchester	43,718,558	1,265	94,667	30	58.4	206	68	593	363,437	4,449	2,235	2,214
Frederick	102,035,122	2,614	404,022	128	34.1	706	366	663	408,143	23,615	12,100	11,515
Garrett	32,463,691	1,496	93,022	29	25.3	73	65	657	415,426	4,221	2,172	2,049
Harford	133,820,030	1,912	175,844	56	32.7	725	447	448	240,149	28,835	14,735	14,100
Howard	133,678,848	1,460	100,625	32	58.5	520	436	251	124,388	27,451	13,514	13,937
Kent	6,675,390	549	16,576	5	73.7	40	40	278	178,734	2,649	1,364	1,285
Montgomery	854,305,564	4,485	333,609	105	82.8	1,989	1,741	495	214,446	110,359	54,090	56,269
Prince George's	713,983,844	3,916	252,134	80	90.6	6,909	1,982	487	230,144	129,967	67,212	62,755
Queen Anne's	13,396,482	1,029	20,996	7	11.6	118	75	372	232,620	4,816	2,388	2,428
St. Mary's	31,554,633	990	34,086	11	22.0	391	198	373	214,629	12,986	6,883	6,103
Somerset	12,080,146	729	2,995	1	36.7	116	46	338	211,600	3,055	1,618	1,437
Talbot	29,983,823	841	20,522	6	47.9	147	60	259	169,279	3,912	1,924	1,988
Washington	184,332,504	1,911	180,365	57	55.0	263	301	455	277,512	19,857	10,144	9,713
Wicomico	111,819,831	1,637	58,200	18	44.3	614	179	379	229,959	11,710	5,990	5,720
Worcester	28,193,786	1,339	32,309	10	67.0	214	85	475	293,943	5,548	2,706	2,842

Sources: See Appendix A.

TABLE E.7

OPERATING OUTLAYS OF ALL LOCAL GOVERNMENTS, BY FUNCTION, FY 1988

County	Total	General Government	Public Safety				Public Works		
			Police	Fire	Corrections	Other	Highways	Sanitation & Waste Removal	Other
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Total	$7,502,401,758	$486,238,606	$427,919,949	$261,541,437	$86,880,659	$88,605,842	$216,738,848	$476,811,450	$362,750,918
Allegany	115,952,224	4,712,278	2,970,487	2,396,939	622,149	1,417,324	5,634,583	9,576,100	7,754,971
Anne Arundel	593,912,906	56,794,756	36,361,147	34,381,600	5,663,479	5,405,961	25,730,405	28,462,609	22,503,487
Baltimore City	1,658,296,170	130,953,921	142,801,498	76,826,280	28,763,165	28,980,618	33,577,104	113,508,274	52,628,147
Baltimore	922,774,424	36,512,068	56,507,732	39,482,545	6,034,617	11,939,746	17,118,834	50,818,835	0
Calvert	63,956,318	3,800,755	2,376,686	477,811	1,622,225	733,658	3,749,192	1,566,490	619,114
Caroline	34,511,950	2,338,804	939,272	594,228	627,290	73,571	1,965,471	1,081,145	958,768
Carroll	137,077,839	10,703,890	3,073,180	1,754,636	1,067,825	1,363,669	6,996,931	3,593,169	1,752,858
Cecil	86,106,208	5,154,447	2,192,436	515,441	1,627,217	2,003,506	4,418,453	3,065,476	2,587,012
Charles	130,512,413	5,260,888	6,061,386	1,950,724	1,810,989	703,113	1,973,590	5,172,644	3,883,294
Dorchester	42,469,079	1,979,267	1,862,178	432,462	214,138	253,045	4,922,611	1,496,589	933,237
Frederick	179,166,604	8,964,947	5,660,339	3,196,109	1,810,407	1,139,379	8,068,360	11,296,194	11,403,912
Garrett	41,967,023	1,663,693	462,966	359,583	199,330	152,040	6,367,814	1,348,749	616,355
Harford	213,636,910	12,080,418	8,756,813	2,227,200	2,427,063	1,667,838	11,915,057	9,615,296	4,955,490
Howard	265,531,457	18,545,752	12,062,532	7,504,593	2,572,331	3,713,345	5,663,934	15,345,138	15,228,394
Kent	25,770,250	1,793,430	720,257	406,558	394,653	121,640	1,390,279	763,361	1,099,025
Montgomery	1,320,355,953	73,571,379	67,119,456	48,800,187	11,033,388	14,587,234	34,564,015	88,586,524	102,910,539
Pr. George's	1,134,553,899	86,703,636	58,275,857	29,385,417	13,691,089	9,592,700	16,613,387	103,092,328	76,308,683
Queen Anne's	44,916,782	2,188,880	708,099	572,116	632,363	414,493	3,395,441	3,272,216	765,941
St. Mary's	78,734,522	3,285,333	2,325,169	544,172	886,169	1,105,258	2,472,599	2,686,534	1,859,724
Somerset	26,659,598	2,168,477	491,091	270,298	303,336	246,035	1,666,394	1,678,671	811,261
Talbot	48,087,442	1,907,996	1,695,232	649,838	514,840	418,612	2,350,809	1,823,243	12,727,754
Washington	148,986,787	6,067,714	5,112,047	2,832,061	1,691,809	1,060,460	4,840,283	6,752,726	19,059,656
Wicomico	99,272,788	3,845,407	3,024,038	3,007,188	1,050,123	621,343	6,371,178	4,256,092	5,721,624
Worcester	89,192,212	5,240,470	6,360,051	2,973,451	1,620,664	891,254	4,972,124	7,953,047	15,661,672

Sources: Tables E.8 and E.9.

TABLE E.7

OPERATING OUTLAYS OF ALL LOCAL GOVERNMENTS, BY FUNCTION, FY 1988

County	Health & Hospitals	Social Services	Education		Recreation & Parks	Libraries	Natural Resources	Urban Development & Housing	Economic Development
			Elementary & Secondary	Community Colleges					
	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
Total	$298,141,389	$587,923,858	$2,803,916,362	$295,685,325	$186,896,047	$95,870,367	$7,843,557	$43,891,816	$72,386,384
Allegany	6,102,072	13,069,472	42,653,135	7,879,696	913,707	639,276	142,618	1,150,812	1,309,050
Anne Arundel	17,106,094	24,560,354	250,212,281	25,190,724	7,200,671	8,039,995	0	258,749	549,391
Baltimore City	87,897,376	298,609,052	410,950,668	23,491,363	42,814,762	15,958,864	0	16,016,063	58,813,528
Baltimore	65,307,784	38,034,256	355,504,008	74,665,574	11,014,704	20,083,621	3,481,006	206,066	882,930
Calvert	3,244,356	3,931,627	34,125,242	0	1,251,761	635,231	130,443	427,889	293,122
Caroline	1,766,651	2,853,029	15,951,157	1,066,976	454,129	613,829	98,702	589,999	237,821
Carroll	5,991,534	8,414,403	70,915,569	3,312,780	937,743	2,418,488	255,593	712,668	1,727,100
Cecil	3,158,432	6,115,579	43,074,671	5,202,150	373,839	1,330,835	166,950	1,227,857	152,277
Charles	5,627,846	8,325,440	62,641,547	11,471,137	2,579,679	683,018	398,874	2,055,127	215,502
Dorchester	2,024,321	4,161,693	18,405,252	1,007,699	355,605	355,957	224,919	177,859	124,222
Frederick	6,294,231	6,833,788	88,919,923	7,293,604	2,416,101	1,097,398	252,438	1,844,011	342,099
Garrett	2,085,397	3,379,128	19,533,617	2,444,902	59,495	287,736	114,838	636,596	240,798
Harford	6,015,338	19,496,982	100,845,286	13,440,458	2,031,400	3,069,528	182,462	1,831,414	261,224
Howard	5,733,427	8,538,083	116,377,493	11,015,976	3,938,387	3,914,977	390,119	1,901,911	947,218
Kent	2,118,692	1,550,887	10,460,354	829,871	300,522	233,674	232,915	204,805	32,181
Montgomery	26,941,714	52,907,193	505,552,902	63,719,606	58,677,455	17,212,138	250,328	9,114,156	2,125,221
Pr. George's	26,732,286	50,669,741	430,367,475	30,348,594	44,745,094	14,296,201	488,222	1,874,841	1,744,248
Queen Anne's	2,600,062	2,744,747	21,764,163	1,481,911	1,422,454	325,884	249,728	205,257	985,860
St. Mary's	3,570,456	7,327,753	46,100,469	0	766,779	1,294,406	163,054	281,260	333,419
Somerset	1,973,327	2,952,126	12,206,661	0	181,130	154,232	42,768	495,548	139,038
Talbot	1,844,832	2,251,480	15,165,216	1,541,187	175,710	598,147	128,231	614,297	158,776
Washington	6,826,876	10,463,167	65,042,923	7,335,002	2,039,631	1,320,675	236,341	775,907	148,615
Wicomico	4,221,585	7,600,104	42,762,728	2,132,988	1,741,023	864,054	108,490	525,609	0
Worcester	2,956,700	3,133,774	24,383,622	813,127	504,266	442,203	104,518	763,115	622,744

TABLE E.7

OPERATING OUTLAYS OF ALL LOCAL GOVERNMENTS, BY FUNCTION, FY '88

County	Economic Opportunity	Debt Service		Intergovernmental	Miscellaneous
		Principal	Interest		
	(19)	(20)	(21)	(22)	(23)
Total	$10,286,993	$233,975,055	$290,755,979	$10,872,859	$156,468,058
Allegany	47,362	2,058,858	3,624,062	28,704	1,248,569
Anne Arundel	0	19,170,234	25,116,544	0	1,204,425
Baltimore City	1,949,567	49,843,215	43,672,820	0	239,885
Baltimore	3,258,454	41,207,875	30,494,099	0	60,219,670
Calvert	0	1,227,760	1,293,178	0	2,449,778
Caroline	0	814,960	753,144	172,942	560,062
Carroll	617,534	2,707,085	3,124,030	1,709,019	3,928,135
Cecil	0	1,108,473	1,291,872	170,914	1,168,371
Charles	40,767	3,364,091	2,913,061	0	3,379,696
Dorchester	46,497	1,434,908	1,017,169	0	1,039,451
Frederick	1,648,600	5,630,215	4,499,980	330,705	223,864
Garrett	219,064	212,265	647,288	36,993	898,376
Harford	2,109,646	4,679,086	3,339,011	0	2,689,900
Howard	166,460	16,011,817	15,278,373	0	681,197
Kent	18,697	2,196,553	246,843	13,348	641,705
Montgomery	74,676	47,728,577	81,381,698	4,267,273	9,230,294
Pr. George's	68,070	23,569,263	59,324,374	0	56,662,393
Queen Anne's	0	181,623	514,174	39,522	451,848
St. Mary's	21,599	1,660,070	1,800,337	0	249,962
Somerset	0	105,790	292,980	24,526	455,909
Talbot	0	1,025,174	1,257,476	217,471	1,021,121
Washington	0	2,081,171	2,273,746	562,521	2,463,456
Wicomico	0	4,334,155	3,708,331	0	3,376,728
Worcester	0	1,621,837	2,891,389	3,298,921	1,983,263

TABLE E.10

PER CAPITA OPERATING OUTLAYS OF ALL LOCAL GOVERNMENTS, BY FUNCTION, FY 1988

County	Resident Population 1/1/88	Total	General Government	Public Safety				Public Works			Health and Hospitals	Social Services
				Police	Fire	Corrections	Other	Highways	Sanitation	Other		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Total	4,579,000	$1,638.44	$106.19	$93.45	$57.12	$18.97	$19.35	$47.33	$104.13	$79.22	$65.11	$128.40
Allegany	75,300	1,539.87	62.58	39.45	31.83	8.26	18.82	74.83	127.17	102.99	81.04	173.57
Anne Arundel	414,300	1,433.53	137.09	87.77	82.99	13.67	13.05	62.11	68.70	54.32	41.29	59.28
Baltimore City	753,450	2,200.94	173.81	189.53	101.97	38.18	38.46	44.56	150.65	69.85	116.66	396.32
Baltimore	685,000	1,347.12	53.30	82.49	57.64	8.81	17.43	24.99	74.19	0.00	95.34	55.52
Calvert	46,650	1,370.98	81.47	50.95	10.24	34.77	15.73	80.37	33.58	13.27	69.55	84.28
Caroline	25,000	1,380.48	93.55	37.57	23.77	25.09	2.94	78.62	43.25	38.35	70.67	114.12
Carroll	116,900	1,172.61	91.56	26.29	15.01	9.14	11.67	59.85	30.74	15.00	51.25	71.98
Cecil	70,700	1,217.91	72.91	31.01	7.29	23.02	28.34	62.50	43.36	36.59	44.67	86.50
Charles	93,150	1,401.10	56.48	65.07	20.94	19.44	7.55	21.19	55.53	41.69	60.42	89.38
Dorchester	30,350	1,399.31	65.22	61.36	14.25	7.06	8.34	162.20	49.31	30.75	66.70	137.12
Frederick	137,600	1,302.08	65.15	41.14	23.23	13.16	8.28	58.64	82.09	82.88	45.74	49.66
Garrett	26,800	1,565.93	62.08	17.28	13.42	7.44	5.67	237.61	50.33	23.00	77.81	126.09
Harford	166,650	1,281.95	72.49	52.55	13.37	14.56	10.01	71.50	57.70	29.74	36.10	116.99
Howard	158,850	1,671.59	116.75	75.94	47.24	16.19	23.38	35.66	96.60	95.87	36.09	53.75
Kent	17,000	1,515.90	105.50	42.37	23.92	23.22	7.16	81.78	44.90	64.65	124.63	91.23
Montgomery	693,550	1,903.77	106.08	96.78	70.36	15.91	21.03	49.84	127.73	148.38	38.85	76.29
Pr. George's	695,050	1,632.33	124.74	83.84	42.28	19.70	13.80	23.90	148.32	109.79	38.46	72.90
Queen Anne's	31,400	1,430.47	69.71	22.55	18.22	20.14	13.20	108.14	104.21	24.39	82.81	87.41
St. Mary's	69,050	1,140.25	47.58	33.67	7.88	12.83	16.01	35.81	38.91	26.93	51.71	106.12
Somerset	19,400	1,374.21	111.78	25.31	13.93	15.64	12.68	85.90	86.53	41.82	101.72	152.17
Talbot	27,750	1,732.88	68.76	61.09	23.42	18.55	15.09	84.71	65.70	458.66	66.48	81.13
Washington	117,200	1,271.22	51.77	43.62	24.16	14.44	9.05	41.30	57.62	162.63	58.25	89.28
Wicomico	71,300	1,392.33	53.93	42.41	42.18	14.73	8.71	89.36	59.69	80.25	59.21	106.59
Worcester	36,600	2,436.95	143.18	173.77	81.24	44.28	24.35	135.85	217.30	427.92	80.78	85.62

Sources: Table E.7 and U.S. Bureau of the Census, Current Population Reports, Series P-26, No. 88-A, County Population Estimates: July 1, 1988, 1987, and 1986 (August 1989), p. 18.

TABLE E.10

PER CAPITA OPERATING OUTLAYS OF ALL LOCAL GOVERNMENTS, BY FUNCTION, FY 1988

County	Education		Recrea-tion & Parks	Librar-ies	Natural Re-sources	Urban Develop-ment & Housing	Economic Devel-opment	Economic Oppor-tunity	Debt Service		Inter-govern-mental	Miscel-laneous
	Elem. & Second.	Comm. Colleges							Prin-cipal	Inter-est		
	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)
Total	$612.34	$64.57	$40.82	$20.94	$1.71	$9.59	$15.81	$2.25	$51.10	$63.50	$2.38	$34.17
Allegany	566.44	104.64	12.13	8.49	1.89	15.28	17.38	0.63	27.34	48.13	0.38	16.58
Anne Arundel	603.94	60.80	17.38	19.41	0.00	0.63	1.33	0.00	46.27	60.62	0.00	2.91
Baltimore City	545.43	31.18	56.83	21.18	0.00	21.26	78.06	2.59	66.15	57.96	0.00	0.32
Baltimore	518.98	109.00	16.08	29.32	5.08	0.30	1.29	4.76	60.16	44.52	0.00	87.91
Calvert	731.52	0.00	26.83	13.62	2.80	9.17	6.28	0.00	26.32	27.72	0.00	52.51
Caroline	638.05	42.68	18.17	24.55	3.95	23.60	9.51	0.00	32.60	30.13	6.92	22.40
Carroll	606.63	28.34	8.02	20.69	2.19	6.10	14.77	5.28	23.16	26.72	14.62	33.60
Cecil	609.26	73.58	5.29	18.82	2.36	17.37	2.15	0.00	15.68	18.27	2.42	16.53
Charles	672.48	123.15	27.69	7.33	4.28	22.06	2.31	0.44	36.12	31.27	0.00	36.28
Dorchester	606.43	33.20	11.72	11.73	7.41	5.86	4.09	1.53	47.28	33.52	0.00	34.25
Frederick	646.22	53.01	17.56	7.98	1.84	13.40	2.49	11.98	40.92	32.70	2.40	1.63
Garrett	728.87	91.23	2.22	10.74	4.29	23.75	8.99	8.17	7.92	24.15	1.38	33.52
Harford	605.13	80.65	12.19	18.42	1.10	10.99	1.57	12.66	28.08	20.04	0.00	16.14
Howard	732.63	69.35	24.79	24.65	2.46	11.97	5.96	1.05	100.80	96.18	0.00	4.29
Kent	615.32	48.82	17.68	13.75	13.70	12.05	1.89	1.10	129.21	14.52	0.79	37.75
Montgomery	728.94	91.88	84.61	24.82	0.36	13.14	3.06	0.11	68.82	117.34	6.15	13.31
Pr. George's	619.19	43.66	64.38	20.57	0.70	2.70	2.51	0.10	33.91	85.35	0.00	81.52
Queen Anne's	693.13	47.20	45.30	10.38	7.95	6.54	31.40	0.00	5.78	16.38	1.26	14.39
St. Mary's	667.64	0.00	11.11	18.75	2.36	4.07	4.83	0.31	24.04	26.07	0.00	3.62
Somerset	629.21	0.00	9.34	7.95	2.21	25.54	7.17	0.00	5.45	15.10	1.26	23.50
Talbot	546.49	55.54	6.33	21.56	4.62	22.14	5.72	0.00	36.94	45.31	7.84	36.80
Washington	554.97	62.59	17.40	11.27	2.02	6.62	1.27	0.00	17.76	19.40	4.80	21.02
Wicomico	599.76	29.92	24.42	12.12	1.52	7.37	0.00	0.00	60.79	52.01	0.00	47.36
Worcester	666.22	22.22	13.78	12.08	2.86	20.85	17.02	0.00	44.31	79.00	90.13	54.19

TABLE E.11

INDEX OF PER CAPITA OPERATING OUTLAYS OF ALL LOCAL GOVERNMENTS, BY FUNCTION, FY 1988

County	Resident Population 1/1/88	Total	General Government	Public Safety				Public Works			Health and Hospitals	Social Services
				Police	Fire	Corrections	Other	Highways	Sanitation	Other		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Total	4,579,000	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Allegany	75,300	94.0	58.9	42.2	55.7	43.5	97.3	158.1	122.1	130.0	124.5	135.2
Anne Arundel	414,300	87.5	129.1	93.9	145.3	72.0	67.4	131.2	66.0	68.6	63.4	46.2
Baltimore City	753,450	134.3	163.7	202.8	178.5	201.2	198.8	94.2	144.7	88.2	179.2	308.7
Baltimore	685,000	82.2	50.2	88.3	100.9	46.4	90.1	52.8	71.2	0.0	146.4	43.2
Calvert	46,650	83.7	76.7	54.5	17.9	183.3	81.3	169.8	32.2	16.8	106.8	65.6
Caroline	25,000	84.3	88.1	40.2	41.6	132.2	15.2	166.1	41.5	48.4	108.5	88.9
Carroll	116,900	71.6	86.2	28.1	26.3	48.1	60.3	126.5	29.5	18.9	78.7	56.1
Cecil	70,700	74.3	68.7	33.2	12.8	121.3	146.5	132.0	41.6	46.2	68.6	67.4
Charles	93,150	85.5	53.2	69.6	36.7	102.5	39.0	44.8	53.3	52.6	92.8	69.6
Dorchester	30,350	85.4	61.4	65.7	24.9	37.2	43.1	342.7	47.4	38.8	102.4	106.8
Frederick	137,600	79.5	61.4	44.0	40.7	69.3	42.8	123.9	78.8	104.6	70.3	38.7
Garrett	26,800	95.6	58.5	18.5	23.5	39.2	29.3	502.0	48.3	29.0	119.5	98.2
Harford	166,650	78.2	68.3	56.2	23.4	76.8	51.7	151.1	55.4	37.5	55.4	91.1
Howard	158,850	102.0	109.9	81.3	82.7	85.3	120.8	75.3	92.8	121.0	55.4	41.9
Kent	17,000	92.5	99.3	45.3	41.9	122.4	37.0	172.8	43.1	81.6	191.4	71.1
Montgomery	693,550	116.2	99.9	103.6	123.2	83.8	108.7	105.3	122.7	187.3	59.7	59.4
Pr. George's	695,050	99.6	117.5	89.7	74.0	103.8	71.3	50.5	142.4	138.6	59.1	56.8
Queen Anne's	31,400	87.3	65.6	24.1	31.9	106.1	68.2	228.5	100.1	30.8	127.2	68.1
St. Mary's	69,050	69.6	44.8	36.0	13.8	67.6	82.7	75.7	37.4	34.0	79.4	82.7
Somerset	19,400	83.9	105.3	27.1	24.4	82.4	65.5	181.5	83.1	52.8	156.2	118.5
Talbot	27,750	105.8	64.8	65.4	41.0	97.8	78.0	179.0	63.1	579.0	102.1	63.2
Washington	117,200	77.6	48.8	46.7	42.3	76.1	46.8	87.3	55.3	205.3	89.5	69.5
Wicomico	71,300	85.0	50.8	45.4	73.8	77.6	45.0	188.8	57.3	101.3	90.9	83.0
Worcester	36,600	148.7	134.8	185.9	142.2	233.4	125.8	287.0	208.7	540.2	124.1	66.7

Sources: Table E.10.

TABLE E.11

INDEX OF PER CAPITA OPERATING OUTLAYS OF ALL LOCAL GOVERNMENTS, BY FUNCTION, FY 1988

County	Education		Recreation & Parks	Libraries	Natural Resources	Urban Development & Housing	Economic Development	Economic Opportunity	Debt Service		Intergovernmental	Miscellaneous
	Elem. & Second.	Comm. Colleges							Principal	Interest		
	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Allegany	92.5	162.1	29.7	40.6	110.6	159.4	110.0	28.0	53.5	75.8	16.0	48.5
Anne Arundel	98.6	94.2	42.6	92.7	0.0	6.5	8.4	0.0	90.6	95.5	0.0	8.5
Baltimore City	89.1	48.3	139.2	101.2	0.0	221.8	493.8	115.2	129.5	91.3	0.0	0.9
Baltimore	84.8	168.8	39.4	140.0	296.7	3.1	8.2	211.7	117.7	70.1	0.0	257.3
Calvert	119.5	0.0	65.7	65.0	163.2	95.7	39.7	0.0	51.5	43.7	0.0	153.7
Caroline	104.2	66.1	44.5	117.3	230.5	246.2	60.2	0.0	63.8	47.4	291.3	65.6
Carroll	99.1	43.9	19.7	98.8	127.6	63.6	93.5	235.1	45.3	42.1	615.5	98.3
Cecil	99.5	113.9	13.0	89.9	137.8	181.2	13.6	0.0	30.7	28.8	101.8	48.4
Charles	109.8	190.7	67.9	35.0	250.0	230.2	14.6	19.5	70.7	49.3	0.0	106.2
Dorchester	99.0	51.4	28.7	56.0	432.6	61.1	25.9	68.2	92.5	52.8	0.0	100.2
Frederick	105.5	82.1	43.0	38.1	107.1	139.8	15.7	533.2	80.1	51.5	101.2	4.8
Garrett	119.0	141.3	5.4	51.3	250.1	247.8	56.8	363.8	15.5	38.0	58.1	98.1
Harford	98.8	124.9	29.9	88.0	63.9	114.7	9.9	563.4	54.9	31.6	0.0	47.2
Howard	119.6	107.4	60.7	117.7	143.4	124.9	37.7	46.6	197.3	151.5	0.0	12.5
Kent	100.5	75.6	43.3	65.7	799.8	125.7	12.0	49.0	252.9	22.9	33.1	110.5
Montgomery	119.0	142.3	207.3	118.5	21.1	137.1	19.4	4.8	134.7	184.8	259.1	38.9
Pr. George's	101.1	67.6	157.7	98.2	41.0	28.1	15.9	4.4	66.4	134.4	0.0	238.6
Queen Anne's	113.2	73.1	111.0	49.6	464.3	68.2	198.6	0.0	11.3	25.8	53.0	42.1
St. Mary's	109.0	0.0	27.2	89.5	137.8	42.5	30.5	13.9	47.1	41.1	0.0	10.6
Somerset	102.8	0.0	22.9	38.0	128.7	266.5	45.3	0.0	10.7	23.8	53.2	68.8
Talbot	89.2	86.0	15.5	103.0	269.8	231.0	36.2	0.0	72.3	71.4	330.0	107.7
Washington	90.6	96.9	42.6	53.8	117.7	69.1	8.0	0.0	34.8	30.6	202.1	61.5
Wicomico	97.9	46.3	59.8	57.9	88.9	76.9	0.0	0.0	119.0	81.9	0.0	138.6
Worcester	108.8	34.4	33.8	57.7	166.7	217.5	107.6	0.0	86.7	124.4	3,795.1	158.6